INBOUND FREIGHT MANAGEMENT AND OPERATIONAL EFFICIENCY IN THE MANUFACTURING INDUSTRY

A CASE OF ROOFINGS ROLLING MILLS

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DECLARATION

I, **Sigombe Richard** hereby declare that this dissertation titled "*Inbound Freight Management and Operational Efficiency in The Manufacturing Industry A Case of Roofings Rolling Mills",* is my original work and has never been presented to any university or institution of higher learning for any academic award.

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APPROVAL

This dissertation was compiled by **Sigombe Richard** under the title**, "Inbound Freight Management and Operational efficiency",** taking a case study of the Roofings Rolling Mills. It was under our supervision and it meets the requirements for the award of a degree of masters of Science in Procurement and Supply Chain Management of Kyambogo University.

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DR PETER .W. OBANDA

(Principal Supervisor)

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DR. TITUS BITEK WATMON

(Second Supervisor)

DEDICATION

I dedicate this dissertation to my beloved mum Justine Nakamya for her endless sacrifice towards my academics

May God bless you now and forever.

ACKNOWLEDGEMENT

My special thanks and honour to the Almighty God, in whose power and strength was able to walk through this tough time. I also extend my sincere gratitude to my supervisors Dr Peter. W. Obanda and Dr Titus Bitek Watmon for their enthusiastic and professional guidance which helped me a lot to accomplish this dissertation successfully. May God give them more knowledge and strength now and forever. I am also indebted to all those who through their commitment have made my work a success especially the workers at the Roofings Rolling Mills in Uganda who were approached, filled the questionnaires and provided the necessary information concerning the research study.

My sincere thanks goes to my course mates including Hawa Tuku ,Nagudi Regina ,Kawaddwa Sheem and Nabwato Veronica struggled with doing course works and assignments for their great care, advice and continuous support for my academic struggles, that held me confident to the end of the course. I also thank my fellow workmates and friends including Rita, Lamec, Faith, Emmanuel, Vicent, Arinda, Clive, and Gracious among others for their encouragement that enabled me to finish the course successfully.

GOD BLESS U ALL

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

FTL…….Full Truck Load

LTL……Less than Truckload

RBV…….Resource Based View

WTO……World Trade Organization

VRIN……Value, Rarity, Non-Imitability and Non-Substitutability

RRM…….Roofings Rolling Mills

SGR……..Standard Gauge Railway

SPSS…….Statistical Package for Social Sciences

SCM……Supply Chain Management

TABLE OF CONTENTS

ABSTRACT

The study centered on effect of inbound freight management and operational efficiency using a case study of Roofings Rolling Mills. The study was guided by the three objectives that is; to determine the effect of Carrier Management on operational efficiency, the effect of freight consolidation and optimization on operational efficiency and the effect of strategic partnership on operational efficiency of Roofings Rolling Mills. A cross-sectional survey design were used which enabled the researcher to collect detailed and in-depth data from Roofing Rolling mill staff. The researcher used questionnaire and interview guide to collect data from 32 and 3 respondents respectively. Research findings show that the respondents agreed that carrier management was high at Roofings Rolling Mills and it was revealed that, the extent to which carrier management predicts operational efficiency was low but the relationship between the two variables was statistically significant (R^2 value 0.132 (13.2%), and Sig. value 0.041); r=0.465,sig.value=0.000. Findings also show that respondents agreed that freight consolidation and optimization was high at Roofings Rolling Mills and it was revealed that, the extent to which Freight consolidation and optimization predicts operational efficiency was low but the relationship between the two variables was statistically significant (R^2 value 0.25(25%), and Sig. value 0.004); r=0.578,sig.value=0.000 and finally findings revealed that strategic partnership was high at Roofings Rolling Mills and it was revealed that, the extent to which strategic partnership predicts operational efficiency was low but the relationship between the two variables was statistically significant(R^2 value 0.25(25%), and Sig. value 0.004) r=0.687,sig.value=0.000. In general, the extent to which inbound freight management predicts operational efficiency was low but the relationship between the two variables was statistically significant (R^2 value 0.24 (24%), and Sig. value 0.004); r=0.662, sig.value=0.000. The researcher recommends that Roofings Rolling mills should continue adopting and implementing inbound freight management practices to effectively improve on their operational efficiency; the researcher therefore recommends the need for full management support/senior management sponsorship in order to tap more from the inbound freight management practices and a comparative study should be conducted regarding inbound freight management practices in another company with in manufacturing sector that is similar in terms of size in regard to areas for further study.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Incoming freight in most companies account for almost 50% of the logistics costs and for companies to gain more control of these costs; there is need to make inbound freight management a priority in the way they carry out their logistics activities and supply chain management as a whole.(PLS Logistics, 2018). As companies choose to manage their inbound vendors a lot of attention will be awarded on the integrity of their shipments, end user satisfaction and information tracking hence a decision to manage inbound freight will give companies a greater benefit to improve in terms of reliability, acquire greater visibility and have maximum control over the cost of their operations. Chopra and Meindl, (2007) as cited by Makumbi (2014) argues that undertaking inbound freight has a great influence not only facilities of the company but also on the overall inventory levels of a company hence impacting significantly on cost structure and operations as a whole. The research undertaken by PLS Logistics, (2018) notes that for companies involving in importation can only gain control of their inbound freight by ensuring shipment tracking to determine their status and gain maximum control over their inventory but this seems to be a complicated process which may require a lot of operational changes in today's most manufacturing companies (PLS Logistics, 2018).

In a bid to attain operational efficiency, Brar and Saini (2001)as cited by Musyoka,(2016) argue that there is need for companies to take a clear look on how they manage their inbound freight since it's the beginning point for the supply activities impacting on other subsequent operational activities of most manufacturing companies. The authors adds that any kind of disruption on inbound freight flow may end up halting production lines creating a deficit in

materials which later culminates into loss of business opportunities. This therefore acts as eye opener to manufacturing firms to integrated inbound freight as they undertake the planning of their operations in regard to sourcing of materials and delivery of end products. This chapter there includes the Background to the study(historical ,theoretical ,conceptual and contextual),statement of the problem ,purpose of the study, objectives of the study, research questions, scope of the study, significance of the study, definition of key terms and conceptual framework.

1.1 Background to the study

1.1.1 Historical Background

In the early stages inbound freight management focused on local optimization which mostly entailed the optimization of inbound freight for particular shipments but the current trend has moved from local to global optimization. Firms now days are putting a lot of focus on agility and flexibility issues since there is a target of keeping inventories at a minimum and then respond to customers need in the most accurate manner (World Trade Organization, 2001). WTO, (2001) adds that inbound freight management is driven by; reduction in costs of trade; reduction in both inbound freight and those related with integrating different parties. The introduction of unrestricted zones especially by US during the post-world war II era greatly reduced barriers to trade among countries and an increase in the cross-border movement of goods in most of the mass producing nations. In addition changes in technology has greatly ushered in high value in regard to inbound freight services and hence when inbound freight management is combined with information technology the benefits manifests in the form of increased speed, reliability and low costs (WTO, 2001).

According to Frankel, (2000) as cited by Sebastian Kot (nd), the post war years saw the decline of transportation costs by a margin of $66 for a period of 70 years. The last 30 years saw air cargo rates falling making trade possible especially in non-tradable perishable goods. Shipping

costs have been reduced for instance the ratio of CIF trade value between 1950 and 1990 in the US trade. There has been an increase in inbound freight management globally as means of production are becoming accessible. Most of the companies falling under OECD countries with those especially from industrializing countries such as South Korea, Taiwan, Brazil, Chile among others have been linked to US in regard to deliveries for transitional and end-user products. An increase in innovation in developing countries and convoyed with a decrease in taxes which in turn has unlocked different countries opening up of former closed countries to be able to participate in cross border transactions (World Trade Organization , 2001).

Bordo et al (1999) argue that industrial innovations are key in expounding on declining inbound freight charges even though there has been a controversial argument as alluded by Krugman (1995). The former notes that much of the technical improvements have been attributed to information technologies which increase both capacity and functionality of different modes. These kinds of developments have fundamentally transformed interactions across the globe hence improving inbound freight operations. Different firms have been able to develop innovative ways in regard to combination of inbound freight in a bid to increase efficiencies in the globally competitive environment. Gwilliam, (1998) notes that even though inbound freight management varies with the type of products area scope especially regarding the different raw materials in order to achieve value for money there is need to minimize inventory holding costs. Reduction of inventory has become of significant importance to many firms and this has greatly revealed an effective inbound freight management framework since a section of necessary items can be distributed to different economies.

Just in time production systems such as restructuring of firms have of recent seen an increase in importance of inbound freight management. Over recent years a lot of attention has been

given to flexible operating systems (Piore & Sabel, 1984: Storper & Scott, 1992) as cited by Scott and Storper (2003). These kinds of operations have seen a movement from vertical to horizontal forms encouraging economies of scale as noted by Markusen, (1985). The author notes that these organizational and geographical arrangements have been able to capture upstream advantages since an efficient and reliable inbound freight management is critical in global production chains. The drive to reduce costs has seen manufacturers involved in inbound freight management to source for materials in different countries. Water charges and the mixture of other inbound freight charges have reduced tremendously encouraging cross border transactions.

1.1.2 Theoretic Background

The theoretic review of this study is anchored on the Resource-Based View Theory (RBV).

1.1.2.1 The Resource-Based View (RBV)

This theory bases most of its work on Prahalad & Hamel (1990) as cited Makumbi, (2014). These authors' work look at firms as a bundle of resources that separates firms from the other giving them a competitive advantage but for firms to identify what they regard to be strategic resources there is need to satisfy four major elements including Value, Rarity, Non-Imitability and Non-substitutability being abbreviated as VRIN framework of the Resource Based View theory as according to Barney, (199) & Cheon et al (1995) as cited by Makumbi, (2014). The theory affirms that for resources that are not considered core but rather non-core is plowed out to an external resource as emphasized by (Quinn and Hilmer, 1994) in Makumbi, (2014). This theory assumes that for firms to be competitive they should access resources that cannot easily be exchanged and very hard to build and imitate and emphasizes a firm's resources as a vital determinant for its superior performance (Barney & Clark, 2007) as cited by Misuko (2015). In relation to the study; through inbound freight management firms can acquire a number of

resources including physical, human, insights, information and collaborative resources which they can merge together and create very unique and distinct capacities in order to achieve operational efficiency which can be manifested in delivery of superior items to different destinations. The relevance of this theory is that through a well distinct intangible resources that is inbound freight management practices such as carrier management, freight consolidation and optimization, strategic partnership among others firms can easily exploit them and attain operational efficiency.

1.1.3 Conceptual Background

Inbound freight management is a part of the general inbound logistics concept which makes the overall Supply chain management with other activities such as procurement, warehousing, inventory management among others as noted by Harrison & Hoek,(2008) and cited by Kiraga, (2014). This in turn leads to an improved process flow and a reduction of costs in the whole chain since as integration takes place, different members operating under the same chain bring their tools and efforts together in order to coordinate different business activities with an aim of ensuring customer satisfaction (Cooper, Lambert & Pagh, 1997) as cited by Kiraga (2014).

From the writings of Coyle (2011) as cited by Musyoka, (2016); inbound freight acts a commercial driver supporting product possession to different parties. He adds that when companies source for different items and take them where there are needed both place and time utilities are enjoyed. Branc (2009) as cited by Musyoka, (2016) adds that firms can decide to use one or more several modes of transport to both effectively and efficiently move materials for the planned production. In this regard inbound freight management can facilitate operational efficiency by ensuring transferring items in the most effective and efficient manner possible which in turn calls for a proper plan regarding expected lead times to best manage the delivery timeliness. But for Baker (2010) as quoted by cited by Musyoka, (2016) argues that

organizations should endeavor to enforce shipment visibility while undertaking inbound freight activities. He notes that there is need to balance a compromise between the import charges and the savings likely to be made at the place of destination meaning a keen eye on landed costs, customs clearance, shipments lead time and the costs associated with holding inventory since its well-known that operational efficiency is greatly impacted upon by transport costs, speed and consistency in terms of what has been delivered. "*For great performance firms must move materials in the right order, right quantity, right quality and right time*" (Bowersox, 2010) as Musyoka, (2016) quotes him.

Fair (1981) notes that it has been proved that inbound freight management plays a fundamental part to convert different resources to what is best suitable to the ultimate customer or end user. So, the planning of the different related functions and activities into a thorough system enabling the movement of goods to both reduce costs and achieve superior customer service. Tseng et al (2005) as cited by Kiraga (2014) argue that for any system one put in place there is need for its effective management hence with inbound freight management system well management; operational efficiency will be guaranteed. In their writings Liviu & Emil (1995) as cited by Kiraga, (2014), the authors pointed out the following constructs of inbound freight management including "*carrier management, load planning and optimization, preparing and executing shipment, monitoring, freight payment and auditing and finally performance monitoring."* They allude that for any management field including inbound freight management; there is need for useful solutions for any kind of manager to ensure that value for money is attained in all parts of the organization (Liviu & Emil, 1995) as cited by Kiraga, (2014). Therefore, inbound freight management entails those techniques and solutions which are assumed to be both effective and cost effective for both the organization and the customers

This in turn increases the level of transportation velocity while optimally utilize the firm's resources both efficiently and effectively

It has been noted that with a well-organized inbound freight management; operational efficiency is guaranteed. The reason for this argument is that if the practice is not handled properly it can really cost the organization. Hugo (2011) noted that for any company thriving for responsiveness it should be cautious of available inbound freight cost due to the expectations from the customers in relation to quick deliveries. The author adds that for any company thriving for both effectiveness and efficiency there is need to put an element of economies of scale into consideration since there will be manifestation of aggregated deliveries and the number of times in regard to transportation of items will reduce due to larger shipments being aggregated. Stock and Lambert, (2001) as cited by Sigurdsson and Thrandardottir, (2015) points out that inbound freight costs in an organization can contribute to about 20% of the overall final price of the item hence the need for effective control and management of inbound freight in order to realize significant increase in efficiency and overall profitability of the company as supported by Chopra and Meindl, (2007) as cited by Sigurdsson and Thrandardottir, (2015) . For the purpose of this study, the focus will be on carrier management, freight consolidation and optimization and strategic partnerships and how they influence operations efficiency with specific emphasis on Roofings Rolling Mills.

