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FACULTY OF COMMERCE

DEPARTMENT OF MARKETING MANAGEMENT

**Title: Assessing the influence of inbound logistics on
Company performance. A case of Browncast steel company (Pvt) Ltd**

BY

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*This dissertation is submitted in partial fulfilment of the **Bachelor of Commerce
Marketing Management Honours Degree at Midlands State University.***

MIDLANDS STATE UNIVERSITY

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DEDICATIONS

I dedicate this research firstly to God almighty for giving me the wisdom and guidance in doing this project. I am also grateful to my father, mother and family members for their continued unwavering support.

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Firstly I would like to extend my gratitude to my supervisor Mr. Chokera for his guidance. I also want to thank my parents, sister and brothers for their unwavering support both morale and financial support. It is also important to thank my friends who helped me in different sections of the research and in particular Jabulani, Paul's and Lee.

ABSTRACT

The research study is about inbound logistics on company performance. The researcher aimed at determining the influence of Logistics Information management on lead time, assessment on the effects of inventory management policies on reducing stock outs, influence of transport system should be used on product delivery and inventory costs that are incurred and affects profitability of the company. The research was carried out at Browncast steel merchant company a member of steel merchant in Zimbabwe Steel Industry. Major arguments highlighted issues on the influence of inventory costs shows that some cost of capital tied up should be used for other purposes, information, materials and inventory should flow from the steel supplier in a less cost and faster way. The research relied on descriptive research design aided by exploratory design. A sample size of 82 respondents was used, 24 employees and 58 steel suppliers. An average questionnaire response rate of 87% was achieved. Interviews were also administered to top management. Both probability and non-probability sampling to achieve unbiased results. Both primary and secondary data was from inbound logistics textbooks, interviews, questionnaires, company financial reports enabling validity of the research. Major findings concludes that storage space costs influence inventory costs on company profitability and unutilized space maybe rented out. The use of 3 to 4 tonnes sizes of delivery trucks proved small as they determine the influence of transport therefore 5 tonne trucks may be used, information technologies facilities like internet should be adopted for quick movement of information and maximize inventory postponement policy.

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ABBREVIATIONS AND DEFINATIONS OF TERMS

ZIA -	Zimbabwe Investment Authority
B.S-	Browncast Steel
ICT-	Information communication technology
DRP-	distributive requirements planning
ERP-	enterprise requirements planning
RFID-	radio frequency identification
UPC-	Universal Product Code
Lead time-	is the amount of time between the placement of an order and the receipts of the goods ordered
Inbound Logistics	is the relationships with suppliers and include all the activities required to receive, store, and disseminate inputs

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Chapter One

General Introduction

1.0 Introduction

The following chapter looks at the background of study, statement of the problem research objectives, research questions, significance of the study, research assumptions, delimitations, limitations of the study and definitions of terms.

1.1 Background of the study

Numerous scholarly researches on inbound logistics have been done since the beginning of the 21st century. Tuomola (2014) researched on introducing an effective inbound logistics concept to the automotive industry on preparing a Milk-Run –transportation plan for Valmet Automotive Ltd. The objective of the study was to create a preliminary model of a milk-run logistics concept to Valmet Automotive Ltd. The aim of introducing a particular logistics concept was to improve the company's inbound logistics flow leading to a cost-advantage in the firm's value chain. The theoretical part consists of a theory about supply chain and value chain, and more specifically, the inbound logistics and milk-run logistics concept in the automotive industry. The developmental research discussion was based on verbal interaction, which raised new ideas and suggestions for improvements. Data collection method for the empirical part in this study was qualitative. The results of the study, proved that the value chain analysis aimed at cost-efficiency, environmental-friendliness and increased efficiency and effectiveness in the whole supply chain.

In 2011, Baar undertook a study on the development of a model to assess and quantify the effect of inbound logistic concepts on costs in Netherlands. The study investigated the shift in focus from outbound logistics to inbound logistics, an inbound logistics decision support model is developed in this research report. This model offers the user the possibility to discover the benefits that rest in optimizing inbound logistics. The problem area has been scoped to the European logistic network because this guarantees the availability of a good transport network. But Danone Baby Nutrition, the problem owner, has factories worldwide, so the model can only be used for part of their factories. It was also chosen to only look at inbound flows of palletized packaging and raw materials of one factory. The researcher focused on the concept of Just-in-Time delivery of the products to the factory on time was an ideal strategy through adopting the eight supplier concept whereby it involves many alternative supplies combines

supply of inputs for the inbound logistics decision supports the model, their effects on total costs can result in reduction in production. The empirical research results managed to tackle issues on delay in delivery as they are counter balanced with the eight supplier model in case one supplier defaulters delivery.

Tseng, Long and Taylor (2008) from South Australia examined the effect of the role of transportation in logistics chain. The purpose of the study was to determine operation and role of transportation efficiency of moving products. Tests were carried out to determine if there was a significant relationship in techniques and management principles if they improve the moving load, delivery speed, service quality, operation costs, the usage of facilities and energy saving on inbound logistics. Applied research and descriptive survey method were used through use of questionnaires. Transportation takes a crucial part in the manipulation of inbound logistics. Their research reviewed the current condition whereby a strong system needs a clear frame of inbound logistics and a proper transport implements and techniques to link the producing procedures. The other concept presents City Logistics independently due to it is considered as a main tendency and an available method of future integration of transport and logistics in the urban areas. Production or manufacturing plants required the assembly of materials, components, and supplies, with or without storage, processing and material handling within the plant and plant inventory (Tseng, Wen Long and Taylor ,2008). Results of the study showed that a good transport routing system in logistics activities provides inbound logistics efficiency, reduce operation cost, and promote service quality.

Hai Lu and Yirong Su (2002) from Graduate Business School of Economics and Commercial Law Göteborg University in Sweden researched on an approach towards overall supply chain efficiency a future oriented solution and analysis outbound process. They got feedback from interviewees from logistic specialists through oral conversation, where they recorded the interviews and the information gathered was sorted again for re-listening to the tape. In their study, they tried to exploit a solution in which Schenker, as a logistic provider, would be actively involved so that inbound logistic performance can be more effective and efficient which would benefit all participants in the value chain. Information technologies were adopted as catalysts to help, support and upgrade the whole process of supply chain solutions offered to clients. The results of the research showed that emphasis and focus should not only on outbound as they not only reduce costs, but also focus on inbound logistics as they generate more collaborative relationship with internal organizations, suppliers and logistic providers,

which will ultimately result in a more effective business process from which all parties will benefit.

However, an analysis of the researches mainly relied on the network theory, which argues that an organization can achieve competitive advantage if it has ability to network with various parties in order to access strategic resources. Major Key elements in logistics which are logistics information management, inventory management policies, efficient transport system and inventory cost issues were not adequately covered in these researches. This has triggered the researcher to conduct a similar research on the influence of inbound logistics on company performance at Browncast Steel Limited.

Browncast steel Investments is a fast growing 100% locally owned steel merchant company, specializing in the distribution of quality steel plates, tubes, bars, and reinforcement steel for household, light or heavy industrial use, construction and mining obtained primarily from South Africa. Large steel merchants companies like Africa steel, Longden steel and steel center enjoy the opportunities of maximizing inbound logistics activities to enhance their operations and maximization of resultantly profits and they have large warehouses where large tonnes of steel can be stored. They also have their own big trucks sufficient enough to carry different variations of steel dynamics. Other additional services offered like cutting and bending are not outsourced they are done internally as this cut on costs. These large steel retailers offer partnership accounts whereby they give Browncast Steel stock on account. Browncast Steel Company is involved in a wide range of business which includes steel used in Mining, Construction, Agriculture, Property development, Fabrication and Advertising industry. Products offered by the firm are company reinforcement bars /deformed bars, reinforcement mesh /wire mesh, round Bars, galvanised IBR/Chromadek sheets, mild steel sheets, equal Angles and unequal, reinforcement wire/Tying wire, flat bars, Channels and square tubes. Additional service offered include bending, welding, galvanizing and threading

The main clients that are served by Browncast steel are Mimosa mine, Zimplats mine, Deven Engineering, Zimbabwe, Precast concrete, Exodus Engineering Company, Zimbabwe Motor Distributors, J R Goddard, BYD Steel structures, Warrap engineering, precision grinders, A and Sons, William Bain , Delta Malbruk and a few individual walk in customers. However, performance of the company took a downturn as sales volume started to dwindle and profitability started to decline as depicted by Table 1.1 ,

Table 1.1 Browncast sale revenue and profitability comparison

YEAR	SALES VOLUME(units)
2013	90 000
2014	70 000
2015	46000

Source: Browncast Financial Report 2015.

The market in steel industry is dominated by 9 major players as illustrated by figure 1.1