1.1.4 Contextual Background

Roofings Rolling Mills is one of the biggest privately owned steel manufacturing organizations in East and Central Africa under the chairmanship of Dr.Sikander Lalani. Under him, there are other board members who assist in running the company.

Roofings Rolling Mills was established in Uganda in 2009 from Roofings limited under the license of the Uganda Investment Authority (UIA) with an aim of producing the best quality

steel products, which meets the ISO 9001 standards as well as satisfying the customer needs. The company embarked on constant upgrading to higher technology levels, research and development and expansion of product lines which enabled it become one of the leading steel manufactures of quality steel products in the region. The company operates from its factory on 40 acres of land which is located on plot 406, Namanve industrial park along Nantabulilirwa village in Mukono district approximately 3km from the main road. The company was producing a variety of products which were used for construction purposes such as galvanized pre-painted coils which are formed into iron sheets used mainly for roofing sheets, binding wires, TMT rebars, galvanized wires, razor wires, barbed wires, chain links. As part of production, the company was producing oxygen, hydrogen and nitrogen, for which the surplus oxygen was donated to hospitals like Rubaga, Nsambya.

RRM has gone through the number of phases as shown below;

Phase I was using imported wire rods as raw materials which were used for producing galvanized and barbed wires and chain links.

Phase II used imported billets and local scrap metals for making the TMT re-bars, there was also the oxygen plant which produced oxygen which was used in the burning process in phase 2.

Phase III used hot rolled coils for the production pre-painted iron sheets, AZED iron sheets, and galvanized coils. Roofings Rolling Mills in 2011 was able to acquire funding from International Finance Corporation totaling $25 million to expand its facilities. On top of that in December 2010 a total of $64 million was acquired from six(6) Ugandan commercial banks to also help in company operations. When all of the planned expansion is completed, the company's exports will more than double to over US$130 million annually. Roofings Rolling Mills distributes its items to all the countries in the East African community and not forgetting DRC. According to Nashila Lalani the Executive Director quotes *"that having the right*

product is not sufficient, but other factors such as distribution channels or accessibility are equally vital to confirm that the buyer gets the correct expertise in buying the merchandise". "*Previously, we used to import galvanized wire, colored and galvanized coils and rebar. Today we import the basic raw materials and add value to the tune of over 50 %. This type of backward integration and value addition in the manufacturing sector is what will help Uganda achieve her goals of becoming a middle-income country by 2040*," Lalani further intimated. Most of the raw materials are sourced from South Africa and Japan but mostly the latter (Anthony Nash, 2017). The preference for Japan is in line with the urge by the manufacturing plant to supply top quality merchandise. Hot rolled coil is that the most foreign of their raw materials, from Japan. Away from the raw materials, most of the machinery used at the power in Namanve like the electrical controls, automation and therefore the thought instrumentality were foreign from Japan. The company supplies its products to the local markets, Rwanda, South Sudan, Burundi and Kenya. He talks proudly of being a player in the Kenyan market: *"It speaks volumes that after paying the freight for our raw materials that are transported through Kenya, our products are then exported to the country. This is more of recognition that the products of RRM meet the standards of the end users*. "alludes Dr Sikander Lalani, Uganda's steel magnate.

1.2. Statement of the Problem

In Uganda a day in the manufacturing industry in particular for the case of Roofings Rolling Mills can mean and cost millions of dollars. These and other factors including clearing and forwarding, transportation, shipping and customs among others will ultimately combine to provide a nightmare for the company as it undertakes its inbound freight operations (Daniel Otto,18th September 2018). "*One of the challenges bound to occur are bureaucratic delays given the nature of our country (Landlockedness) which makes the machinery and necessary equipment to come either through Mombasa port in Kenya or through Dar es Salaam in*

Tanzania; there also cases of customs issues related either to interpretation of the law and finally lack of prior experience in taxation with in the east African region" as Daniel Otto,18th September 2018*)* narrates.

Roofings Rolling Mills was privileged to obtain contracts from the Uganda government to involve in the supply of different infrastructure projects such as major dams. When the mister in charge of Finance for Planning (David Bahati) was opening up new products at the company premises confirmed that the company will be in responsible of supplying all steel building materials for both 183MW Isimba hydropower projects and 600MW Karuma (Kazooba,2016). Roofings Rolling Mills is challenged by limited routes across almost the entire country and region which has hindered them to simply and economically move the different materials needed in order to undertake the different available projects. East Africa's steel giant Roofings has asked the region to fully exploit the Standard Gauge Railway (SGR) describing it as a grand godsend. "*We are already in talks with them (SGR), we are in need of a railway siding because it will enable faster and carriage of heavier loads*," as noted Stuart Mwesigwa, Roofings business development manager (Mugabe David (1 march, 2016)). Mwesigwa further notes that "*we are not bringing in as much material currently using the current line, yet the company aims to go beyond Uganda into South Sudan, Kigali and we have tentacles in all those places*". Roofings Rolling mills's targeted 72,000 tons capacity in a year has always been hampered with which has greatly affected the company in creating new markets not only in Uganda but the whole region at large. In addition to the above challenges; the Import officer pointed out that "*the company has been experiencing cases of breakage of trucks on the way and problems in regard to physical verification most especially of raw materials coming from china and the importation costs are slightly higher not forgetting the extreme costs from the forwarders and sometimes goods are lost after test by UNBS".* This hence motivated the researcher to undertake a study.

1.3 Purpose of the study

The main aim of the study was to examine the effect of inbound freight management on operational efficiency of Roofings Rolling Mills.

1.4 Research Objectives

i. To determine the effect of Carrier Management on Operational efficiency of Roofings Rolling Mills.

ii. To examine the effect of freight consolidation and optimization on Operational efficiency of Roofings Rolling Mills.

iii. To examine the effect of strategic partnership on Operational efficiency of Roofings Rolling Mills.

1.5 Research Questions.

i. What is the effect of Carrier Management on Operational efficiency of Roofings Rolling Mills?

ii. What is the effect of freight consolidation and optimization on Operational efficiency of Roofings Rolling Mills?

iii. What is the effect of strategic partnership on Operational efficiency of Roofings Rolling Mills?

1.6 Scope of the study

1.6.1 Content scope

The focus of this study was on how Inbound freight management practices affect Operational efficiency. The study continued to explore how Carrier Management, how freight consolidation and optimization affect operational efficiency and how strategic partnership affect operational efficiency of Roofings Rollings Mill.

1.6.2 Geographical scope

The company operates from its factory on 40 acres of land which is located on plot 406, Namanve industrial park along Nantabulilirwa village in Mukono district approximately 3km from the main road. The company was particularly chosen as a case study because the company has been involving in inbound freight management activities and now that the company has over the years expanded its operations with the increase in cross-border trade with countries neighboring Uganda hence exposing the researcher to a well vast and rich information source on the operations within the area of study.

1.6.3 Time Scope

This study took a timeframe of six (6) months since it was the maximum period granted to a post-graduate student by the School/ University to conduct and report on their study findings.

1.7 Significance of the study

This study will provide to the management Roofings Rolling Mills with unique insight into the dynamics of inbound freight management, and will be an ice-breaker to their operations.

The study may also help inform investors and chief executives, who are the policy makers at the organizational, partnership and national level, of the framework upon which inbound freight management activities and implementation are based to attain sustainable shareholder value and competitive advantage.

The research may also help academicians and researchers in conducting further study on the different inbound freight management practices like Carrier management, freight consolidation and optimization and strategic partnership which is also a common practice in Uganda.

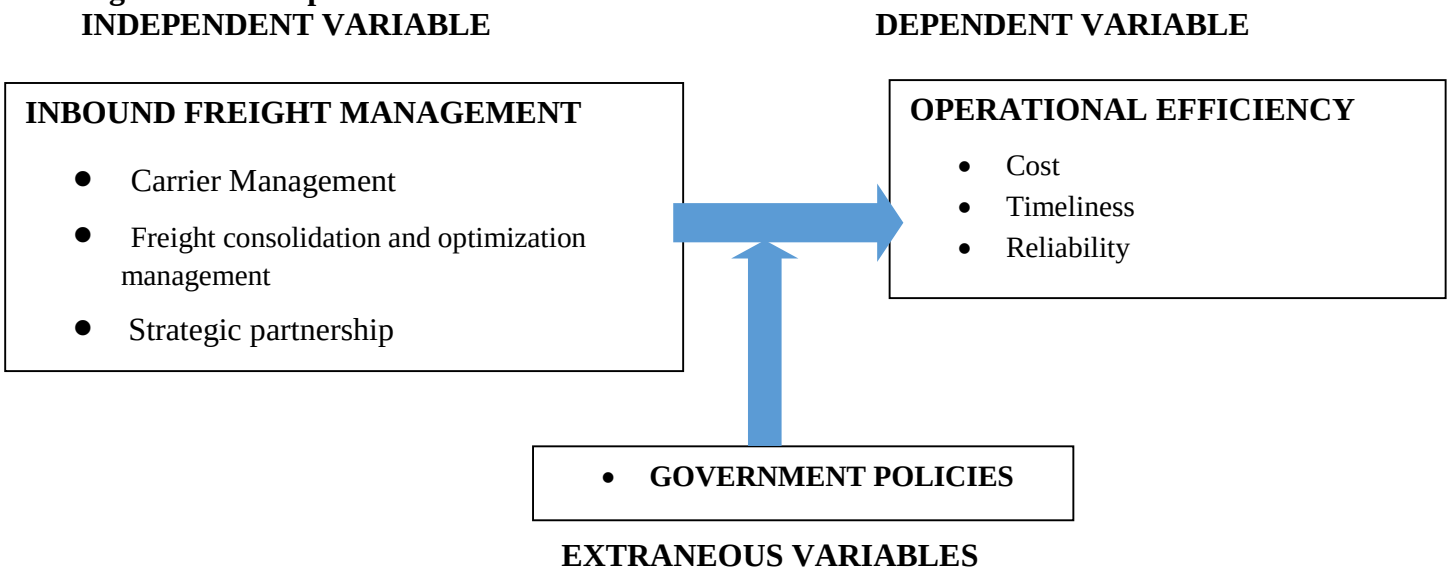
1.8 Definition of Key terms

- **Inbound Logistics** is concerned with processes of the movement of materials or finished inventory from supplier to the purchasing organization

- **Inbound freight refers** to an integral part of supply chain management and entails shipments coming from vendors
- **Inbound freight management** involves management of different activities to ensure that optimization is attained right from the supply source to the manufacturer's premises.
- **Operational Efficiency** is defined as a gauge to operations in terms of organization's activities to meet ultimate purchaser's needs, including timely delivery of goods and availability of crucial inventory in a responsive manner.

1.9 Conceptual Framework

Figure 1: Conceptual Framework



Source: Modified by the Researcher and adapted from Misuko, (2015); "*Strategic inbound transportation management practices and performance of Large-scale Manufacturing firms in Kenya".*

Explanation

The conceptual framework in figure 1 above illustrates the conceptual environment of the study. As explained in the accompanying literature review, the conceptual framework

diagrammatically illustrates the effect of inbound freight management (independent variable) on Operational efficiency (dependent variable).

Carrier management as part of inbound freight management involves the selection of mode of transport and carrier, negotiating rates and service levels and evaluation of carrier performance The conceptual framework demonstrates the effect of Carrier management on operational efficiency and this has an influence on operational efficiency in terms of cost efficiency, time efficiency and reliability efficiency.

Freight consolidation and optimisation as part of inbound freight management entails the creation an efficient transportation plan that enables manufacturing companies to minimize on different costs. In the conceptual framework it shows how it affects operational efficiency in terms cost efficiency, time efficiency and reliability efficiency.

Strategic partnership as part of inbound freight management involves a long-term relationship between supplier and buyer encouraging smooth flow of ideas and feedback. In the conceptual framework it shows how it affects operational efficiency in terms cost efficiency, time efficiency and reliability efficiency.

However, the above relationship is moderated by other factors. In this study, these factors have been analytically established as Government policies such as taxation, local content policy etc.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section deliberates on the concept of inbound freight management (IV), operational efficiency (DV) and how the independent variable affects the dependent variable as presented by different scholars, experts and practitioner as analyzed below: the chapter expounds more on the theoretical review, conceptual review , how each construct of the independent variable (Carrier management, freight consolidation and optimisation and strategic partnership) affects operational efficiency(Cost, Time and Reliability) and the summary of literature review and literature gap.

2.1 The Theoretical Review

The theoretical review of this study was anchored on the theory of the Resource-Based View (RBV).

2.1.1 The Resource-Based View (RBV)

The theory alludes that organization's resources act as one of the elements of viable and superior performance if handled well. This theory adopts two assumptions in analyzing sources of competitive advantage as noted by (Barney, 1991 and Peteraf and Barney, 2003). The RBV model assumes that firms within a particular industry may be heterogeneous depending on the bundle of resources that they have maximum control over as noted by (Barney,1991) and later by Peteraf and Barney, 2003). The argument alluded by Cool, Almeida Costa and Dierick,(2002) points out that "*if all firms in a market have the same stock of resources, no strategy is available to any firm that would not also be available to all other firms existing in the same market".*

According to Misuko (2015) as noted from the writings of Gold, Seuring and Beske (2009) in their study they utilized the resource-based view in the impact of Information Technology on Organizational supply chain capabilities and performance and it was revealed that organizational resources are critical in achieving a competitive advantage. Prahalad & Hamel (1990) as quoted by Makumbi, (2014) looked at Resource based view by seeing organizations as a unique bundle of resources that distinguish one firm from another, and give firms a sustainable competitive edge. But for any firm to identify the strategically important resources, the same must satisfy these four major elements (Value, Rarity, Non-imitability and non-substitutability) abbreviated as the VRIN framework of the Resource Based Theory (Barney, 1991 and Che et al, 1995) as cited by Makumbi (2014). This theory points out that resources that are not considered strategically important according to the above criterion are considered non-core and have to be plowed out to an external resource with the potential to exploit them (Quinn and Hilmer, 1994) as reflected in Makumbi (2014). 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) as cited by Makumbi (2014). The theory lays emphasis on firm's resources as its key determinant to its excellence performance and competitiveness. Through inbound freight management firms can acquire physical, human, insights, information and if combined together operational efficiency can be inevitable delivering both tangible and intangible benefits. The relevance of this theory is that through inbound freight management a company can utilize its intangible resources as part of the organizational capabilities to gain a competitive advantage by integrating inbound freight management practices like carrier management, freight consolidation and strategic partnerships to achieve operational efficiency.