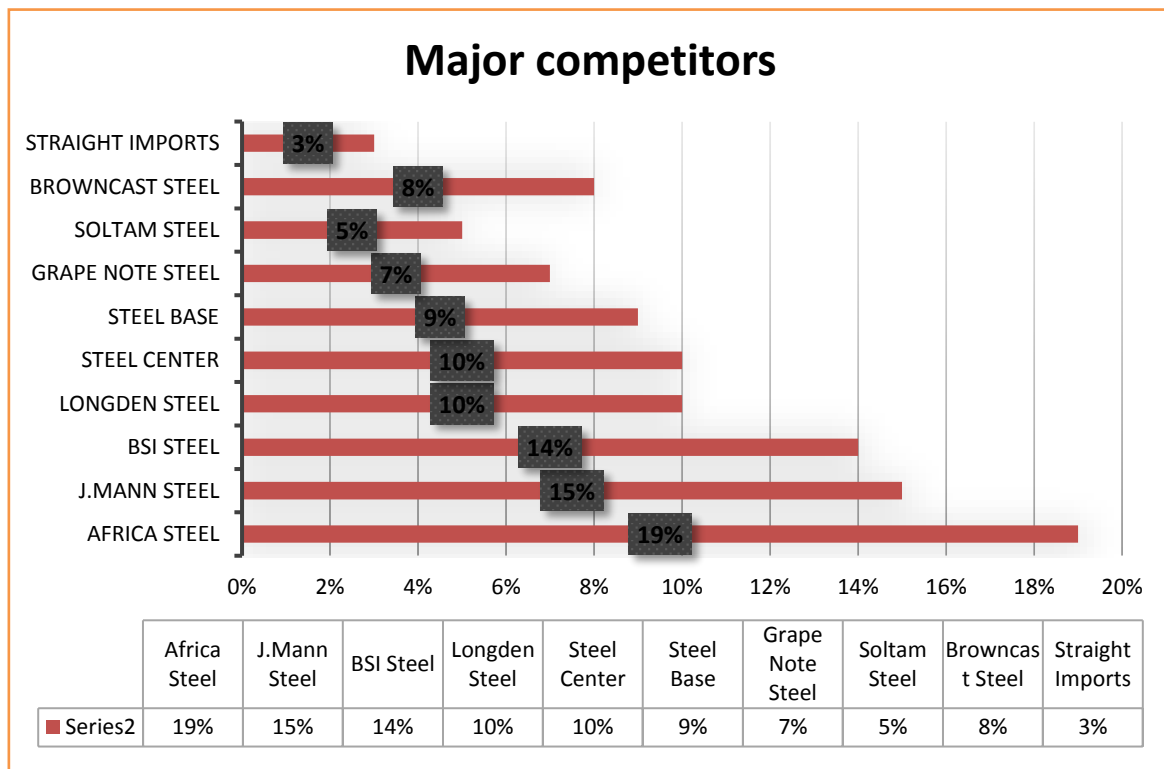


Fig. 1.1 Market share Analysis

Source: Browncast Steel Financial Report 2015

1.2 Statement of the Problem

The steel merchant industry in Zimbabwe as reported by the Zimbabwe Investment Authority (ZIA) in their 2014 report emphasised that the steel industry products are on high demand due to a surge of infrastructural projects being undertaken in the economy. The Zimbabwean economy has shown signs of improvement which has been spurred by the use of multicurrency system. Despite a high demand of steel products in the economy Browncast steel merchants is facing stiff and mounting competition from local and foreign firms. The firm has been experiencing low margin on sales, high lead time and experiencing stock outs affecting inbound logistics as shown in the table below:

Table 1.2 Browncast sale revenue and profitability comparison

YEAR	SALES VOLUME(units)	PROFITS(\$)
2013	90 000	83 000
2014	70 000	66 000
2015	46000	33 000

Source: Browncast Financial Report 2015.

A downward trend on profits has been the major drawback affecting the firm as shown by the table above.

1.3 Research Objectives.

- To determine the influence of Logistics Information management on lead time
- To explore the effects of inventory control system on reducing stock outs
- To determine the influence of transportation trucks on product delivery to the firm
- To assess the influence of inventory costs on company profitability

1.4 Research Questions

- What determine the influence of Logistics Information management on lead time?
- What are the effects of inventory control system on reducing stock outs?
- Which transport trucks should be used on product delivery
- What inventory costs affects profitability of the company?

1.5 Significance of the study

The following research work is beneficial to the following stake holders Browncast firm and the steel industry, to Midlands state university and to the student researcher.

Browncast firm and the steel industry

- Due to the research the industry will benefit from the outcome of this study in formulating effective and comprehensive inbound logistics strategies that can be meaningful in the steel competitive industry.
- In addition it also gives a chance for the policy makers because it will help in identifying key performance indicators and it will provide practical insights useful for planning, controlling, monitoring and evaluating in inbound logistics management.

Midlands State University

- The research will be a provision for review in future by other students in their research work as reference material, especially those who will be interested in the same subject.

The Student Researcher

- The research process will enlighten the student as it will equip and presents source of knowledge, experience and skills to carry out future research programs.

1.6 Assumptions

- The respondents would give unbiased information and respondents would understand the language being used
- Inbound logistics caused delays in supply of steel products and resulting in lost sales.
- Browncast management would co-operate in provision of company's sensitive data to get information for research and academic purpose.
- The outcome of the research would be a true representation of all the operations of Browncast steel Zimbabwe.
- The use of multicurrency in the economy would persist in Zimbabwe and remains unchanged during the period of the study.

1.7 Delimitations

- Research covered the period 2013 to 2016.
- Research was confined to Browncast steel management, employees and some selected suppliers of steel and transport operators.
- Research was carried out at Browncast steel main head office in Harare Adbennie.
- The research focused on aspects of inbound logistics and supply chain management

1.8 Limitations

- The research has dealt with a sample size of 82 respondents which will be drawn from employees, logistics companies and steel suppliers out of about 100. Therefore responses to be generated may not be fully represented to the whole population. Their views may not represent the whole population. On sample size however, an approved model of sample study has been used for validity.
- The research approach to be used is more of qualitative. Hence if it uses quantitative approach results are likely to differ.
- This research has relied more on questionnaires and interviews because if other data collection methods are used they will pose different results.
- Descriptive research design has been used as it tries to complete an accurate assessment of the topic at hand.

1.10 Section Summary

This section laid the foundation presented by the researchers' main area of focus. A background of circumstances prevailing at Browncast steel, the statement of the problem, research objectives, research questions, significance of the study, assumptions made to the research. The chapter laid a strong foundation upon which further analysis on inbound logistics management systems is to be centered on.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter involves evaluation of a collection of articles, books, journals, research paper and academic dissertations that were written in disciplines related to the one under current investigation. Focus is on finding areas of convergence, areas of divergence as well as reviling the gaps related to the influence of Logistics Information management on lead time, assessing the effects of inventory management policy on reducing stock outs, determining the influence of transportation system on product delivery and to assess the influence of inventory costs on company profitability.

2.1 Concept of Logistics

Waters (2003) defines logistics as the process of planning, implementing and controlling the efficient, cost effective flow and storage of raw materials, in process inventory, finished goods and related information from the point of origin to point of consumption for the purpose of conforming to customer requirements. Hence, Logistics is the arranging, association, and control of all exercises in the material stream, from crude material until conclusive utilization and turn around streams of the fabricated item, with the point of fulfilling the client's and other intrigue gathering's needs and wishes that is, to give a decent client benefit, minimal effort, low tied-up capital.

Frazelle (2002) postulated that logistics is comprised of 5 interdependent activities: customer response, inventory planning and management, supply, transportation and warehousing. The author argues out that it is hard win a game without a scoreboard and hard to even know which game you are playing without a score board, as such logistics organisation is in competition with their competitors' logistics organizations and third party logistics services, it is critical to hold the logistics organisation accountable to business-like performance measures. The logistics benchmarking and goal setting process permits a quantitative assess of the opportunities for improvement in each logistics performance indicator. Frazelle (2002) identified 4 logistics performance indicators which are financial measures of logistics, productivity measures of logistics performance, quality measures of logistics performance and cycle time measures of logistics performance. These performance measures matrix are applied

in each of the five logistics activities as outlined by Frazelle (ibid) as customer response, inventory management and planning, supply, transportation and warehousing.

Folinas & Dimitris (2012) added that Logistics and Supply Chain Management has been a vital part of every economy and every business entity. Both sciences have become prestigious research fields focusing on best practices, concepts, and methods. Outsourcing Management for Supply Chain Operations and Logistics Services is concentrated on the key players of the outsourcing paradigm; the organizations that provide logistics services, the Third Party Logistics (3PL s), as well as their clients, presenting and promoting the lessons learned by their cooperation. Specifically, this publication presents studies which are relevant to practitioners, researchers, students, and clients of the application of the Outsourcing practice on the Logistics and Supply Chain Management services.

2.1.1 Inbound Logistics

Porter (1985) propounded that Inbound Logistics involve relationships with suppliers and include all the activities required to receive, store, and disseminate inputs. Porter (1985) brought up the idea of the value chain analysis basing on the process of viewing of organisations, the idea of seeing a manufacturing (or service) organisation as a system, made up of subsystems each with inputs, transformation processes and outputs. Takita et al (2016), alluded that differentials consists, therefore, in production costs, storage, distribution and transport, what it is called inbound and outbound logistics. Eventually the main aim is to analyse value chain activities carried out, determining costs and effects on profits. Porter (1985) illustrates Linkages shown in the diagram below are crucial for corporate success. The linkages are flows of information, goods and services, as well as systems and processes for adjusting activities. If all functions and all other departments work in time and in reliable accuracy, procurement of the necessary material for the correct date. Though the value chain analysis highlighted various aspects, areas to do with information technology have been left out.

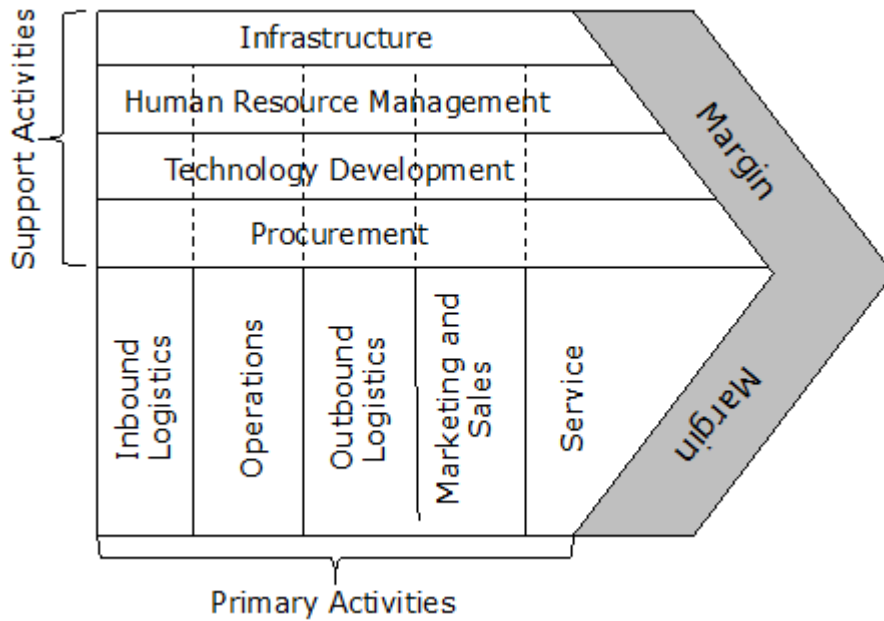


Fig 2.1 Porters Competitive advantage

Source: Porter, Michael E., "Competitive Advantage". (1985)

2.1.2 Reverse logistics

Rogers and Tibben (2006) define reverse logistics as process of planning, implementing and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal. Larsen et al, (2007) added that Reverse logistics is a term that encompasses a broad range of activities within and outside of logistics including product returns, source reduction, recycling of material, re-use of materials, waste disposal and refurbishing, repair and remanufacturing. However, Harrison and Remko (2011) argued that the document that the life of a product from a logistics point of view does not end with the delivery to customer but, products may become damaged, obsolete and non-functioning and need to be returned to their source points for repair and disposition. In the event that the product is defective, the customer will have to return the product.

2.2 Effects of Inventory Management policy on reducing stock outs

Muller (2003) described inventory as broad term which refers to the stock of any item(s) or resources used in an organization. Inventory includes raw materials, work- in -progress, supplies used in operations and finished goods. Inventory is that total amount of goods a business has on hand at a given time. Sarte et al (2015) argued that inventories provide

additional information relative to aggregate investment regarding firms' intertemporal decisions, and thus additional insight in explaining business cycles. It is a vital asset that keeps businesses running. Inventory helps the company meet demand. Inventories occur whenever the time inventory enters is different than when it leaves. Muller(2003) alluded that during the intervening interval the item is part of the inventory.

However in the steel industry customers want products in the shortest possible amount of time available, they often satisfy this demand by keeping final goods inventory on hand, that is to ensure that the goods are readily available of shelves for customer purchase (on-shelf availability). Though this is good customer satisfaction, if too much final goods inventory is kept they can become outdated and therefore never sell especially in the case of non-durable consumer goods. However, if insufficient, leads to lost sales and hence revenue accompanied by poor customer satisfaction. These cost associated with inventory can be broadly classified into three namely ordering cost, holding cost and cost of stock outs.

Bowersox and Closs (2004) contradicted that holding costs (carrying) include the costs for storerooms, taking care of, protection, pilferage, breakages, out of date quality, devaluation, charges and the open door cost of capital. These tend to vary directly with the inventory levels held. On the other hand, ordering costs refer to Inventory level (Residence time) managerial and clerical costs to prepare purchase orders and raise purchase requisitions. The effects are that cost will be apportioned differently.

2.2.1 Inventory management on reducing stock outs

Inventory management, according to Hugo et al (2006), is defined as an aspect of the supply chain that focuses on enhancing the right quantity at the right time without compromising the financial position of the firm or customer service. Inventory management is a logistical concept that was developed after the World War II with the managing of inventory involving two fundamental questions; how much to re-order from vendors and when to order? (Colle et al 2009). Inventory management plays a decisive role in enhancing efficiency and competitiveness of business enterprises. Therefore, there is an increasing need for enterprises to embrace effective inventory management systems as a strategy to improve their competitiveness (Rajeev 2008). Effective inventory management entails holding an appropriate amount of inventory. Too much inventory consumes space, creates financial burden and increase the possibility of damage, deterioration, spoilage and loss. However, on the other hand, Dimitrios (2008) postulated too much inventory consumes physical space, creates a

financial burden, and increases the possibility of damage, spoilage and loss. On the other hand, too little inventory often disrupts business operations, and increases the likelihood of poor customer service.

Prudent inventory management requires the analysis of the costs of maintaining certain levels of inventory as there are costs involved in holding too much stock and there are also costs involved in holding too little hence the need to put in place an effective stock management system to ensure reliable sales forecasts (Atrill, 2006). Grablowsky (1984) observed that large businesses rely more on quantitative techniques, such as EOQ and linear programming, to provide additional information for decision-making, while some SMEs like Browncast steel make use of judgement without any back up.

Maintaining optimal inventory levels reduces the cost of possible interruptions or loss of business due to scarcity of products. Lazaridis and Dimitrios (2005) highlighted the importance of firms keeping their inventory at optimal level by analysing the relationship between working capital management and corporate profitability and stressed that its mismanagement will lead to excessive tying up of capital at the expense of profitable operations. Other authors Green and Corsten (2007) added that, document that stock outs have serious implications for businesses and they affect consumers, retailers and manufacturers. Businesses should employ effective inventory management practices such as continuous replenishment, JIT, VIM and ABC (Basuroy et al, 2001). Hedrick (2005) alluded that “stock must be well managed in order to maximize profits” and “many small businesses cannot absorb the types of losses arising from poor inventory management.” Clearly inventory management is important to business and vital to inbound logistics success. However researchers above ignored areas to do with personnel handling the inventory as they are of paramount importance on inventory management.

2.2.2 Inventory Policy on reducing stock outs

Chan et al (2014) describes inventory inaccuracy often exists in manufacturing systems, which has great negative impact on the performance of production control, e.g. very high work-in-process holding cost or backlog penalty. Inventory policy consist of guidelines concerning what to purchase or to manufacture, when to take action and in what quantity. For example, some firms may decide to postpone inventory positioning by maintaining stock at the plant. Other firms may use a more speculative policy by electing to place more product in local distribution centers to have it closer to the market. The development of sound inventory policy is the most difficult issue within overall inventory management (Bowersox 2004). Basically

there are three management approaches to managing inventory which are inventory speculation, inventory consignment and inventory postponement.

2.2.2.1 Inventory Speculation on reducing stock outs

Zinn et al.(1998) enlightened that the inventory speculation approach is, by far, the most frequently encountered inventory management approach in practice. With this approach, a firm would purchase items and physically hold such items within its storage facilities before demand or usage requirements for these items are known. With this approach, a firm would purchase items physically and hold such items within its storage facilities before demand or usage requirements for these items are known with certainty (Bucklin 1965). The choice comes with many benefits, not the least of which is the ability to respond quickly to demand or usage needs and the ability to protect itself against fluctuations in prices. In addition, with this approach, a firm can also avail itself of volume discounts and reduced inbound transportation costs from buying in bulk (Bucklin, 1965; Zinn and Bowersox, 1988; Pagh and Cooper, 1998). This will eventually result in increased profitability. The researcher views this approach as an ideal approach as it prevents stock outs which will eventually result in lost sales causing decrease profits. Unavailability of stock can as well make customers switch to competitors causing negative impact on future sales declining. This approach however include inventory costs such as storage, handling and cost of capital.

2.2.2.2 Inventory Postponement on reducing stock outs

Inventory postponement In contrast to inventory speculation, a firm, operating under an inventory postponement approach, would deliberately delay the purchase and the physical possession of inventory items until demand or usage requirements are known with certainty (Bucklin, 1965). Therefore, by doing so, a firm can minimize the risk of inventory obsolescence, reduce the opportunity cost of having capital tied up in such items and avoid incurring storage and tracking expenses since these items are physically located with the supplier. However this approach has its own consequences in that, there is risk of losing sales because the firm may be unable to timely respond in a manner of having these items readily available within its own storage facilities (Cooper 1998). Moreover, transportation and materials taking care of expenses from purchasing in littler bunch sizes would prone to come about (Xu et al 1994) as would the danger of cost increments, as would the danger of cost increments. The higher the quantity of times stock is taken care of, the higher the taking care of expenses. The researcher also identifies another possible drawback of lost sales because

some customers want to purchase only products which are available at hand and do not want promises. The lost sales will also result in lost profits.

2.2.2.3 Inventory consignment on reducing stock outs

A firm operating under an inventory consignment approach would physically hold purchased items in inventory but, in this arrangement, ownership of those items would reside with its supplier (Coughlan et al, 2001). Only after the items have been either used in production or have been sold to customers would the firm then make payments to the appropriate supplier. By following this approach, the firm would benefit from having relatively immediate access to items to meet. The researcher identified a benefit of using this approach of preventing lost sales because when the customer comes to the shop, the customer will see the product available and will be able to buy the product if he wishes to buy (Kandel 1996, Corbett 2001, Valentini and Zavanella 2003). Unfortunately in addition to the expense of storing, handling and tracking these purchased items, a firm could also be subject to price fluctuations, with the price of the on hand increasing between the time when they are physically received and when they were put to use or sold (Simchi-Levi et al 2001) seem to view this approach as beneficial in terms of reducing costs like capital being tied up whilst (Kandel 1996; Corbett 2001; Valentini and Zavanella 2003) view this approach as a risky method because of price fluctuations or inflation. The researcher agrees with all the authors because it is important that capital should be used for other profitable projects rather than being tied up in inventory and also the company may incur some unnecessary costs due to increase in prices so it is important to manage inventory properly.

2.2.4 Comparison of Inventory Policies on reducing stock outs

Prior research with respect to inventory policies provided some insights when the choice of inventory management approach is limited to selecting either inventory speculation or inventory postponement. According to Zinn and Bowersox (1988), when the dollar value per unit of a purchased item is high and when sales volume for units of items fluctuates greatly, inventory postponement would be preferred over inventory speculation. Conversely, Pagh and Copper (1988), inventory speculation would be better approach than inventory postponement when a purchased item is a relatively standard product in early stages of product life cycle and faces low demand uncertainty and low customer order to delivery time but high delivery frequency.

On the other hand, much has been written in literature extolling the benefits of the inventory consignment approach. The benefits include improved information sharing and coordination and reduced logistical costs (Corbett 2001). Interestingly, the underlying assumption in much of the literature appears to suggest that inventory consignment would be the preferred choice considered against inventory speculation or inventory postponement. It is imperative therefore, that all four options of inventory speculation, inventory postponement, inventory consignment and reverse inventory consignment be considered together within some common decision framework (Corbett 2001). Such a decision framework should identify and define a set of common factors underlying drivers which when varied would help firms learn to select the most appropriate inventory management approach for a particular purchased item and context. Without such a decision frame work, a firm, in the worst case would have to be subjected to three costly trial and error decisions before arriving at the most appropriate choice of inventory management approach.

2.3 Influence of Inventory Costs on company profitability

There are three important costs of inventory and those are carrying costs, storage costs and out of stock cost.

2.3.1 Carrying costs on company profitability

Bowersox and Closs (2004), alluded that, these are costs associated with holding a quantity of goods for some time. For example this is the cost of capital tied up and could be used up for other purposes. There are also costs of taxes and insurance for inventory. Kansal and Kapoor (2005) mentioned with the exception of a few states a property tax levied on all or some inventory in the warehouse. Fire and theft protection insurance is needed to protect inventory from losses and storage space costs need to be fully maximized or rented. Holding inventory in inbound logistics may result in five carrying costs proposed by Bowersox and Closs (2004). If these taxes increase they will reduce company profits.

2.3.2 Capital Cost on company profitability

Bowersox and Closs (2004) provided the most controversial aspect of maintenance cost is appropriate charge to place on invested capital. A prime interest rate is used to measure capital cost. The rate is that cash used to replace capital invested in the inventory can be purchased in the money markets at that rate. Any funds invested in the inventory lose their earning power, restrict capital available and limit other investment. Kansal and Kapoor (2005) alluded that

confusion may result from the fact that top management frequently does not establish a clear cut capital cost policy to be applied uniformly in decision making. For inbound logistical planning the cost of capital must be thought out clearly since the final rate of assessment will have a profound impact on system design.