2.2 Conceptual Review

This section explains the independent variable (Inbound freight management), the dependent variable (operational efficiency), effect of carrier management on operational efficiency, effect of freight consolidation and optimisation, the effect of strategic partnership on operational efficiency and operational efficiency measures (Cost, Time and Reliability).

2.2.1 Inbound freight management

Inbound freight management entails the management of the transportation, storage and delivery of goods and raw materials coming from suppliers (Misuko, 2015). This therefore means that inbound freight management practices can enable companies to operate efficiently and obtain value for money for different manufacturers especially when the different inbound activities are properly managed. Buying organizations have been able to attain benefits by the use of Free on Board since this puts them at liberty to determine the kind of carriers to undertake the different forwarding activities (Sambracos & Ramfou, 2013). It has proved that inbound freight management has enabled companies to undertake different practices including carrier selection and management, freight consolidation and optimization ,technology integration ,strategic partnerships, preparation and executing and monitoring practices.

Farris II, (2010) as cited in Misuko, (2015) points out the advantages of Inbound freight management including the ability to plan and schedule inbound shipment through the use of both directed and traceable carriers, reduction in inbound congestion at the ports and docks, improved ability to monitor inbound freight costs and choices, lower transportation costs through consolidation of different shipments and finally improved handling of problems and maintenance of data records.

According to Coyle (2011); inbound freight encourages movement of product ownership from one party to another. He adds that when an organization has a well sound and organized inbound freight management system sourcing for goods becomes easy and at then delivering

them both place and time utilities are enjoyed. Branc (2009) adds that firms can decide to use one or more several modes of transport to both effectively and efficiently move materials for the planned production. In this regard inbound freight management can facilitate operational efficiency by ensuring conveyance of items to the consumers in most effective and cost-effective manner hence this calls for a proper plan regarding expected lead times to best manage the delivery timeliness. But for Baker (2010), argues that organizations should endeavor to enforce shipment visibility while undertaking inbound freight activities. He notes that there is need to balance a compromise between the import charges and the savings likely to be made at the place of destination meaning a keen eye on landed costs, customs clearance, shipments lead time and the costs associated with holding inventory since its well-known that operational efficiency is greatly impacted upon by transport costs, speed and consistency in terms of what has been delivered. "*For great performance firms must move materials in the right order, right quantity, right quality and right time*" (Bowersox, 2010).

Khairunj and vinceno, (2014) portrays the following steps in regard to business process flow when planning freight for an inbound load.

Step 1: Use a purchase order to create an inbound load. This can be done by modifying an existing inbound load.

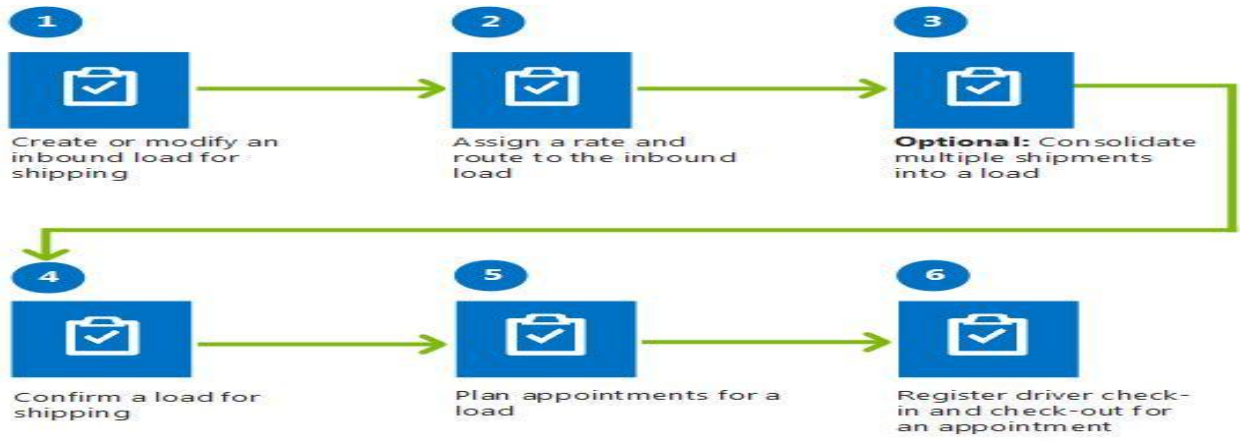
Step 2: Assign a rate, route, and shipping carrier.

Step 3: Optional: Consolidate shipments that are shipped to one or more destinations in the same route.

Step 4: Confirm an inbound load to prepare to receive the shipment from the vendor.

Step 5: Plan when to receive the load from a vendor at the inbound dock.

Figure 2: Showing business process flow when planning freight for an inbound load.



Source: Khairunj and vinceno, (2014), Business process: Planning transportation for inbound loads

2.2.2 Operational Efficiency

Efficiency of operations manifests once the proper combination of individuals, process, and technology close to reinforce efficiency whereas as routine operations are put to a preferred state. Operational efficiency can be manifested in terms of productivity, profitability, morale of employees, customer service improvement, adaptiveness to changes, competitive edges among others. He continues that to make an organization operate efficiently factors related to the management and determinations of organizational efficiency are essential (Shankar, 2012). However a number of suggestions have been made by academicians regarding different criteria that can be employed, and in the assessment of organization's operational efficiency including: profitability measured in terms of gross profit, growth, productivity relating a unit of output to the input required to produce, new innovations in terms of new services, new technology and managerial systems and procedures.

According to Thukaram,(1999), operational efficiency can be measured basing on the following criteria including ; reduction in operating cost by not producing defective goods,

identification of the process faults and defects of products and thus control scrap and waste, setting and resetting of processes and machinery to know the performance of similar machines and operations, increase in the profit earning capacity of the business, reduction in product line bottlenecks and customers' satisfaction, easy management of working capital, earning and dividends, efficient operation of workers, reduction in material handling costs and efficient installation of new techniques of production and automation if necessary.

Huan (2004) as cited by Musyoka (2016) urges that for a company to arrive at operational efficiency; there is need to audit firm's processes including: product delivery, lead time, awareness among others. Therefore, by evaluating these metrics, organizational performance measures can, therefore, be narrowed to cost, speed, reliability and customer satisfaction perspectives as noted by Beamon, (1999) and cited by Musyoka (2016). Eventually these operational efficiency measures help firms assess their competitive position and work towards operational efficiency with a view to exploiting potential operational success (Stock and Lambert, 2000) as cited by Musyoka (2016).

Operational efficiency can also be reflected as a gauge to company's 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 as alluded by Housman, (2004) as cited by Musyoka (2016). The writer notes that due to increased competition among companies arising from open markets; operational efficiency can be achieved as companies undertake inbound freight management. Gattorna (2003) as cited by Musyoka, (2016), notes that for firms to attain operational efficiency; there is need to have a clear view of the inbound freight management framework. Musyoka, (2016) quotes Kurien and Qureshi (2011) in regard to the view that the Supply Chain Operations Reference (SCOR) model approach promotes for a number of operational efficiency measures including cost, time, quality and flexibility.

2.4 Carrier Management and operational efficiency

One of the critical decisions regarding inbound freight entails choosing the particular carrier to assist in movement of items from say the source to manufacturing sites hence there is need to consider various attributes in selection of someone/organization to undertake that task as indicated in Misuko, (2015) and Kiraga (2014) from the research undertaken by Meixell & Norbis, (2008) . These criteria can vary basing on the kind of industry you are operating in, so long as the selected party has potential to handle both inbound and outbound operations with the ultimate aim of contributing to operational efficiency of manufacturing firms.

Monczka et al (2005) as cited by Misuko(2015) and Kiraga (2014) urges that the decision regarding a particular mode and the management of different carriers constitutes a decision making process in regard to movement of cargo including the different conveyance variables such as: "*selection of mode of transport and carrier, negotiating rates and service levels and evaluation of carrier performance* It's imperative to note that a performance of particular carrier influences both the efficiency and effectiveness of not only the inbound logistics function but the whole logistics framework which immensely contribute to operational efficiency of a company.

According to Schramm, (2006), as companies effectively manage their carriers in relation to the different services they offer including organizing of cargo, freight forwarding activities among others, its guaranteed that operational efficiency will be attained. The author adds "*a sound carrier management practice helps in reducing the time and costs for their clients by finding solutions to the biggest difficulties in international shipments and merging together many small shipments into one large shipment and amongst the activities they undertake taking*

care of everything including selection of the mode of transport, the route, the payments, international shipping documentation and requirements".

Carrier selection and management should not be limited to service levels but rather a number of factors including contracting capacity of a particular carrier if operational efficiency is to be attained (Roberts, 2012). Carrier management and selection has evolved to enable companies operating in volatile and unstable markets achieve value for money as much as possible. In determining what exactly influences modal carrier selection and management, a very significant part is the fact that these selection decisions are not always made in a treaded process as was done before as noted by (Coyle et al., 2006) and cited by Misuko, (2015). The author argues "*a company may select a mode and carrier mainly based on product attributes and the mode is not necessarily chosen first if the carrier has multi-modal capabilities".* The most vital element is that the carrier selected must possess the ability to ship the item at the required level of service required irrespective of the mode to enable a company attain operational efficiency.

Selection and management of a carrier entails two steps including choosing a particular mode and choosing a carrier operating with in that mode and currently such has been covered in activities involving outsourcing parties or third-party logistics companies. Shipment of cargo from different sources to different markets around the globe yields higher cost and longer transit time hence the need to have a well outstanding carrier management program. Different activities linked with global sourcing provide challenges such as delivery of adequate carriage and storage, getting items through customs and then distribute them to different foreign sites in a timely manner at an satisfactory rate. In many cases, these challenges can be relieved through the inclusion of carrier and management of their activities (Wisner et al., 2005) as

cited by Kiraga, (2014) and the various partnership arrangements in place (Ireton, 2007) as cited in Kiraga, (2014). These in turn act as avenues for stimulating and driving operational efficiency in most of the manufacturing firms.

Through carrier selection and management operational efficiency can be effected by different manufacturing firms as a result of economies of scale sometimes regarded as network effects (Mentzer, 1986) as cited in Kiraga, (2014). Economies of scale can be manifested as a result of proper use of transportation equipment which are mostly used by different carriers and managed by relevant parties. Attention is granted to economies of scale since shipment size act as strong drive to ship goods in full truckloads in order to minimize costs accruing from various expenditures associated with necessary equipment hence depicting operational efficiency in manufacturing firms.

Areas of security in the supply chain are now days given a lot of attention in regard to complying to new security measures with an aim of reducing terrorist threats and also dealing with consequences of these terrorist attacks because they greatly influence business operations. These kind of scenarios have forced inbound freight managers to minimize the effects of these attacks and threats by selecting safety mindful carriers who can ship through safe ports, ensuring that packing safety requirements are seen and ensuring that a review is done on different competent carriers (Rinehart, Myers & Eckert, 2004) as cited in Kiraga,(2014). Sheffi, (2001) as cited in Kiraga (2014) adds that inbound freight mangement can perform better as organisations manage their carriers since transportation complexities and inventory management problems will be dealt with depicting operational efficiency in manufacturing firms.

In order to acquire operational efficiency out of inbound freight management amongst manufacturing firms, Docherty, Giuliano and Houston, (2008) as cited from Misuko, (2015) argue that the following should be done; selection of the best carrier regarding the number of carriers hired to move the necessary freight, reduction and consolidation of number of carriers and selection of a dedicated freight forwarder that immensely benefit inbound freight operations. In this regard the use of a few but dedicated key carriers enables manufacturing firms to reduce on complexities associated with administration requirements, encourage smooth negotiations and lastly create cordial relationships with necessary suppliers which consequently play a bigger role in contributing to the management of different carriers.

2.5 Freight Consolidation and Optimization and Operational efficiency

It has been noted that in majority of small and medium enterprises involved in moving freight; shipment volumes get challenged in procurement of cargo in "*Full Truck Load (FLT)* or *Full Container Load (FCL)"* numbers. The truth is that when it comes to cargo rates, lesser consignments are costly hindering the achievement of economies of scale which are realized after volume consolidation (Gammelgaard and Larson, 2001) as cited by Misuko,(2015). The authors allude that its prudent to consolidate smaller shipments taking the same route and then pool the different minor packages into regions and then send them in large quanties hence "*Less than Truck Load (LLT) or Less than Container Load (LCL)"* consignments to be combined together through inbound consolidation hubs and pooled into multi-stop truckload shipments. With this in place considerable savings can be realized out of freight consolidations an indicator of operational efficiency. Misuko, (2015) points out in his research as acquired from Jahre and Hatteland, (2004) that to achieve the benefits accruing from consolidation opportunities through using different devices and better packaging which enables the products

to be combined, endangered and moved which later impacts on logistics activities and in particular inbound logistics activities of any manufacturing firm.

Freight Consolidation and optimization entails the creation of an efficient transportation plan that enables manufacturing companies to minimize on different costs and achieve operational efficiency. Its argued that companies seek for various chances to bring down various costs, the different timeframes and the transportation mode available on the market. To maximize opportunities out of consolidation, firms can also utilize pelletized equipmets instead of using movable cartons since they provide steadiness and maximum protection in the process of shipment. Companies practicing the use of combined cargo and putting a lot of emphasis on safety issues, operational efficiency becomes a norm as cited by Misuko (2015) and Kiraga (2014) from the research undertaken by Jahre et al (2004) and Gustaffson et al, 2006).