2.3.3 Storage costs on profitability

Bowersox and Closs (2004), storage cost covers facility expenses related to product holding rather than product handling. The cost must be allocated to specific products since it is not related directly to inventory value. Total storage charges may be direct or may require allocation. With privately owned facilities, the total annual depreciation expense of warehouse must be calculated in terms of a standard measure such as cost per square cubic foot. Kansal and Kapoor (2005), for public warehouses, charges typically include a storage end of each month from a public warehouse operations perspective, monthly storage charges are based on space utilization in order to cover fixed costs and storage facility. Crump (2011) postulated that it is not uncommon to see IT managers also factor in the cost of the maintenance contract and some administrators to operate and manage that storage. The true cost of storage has more components though.

2.3.4 Out of stock costs on profitability

Buchanan (2008) propounded the notion of opportunity cost playing a crucial part in attempts to ensure that scarce resources are used efficiently. Thus, opportunity costs are not restricted to monetary or financial costs: the real cost of output forgone, lost time, pleasure or any other benefit that provides utility should also be considered an opportunity cost. These occur if there is demand for goods that are out of stock. A firm incurs out of stock costs because of lost sales and back order expenses. Bowersox and Closs (2004), customers prefer to receive goods as soon as possible. The customer who cancels an order because the firm is out of stock usually goes somewhere. Assortment Planning with Stock out-Based Substitution Smith and Agrawal (2000) develop a base-stock inventory model with stock out based substitution that determines the optimal assortment to be carried as well as inventory levels subject to a service level constraint. They show how further constraints such as shelf space can be incorporated into their approach. Mahajan and van Ryzin (2001) extend the model of Smith and Agrawal (2000) by introducing dynamic consumer substitution where the number of substitution attempts is not restricted and substitution rates depend on the availability of substitutes in a given assortment. Kok and Fisher (2007) develop a practice-motivated approach to determine the optimal assortment from sales data. Given their focus on products with long shelf life and high service

level, the demand function is obtained from log linear regression, ignoring unobservable lost sales. Hopp and Xu (2008) formulated an attraction model with a factor for each product that depends on quality and price. Multiple substitution attempts are modeled by a static approximation as a simplification of the dynamic substitution approach of Mahajan and van Ryzin (2001). Honhon et al. (2010) consider the assortment planning problem with stock out based substitution. Demand is classified into different customer types whereas each type has a certain ranking of purchase preferences. Prices remain fixed in this model. Yücel et al. (2009) combine assortment planning with the supplier selection problem in the presence of quality issues and dynamic substitution behavior.

2.4 Influence of Logistics Information Technology on lead time

Herselman and Hay (2003), describe ICT as technologies that support the communication and co-operation of “human beings and their organizations” and the “creation and exchange of knowledge. Furthermore, Yu (2010) considers ICT as a range of technologies that allow the gathering, exchange, retrieval, processing, analysis and transmission of information. In other words, ICT can be described as any tool that facilitates communication. Selwyn (2002) refers to ICT as “an umbrella term that includes computer hardware and software; digital broadcast and telecommunications technologies as well as electronic information repositories such as the World Wide Web or those found on CD-ROMs”. Ssewanyana (2009) further describes ICT as a strategic tool that allows users to become more efficient and effective.

The benefits of ICT for a firm includes saving of inputs, general cost reductions, higher flexibility and improvement in product quality (Mouelhi, 2009; Majumdar et al., 2010). Bloom et al. (2009) ascertain that ICTs play a major role in networking and communication as firms use these technologies to facilitate communication among employees and reduce co-ordination costs. Arvanitis and Loukis (2009) also advocated that the use of ICT strategies has direct implication for firms as they help in areas inventory control and quality, inbound logistics and supply chain management. Cohen et al (2002) noted that ICT tools provide a supportive role for human resource activities to improve organisation efficiency and effectiveness. Hence, ICT tools help in executing activities faster, support autonomous decision making process and enable distributive operations (Huang and Nof, 1999) in order to achieve higher supply chain and logistics efficiencies (Jack et al, 2006).

In a standard supply chain, supplies are purchased and products are produced at one or more factories, shipped to warehouses for transitional storage space and then forwarded to retailers or end users (Fine, 1998). Various businesses expect supply chains to provide them with the necessary information so as to carry on and succeed. Leenders and Fearon (2006) noted that using ICT tools to manage supply chain increases efficiency and waste reduction in the value chain. Technological advancements that include distributive requirements planning (DRP), enterprise requirements planning (ERP), barcodes and radio frequency identification (RFID) enable organisations to achieve competitive advantage in inventory management.

Helo et al (2008) describe a barcode as a code made from narrow related lines and spaces which can be stored in 20 to 30 characters per inch of coded information known as the Universal Product Code (UPC). Bar-coding contributes to the performance of supply chain by facilitating faster data entry (Gerald et al, 2000. Gerald et al (2000) provided that in addition, it reduces labour costs as a result of the saved and increased productivity. Barcodes also help in elimination of costly over and under stocking of inventory and the increased efficiency of JIT inventory systems. However researches perfectly work when there is coordination of activities. Better decision making is also enhanced through the use of bar – coding by capturing that would be difficult to collect using other ways, which can assist supply chain managers to fully make informed decisions.

Yazici (2002) documents that given the fact that suppliers are located all over the world, it is essential to incorporate various activities of the organisation within and outside. In order to achieve this, Helo et al (2008) propounded that ERP is a business management system made up from a collection of applications or modules that integrates company functions such as marketing, finance, manufacturing and logistics. William (2009) is in agreement that ERP system incorporates all information needed by the operations functions effectively together with finance, marketing, procurement, accounting, human resources, production, materials management, value addition, maintenance of quality, allocation and distribution of materials and finished products by process engineering and information technology. Yazici (2002) ERP system make use database technology to control and integrate information related to customers, suppliers, employees and finances. In 2009, William pointed out that ERP systems can be instrumental functionally oriented organisation into process oriented ones and in improving the performance of various supply chains through collaboration, cooperation and coordination.

According to Lysons and Farrington (2006), RFID is a generic term for technologies that use radio wave to automatically identify individual items. Effy and Andy (2008) advised that RFID technologies may improve the overall performance of various organisations in the supply chain logistics by ensuring that inventory is kept at its minimal level, hence increases efficiency and effectiveness of the process so as to get accurate information. Radio wave can also improve the traceability of products and the visibility throughout the whole supply chain process, in addition making reliable and speeding up tracking, shipping, checkout and counting processes, which may result in improve inventory flows and more accurate information (Helo et al, 2008).

2.4.1 Lead time fundamentals and information management

Nordas et al. (2006) indicates that Lead time is the amount of time between the placement of an order and the receipts of the goods ordered. Just-In-Time (JIT) production shows that there are advantages and benefits associated with their efforts to control lead time. This helps reduce lead time and is one of the sources of success of their JIT philosophy (Foote et al, 2005). In an attempt to reduce lead time, businesses and organizations found that in reality 90% of the existing activities are non-essential and could be eliminated. As soon as manufacturers focused on processes, they found waste associated with changeovers, quality defects, process control, factory layout, and machine down time. So they tried to find ways to reduce or eliminate waste. Harrington (1996) proposes by eliminating the non-value adding activities from the processes and streamlining the information flow significant optimization results can be realized. In the 1960s and 70s, manufacturers competed on the basis of cost efficiency. In the 1980s to date, quality was the rage and Zero Defects and Six Sigma came into vogue. Cost and quality are still crucial to world-class operations, but today, the focus is squarely on speed.

Bosireet all (2011) conducted a study on the impact of outsourcing on lead time and customer services in supermarkets in Nairobi. The study indicates that 10 supermarkets outsource several services such as; marketing and advertising, maintenance, fleet operation etc. The study also revealed the impact of outsourcing on lead time. However, According to Hetzel (1988), brought in a new twist whereby forecast errors cause expediting to meet unexpected demand, and the disruption adds to queuing and missed deliveries. Zong (2008) also argues that in manufacturing systems there are many factors contributed to long production lead-times. Machine failure is one of those significant factors. While the researchers have covered so many issues on lead time, particular attention need to be given to areas neglected by the researchers which include passage of logistical information.

2.4.2 Key factors in lead time reduction study

Raouf et al, (1994) assumed that the lead-time demand follows the normal distribution. There are mainly two categories demands in their present study, one is deterministic demand and the other is stochastic (probabilistic) demand then it was found that only a single distribution cannot use to describe the demand of the lead time. Raouf et al, (1994) Moreover, it has seen that the reorder point as a decision variable. Stochastic demand includes two types of demands: the first type characterized by a known demand distribution and on the contrary the second type characterized by arbitrary demand distribution. Raouf et al, (1994) When the assumption of deterministic demand is relaxed and demand is assumed to be stochastic, lead time becomes an important issue and its control leads to many benefits.

Porteus (1986) and Rosenblatt and Lee (1986) are among the first who explicitly elaborated on a significant relationship between quality imperfection and lot size. Keller and Noori (1988) extended Porteus' (1986) work to the situation where the demand during lead time is probabilistic and shortages are allowed. Hwang et al. (1993) studied the multiproduct economic lot size models in which setup reduction and quality improvement can be achieved with a one-time initial investment. Hong and Hayya (1995) presented a model including a budget constraint and other types of continuous functions for quality enhancement and setup cost reduction. Ouyang and Chang (2000) investigated the impact of quality improvement on the modified lot size reorder point models involving variable lead time and partial backorders. Ouyang et al. (2002) extended Ouyang and Chang's (2000) model by investing in process quality improvement and setup cost reduction simultaneously. Tripathy et al. (2003) presented an EOQ model with an imperfect production process and the unit production cost is directly related to process reliability and inversely related to the demand rate. Reducing lead times is especially important in situations where customer demand is uncertain, since long lead times put the company at a high risk of running out of stock before an order arrives. A large number of researchers Glock et al (2012) have worked out the effect of lead time reduction on safety stock. Further, it has been shown that lead time is correlated with financial performance indicators, such as ROI (Return of Investment) or average profit. This underscores the importance of managing lead time inversely related to the demand rate.

Other researchers, Schneider (2013) described lead time as the latency (delay) between the initiation and execution of a process. A more conventional definition of lead time in the supply

chain management realm is the time from the moment the customer places an order (the moment you learn of the requirement) to the moment it is received by the customer.

Lysons (2007) suggests, an important concern in the interest of supply chain optimization is inventory management. Even though the current developments like JIT and cost efficient principles are against holding inventory (Waters, 2011), there exists plenty of reasons for carrying inventory. For example, to lower the risk of supplier failure, lead time uncertainty, meeting the sudden changes in demand and hedging against foreseen shortages and price fluctuations (Lysons, 2007). Hereby, it could be said that there exist, both, benefits and disadvantages in holding inventory from one hand it protects companies against unforeseen fluctuations in supply and demand, but from the other hand inventories require high capital involvement, which reduces the financial efficiency.

2.5 Influence of transport on product delivery

Nahmias (2009) alluded that supply chain network requires extensive management of goods, money and information among all the relevant stakeholders .When a production flow is being analyzed in particular, the whole supply chain (SC) has to be considered. Stock and Lambert, (2001) added that the manufacturing of the finished good desperately depends on the availability of these materials as it can lead to production stops therefore can have a negative impact on the profitability and service level to the end customer.

2.5.1 Transportation on product delivery

Kenyon and Meixell (2011) alluded that “Logistics outsourcing has a significant effect on how manufacturing firms produce and deliver products to their customers”. Indeed, many manufacturing firms do not own or manage the transportation and warehousing resources used for inbound and outbound shipments from their facilities. It is included because it is a major part of the supply chain due to its power to add value to some goods by moving them from their current location to a more advantageous location. Through research, (Atos et al, 2012) transportation has been found to be a major factor in logistics processes. It is mentioned in virtually all research regarding this topic and is often the main focus of articles discussing logistics. Chopra and Meindl (2007) argued that the choice of transportation type in a company can have a big influence on both position of facilities and the inventory level of a company, and thus it impacts the company’s cost structure significantly. On the other hand, Hugos (2011) continued arguing that a supply chain thrives for effectiveness, economies of scale can be

achieved because then it is possible for the SC to aggregate the deliveries and transport fewer times with larger shipments. The total transportation costs can account for much as 20 percent of the finished product price and sometimes even more (Stock and Lambert, 2001). For that reason, Chopra and Meindl (2007) alluded that effective controlling and management of transportation can result in substantial improvements in efficiency and total profitability of a company. The researchers left out issues related to rationalization of carriage of capacity of the transport.

2.5.2 The Supply Chain and Transportation on product delivery

Stock and Lambert (2001) explained that within the supply chain, the transportation function plays a significant role when it comes to movement of goods and raw material. For inbound transportation, this could be transformed, so the suppliers use milk-runs to a consolidation point that is fairly close to them, from where trucks transport the raw material to the manufacturer with direct shipment Chopra and Meindl (2007). When a product becomes more valuable, the percentage of the value tends to be lower (Stock and Lambert, 2001). In order to cover this incurred transportation cost, companies sometimes add a surcharge on the final product value, like mentioned earlier. The Facilities, inventory and transportation as logistical drivers, and information, sourcing and pricing as cross-functional drivers important that those drivers fit together in order to get the most out of the supply chain management Chopra and Meindl (2007). It is important to know the purpose and goals are in order to know how it is supposed to react to changes in different drivers. The changes can have great impact on the inbound logistics effectiveness and its capability Hugos (2011).

2.5.3 The Vehicle Routing Problem (VRP) on product delivery

The vehicle routing problem was first introduced by Dantzig and Ramser in (1959) under the title “The Truck Dispatching Problem” Laporte (2009). The article’s main topic is to find the optimum routing of a fleet of petrol delivery trucks between a central depot and service stations. In 1964, Clarke and Wright then introduced the famous Savings method, an improved and effective greedy heuristic algorithm. The comparability of this kind of inbound pickups vehicle routing problem versus the ordinary outbound delivery vehicle routing problem, turns out to be of equivalence by simply reversing the routes (Toth and Vigo, 2014). The VRP has been studied for decades with numerous optimal algorithms developed for solving the problem successfully. Because the VRP is an extension of the exact algorithms used for the VRP are based on the successful development devoted to the optimal solution for the TSP (Toth and

Vigo, 2014). Laporte and Nobert (1987) provided one of the first complete work on exact algorithms for the VRP. Since then, numerous papers have been published focusing on exact algorithm analysis for the problem. This includes work by Laporte et al. (1992

Allu (2016) ascribed that Efficiency Equation can be used to determine efficiency for each aspect of logistics. Therefore, an equation for each activity will be shown. For transportation, the researcher will consider the output to be what is gained through transporting goods and input to be what is required in order to transport goods. Output will therefore be value added to goods through the transportation of these goods and input will be the costs associated with transporting those goods (fuel costs, wages, costs of vehicles, etc.):

Transportation Efficiency = (\$ value added from transportation / (\$ costs of transportation

Huggins (2012) argued that value-added is the difference between the value of a good at its starting location that is the manufacturing facility or bottling facility in this case and the value of the good once it reached its point of sale location (i.e. retail store or vending machine). Obviously, a product has more value at a retail store than it does in a company's warehouse, because in the retail store it is available for sale. At the store it can generate revenue, while in the warehouse it is simply sitting there waiting to be moved. Nagy (2011) illustrated detailed analysis of the mass transport through membrane layers and its effect on different separation processes, this book provides a comprehensive look at the theoretical and practical aspects of membrane transport properties and functions.

2.5.4 Transport modes on product delivery

Mansidao and Coelho (2014) provide that strategic Inbound Transport Management Practices are the best practices that are used in transportation to ensure that manufacturers optimize cost. Stock and Lambert (2001) added that these methods or techniques found to be the most effective and practical means in achieving transportation objectives such as low costs, timely delivery of transportation related information to the rest of the enterprise and to customers, increase transportation velocity while making optimum use of the firm's resources. Russell and Taylor (2003) supported that a well-run inbound transportation program can reduce costs, improve service, minimize it can drive efficiencies across the entire supply chain. The number of carriers you hire to move your freight, reducing and consolidating the number of carriers or selecting a dedicated freight forwarder that will benefit overall transport logistics, Docherty, Giuliano and Houston (2008). Aberdeen Group (2015) added that using fewer dedicated key

carriers enables you a firm to reduce the complexity of administration requirements, establish relationships and liaisons with supply partners

According to Coyle (2006) there is a need for logistic managers to consider environmental impact when selecting carrier mode. Freight Consolidations and Optimization. For some little to medium measured organizations moving cargo, shipment volumes are not generally adequate to buy cargo in Full Truck Load (FTL) or Full Container Load (FCL) amounts. Not as much as Truck Load (LTL) and Less than Container Load (LCL) shipments can be pooled through inbound or outbound solidification center points or joined into multi-stop truckload shipments. The savings to be realized through freight consolidations are considerable (Gammelgaard and Larson 2001).

2.6 Summary

This chapter showed various literature reviews of various authors concerning the influence of inbound logistics. Major arguments centered on strategic Inbound Transport Management, inventory policies, inventory cost and ware house management. Various researches showed that the best practices ensure manufacturers and steel suppliers to optimize cost and reduce lead times. Firms focused on outbound logistics leaving out inbound logistics. All these are alluded to inbound logistics of Browncast Steel.

CHAPTER THREE

Research Methodology

3.0 Introduction

Research methodology is "the strategy or architectural design by which the researcher maps out an approach to problem-finding or problem-solving" (Smith and Dainty, 1991). Thus Research methodology is the frameworks within facts are placed so that meaning is derived (Schindler and Cooper 2001). Research methodology is the process used to collect information and data for the purpose of making research business decisions, the methodology may include publication research, interviews, surveys and other research techniques and could include both present and historical information.

3.1 Research design

Hair (2002) defined research design as a blueprint that serves as reference showing the appropriateness of how the research is to be undertaken. Research design also refers to a program used to guide the researcher in collecting, analysing and interpreting observed facts and provides the glue that holds the research project together (Yin 2003).

3.1.1 Descriptive research design

Hair et al (2002) defines descriptive design as a research that uses a set of scientific methods and procedures to collect data structures that are used to identify, determine and describe the existing characteristics of a target population. Gay (1983) also defined descriptive research as the process of collecting data in order to test hypothesis and to answer questions concerning the current status of the subjects in the study. Descriptive research design was used in this study. The design is considered appropriate in the study because it describes what is happening at present and the study only reports what is the influence of inbound logistics on company performance at Browncast Steel merchant company. The approach has further allowed the researcher to come up with both qualitative and quantitative. The research design permits the use of measuring instruments like interviews and questionnaires. Descriptive research design provides accurate, statistically reliable data on the influence of inbound logistics on company performance. It also necessitates a reasonably large sample of respondents. The sample of respondents has been a representative of the parent population under study and the standard questionnaire has been used for data collection.

3.1.2 Exploratory design

This is designed to collect and interpret data in an unstructured format using sometimes an informal set of procedures (Hair et al, 2002). This research has been employed to provide a greater understanding of a concept, to crystallise or discover general ideas and understandings connecting to the subject of the study. The research will use exploratory design in facilitating the collection of the other data which is regarded as sensitive in a formal setting. The researcher maximized and made use of informal groups during lunch hour as a preliminary investigation since it involves a minimum expenditure of cost and time. Qualitative data was gathered from different thoughts, opinions and get deeper insights in an informal setting.

3.2 Total population

A Total Population of 100 people has been used in the research which will be drawn from company employees thus the managing director, accountant, marketing executive managers, production manager, warehouse manager, supplies, and Logistics Steel suppliers include Africa steel, steel center, Steel Horizon, Steel Mart, Steel Base, J.mann steel, Longden steel and others.

Table 3.1 Target population

Respondents	Total
Company employees	25
Suppliers	75
Total	100

3.3 Sampling methods and techniques

The sample method involves taking a representative selection of the population and using the data collected as research information. A sample is a “subgroup of a population” (Frey et al. 2000). It has also been described as a representative “taste” of a group (Berinstein 2003). The sample should be “representative in the sense that each sampled unit will represent the characteristics of a known number of units in the population” (Lohr 199). The researcher used probability sampling and the non-probability sampling methods to get unbiased results. The researcher used probability sampling technique in which every unit in the population has a chance of being selected into the sample. Wilson (2006) alluded that using probability method, the researcher can be sure of obtaining information from a relatively representative group of

the population of interest. The probability sampling methods, simple random sampling and stratified sampling method. The researcher will use simple random sampling method which gives the population an equal probability of being selected and will enable the researcher to acquire a fair representation of the participants. This technique is easy to understand and to use and sample results are free from bias. This involved getting the whole target population and then making sure that it is reduced to the required number sample for use. The required population was given a number each and then placed in a box and numbers are picked at random. The selected numbers was used for the research.

However, the researcher also used non-probability sampling involves the probability of any particular subject of the population being chosen which is unknown or next to zero.