Freight Consolidation and optimization as a strategy involves a combination of two or more orders or different shipments in order to ensure that large quantities can be dispatched on the same vehicle to serve similar region. Ulku, (2009) alludes that considerable savings can be created from the different units combined. He adds that there are challenges firms face regarding determining a specific policy to consolidate different shipments that gives quality service to their customers especially for those whose orders are among the first. It's noted that Freight consolidation and optimization should cover various products or regions but not just limited to one product or one destination. An example could be when several small orders being destined for different customers located in the same geographical region, the manufacturing firm can decide to develop one consolidated shipment to offset high freight costs through the volume freight discount rates which will later make offloading to be disaggregated for specific individual customers. A live example includes a manufacturer of

glass fibre a roofing material sending small loads to a customer in Kingston; by consolidating these different shipments with those in places like Ottawa, it creates a large consolidated shipment qualifying for volume discounts however much part of the cargo destined for Kingston will be removed before the vehicle heads to its final destination (Ulku, 2009).

It's prudent to note that goods may be moved to different destinations using different modes as consolidated volumes such as air, sea, rail, motor vehicles (Ulku,2009). The use of transportation by truck accounts for largest share and can raise a number of opportunities arising from small shipments (Tyworth et al 1987) as cited by Ulku, (2009). The trucking industry considers the use of line haul small loads dominating the segment of the transportation market since many trucking firms are using discounts to encourage manufacturing firms to consolidate freights into larger ones enabling more efficient operations. Consequently building Full truck load shipments being a primary focus of consolidation efforts by manufacturing firms helps in achievement of reduction in administrative costs in regard to management and planning programs.

Ulku (2009) notes that the benefits of freight consolidation and optimization mainly accrue out of lower transportation costs and decreased transport operations. The author points out that incase freight consolidation and optimization is not made a priority order cycle times may lengthen hence having far fetching consequences to the ultimate customers. Transport economies are well known for making the work of carriers easier by hauling larger shipments into lower rates per unit. Masters, (1980) as cited by Ulku, (2009) urge that freight consolidation and optimization greatly reduces not only pickup costs of different manufacturing firms but also both the dock and delivery costs. If a comparison can be made with Less than truck load shipments where the transporter is required to make a number of stop overs for different pickups and deliveries but if its for Full truck load only two stopovers may

be required that is one from the point of origin and then the other at the point of destination. The former (LTL) system makes it less economical for transporters to advance for small shipments and especially those scattered in different areas and with different pickup sites. Another advantage according to the writer manifests itself in the area of transport services including faster and reliable transit times resulting into decreased inventories and not compromising with customer service requirements. Consequently faster transit times make less capital to be tied up in the inventory, encourage earlier payments increase in the cash flows (Masters, 1980) as cited by Ulku, (2009) .

Ballou, (1987) as cited in Kiraga, (2014) points out the rationale of packaging in tapping benefits out of freight consolidation and optimization. He confirms that packaging encourages product unitization, protection and transportation in a most secure manner possible. Prendergast (1995) as cited by Kiraga, (2014) supports it by alluding that the shape of the package, its volume and weight however much what is inside may be different may significantly affect a number of inbound logistics activities and in particular inbound freight management activities. A number of firms tend to undermine the role of packaging forgetting any slight mistake made can offset the benefits accruing from better optimization efforts from a particular package negatively affecting efficiency of transport system. An example can include the use of familiar round tin can which does not suit transport capacity maximization but when the metal square are used the benefits can manifest in spite of the cost attached to them in terms of construction as pointed out by Jahre and Hatteland,(2004) as cited by Misuko,(2015). From another perspective load planning which is part of vehicle routing and scheduling can immensely represent total inbound freight costs affecting efficiency of majority manufacturing firms (Slatter, 1979). Furthermore, even though companies concern more about achievement of economies arising from better optimization, issues of agility and efficiency in

a more demanding and dynamic environment can help in generating high level of operational efficiency in most of the manufacturing firms.

2.6 Strategic partnerships and operational efficiency

Docherty, Giuliano and Houston (2008) as cited by Misuko, (2015) agree that cargo transporters are some of the fundamental partners in a Logistics framework and an overall supply chain. The authors point out that it's prudent for manufacturing firms to create a connecting method with these suppliers by tapping from the potential. Through creation of a strategic partnership, firms have an assurance to work towards goal achievement as a team rather than individual entities. It's also proven that as firms transform their suppliers, forwarders within their area of operation, there is an assurance of the partner working together towards the reduction of administrative hindrances, establishing clear communication lines, providing of well-advanced skills and technology for example web-based tracking and tracing and this in turn culminate into lower costs. The research undertaken by the Aberdeen Group, (2015) as noted by Misuko, (2015), it was proven that incase a firm undertakes a strategic approach in regard to their relationships with their suppliers, improving inbound freight operations will be guaranteed . Hence firms should therefore transform their suppliers and make them vital partners as it creates an entrusted interest regarding the activities of the supplier, carrier and forwarder to ensure that they tap all the benefits from them in order to improve in the areas of customer service and their overall business operations (Aberdeen Group, 2015) as cited by Misuko,(2015).

Setting up deals with new suppliers creates significant costs for manufacturing firms but when a company undertakes a strategic partnership programme, there is an assurance of elimination of the costs related with new relationships created (Davies, 2014). This can be achieved through cooperation in mutually beneficial relationship with the key suppliers as

manufacturing companies can attempt to reduce on costs over long term in regard to incoming freight to the company. Cordial relationships not only crate cost savings but can also help in reduction of availability problems, issues of delays, issues in regard to quality creating a well profound service delivery not only to the company but to the consumers of the company products. The author adds that strategic partnerships can enable the suppliers to gain a more complete understanding of business interests allowing the former to meet the actual needs in the most effective and efficient manner. To supplement more these strategic partnerships helps in curbing problems that arise during ordering in easier way possible creating operational efficiency for manufacturing firms.

One of the notable factors affecting manufacturing firms are fluctuation in market prices (Davies 2014). Sometimes these changes in prices come as result of an increase in prices of commodities. However when a manufacturing firm adopts a strategic partnership programme a subset of an overall inbound freight management program, it can take advantage of fixed pricing to overcome the issue of volatility, encourage assurance of lengthy contractual terms, reduction in levels of orders and also use a qualifying criteria to suit the prevailing circumstances. Therefore, a clear an unambiguous cost structure between the suppliers and the manufacturing firms encourages stability in operations, creates an element of certainty which later translates to a jovial and committed customer base.

A long-term relationship between supplier and buyer encourages smooth flow of ideas and feedback. This in turn creates a further efficient and an active inbound freight management that allowing significant influence regarding the costs and onto the consumers of the items (Davies, 2014). Cordial relationships between supplying and manufacturing firms encourages product development, initiating of new ordering processes and proper inventory management

which culminates into a wide variety of both monetary plus operative paybacks to all the participating parties. In addition, as buyers and suppliers work as partners the supply chain can be tailored to meet the specific needs of individual parties. This can be manifested inform of process consolidation, reduction in upstream costs and improvement in what is pulled to the end-user. Conclusively in spite of underlying weaknesses in the manufacturing sectors through a strategic partnership programme a healthier bottom line can be created through a combination of both savings and operational efficiencies.

2.7 Operational Efficiency Measures

Borgstrom (2006) argues that when it comes to measures of operational efficiency; issues of cost, quality, delivery precision and capability takes a center stage but in relation to this study the following measures including time, reliability and cost will be reviewed.

2.7.1 Time Efficiency

One of fundamental aspects of measuring operational efficiency is in terms of how responsive and efficient products and services are delivered against the required or stipulated time. Auramo, et al, (2004) as cited by Pule,(2014) argues that when managing a contract, a particular contractor's performance is measured on how he/she complete her assignment on time without compromising quality and the quantity of a service or the item provided. Poor time management can result from lack of competitiveness, lack of priorities, interruptions within your way of operation, inability to say "No", procrastination, and poor self- organization skills, among others, which manifest inefficiencies in form of delays, cost escalation, low productivity among workers, and loss of customers, thus reduced organizational competitiveness, and as significant slope in the operations of the company as indicated by (Humphreys, P.C., 2000) and cited by Pule,(2014) .

Christopher, (2011) argues that currently around the world the capability to adapt to any

customer's requirements in a shortest time possible has grown into a serious issue. Its noted that consumers of items not only prefer shorter timeframes but they also aim at acquiring customized solutions to their problems implying that partnership is needed with a supplier who possess the ability to meet the precise needs of customers in most preferred time which is an element of agility.

2.7.2 Reliability Efficiency

Reliability measures play a key role in helping companies to keep track in achieving its operational enhancement objectives; firstly they support fact-based decision making based on outputs of performance measures against objectives; secondly they also communicate operational requirements for monitoring, continuous improvements and change management in companies; and lastly they motivate better supplier performance as noted by (Monczka, 2011) and cited by Musyoka, (2016). With great emphasis on the alluded facts, firms have been able to achieve service leadership as well as cost leadership and management of an efficient organization inform of flexibility, customer service and cost effective (Barrow, 2013) as cited by Musyoka, (2016).

A crucial element in relation to reliability efficiency entails the planning out your routes and use driver classification to achieve orders and directing to industrialize delivery routes in the easiest and most well-organized way as noted by maarten@carpal.me, (2018). Through the implementation of different technologies such as smart algorithms for example geo fencing, knowing the driver activity, machine learning among others, a company can be able to repeatedly and precisely match orders to respective drivers. This in turn implies that there is a possibility of minimizing the capacity, streamline processes, and ensure resources are resourcefully utilized.

Maarten@carpal.me, (2018) adds that by being able to monitor, modify and control orders and drivers on-the-go, many companies can easily take direct action if there are any urgent or unpredictable issues. The author alludes more that there is need to create a customer-centric platform that should aim at putting emphasis regarding the planning of routes and then use driver tagging to fulfil orders and afterwards employ smart routing to automate delivery routes in the most effective, efficient and easier way. With all these initiatives in place, companies can build better workflows in their daily operations, while identifying delivery patterns that can help forecast future deliveries and with the right platform. Companies can be in full control of their deliveries when unpredictability occurs hence culminating into reliability efficiency.

Christopher, (2011) alludes that one of the main reasons why companies carry safety stock is because of uncertainty. This may be uncertainty regarding future demand or uncertainty due to availability of a few suppliers able to fulfil a delivery promise, or regarding the standard of materials or elements. Major improvements in reliability can only be achieved through re-engineering the processes that impact performance of company operations. The author reveals that logistics practioners and managers discovered that the best way to improve product reliability was through focusing on process control and this in turn will manifest of reliability efficiency.

2.7.3 Cost efficiency

Cost efficiency of organisations is reflected in the capability to control costs and achieve the flow of materials in the most effective way possible (Datta, 2000). He adds that potentiality of this control is again highly related to the quality of decision making, information available with respect to the quantity and location of materials. A little reflection on the basic needs of the functional units of any organisation will confirm that an effective interrelationship at the various stages of materials utilisation, conversion, location and their movement will ultimately

control costs. Its noted that if the quantity and movement of materials have to be controlled, information flow must be timely, accurate and without disruption which immensely depicts on cost efficiency.

Chopra & Meindl (2007) as cited by Makumbi (2014) notes that the major objective of any manufacturing firm involved in inbound freight management is to ensure a reduction in the costs across the whole supply chain in order to deliver customer value. Costs may include inventory costs, facility and handling costs, transportation and distribution costs (Inbound and Outbound costs) and information costs. So cost efficiency can be measured as organizations strive to minimize costs across all their supply chain operations.

Pfeffer & Salancik, (1978) as cited by Pule,(2014) points out that normally cost is associated with the concepts including 'economy and efficiency', for *efficiency* is an internal standard of measuring performance looking at resources as being utilized with an organization while *economy* refers to how one uses minimum possible resources to achieve a desired output. To put these two concepts into context that is efficiency and economy in regard to inbound freight management becomes crucial in lowering the price of the items to be supplied as indicated by McLaren et al (2004) as cited by Pule, (2014). For instance, if inbound freight operations of Roofings Rolling Mills are more efficient and economical as much as possible, this will in turn lead to usage of few resources and the time taken to procure and management of the different items, an indicator of operational efficiency.

2.8 Inbound freight management and Operational efficiency

Stank and Keller (2000) explains that the contribution of inbound freight management for manufacturing firms is highly significant as it helps in reduction of costs related to transportation and enhancement of delivery reliability through strategic collaboration of all

value chain actors, modes and service providers . Standard practice is that companies usually make choices to either manage international transportation, or domestic transportation, or both, to monitor the lifecycle and engage with partners throughout the transportation period. This goes through a rigorous process of bidding to complete on platform, awarding of contract, monitoring of execution and implementation changes made relying on the information gathered from analyzed transportation data. In regard to inbound freight management, the value chain comprises the shippers, suppliers, and logistics service providers (Sandberg and Abrahamsson, 2011).

The ability to transport items from supply sources is a critical activity in the inbound freight management framework (Lambert, 2005) as cited by Musyoka, (2016). And as companies balance these factors operational efficiency will be attained as (Bowersox 2010) notes and quoted by Musyoka, (2016). With reference to PF Collins International Trade Services (2003) as emphasized and cited by Musyoka, (2016), inbound freight management practices that can contribute to operational efficiency include; Freight Consolidations, Customs clearance/compliance, tracking (track and trace), and forwarder management.

The principle advantages of inbound freight management include the ability to plan and schedule inbound shipment through directed and traceable carriers and reduced inbound congestion at the ports and docks. Having dedicated carriers imply that the costs can be lowered through loyalty schemes, improved ability to monitor inbound freight costs and choices, lower transportation costs through consolidation of shipments and improved handling of problems and maintained data records (Farris II, 2010) as cited by Misuko,(2015). A strategic overview of inbound freight management is conceptually vital in understanding the strategic purchasing and logistical process of the firms. 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 these

consolidation efforts should not happen at the compromise of scheduled transport, reliability and timely delivery (Ulku, 2009) as cited by Musyoka, (2016).