Convenience sampling was administered by the researcher since it gives the room to make research at that moment at once. Zikmund (2000) pointed out that convenience sampling involves selecting people who are most conveniently available to the interviewers. The researcher managed to use judgmental sampling. In this technique, units in a sample were selected on the basis of personal judgment or convenience. According to Wilson (2006), judgmental sampling refers to any procedure where a researcher consciously selects a sample that is considered most appropriate for the research study. It is a type of non-probability sampling also known as grab/opportunity or accidental sampling which involves the sample being drawn from that part of the population which is close to hand, which is readily available and convenient.

3.3.1 Sample size

A sample size should be a representative of population being studied. Morgan and Krejcie (1970) developed a sample size model for all kinds of populations. They developed a model that matches the total population with the kind of sample that would represent it fully. The researcher managed to use their model as it would simplify the number of respondents which has been used. Morgan and Krejcie (1970) put forward the need for an efficient method of determining sample size as it gives room for error. The diagram below shows the table for determining sample size.

Table 3.2 Determining sample size

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
 "S" is sample size.

Krejcie, Robert V., Morgan, Daryle W., "Determining Sample Size for Research Activities", Educational and Psychological Measurement, 1970.

Source: Morgan and Krejcie (1970)

Table 3.3 Sample Size

Respondents	Total	Sample size
Company employees	25	24
Suppliers	75	58
	100	82

3.4 Data sources

There are two types of data collection which are primary and secondary data (Blumberg, Cooper & Schindler, 2008). Sources of data include various areas where the researcher has managed to get much needed information which will aid in the research process.

3.4.1 Secondary data

The researcher gathered secondary data from inbound logistics textbooks, company journals, books, Business financial Gazette newspapers, company financial reports and industrial marketing literature publications with information related to the problems under study upon publication. In this research secondary data was used to determine influence of inbound logistics on company performance.

3.4.2 Primary data

This is information or data the researcher finds in the field directly for the purpose they have at hand. In this research, primary data was data the researcher collects through questionnaires, interviews and this data gave direct responses to the objectives at hand. Primary data sources has been used when determining the influence of inbound logistics on company performance. Primary sources were also used since other information require more personal interaction.

3.5 Research instruments

Wilkinson (2006) defined research instruments as measurement tools for example, questionnaires, scales, interview designed to obtain data on the topic of interest from research subjects.

3.5.1 Questionnaires

The questionnaires included closed ended questions depending on the amount of information required in the situation. Structured questionnaires with closed ended questions were given to company employees" shop floor workers and were also administered to steel suppliers. The respondents were given a questionnaire to complete and to reduce pressure on the respondents they were given a day to complete the questionnaire. The researcher used questionnaires since they can be self- administered allowing room for clarity. The responses were gathered in a standardised way, so questionnaires are more objective.

3.5.2 Interviews

Interviews are the most common types of source for collecting information and several types of interviews can be used: structured, semi-structured and unstructured (Blumberg, Cooper, &

Schindler, 2008). Interviews were used as they are less time consuming. They also give more light in areas skipped by the questionnaires. Interviews ensure the attainment of adequate data, as data is given in greater detail and higher degree of openness and co-operation is achieved. The researcher had the opportunity to clarify restate and explain question to ensure that respondents understood them.

3.6 Data collection procedure and Administration

The researcher used a letter of introduction on questionnaires, questionnaires were dropped off, dropped out to the participants and were collected. This was done personally by the researcher and it was done within one week. Some appointments prior to interviews were made to the individuals so as to give them adequate time to prepare as well as to make sure that they will be available when the researcher wants to conduct the interview.

3.7 Validity and reliability of the study

- An empirical triangulation analysis was done in this research thus using a combination of different research methods to mitigate bias and provide valuable insights. For example use of interviews, observations and surveys.
- A large sample size was used of 82 respondents out of 100. This gave a more accurate representation of all.
- Pilot Study was done. Before the final execution of the research and data collection, the researcher conducted a pretesting of the questionnaires and interview questions. A small scale preliminary study was conducted in order to evaluate feasibility, time, cost, adverse events, and effect size (statistical variability) in an attempt to predict an appropriate sample size and improve upon the study design prior to performance of a full-scale.
- Nature of questions to be asked comprised of easy and simple questions

3.8 Ethical considerations

The researcher observed the code of ethics in gathering data of this study. The questionnaires indicated that the respondents were assured of greater anonymity and confidentiality. In research it is important to adhere to ethical norms in research. Norms promote the aims of research, such as knowledge, truth, and avoidance of error. For example, prohibitions against fabricating, falsifying, or misrepresenting research data promote the truth and minimize error. The researcher recorded collected information as it is and did not edit any information.

3.9 Data presentation and analysis

The information gathered was examined and edited by the researcher. Qualitative data was analysed through theoretical information provided. For questionnaires, if there are any blank spaces the researcher inquired and asked if the respondent did not comprehend the question which was being examined. Quantitative information was used to analyse data and then organised and presented on bar graphs and tables.

3.10 Summary

The chapter summarises how the research designed was employed, the sample size used, research instruments adopted to generate responses and how validity and reliability of findings was presented. The next chapter presents data analysis, presentation and discussions of findings

CHAPTER FOUR
DATA ANALYSIS, PRESENTATION AND DISCUSSION OF FINDINGS

4.0 Introduction

The chapter presents and analyses data that were gathered from both questionnaires and interviews and to be presented using tables, charts and graphs to enhance understanding of the data. Analysis was done in both quantitative and qualitative terms through questionnaires and interviews. Summary of findings is presented at the chapter end.

4.1 Response rate

In this research questionnaire distribution was done to the three categories of respondents' namely corporate steel supplier, Browncast steel employees and management. A total of 82 were distributed. Response rates generated are shown on table 4.1

Table 4.1 showing Response Rates

Category of response	Questionnaires distributed	Questionnaires returned	Response Rate
Steel suppliers	58	55	95%
Employees	24	19	79%
Total	82	74	90%
Average response rate			87%

As shown on table 4.1 a high response rate averaging of 87% was generated. The whole response rates from all the respondents was ranging from 79% to 95%.The high response rate from the questionnaires can be attributed to the fact that research participants were available at both at the company during time of the research and were really interested in the topic under investigation.

4.2 Analysis of Demographic characteristics of the research participants.

This research was interested in the demographic characteristic of the research participants in terms of how long the steel suppliers have been doing business with Browncast steel and how

often does Browncast steel places order from your company. These characteristics were considered important in terms of validating the responses of quality of data generated.

4.2.1 Years of doing business with Browncast steel

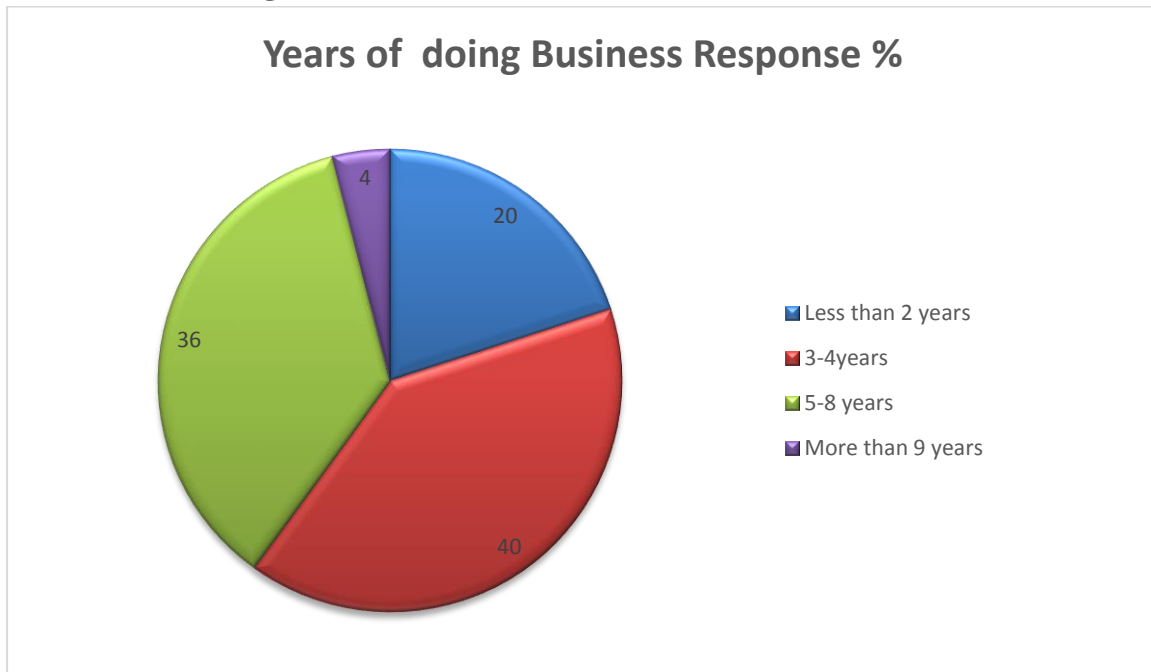


Fig 4.1 Pie chart showing years of doing business with Browncast steel.

As shown in the fig 4.1 majority of the respondents fall in the 3 to 4 years category with 40% and 5 to 8 years category with 36% of doing business with Browncast steel. This has been attributed to improved engagement and constant management and communication of the steel suppliers. Since Browncast steel is in operation for more than 10 years it means most companies traded with Browncast steel in the period of less than 2 years are new players in the steel industry. An extreme case of 4% of steel suppliers doing business with the company for more than 9 years shows that it only relies with them in times of need for replenishing stock. These results from questionnaires are also in agreement with the views expressed from the interviews where majority of the managers mentioned poor communication and in adequate safe keep of supplier data information. New employees contributed to extinction of other suppliers as they could not do follow ups to old steel suppliers.