The Procedures at a country's entry points relating to customs compliance can either increase or decrease transactional costs. However, with clearance efficiency speed and predictability of inventory delivery will be an assurance. In addition well-articulated documentation enables faster customs clearance reducing its impact on global sourcing lead times (Zamora-Torres, 2013) as cited by Musyoka, (2016). Currently with the advancement of electronic platforms submission of information to manufacturing firms online cutting on clerical efforts has been achieved (Hanouz, Geiger and Doherty, 2014) as was cited by Musyoka, (2016)..

According to Musyoka, (2016) from the writings of Helo (2011), as firms move shipments through collecting and managing information on product's location across the operations, assisting recognition and mitigation of transport exclusions and a possibility to reduce prices and interruptions in regard to inbound freight operations. Dukare, Patil and Rane (2015) as Musyoka, (2016) cited add that with real-time-tracking cargo traceability and delivery visibility will be guaranteed. In Freight forwarding transport intermediaries improve operational efficiency and enhance service levels through their industry knowledge and skills. Most freight forwarders go even an extra mile to offer related services such as warehousing, less-than-truckload transport, express parcel services and multimodal transport arrangements (Asian Development Bank, 2012) as adopted and cited by Musyoka, (2016).

Most companies manage their entire lifecycle of transportation sourcing through planning, tendering, payments, audit, monitoring and evaluation and contract management. Resolution of discrepancies through a collaborative dispute workflow with transportation actors is a key component of the freight payment function (Placeholder3). These components of

transportation management are geared towards improving transportation reliability and customer service delivery at least cost (Bowersox and Closs, 2002).

According to Robinson (2005) a good and solid inbound freight programme allows manufacturing firms to: better understand the true cost of goods and transportation rates; have a review of vendor and supplier business processes; mapping of own internal buyer or purchasing processes; monitoring vendor shipments for verification that orders are on schedule during shipping; consolidation of shipments and optimization of loads and modes; gaining visibility to inbound orders transit or at destination points using a single data repository; reporting on compliance levels of vendors and supply chain performance; making changes to terms of sales and study freight allowances being offered.

2.9 Summary of Literature Review and Literature gap

Evidence indicates currently that firms are forming an environment of co-existence opposed to competition (Bechtel & Jayaram, 1997) as cited by Musyoka, (2016). Different forms of literatures see this as a result of looking into Logistics management from different viewpoints such as logistics, operations management, supply management and marketing (Croom et al., 2000) as quoted by Musyoka, (2016). Inbound freight management has now been recognized as an important link in business and as such a source of market differentiation (Bowersox et al. (2002) as adopted and cited by Musyoka, (2016). Bowersox (2010) as quoted by Musyoka, (2016) notes that companies are now sourcing their materials globally to benefit from value of low cost countries of manufacture. Inbound freight management as link between suppliers and buying firms is becoming a considerable issue as evident from works of different scholars.

In relationship to the gap the available literature focuses more on developing countries/economies compared to developing countries and as a result the practice is still taking shape. More-so, there is insufficient literature specifically on inbound freight management practices since most of the literature available in Uganda focuses on a broader inbound logistics framework and outbound freight management activities.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This section elaborates on the research design used , study area, population of the study, sample size, sampling techniques, Data collection instruments, data collection procedure, data quality control (validity and reliability), data analysis and presentation and limitations to the study.

3.1 Research Design

The research undertook a cross-sectional survey design. The cross sectional survey involves the type of study that analyses data from a population or a representative subset at a specific point in time that is cross sectional data. (Cohen et al, 2007. The advantage of this kind of study is that its faster and are inexpensive compared to other study designs. Both quantitative and qualitative approaches were used to substantiate the study and to allow the collection of enriched information from respondents in the broader perspective. For example; Quantitative methods like tables and graphs were used to illustrate statistical findings for simplification and easy interpretations, whereas qualitative methods were useful in providing comprehensive explanations about situational occurrences since some of the data was in form of interviews.

3.2 Area of the Study

The company operates from its factory on 40 acres of land which is located on plot 406, Namanve industrial park along Nantabulilirwa village in Mukono district approximately 3km from the main road. The company was particularly chosen as a case study because the company has been involving in inbound freight management activities. Given that the company has over the years expanded its operations with the increase in cross-border trade with countries neighboring Uganda it exposed the researcher to a well vast and rich information source on the operations within the area of study.

3.3 Population of the study

The study targeted staff of Roofings Rolling Mills including departmental and sectional heads ,staff from procurement and stores department and members from transportation and distribution department who are more knowledgeable and directly affected by the inbound freight management practices.

3.4 Sample Size

According to Krejcie & Morgan, (1970) a population of 40, requires a sample proportion of 36 as indicated in the table below. The respondents from Roofings Rolling Mills included (7) departmental and sectional heads, (10) from Procurement and stores and (19) from transportation and distribution staff who were more knowledgeable and directly affected by the inbound freight management practices.

Table 1: Showing Sample Size of Respondents

Respondents	**Target Population**	**Sample Size**	**Sampling Technique**
Departmental and sectional Heads	10	7	Purposive Sampling
Procurement and stores staff	10	10	Purposive Sampling
Transportation and distribution staff	20	19	Simple Random and stratified Sampling
Total	40	36	

Source: Krejcie and Morgan (1970) and modified by the researcher

3.5 Sampling Technique and Sample selection

Sampling was carefully done as to ensure representativeness of the sample to the population, and at the same time ensuring effective data collection is maintained all times. The research undertook a combination of simple random sampling and purposive sampling techniques in selecting a representative sample for this study as indicated below.

3.5.1 Stratified Sampling and Simple Random and technique

The simple random sampling technique encourages equal chances of selecting respondents for the study and most applies for homogeneous population whereas stratified sampling enables dividing the different population into different stratas. After dividing the population into stratas, they were then randomly selected. The researcher randomly picked 19 respondents out of the 20 respondents and it was applied on transportation and distribution staff.

3.5.2 Purposive Random Sampling

This sampling technique enabled the researcher to choose respondents who possess specialist knowledge in the field under study in order to obtain in-depth knowledge and information on the subject matter (Cohen et al, 2007) and help save time (Kothari, 2004). 7 respondents out of 10 respondents were chosen from the Departmental and sectional heads whereas 10 out the 10 respondents were chosen from procurement and stores staff.

3.6 Sources of Data

3.6.1 Primary Data

This is an original source of information; the actual field where data is collected. Primary data involves obtaining data from the field which the researcher uses to draw conclusions about the study, (Mugenda and Mugenda, (2003). The data from primary sources were obtained using the data collection methods mentioned under section 3.7 below. Three key personnel were interviewed, including the import officer, material and production officer and transport personnel, which enabled collection of first-hand information.

3.6.2 Secondary Source

According to Oso, & Onen, (2008) these entail publications in which authors review the works of others. Such sources include but not limited to research articles, books, casual interviews, published or unpublished reports, newspapers, online information among others. They give a quick overview of researches related to the problem, and how similar studies were tackled by different authors. Secondary information also helped to communicate the areas of agreement and disagreement between the various scholars and therefore showed the remaining gaps that the research could fill and contribute to knowledge. It also helped in discussing the results of the study and show how the results of the study concurred with what already existed about the problem or gave room for disagreeing with what already existed

3.7 Data collection instruments

3.7.1 Questionnaires

The researcher used structured, close-ended questionnaires. Structured, close-ended questionnaires helped in eliciting responses specific to this case-study (Cohen *et al*, 2007), and seems economical and time-saving as they can easily be administered. The researcher used five(5) Likert scale to gather responses regarding quantitative data on the research variables.

3.7.2 Interviews

The researcher conducted interviews using an interview guide to supplement the data collected using the questionnaire method, which enabled the researcher to obtain more relevant quality information from respondents' responses that couldn't specifically be captured in the questionnaires (Saunders et al, 2003).

Interviews are known for eliciting responses about complex and deep issues that may not be well qualified where a questionnaire has been employed (Cohen et al, 2007). This method of

data collection helped in triangulation of data from different methods and sources to compare the results for similarity and reliability as emphasized by Saunders et al, (2003).

3.8 Validity of the Research Instrument

Validity of the research instrument refers to the ability of research instruments to elicit the desired response from the target population (Kothari, 2003). To ensure this desired response, the questionnaires in this study was subjected to scrutiny by experts in the field of study prior to their deployment in the field to eliminate vague and ambiguous questions and streamline the content structure, flow and conciseness, in other words ensured content validity (Saunders, 2003). To determine validity of the research instrument a content validity test was done basing on the formula below;

CVI =K/N where K is the Total number of items rated as relevant and N the Total number of items in the questionnaire.

A total of 23 items out of 30 in the questionnaire were rated as relevant, yielding a content validity index as calculated below.

$$CVI = \frac{23}{30} = 0.77$$

The questionnaire was deemed valid for collection of data because the figure was 0.77 greater than 0.70 as recommended by Amin (2005).

3.9 Data Reliability

Reliability of data refers to the ability of research instruments to generate similar results if they are administered repeatedly (Kothari, 2004). Instrument reliability measures the consistency of research instruments (Saunders *et al,* 2003). To ensure instrument reliability, the questionnaire in this study was pilot tested for consistence, and responses were subjected to the Cronbach's Alpha Reliability test using SPSS software to measure internal consistency of responses (Amin, 2005). The results from the reliability tests showed that the all variables

tested were greater than 0.50 implying that the research instrument was reliable as to provide consistent results if administered repeatedly, as emphasized by Kothari (2004).

Table 2: The results of the above test are indicated below

Variables	Cronbach Alpha	No of items
Carrier management	0.869	5
Freight consolidation and optimisation	0.831	5
Strategic partnership	0.664	5
Operational efficiency	0.938	15

Source: SPSS Raw Data.

3. 10 Procedure for Data collection

After obtaining approval of the research proposal and upon obtaining the letter of introduction from Kyambogo University Graduate School, the researcher designed both a questionnaire and an interview guide for collection of data. The researcher went on to do a pilot study to pretest the research instruments and later proceeded for actual data collection.

3.11 Data analysis and Presentation

3.11.1 Quantitative data Analysis

A close-ended questionnaire relating to inbound freight management and Operational efficiency variables was used to determine its comprehensiveness and correctness. The data collected was fed into the SPSS Software after being classified and coded categorized. The researcher used regression coefficient tool and Pearson's correlation coefficient tools in SPSS to measure the relationship between the variables, and whether the independent variable (freight forwarding outsourcing) has an influence on the dependent variable in SPSS software to analyze the "cause and effect" relationship between inbound freight management and operational efficiency. The researcher used inferential measures to generate analysis of the variance and regression coefficients. The purpose of regression analysis was basically to

understand the influence among variables that is inbound freight management and operational efficiency. This model also involves some random error that cannot be predicted. The underlying simple linear regression model is**;**

$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \varepsilon,$

Where; Y= Operational Efficiency of Roofings Rolling Mills; β0= constant (coefficient of intercept); X1= carrier management; X2= Freight consolidation and optimization; X3=strategic partnership; ε = error term; β1, β2 and β3= regression coefficient of the three variables

Table 3: Interpretation of various means

Mean Range	**Response mode**	**Interpretation**
1.00-1.80	Strongly disagree	Very Low
1.90-2.60	Disagree	Low
2.70-3.40	Not sure	Undecided
3.50-4.20	Agree	High
4.30-5.00	Strongly agree	Very high

Source: Modified by the Researcher but adapted from Moidunny, (2009)

3.11.2 Qualitatitative data analysis

Semi-structured interviews were sorted after data collection and responses grouped by theme and then by feedback to enable easier interpretation. The researcher then checked all the responses to determine their correctness basing on the research objectives.

3.12 Limitations to the study and possible solutions

There was a tendency of some respondents showing a negative attitude towards the researcher when he wanted responses from them. However, to overcome this the researcher convinced the respondents that the research was purely academic.

Inadequate finance to facilitate transport, purchasing research equipment and expenses on typing, printing, photocopying questionnaires, binding and others was also a problem that was encountered during the study. The researcher tried to solve this by soliciting for funds from friends and relatives and also coming up with a budget on how to carry out the activities.

CHAPTER FOUR

ANALYSIS OF DATA AND PRESENTATION OF STUDY FINDINGS

4.0 Introduction

This chapter presents the results from the data gathered and analyzed, presentation and interpretation in context of the research objectives.

4.1.1 Response Rate

The researcher sent out 36 questionnaires, out of which 32 were fully completed and returned, yielding a 88.9% response rate. The researcher also interviewed 3 key personnel to supplement data from the questionnaires, yielding a combined response rate of 81.3% which was satisfactory since a response rate of 70% and above is generally considered very good.

Table 4: Showing response rate

	Sampled	Returned	Percentage
Questionnaire	36	32	88.9
Interview	3	3	100
Total	39	35	81.3

Source: Researcher's design

4.2 Demographic characteristics

The researcher was able to gather information concerning the (background information) demographic characteristics of the respondents in order to link the findings with the study objective and focused on the sex of the respondents, marital status of the respondents, age category of respondents, Education background, years spent in the company and the category of respondents. The results collected are shown in the following tables:-

4.2.1 Sex of the Respondents

4.2.1 Sex of the Respondents

Sex	Frequency	Percentage
Male	27	84.4
Female	5	15.6
Total	32	100

Source: SPSS Primary Data.

Research findings reveal in table above that majority (84.4%) were male respondents while 15.6% were female implying that the study was dominated by male respondents and though there was existence of some gender imbalances, there is a good gender distribution in the company.

4.2.2 Age group of respondents

Table 4.2.2: Age group of respondents

Age group	Frequency	Percentage
18-25	6	18.8
26-35	21	65.6
36-45	5	15.6
Total	32	100

Source: SPSS Primary Data

Research findings in table 6 above reveal that 18.8% of the respondents were in the age group between 18-25 years, % were between 26-35years, % were between 36-45 years and the others were over 46 years. This implies that employees of Roofings Rolling Mills who were part of the study were mature enough to be part of the study.

4.2.3 Marital status of respondents

Table 5: Marital status of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	15	46.9	46.9	46.9
	Married	17	53.1	53.1	100.0
	Total	32	100.0	100.0	

Source: SPSS Primary Data

From the above table, 46.9% of the respondents were single, 53.1% are married while none was divorced. This implies that most employees working for the organization are married hence show some kind of responsibility.