4.2.2 Frequency of order replenishment

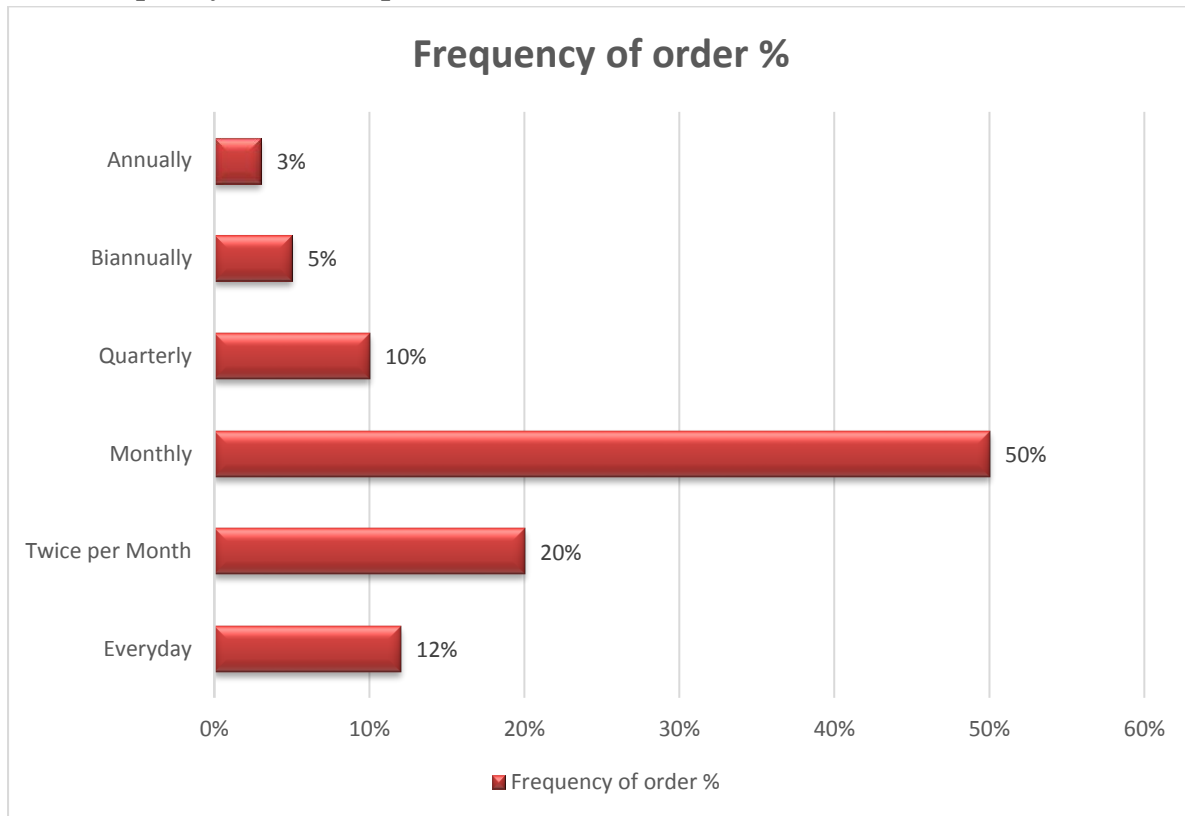


Fig 4.2 Line graph showing frequency of ordering inventory

From the questionnaires distributed as shown in fig 4.2, 50% of the respondents strongly illustrate that Browncast steel replenish their orders monthly. The company also places orders twice a month and every day with a rate of 20% and 12% respectively to some steel suppliers, this was explained by one of the managers interviewed clarified the rise in demand of steel products in the country that has caused the company to have high monthly orders to avoid stock outs though the rate is lower than the monthly order. The margin of 30% shows that the company places low orders to cater for emergency orders. On the other hand, the 3% and 5% representing orders which are done annually and biannually respectively shows responses of companies receiving lowest orders from Browncast steel. They expressed the view that Browncast steel makes payments on an accrual basis so they limit orders to the company. This has left the company struggling to get specialised steel from these companies resulting in lost sales. However one of the managers argued that companies they trade with annually have been left due to increasing steel supplier competition.

4.3 Analysis of response of Influence of Logistics Information management on lead time

The research sought to assess the Influence of Logistics Information management on lead time on Browncast steel. Responses gathered are presented on fig 4.3

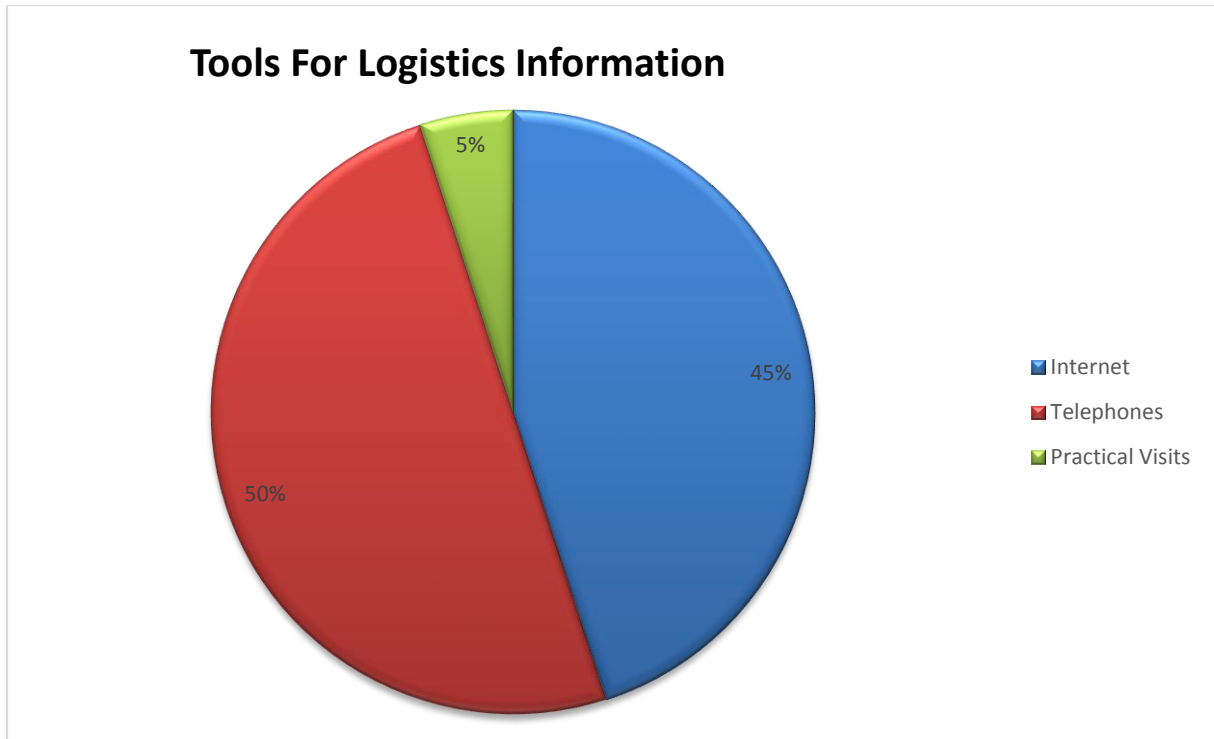


Fig 4.3 showing Tools of Logistics information management.

As shown in fig 4.3 45% positive effect of the logistics steel suppliers are in total agreement of using internet facilities for placing orders, 50% were however responded to the use of telephones in making orders since its very cheap n affordable . On others respondents specified practical visits made by Browncast steel to make orders. Of the 57% respondents who use internet shows that adoption of internet facilities enable quick movement of information between companies. The use of emails, social networks like WhatsApp and Facebook. During the interview the researcher managed to quote one managers in disagreement saying “the internet has disrupted our ordering time due to network interruptions and severe power cuts delivering our orders late”. The method is very cheap, less time consuming and manages large amounts of data to be sent. Nevertheless, 38% responded to use of telephones when making orders. Some companies are constantly switch locations many times leading to a 5% use of practical visits for ordering. Late adoption of faster technologies results in higher costs of fuel and stationary expenses. They are also skeptical of losing company data through cybercrimes by hacking their company data.

4.4 Analysis of effects of inventory management on reducing stock outs

The study embarks on assessing the effects of inventory management policy on reducing stock outs at the company. Therefore, the researcher managed to get responses presented on Table 4.1

Table 4.2 showing inventory management policies responses

Category of Policy	Percentage of Respondents
Inventory Consignment	31%
Inventory Speculation	30%
Inventory Postponement	39%
Other Policies	0
Total	100%

As shown on the table above, only 39% of the respondents maximize on inventory postponement policy in reducing stock outs, were 30% and 31% are alluded to inventory speculation and inventory consignment respectively show high usage of these two inventory policies. Of the lowest 30% which gave a negative effect on inventory speculation stock outs are reduced by physically holding stock in storage facilities before the demand or usage is known. Same applies to inventory consignment there is physical holding of the stock in the warehouse. One of the managers during the interview supported the idea of this policy as it enable the company to increase profitability if burning demand appears. Contrary to inventory speculation and consignment, fewer steel suppliers use inventory postponement with as there will be no physical possession of inventory items at all unless later on until demand or usage is known. However, during the interview one manager was quoted saying” inventory postponement risks losing sales through unable to timely respond to demand and incur transportation costs regularly” which supports findings consistent with (Xu et al 1994).

4.5 An Analysis of the Influence of transportation system on product delivery

The research sought to assess the influence of transport system on product delivery. Responses collected are presented on fig 4.4

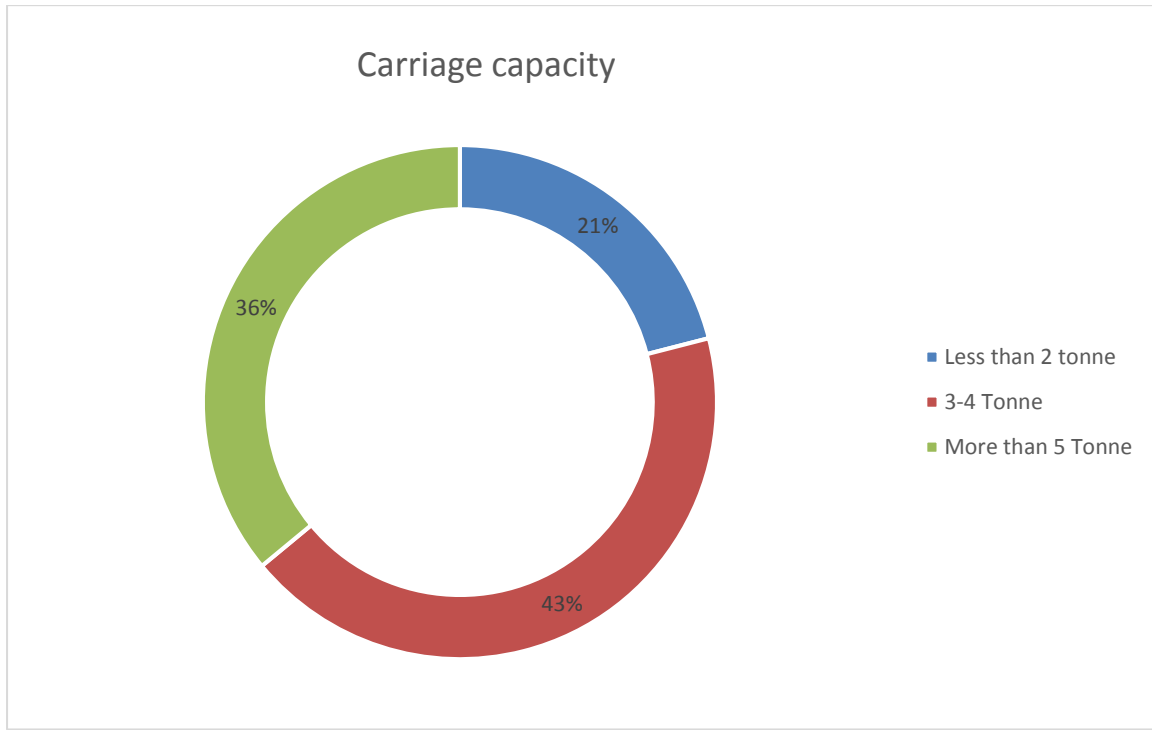


Fig 4.4 illustrating influence of transportation system on product delivery.