4.2.4 Level of Education of respondents

Table 6: Level of Education of respondents

		Frequency	Percent
Valid	Certificate	2	6.3
	Diploma	7	21.9
	Bachelor's Degree	21	65.6
	Master's Degree	2	6.3
	Total	32	100.0

Source: SPSS Primary Data.

Table 8 above reveals that, 6.3% of the respondents had certificates, 21.9% had diploma, 65.6% were degree holders and thus 6.3% had master's degrees. The implies that the respondents in the study were generally elites and thus were in position to express their ideas clearly on the effect of inbound freight management and operational efficiency.

4.2.5 Number of years spent in the organisation

Table 7: Number of years spent in the organization

		Frequency	Percent
Valid	1-2 years	7	21.9
	2-4 years	21	65.6
	5 years and above	4	12.5
	Total	32	100.0

Source: SPSS Primary Data.

Findings in table 9 above reveals that 21.9 % of the respondents had stayed for 1-2 years, and 65.6% had stayed between 2-4 years and 12.5% between 5years and above. This therefore means that Roofings Rolling Mills has a formidable workforce with a vast experience and hence could provide accurate and reliable information.

4.2.6 Category of respondents

Table 8: Category of Respondents

Category		Frequency	Percent
Valid	Departmental and sectional heads	3	9.4
	Procurement and stores staff	9	28.1
	Transport and distribution	20	62.5
	Total	32	100.0

Source: SPSS Primary Data.

Research findings from table 10 reveal that 9.4 % were departmental and sectional heads, 28.1% from procurement and stores and 62.5% from transport and distribution department. This implies that relevant information was obtained from relevant departments at the company and hence determining operational efficiency as a result of inbound freight management was achieved.

4.3 Presentation ,analysis and interpretation of findings per objective

The variables under study, that is, carrier management, freight consolidation and optimization, strategic partnership and operational efficiency were operationalized into quantitative and qualitative items.

4.3.1 Carrier management and operational efficiency

To establish the findings on the first objective, which was to determine the effect of carrier management on operational efficiency in Roofings Rolling Mills, respondents were asked to

provide their views. The interpretation of the results is based on the mean and the Standard deviation. The interpretation of the different mean scores are indicated in table 3 in chapter 3. This is presented and analyzed in the table below;

Table 9: Descriptive statistics corresponding to Carrier management and operational efficiency

Statement	Mean	Std. Deviation
Roofings Rolling Mills carefully undertakes decisions to enhance any transportation mode as they choose and manage a carrier in a bid to attain operational efficiency	**3.88**	**0.609**
Roofings Rolling Mills reflects on the carrier's movement of inbound cargo to minimize costs	**4.06**	**0.581**
Roofings Rolling Mills considers safety precautions as they manage activities of different carriers	**3.72**	**0.581**
Roofings Rolling Mills puts into consideration the kind of items they are to transport as they select their carriers to attain operational efficiency	**3.97**	**0.647**
Roofings Rolling Mills considers transit time in selecting carriers which plays a bigger role in determining operational efficiency.	**4.22**	**0.553**

Source: SPSS Primary Data.

Research findings table 11, determines the effect of carrier management on operational efficiency. Findings showed that the extent to which carrier management affect operational efficiency at Roofings Rolling Mills was high with an average mean of 3.97 and standard deviation of 0.591 . This was attributed to the following responses including: Roofings Rolling Mills carefully undertakes makes decisions to enhance any transportation mode as they choose and manage a carrier in a bid to attain operational efficiency (mean =3.88 , S.D =0.609); Roofings Rolling Mills reflects on the carrier's movement of inbound cargo to minimize costs (mean =4.06, S.D =0.564) Roofings Rolling Mills considers safety precautions as they manage activities of different carriers (mean =3.72, S.D = 0.581); Roofings Rolling Mills puts

into consideration the kind of items they are to transport as they select their carriers to attain operational efficiency (mean =3.97, S.D=0.647), Roofings Rolling Mills considers transit time in selecting carriers which plays a bigger role in determining operational efficiency (mean =,4.22 S.D =0.553).

Inferential statistics to determine the effect of carrier management on operational efficiency were equally computed as explained below;

Table 10: Regression R–Square and Adjusted R-Square statistic between Carrier management and operational efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.364(a)	.132	.103	.49418

a Predictors: (Constant), Carrier Management
Source: SPSS Primary Data.

The table 12 above provides the R and R^2 value. The R value which is 0.364(36.4%) represents the simple correlation and, therefore, indicates a low degree of correlation since it is below 0.50(%). The R^2 value indicates how much of the dependent variable, operational efficiency, can be explained by the independent variable, carrier management and in this case (0.132) 13.2% which is quite small. This implies that 13.2% of the variance in operational efficiency is explained by carrier management while the other factors contribute to 86.8% of the variance in the dependent variable.

Table 11: Analysis of Variance to test how the regression model predicts the outcome variable

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.118	1	1.118	4.576	.041(a)
	Residual	7.326	30	.244		
	Total	8.444	31			

a Predictors: (Constant), Carrier Management
b Dependent Variable: Operational efficiency
Source: SPSS Primary Data.

Research findings in table 13 above shows that the regression model predicts the outcome variable significantly well indicating a statistical significance of the model applied ie $P = 0.041$ which is less than 0.05).

Correlation Results

Objective One: The effect of Carrier management on operational efficiency

To assess whether carrier management had an influence on operational efficiency, the two variables were related using Pearson's correlation coefficient index as illustrated in table below.

Table 14: Pearson's correlation coefficient index between Carrier management and operational efficiency

		Operational Efficiency	Carrier Management
Operational Efficiency	Pearson Correlation	1	.465(**)
	Sig. (2-tailed)		.002
	N	41	41
Carrier Management	Pearson Correlation	.465(**)	1
	Sig. (2-tailed)	.002	
	N	41	41

** Correlation is significant at the 0.01 level (2-tailed).

Table 14 above shows a Pearson's correlation coefficient index between Carrier management and operational efficiency r = 0.465, sig = 0.002 less than 0.05. This suggests a significant relationship between Carrier management and operational efficiency in Roofings Rolling Mills, as it implies that the two variables are related. This result indicates that Carrier management and has an effect on operational efficiency in Roofings Rolling Mills

Interview Responses

In regard to interviews one of the respondents who had stayed in the company for more than 4 years and was coming from the transportation and distribution department noted that *"inbound freight management is practiced in the company including a number of activities such as carrier and forwarder selection, strategic partnership practices, Preparing and Execution*

Shipment practices and all these practices entails the management of the transportation, storage and delivery of goods and raw materials coming from suppliers".

The import officer pointed out that *"the company uses carriers such as multiple hauliers, Pn Mashru, freight forwarders Kenya among others and these are selected basing on their ability to provide attractive rates and superior service".* He added that *"carrier management has enabled the company to reduce the time and costs by finding solutions to the biggest complexities in international shipments".*

Another member of the transport department pointed out that *"carrier management has helped the company in reduction of not only time but also the costs associated with incoming inventories and the management of the activities of the different carriers has been a success in regard to organization of goods and related services needed in the company operation".* But in his concluding remarks he pointed out that *"in spite of the existence of the practice that is carrier management, other factors have indeed immensely contributed to operational efficiency of the company".*

The overall findings from the questionnaires and interviews revealed that indeed carrier management practices do exist in the company and the existence of these practices has indeed to some extent contributed to operational efficiency of the company including reduction in lead times and costs of shipment but what should not be undermined is the influence or role played by other factors in relation to operational efficiency.

4.4 Freight consolidation and optimization and operational efficiency

To establish the findings on the first objective, which was to determine the effect of Freight consolidation and optimization on operational efficiency in Roofings Rolling Mills, respondents were asked to provide their views. The interpretation of the results is based on the

mean and the Standard deviation. The interpretation of the different mean scores are indicated in table 3 in chapter 3. This is presented and analyzed in the table below;

Table 15: Descriptive statistics corresponding to Freight consolidation and optimization and operational efficiency

Statement	Mean	Std. Deviation
Roofings Rolling Mills considers consolidation opportunities to reduce transport costs	**4.19**	**0.471**
Roofings Rolling Mills maintains capacity of transportation providers to maximize on economies of scale	**3.91**	**0.530**
Roofings Rolling Mills makes sure that chances arising from any kind of full truck load is utilized to achieve operational efficiency	**3.94**	**0.619**
Roofings Rolling Mills considers vehicle scheduling and route optimization in order to achieve operational efficiency	**3.94**	**0.669**
Roofings Rolling Mills ensures that packing rules and instructions are given maximum attention in order to achieve operational efficiency	**4.00**	**0.762**

Source: SPSS Primary Data.

Research findings reveal table 15, examines the effect of freight consolidation and optimization and operational efficiency. Findings showed that the extent to which freight consolidation and optimization affect operational efficiency at Roofings Rolling Mills was high with an average mean of 3.99 and standard deviation of 0.610. This was attributed to the following responses including: Roofings Rolling Mills considers consolidation opportunities to reduce transport costs (mean =4.19 , S.D = 0.471); Roofings Rolling Mills maintains capacity of transportation providers to maximize on economies of scale (mean =3.91, S.D =0.530); Roofings Rolling Mills makes sure that chances arising from any kind of full truck load is utilized to achieve operational efficiency (mean =3.94, S.D =0.619); Roofings Rolling Mills considers vehicle scheduling and route optimization in order to achieve operational efficiency (mean =3.94,

S.D=0.669), Roofings Rolling Mills ensures that packing rules and instructions are given maximum attention in order to achieve operational efficiency (mean =4.00, S.D =0.762).

Inferential statistics to examine the effect of freight consolidation and optimization on operational efficiency were equally computed as explained below;

Table 16: Regression R–Square and Adjusted R-Square statistic between freight consolidation and optimization and operational efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.500(a)	.250	.225	.45944

a Predictors: (Constant), Freight consolidation

The table 16 above provides the R and R^2 value. The R value which is 0.500 (50%) represents the simple correlation and, therefore, indicates some degree of correlation since it is equal to 0.50 (50%). The R^2 value indicates how much of the dependent variable, operational efficiency, can be explained by the independent variable, freight consolidation and optimization and in this case 0.250 (25%) which is quite small. This implies that 25% of the variance in operational efficiency is explained by freight consolidation and optimization while the other factors contribute to 75% of the variance in the dependent variable.

Table 17: Analysis of Variance to test how the regression model predicts the outcome variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.111	1	2.111	10.001	.004(a)
	Residual	6.333	30	.211		
	Total	8.444	31			

a Predictors: (Constant), Freight consolidation
b Dependent Variable: Operational efficiency

Research findings in table 17 above shows that the regression model predicts the outcome variable significantly well indicating a statistical significance of the model applied ie (P = 0.004 which is less than 0.05).

Correlation Results

Objective two: The effect of freight consolidation and optimization on operational efficiency

To assess whether freight consolidation and optimization had an influence on operational efficiency, the two variables were related using Pearson's correlation coefficient index as illustrated in table below.

		Operational Efficiency	Freight consolidation
Operational Efficiency	Pearson Correlation	1	.578(**)
	Sig. (2-tailed)		.000
	N	41	41
Freight consolidation	Pearson Correlation	.578(**)	1
	Sig. (2-tailed)	.000	
	N	41	41

** Correlation is significant at the 0.01 level (2-tailed).

Table 18 above shows a Pearson's correlation coefficient index between freight consolidation and optimization and operational efficiency r = 0.578, sig = 0.000 less than 0.05. This suggests a significant relationship between freight consolidation and optimization and operational efficiency in Roofings Rolling Mills, as it implies that the two variables are related. This result indicates that freight consolidation and optimization and has an effect on operational efficiency in Roofings Rolling Mills.

Interview responses

Interviews conducted with the import officer revealed that *freight consolidation and optimization affect operational efficiency as exhibited in the way of maximizing vehicle capacity or improving asset utilization"* and he adds that *"incase no further optimization can be obtained, the shipment must go out the door and the truck must move as loaded".*

Another respondent from the transport department alluded that "*smaller shipments seem to be costly for the organization and hinder a company in achieving economies of scale; so the company has endeavored to consolidate most of their shipments by pulling small consignments into a more a sizable shipment".*

Just like the first objective the overall findings from the questionnaires and interviews revealed that freight consolidation and optimization practices do exist in the company and the existence of these practices has indeed to some extent contributed to operational efficiency of the company including achieving of economies of scale accruing from consolidation opportunities, improved asset utilization but of course the role of other factors could not be under looked.

4.5 Strategic Partnership and operational efficiency

To establish the findings on the first objective, which was to determine the effect of Strategic Partnership on operational efficiency in Roofings Rolling Mills, respondents were asked to provide their views. The interpretation of the results is based on the mean and the Standard deviation. The interpretation of the different mean scores are indicated in table 3 in chapter 3. This is presented and analyzed in the table below;

Table 19: Descriptive statistics corresponding to Strategic Partnership and operational efficiency

Statement	Mean	Std. Deviation
Roofings Rolling Mills through collaborating with its strategic suppliers implements strategies that optimize obstacles associated with distribution of goods	**3.94**	**0.504**
With strategic collaborations Roofings Rolling Mills is able to minimize its cost with their suppliers/providers	**4.06**	**0.435**
Roofings Rolling Mills can share new technologies and improve on the same as they undertake strategic partnership.	**3.97**	**0.595**
Roofings Rolling Mills is able to reduce its administrative obstacles through Strategic partnership.	**3.69**	**0.859**
Roofings Rolling Mills is able to identify better opportunities including the best quality as it partners with its suppliers	**4.03**	**0.595**

Source: SPSS Primary Data.

Findings in table 19 shows that the extent to which strategic partnership affect operational efficiency at Roofings Rolling Mills was high with an average mean of 3.94 and standard deviation of 0.598. This was attributed to the following responses including: Roofings Rolling Mills through collaborating with its strategic suppliers implements strategies that optimize obstacles associated with distribution of goods (mean =3.94 , S.D =0.504); With strategic collaborations Roofings Rolling Mills is able to minimize its cost with their suppliers/providers (mean =4.06, S.D =0.435); Roofings Rolling Mills can share new technologies and improve on the same as they undertake strategic partnership (mean =3.97, S.D =0.595); Roofings Rolling Mills is able to reduce its administrative obstacles through Strategic partnership (mean =3.69, S.D=0.859), Roofings Rolling Mills is able to identify better opportunities including the best quality as it partners with its suppliers (mean =4.03, S.D =0.595).

Inferential statistics to assess the effect of strategic partnership on operational efficiency were equally computed as explained below:

Table 20: Regression R–Square and Adjusted R-Square statistic between strategic partnership and operational efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.500(a)	.250	.225	.45944

a Predictors: (Constant), Strategic Partnership
Source: SPSS Primary Data.

Research findings in table 20 provides the R and R^2 value. The R value which is 0.500 (50%) represents the simple correlation and, therefore, indicates a significant degree of correlation. The R^2 value indicates how much of the dependent variable, operational efficiency, can be explained by the independent variable, strategic partnership and in this case 0.250 (25) % is low since its below 50%. This implies that 25% of the variance in operational efficiency is explained by strategic partnership while the other factors contribute to 75% of the variance in the dependent variable.

Table 20: Analysis of Variance to test how the regression model predicts the outcome variable

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.111	1	2.111	10.001	.004(a)
	Residual	6.333	30	.211		
	Total	8.444	31			

a Predictors: (Constant), Strategic Partnership
b Dependent Variable: Operational efficiency
Source: SPSS Primary Data.

Research findings in table 20 above shows that the regression model predicts the outcome variable significantly well indicating a statistical significance of the model applied ie $P = 0.004$ which is less than 0.05).

Correlation Results

Objective three: The effect of strategic partnership on operational efficiency

To assess whether strategic partnership had an influence on operational efficiency, the two variables were related using Pearson's correlation coefficient index as illustrated in table below.

		Operational Efficiency	Strategic partnership
Operational Efficiency	Pearson Correlation	1	.687(**)
	Sig. (2-tailed)		.000
	N	41	41
Strategic partnership	Pearson Correlation	.687(**)	1
	Sig. (2-tailed)	.000	
	N	41	41

** Correlation is significant at the 0.01 level (2-tailed).

Table 21 above shows a Pearson's correlation coefficient index between strategic partnership and operational efficiency r = 0.687, sig = 0.000 less than 0.05. This suggests a significant relationship between strategic partnership and operational efficiency in Roofings Rolling Mills, as it implies that the two variables are related. This result indicates that strategic partnership and has an effect on operational efficiency in Roofings Rolling Mills.

Interview responses

During the interviews conducted with a member of a production and materials department and confirmed with one respondent from the import officer pointed out that *"the company partners with its carriers and suppliers. Amongst the carriers pointed out include freight forwarders Kenya, multiple hauliers and many others and the different suppliers include those of different materials such as wire rods, billets".*

In addition the respondents alluded to the fact *"that they partner with both their carriers and suppliers by working together towards reducing administrative obstacles, establishing excellent lines of communication, sharing technologies such as web-based tracking and tracing and eventually, which end up lowering costs an indicator of operational efficiency".*

Finally the overall findings from the questionnaires and interviews revealed that strategic partnership do exist in the company and its existence has truthfully to some extent contributed to operational efficiency of the company including reduction in administrative obstacles, minimizing costs with their suppliers among others but just like the first and second objective of the influencing role of other factors could not be under estimated.

4.6 Operational efficiency in Roofings Rolling Mills

To establish the findings on the first objective, which was to determine operational efficiency in Roofings Rolling Mills, respondents were asked to provide their views. The interpretation of the results is based on the mean and the Standard deviation. The interpretation of the different mean scores are indicated in table 3 in chapter 3. This is presented and analyzed in the table below;

Table 22: Descriptive statistics corresponding to Operational efficiency in Roofings Rolling Mills

Indicators of Operational efficiency	**Mean**	**Std. Deviation**
Time efficiency		
There has been timely delivery by reducing the overall transit time of orders.	**3.88**	**0.907**
The number of complete order deliveries are made on time at Roofings Rolling Mills.	**3.94**	**0.948**
There is decreased order response time at Roofing Group.	**3.88**	**0.907**
There is manifestation of hard work in responding to the needs of the company on time.	**4.19**	**0.535**
Shortening of the procurement process time manifests in the operations of the company.	**3.94**	**0.878**
Reliability Efficiency		
There is an increase in safety of orders while in transit and upon delivery	**4.00**	**0.718**
There is an increase in the number of complete order delivered to the company.	**4.22**	**0.718**
Roofings Rolling Mills has been able to map out on its routes and use driver tagging to fulfil orders	**4.03**	**0.751**
There is an assurance that that items are usually delivered when they are still intact and not contaminated or spoiled	**4.03**	**0.740**
The company ensures that inspections/ verifications of the quality and accuracy of items are jointly done upon delivery.	**4.28**	**0.457**
Cost efficiency		

There is a reduction in the overall cost of freight of imports and at Roofings Rolling Mills	**4.19**	**0.535**
There is reduction in the exposure to demurrage and storage costs on shipments at Roofings Rolling Mills	**3.84**	**0.987**
There has been reduction on information costs at Roofings Rolling Mills.	**4.16**	**0.574**
Roofings Rolling Mills has reduced cost of idle-time and overhead costs.	**4.09**	**0.390**
Roofings Rolling Mills has reduced on the cost of finance in freight forwarding activities.	**4.16**	0.515

Source: SPSS Primary Data.

Research findings in table 22, examines the indicators of operational efficiency in Roofings Rolling Mills. Findings showed that operational efficiency in Roofings Rolling Mills was high with an average mean of 4.05 and standard deviation of 0.686. This was attributed to the high level of responses including: there has been timely delivery by reducing the overall transit time of orders (mean =3.88, S.D =0.907); the number of complete order deliveries are made on time at Roofings Rolling Mills (mean =3.94 , S.D =0.948); there is decreased order response time at Roofing Group (mean =3.88, S.D =0.907); there is manifestation of hard work in responding to the needs of the company on time (mean = 4.19, S.D =0.535); shortening of the procurement process time manifests in the operations of the company (mean =3.94, S.D =0.878); there is an increase in safety of orders while in transit and upon delivery (mean =4.00, S.D =0.718); there is an increase in the number of complete order delivered to the company (mean =4.03, S.D =0.751); Roofings Rolling Mills has been able to map out on its routes and use driver tagging to fulfil orders (mean =4.03, S.D =0.751); there is an assurance that that items are usually delivered when they are still intact and not contaminated or spoiled (mean =4.03, S.D = 0.740); the company ensures that inspections/ verifications of the quality and accuracy of

items are jointly done upon delivery (mean =4.28, S.D =0.457); there is a reduction in the overall cost of freight of imports and at Roofings Rolling Mills (mean =4.19, S.D =0.535); there is reduction in the exposure to demurrage and storage costs on shipments at Roofings Rolling Mills (mean =4.16, S.D =0.574); there has been reduction on information costs at Roofings Rolling Mills (mean =4.09, S.D = 0.390); Roofings Rolling Mills has reduced cost of idle-time and overhead costs (mean =4.16, S.D =0.448); Roofings Rolling Mills has reduced on the cost of finance in freight forwarding activities (mean =4.16, S.D = 0.515).

4.7 Inbound freight management and operational efficiency in Roofings Rollings Mill

To examine the extent at which Inbound freight management affect operational efficiency in Roofings Rolling Mills a multiple regression analysis of the three constructs of inbound freight management that is carrier management, freight consolidation and optimization and strategic partnership was conducted and the following results acquired as indicated below;

Table 23: Regression R–Square and Adjusted R-Square statistic between inbound freight management and operational efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.490(a)	.240	.215	.46247

a Predictors: (Constant), Inbound Freight Management

Source: SPSS Primary Data.

The table 23 above provides the R and R^2 value. The R value which is 0.490 (49%) represents the simple correlation and, therefore, indicates a high degree of correlation since its above (50%). The R^2 value indicates how much of the dependent variable, operational efficiency, can be explained by the independent variable, inbound freight management and in this case

0.24 (24)% which is lower than 50%. This implies that 24% of the variance in operational efficiency is explained by inbound freight management while the other factors outside this study contribute to 76% of the variance in the dependent variable.

To determine the significance of relationship between the independent variable and the dependent variable, the multiple regression analysis proceeded by the use of the analysis of variance (ANOVA) statistic, whose results are illustrated in Table 24 below.

Table 24: Analysis of Variance to test how the regression model predicts the outcome variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.028	1	2.028	9.480	.004(a)
	Residual	6.416	30	.214		
	Total	8.444	31			

a Predictors: (Constant), Inbound Freight Management
b Dependent Variable: Operational efficiency
Source: SPSS Primary Data.

Research findings in table 24 above shows that the regression model predicts the outcome variable significantly well indicating a statistical significance of the model applied ie $P = 0.004$ which is less than 0.05).

From the interview responses a general overview in regard to how inbound freight management has impacted on operational efficiency of the company included*; "a decrease in transportation costs arising out of the consolidation possibilities of various shipments"; "there has been a reduction in congestion of cargo at the border points":* One of the line managers stressed that *"inbound freight management has contributed greatly to the company's operations since the level of reliability which has been driven and masterminded by strategic collaborations with various suppliers and carriers".*

According to one of the transport personnel of the company, his assertion was that *"now days , identifying what's in transit, where it is, when it will arrive, and how much it will cost,*

requires patching together information from internal paperwork, carrier websites, and phone calls which is a time consuming and making the process inefficient." A response from the material and production department noted that *"they (Roofings Rolling mills) have little control over the routing guides that specify how their carriers and suppliers should go through to ship materials which sometimes are detrimental to the operations of the organization".*

In regard to solutions to the challenges of inbound freight management at Roofings Rolling mills*; "for compliance procedures to be effective, the company has developed penalties associated with violations of the routing guide and compliance rules".* The respondents added that *"The goal of this is to change the carrier/supplier's behavior since any penalty fees collected can offset the loss of efficiency".*

In order to examine which of the independent variable constructs (Carrier Management, freight consolidation and optimization and strategic partnership) has a stronger influence on the dependent variable (operational efficiency), the researcher proceeded to analyze the standardized and un-standardized coefficients from the SPSS output to determine the Beta (β) weighting value of each independent variable. The Beta values help to predict the standard deviation units that will change in the dependent variable (operational efficiency), if one standard deviation unit is changed in the independent variables (Inbound freight management).

Table 25: Beta Coefficient regression analysis (Multiple Regression) between inbound freight management (carrier management, freight consolidation, strategic partnership) and operational efficiency in Roofings Rolling Mills

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.642	.579		1.108	.275
	Carrier Management	-.010	.176	-.010	-.056	.955
	Freight consolidation	.260	.177	.268	1.466	.151
	Strategic partnership	.606	.164	.532	3.698	.001

a Dependent Variable: Operational Efficiency

Source: SPSS Primary Data.

To start with the first objective which was to determine the effect of carrier management on operational efficiency, the following results as indicated in table above include; the independent variable(carrier management) has a negative effect on the dependent variable(operational efficiency) ($\beta = -0.010$), but is not statistically significant (at 0.955, $\rho > 0.05$), implying that for every standard deviation unit of change introduced in carrier management, there is a 1% reduction in operational efficiency in Roofings Rolling Mills.

These results indicate that carrier management has a statistically weak negative influence on operational efficiency in relation to other independent variables. However, the likelihood of this result happening by mere chance alone is in more than 5% of the cases, standing at ($\rho = 0.955$) 95.5% probability, implying that other factors could be significantly influencing operational efficiency, other than carrier management.

The second objective which was to investigate the effect of freight consolidation and optimization on operational efficiency, the following results as indicated in table above include;

the independent variable(freight consolidation and optimization) has a positive effect on the dependent variable(operational efficiency) ($\beta = 0.260$), but is not statistically significant (at 0.151, $\rho > 0.05$), implying that for every standard deviation unit of change introduced in freight consolidation and optimizations, there is a 26.8% increase in operational efficiency in Roofings Rolling Mills.

These results indicate that freight consolidation and optimization has a statistically positive influence on operational efficiency in relation to other independent variables. However, the likelihood of this result not happening is more than 5% of the cases, standing at ($\rho = 0.151$) 15.1% probability, implying that other factors could be significantly influencing operational efficiency, other than freight consolidation and optimization.

The Third objective which was to assess the effect of strategic partnership on operational, the following results as indicated in table above include; the independent variable(carrier management) has a positive effect on the dependent variable(operational efficiency) ($\beta = 0.606$) and statistically significant (at 0.001, $\rho < 0.05$), implying that for every standard deviation unit of change introduced in strategic partnership, there is a 53.2% increase in operational efficiency in Roofings Rolling Mills.

These results indicate that strategic partnership has a statistically positive influence on operational efficiency in relation to other independent variables. However, the likelihood of this result happening by mere chance alone is less than 5% of the cases, standing at ($\rho = 0.001$) 0.1% probability, implying that strategic partnership significantly influence operational efficiency in Roofings Rolling Mills.

Correlation Results: The effect of inbound freight management on operational efficiency

To assess whether inbound freight management had an influence on operational efficiency, the two variables were related using Pearson's correlation coefficient index as illustrated in table below.

		Operational Efficiency	Inbound freight mgt
Operational Efficiency	Pearson Correlation	1	.662(**)
	Sig. (2-tailed)		.000
	N	41	41
Inbound freight mgt	Pearson Correlation	.662(**)	1
	Sig. (2-tailed)	.000	
	N	41	41

** Correlation is significant at the 0.01 level (2-tailed).

Table 26 above shows a Pearson's correlation coefficient index between inbound freight management and operational efficiency r = 0.662, sig = 0.000 less than 0.05. This suggests a significant relationship between inbound freight management and operational efficiency in Roofings Rolling Mills, as it implies that the two variables are related. This result indicates that inbound freight management and has an effect on operational efficiency in Roofings Rolling Mills.

CHAPTER FIVE

DISCUSSION OF MAJOR FINDINGS, SUMMARY, CONCLUSION, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER STUDY

5.1 Introduction

The purpose of the study was to examine the effect of inbound freight on operational efficiency in manufacturing industry, with Roofings Rolling Mills as a case study. This chapter focuses on the discussion of major findings in relation to the research objectives, summary of research findings, the conclusion, recommendations as well as the suggestions of further research or study.

5.2 Discussion of major findings

The discussion of the major findings obtained from the study is presented in this section. Since the study used a self-administered questionnaire and an interview guide, these two research instruments provided valuable information upon which the findings of the study were based and discussed in this section. The discussion of the study findings is done objective by objective.

5.3.1 Carrier Management and Operational Efficiency at Roofings Rolling Mills

Carrier management was indicated with an average mean of 3.97. This was then regressed against operational efficiency, and it was revealed that, the extent to which carrier management predicts operational efficiency was low but the relationship between the two variables(Carrier management and operational efficiency) was statistically significant (R^2 value 0.132 (13.2%), and Sig. value 0.041); r=0.465 and sig. value =0.002. This implies that the extent to which carrier management is done at Roofings Rolling mills is high. This is line with Monczka, Trent, & Handfield, (2005) as cited by Misuko (2015) and Kiraga (2014) who asserted that the decision regarding a particular mode and the management of different carriers constitutes a

decision making process in regard to transportation including the different transportation performance variables, selection of mode of transport and carrier, negotiating rates and service levels and evaluation of carrier performance. It's noted that a particular transport carrier performs can influence both the efficiency and effectiveness of not only the inbound logistics function but rather the entire logistics function of a company. Therefore it's imperative to note that selection of an appropriate transport carrier and the management of their activities can be a contributing factor to a company's operational efficiency.

In addition, from the interview; the interviewee confirmed that "*carrier management has enabled the company to reduce the time and costs by finding solutions to the biggest complexities in international shipments".*

5.3.2 Freight consolidation and optimization and operational efficiency at Roofings Rolling Mills

Freight consolidation and optimization was indicated with an average mean of 3.99. This was then regressed against operational efficiency, and it revealed that, the extent to which Freight consolidation and optimization predicts operational efficiency was low but the relationship between the two variables(Freight consolidation and optimization and operational efficiency) was statistically significant (R^2 value 0.25(25%); Sig. value 0.004) and r=0.578 and sig. value =0.000. This implies that the extent to which Freight consolidation and optimization is done at Roofings Rolling mills is high. Jahre & Hatteland, (2004) as cited by Misuko,(2015) who pointed out that indeed Freight Consolidation and optimization is used by most of the manufacturing firms and it entails the creation an efficient transportation plan that enables manufacturing companies to reduce costs and improve in the overall service delivery. The authors argue that companies look for various opportunities to balance various costs, the expected transit times and the shipments methods available.

In addition, from the interview; the interviewees confirmed that "*freight consolidation and optimization affect operational efficiency as exhibited in the way of maximizing vehicle capacity or improving asset utilization and they add that incase no further optimization can be obtained, the shipment must go out the door and the truck must move as loaded".*

5.3.3 Strategic partnership and operational efficiency at Roofings Rolling Mills

At Roofings Rolling Mills, a high level of strategic partnership was indicated with an average mean of 3.94. This was then regressed against operational efficiency, and it was revealed that, the extent to which strategic partnership predicts operational efficiency was low but the relationship between the two variables (strategic partnership and operational efficiency) was statistically significant (R^2 value 0.25(25%), and Sig. value 0.004); r=0.687 and sig. value =0.000. This implies that the extent to which strategic partnership is done at Roofings Rolling mills is high. This is line with Davies, (2014) who pointed out that setting up deals with new suppliers creates significant costs for manufacturing firms but when a company undertakes a strategic partnership programme, there is an assurance of elimination of the costs related with new relationships created. In addition, from the interview; the interviewees confirmed that as a "*company they partner with both their carriers and suppliers by working together towards reducing administrative obstacles, establishing excellent lines of communication, sharing technologies such as web-based tracking and tracing and eventually, which end up lowering costs an indicator of operational efficiency*."

5.2 Summary of findings

The study findings revealed that carrier management was high at Roofings Rolling Mills with an average mean of 3.97. After regression analysis being undertaken against operational efficiency; the extent to which carrier management predicts operational efficiency was low but the relationship between the two variables (Carrier management and operational efficiency)

was statistically significant (R^2 value 0.132 (13.2%), and Sig. value 0.041; r=0.465 and sig. value =0.002

Findings also reveal that Freight consolidation and optimization was high at Roofings Rolling Mills with an average mean of 3.99. The regression results indicated that Freight consolidation and optimization predicts operational efficiency was low but the relationship between the two variables (Freight consolidation and optimization and operational efficiency) was statistically significant (R^2 value 0.25(25%), and Sig. value 0.004); r=0.578 and sig. value =0.000.

Finally research findings reveal that strategic partnership was high at Roofings Rolling Mills with an average mean of 3.94. After conducting a regression analysis against operational efficiency, the extent to which strategic partnership predicts operational efficiency was low but the relationship between the two variables (strategic partnership and operational efficiency) was statistically significant (R^2 value 0.25(25%), and Sig. value 0.004 ; r=0.687 and sig. value =0.000.

5.4 Conclusion

According to the research findings, the following conclusions were reached at including; carrier management lowly predicts operational efficiency in Roofings Rolling Mills; freight consolidation and optimization lowly predicts operational efficiency and lastly strategic partnership lowly predicts operational efficiency. In this regard in spite of some challenges such as limited or insufficient management support, less focus on inbound freight as compared to customer focus and non-supportive organizational structures; inbound freight management practices should be given maximum attention since it has been proved to contribute to operational efficiency of Roofings Rolling Mills hence the management of Roofings Rolling Mills should avail senior management sponsorship in regard to inbound freight management and instilling a well supporting organizational culture to the practice.

5.4 Recommendations

The researcher recommends that there is need for senior management support regarding inbound freight management practices since top managers are key decision makers and they also possess control over different resources in their company. This will in turn act as a great stimulant to the operations of the company.

The researcher also recommends that Roofings Rolling mills should continue adopting and implementing inbound freight management practices to effectively improve on their operational efficiency and continue performing competitively since their existence do predict the operations of the company.

5.5 Suggestions for further study

This study mostly focused on inbound freight management; it's prudent that further studies be taken at outbound freight management and how it affects operational efficiency. This comparison will enlighten and provide an insight on some of the outbound freight practices that may be of support to the inbound freight management practices to achieve operational efficiency.

For proper analysis a comparative study should be undertaken regarding inbound freight management practices in another company with in manufacturing sector that is similar in terms of size and areas of intervention and then afterwards findings be compared to arrive at reliable conclusion with proven facts.

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APPENDIX I:

QUESTIONNAIRE

Dear Respondent,

My name is **Sigombe Richard,** a student of Kyambogo University conducting research on "inbound freight management and operational efficiency" at Roofings Rolling Mills in particular. I kindly request you to take some time and give your honest opinion and response to the questionnaire below in order to support my research and build a body of knowledge in the area of study. Any relevant information provided will be treated with utmost confidentiality as it is only going to be used for academic purposes. Your cooperation is highly appreciated.

SECTION A: Demographics Characteristics

1. Gender of respondents

Male ☐ Female ☐

2. Age group

18-25 ☐ 26-35 ☐ 36-45 ☐ Over 46 ☐

3. Marital status

Single ☐ Married ☐ Divorced ☐

4. Level of Education

Certificate ☐

Diploma ☐

Bachelors Degree ☐

Masters Degree ☐

Others (specify).....

5. Number of years spent in the organisation

1-2 years ☐

2-4 years ☐

5 years ☐

6. Category of Respondents

Departmental and sectional heads ☐

Procurement and stores staff ☐

Transportation and distribution staff ☐

S/N	Response	SD	D	NS	A	SA
B1	Roofings Rolling Mills carefully undertakes makes decisions to enhance any transportation mode as they choose and manage a carrier in a bid to attain operational efficiency					
B2	Roofings Rolling Mills reflects on the carrier's movement of inbound cargo to minimize costs					
B3	Roofings Rolling Mills considers safety precautions as they manage activities of different carriers					
B4	Roofings Rolling Mills puts into consideration the kind of items they are to transport as they select their carriers to attain operational efficiency					
B5	Roofings Rolling Mills considers transit time in selecting carriers which plays a bigger role in determining operational efficiency.					

For sections B, C , D and E, The following statements relate to your opinion about the effect of inbound freight management on operational efficiency of Roofings Rolling Mills .For each of the statements below ,please indicate the extent of your agreement and disagreement by ticking in the space provided below;

KEY:

Strongly Disagree-SD	Disagree-D	Not sure-NS	Agree-A	Strongly Agree-SA

SECTION B: **Carrier Management and operations efficiency in Roofings Rolling Mills**

8. To what extent has your company implemented carrier management in an effort to improve operations efficiency?

(Use the scale of: 1- Strongly Disagree, 2- Disagree, 3- Not sure, 4- Agree, 5- Strongly agree)

S/N	Response	SD	D	NS	A	SA
C1	Roofings Rolling Mills considers consolidation opportunities to reduce transport costs					
C2	Roofings Rolling Mills maintains capacity of transportation providers to maximize on economies of scale					
C3	Roofings Rolling Mills makes sure that chances arising from any kind of full truck load is utilized to achieve operational efficiency					
C4	Roofings Rolling Mills considers vehicle scheduling and route optimization in order to achieve operational efficiency					
C5	Roofings Rolling Mills ensures that packing rules and instructions are given maximum attention in order to achieve operational efficiency					

SECTION C: Freight consolidation and optimization and operations efficiency in Roofings Rolling Mills

To what extent has your company implemented Freight consolidation and optimization in an effort to improve operations efficiency?

(Use the scale of: 1- Strongly Disagree, 2- Disagree, 3- Not sure, 4- Agree, 5- Strongly agree).

SECTION D: Strategic Partnerships and operations efficiency in Roofings Rolling Mills

To what extent has your company implemented Strategic Partnerships **in** an effort to improve operations efficiency? (Use the scale of: 1- Strongly Disagree, 2- Disagree, 3- Not sure, 4- Agree, 5- Strongly agree).

S/N	Response	SD	D	NS	A	SA
D1	Roofings Rolling Mills through collaborating with its strategic suppliers implements strategies that optimize obstacles associated with distribution of goods					
D2	With strategic collaborations Roofings Rolling Mills is able to minimize its cost with their suppliers/providers.					
D3	Roofings Rolling Mills can share new technologies and improve on the same as they undertake strategic partnership.					
D4	Roofings Rolling Mills is able to reduce its administrative obstacles through Strategic partnership.					
D5	Roofings Rolling Mills is able to identify better opportunities including the best quality as it partners with its suppliers					

SECTION E: Operational Efficiency in Roofings Rolling Mills

This section focuses on the extent to which operational efficiency in terms of Timeliness, Reliability and Cost efficiency have been attained at Roofings Rolling Mills.

To what extent has your company achieved time, reliability and cost efficiency in its operations? (Use the scale of: 1- Strongly Disagree, 2- Disagree, 3- Not sure, 4- Agree, 5- Strongly agree).

S/N	Time efficiency	SD	D	NS	A	SA
E1	There has been timely delivery by reducing the overall transit time of orders.					
E2	The number of complete order deliveries are made on time at Roofings Rolling Mills					
E3	There is decreased order response time at Roofing Group.					
E4	There is manifestation of hard work in responding to the needs of the company on time					
E5	Shortening of the procurement process time manifests in the operations of the company.					

S/N	Reliability	SD	D	NS	A	SA
E6	There is increase in safety of orders while in transit and upon delivery.					
E7	There is an increase in the number of complete order delivered to the company.					
E8	Roofings Rolling Mills has been able to map out on its routes and use driver tagging to fulfil orders					
E9	There is an assurance that that items are usually delivered when they are still intact and not contaminated or spoiled					
E10	The company ensures that inspections/ verifications of the quality and accuracy of items are jointly done upon delivery.					

S/N	Cost efficiency	SD	D	NS	A	SA
E11	There is a reduction in the overall cost of freight of imports and at Roofings Rolling Mills					
E12	There is reduction in the exposure to demurrage and storage costs on shipments at Roofings Rolling Mills					
E13	There has been reduction on information costs at Roofings Rolling Mills.					

E14	Roofings Rolling Mills has reduced cost of idle-time and overhead costs.					
E15	Roofings Rolling Mills has reduced on the cost of finance in freight forwarding activities.					

THANK YOU

APPENDIX 2:INTERVIEW GUIDE FOR RESPONDENTS

Dear Sir/Madam,

I am Sigombe Richard conducting a study on "**Inbound freight management and operational efficiency using a case of Roofings Rolling Mills"** as a partial fulfillment of the requirement for award of a Masters of Science in procurement and supply chain management of Kyambogo University. The information given will be treated with maximum sincerity and for academic purposes only. Your contribution will be highly appreciated. Therefore, you are required to answer the following questions: -

1. **Introduction Questions**

i. For how long have you worked in this organization?

ii. Which department are you from?

iii. Are you familiar with inbound freight management at Roofings Rolling Mills?

iv. Are u aware of inbound freight management activities in your organization?

v. Is inbound freight management one of the fundamental activities in your company?

2. **Carrier management and operational efficiency**

i. Do you use carriers in the management of inbound freight?

ii. How do you select carriers for your inbound freight management?

iii. How do carrier management affect the operations of Roofings Rolling Mills?

3. **Freight consolidation and optimization and operations efficiency**

i. Does your company do freight consolidation and optimization of its inbound freight operations?

ii. In your own opinion how does freight consolidation and optimization affect operational efficiency?

4. Strategic partnerships and operations efficiency

i. Does your company partner with its carriers and suppliers?

ii. How do you understand strategic partnerships?

iii. How does strategic partnerships affect operational efficiency of Roofings Rolling Mills?

5. Challenges of inbound freight management

i. What challenges are embedded in the inbound freight management activities in your company?

ii. What suggestions can you put forward to overcome the above challenges in your organization?

END

Thank you for your cooperation