As shown in fig 4.4, 43% of the respondents strongly adhere to use 3 to 4 tonnes sizes of their delivery trucks, 36% use more than 5 tonnes trucks which shows a negative influence and less than 2 tonne trucks carry a weight of 21%. Of the 43% delivery of steel is done by 3 to 4 tonne trucks which cater and work well for average small loads of steel. This is also supported by the 21% of less than 2 tonne truck which serve the same purpose of carrying small loads. During the interview two of the managers were in agreement to the use of averagely small tonne trucks they expressed that ordering small inventory it's viable to use equivalent tonne trucks to cut on costs. Majority of the managers interviewed expressed steel as a product which need more space inside the truck. This supported the 36% of the ones which carry more than 5 tonnes. "Bigger loads are carried at once rather than one load being carried at different intervals" one of the managers argues in support of the carrying capacity of more than 5 tonne trucks.

4.6 An analysis of the Influence of inventory costs on company profitability.

Research on the study sought to assess the influence of inventory costs on company profitability. Responses collected are presented by the researcher on fig 4.5 below

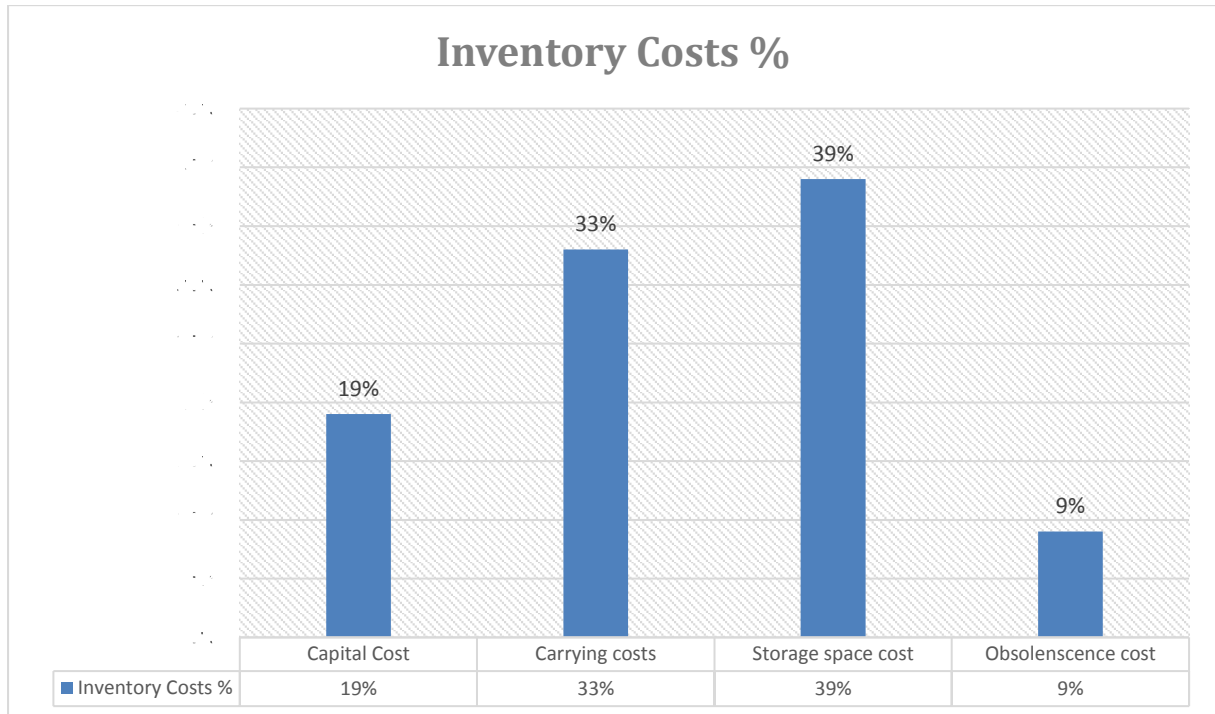


Fig 4.5 showing the influence of inventory costs

The graph above fig 4.5, 39% of the respondents supported that storage space inside warehouses consumes much cost on the expenses. Majority of managers interviewed mentioned the use of bigger warehouses not utilizing its full capacity thereby having unused space not fully maximized. One of the managers explained further that fixed costs remain the same and output declining on renting costs. The researcher managed to get 33% responses carrying costs of steel. Bowersox & Closs (2004) argues that these costs are associated with holding a quantity of goods for some time. Obsolescence and capital cost carry lower responses of 9% and 19% respectively as the latter carries aspects of maintenance costs. One of the managers quoted saying "steel products obsolescence occur after a very long period of time and change in structural engineering work", thus it takes time for steel to become obsolete.

4.7 Chapter Summary

The chapter is analysed data in both quantitative and qualitative terms. The following results were produced.

- Results showed that majority of the respondents are on agreement that storage space cost influence of inventory costs on company profitability as this is supported by the 39% against the lowest response of 9% from obsolescence cost.
- Results also showed that 43% of the respondents strongly adhere to use 3 to 4 tonnes sizes of their delivery trucks as they determine the influence of transport which are averagely small compared to 36% of the respondents which supported carry of more than 5 tonnes.
- 45% of the logistics steel suppliers are in total agreement of using internet facilities for placing orders as this influences logistical information management against a 5% who use practical visits for ordering inventory.
- Results showed that majority of the respondents are on agreement that 39% respondents maximize inventory postponement policy, were 30% and 31% are alluded to inventory speculation and inventory consignment respectively.

The next chapter presents summary, conclusions and recommendations

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Summary

The research study is concerned about inbound logistics on company performance. The researcher aimed at determining the influence of Logistics Information management on lead time, assessment on the effects of inventory management policies on reducing stock outs, influence of transport system should be used on product delivery and inventory costs that are incurred and affects profitability of the company. The research was carried out at Browncast steel merchant company a member of steel merchant in Zimbabwe Steel Industry.

Literature review was done and major arguments presented on major issues on the influence of inventory costs shows that some cost of capital tied up should be used for other purposes. Other arguments provided logistics information to activities relating to receiving the right product in right quantity, in the right place quantity and quality and this at the right cost. Information, materials, inventory should flow from the steel supplier in a less cost and faster way.

The research relied mainly on descriptive research design as it helps to determine and describe existing characteristics of target population. This design was aided by exploratory design to further interpret data in an unstructured format. A sample size of 92 respondents was used 24 employees and 58 steel suppliers and 10 from management. An average questionnaire response rate of 87% was achieved. Interviews were also administered to 10 management personnel. The researcher used both probability and non-probability sampling have been used to achieve unbiased results. Both primary and secondary data was used in the research from inbound logistics textbooks, interviews, questionnaires, company financial reports enabling validity of the research.

The study produced the following findings that majority of the respondents are on agreement that storage space cost influence of inventory costs on company profitability as this is supported by the 39% against the lowest response of 9% from obsolescence cost. Results also showed that 43% of the respondents strongly adhere to use 3 to 4 tonnes sizes of their delivery trucks as they determine the influence of transport which are averagely small compared to 36% of the respondents which supported carry of more than 5 tonnes. 57% of the logistics steel suppliers are in total agreement of using internet facilities for placing orders as this influences logistical information management against a 5% who use practical visits for ordering inventory. Results

showed that majority of the respondents are on agreement that 39% respondents maximize inventory postponement policy, were 30% and 31% are alluded to inventory speculation and inventory consignment respectively.

5.1 Conclusions

The research results obtained have made and allowed the researcher to make the following conclusions

5.1.1 Influence of information technology on lead time

Given that 45% of the logistics steel suppliers are in total agreement of using internet facilities for placing orders, 50% were however responded to the use of telephones in making orders. On others respondents 5% specified practical visits made by Browncast steel to make orders. Of the 45% respondents who use internet the researcher concluded that the adoption of internet facilities enable quick movement of information between companies through the use of emails, social networks like WhatsApp and Facebook. However the internet may be disrupted and affects ordering time due to network interruptions and severe power cuts making orders send late. The method is very cheap, less time consuming and manages large amounts of data to be sent. Nevertheless, 50% responded to use of telephones when making orders since it is an old convectional way of communication. Some companies are constantly switch locations many times leading to a 5% of the need to engage practical visits to the company. Slow adoption of latest cheap, fast technologies enabling large data storage has made lead times to occur when doing orders.

5.1.2 Effects of inventory management policies on reducing stock outs

Based on the findings only 39% of the respondents maximize on inventory postponement policy in reducing stock outs, were 30% and 31% are alluded to inventory speculation and inventory consignment respectively show high usage of these two inventory policies. Therefore 30% on inventory speculation stock outs are reduced by physically holding stock in storage facilities before the demand or usage is known. Same applies to inventory consignment there is physical holding of the stock in the warehouse. Therefore if there is a surge in demand this policy of inventory postponement will cause delays in steel supplying. Contrary to inventory postponement is inventory speculation and consignment, they both make the firm to hold physical stock in the warehouse.

5.1.3 Influence of transportation system on product delivery

43% of the respondents strongly adhere to use 3 to 4 tonnes sizes of their delivery trucks, 36% use more than 5 tonnes trucks and less than 2 tonne trucks carry a weight of 21%. Of the 43% delivery of steel is done by 3 to 4 tonne trucks which cater and work well for average small loads of steel. This is also supported by the 21% of less than 2 tonne truck which serve the same purpose of carrying small loads. Averagely small tonne trucks become costly when they are used to order big inventory from steel suppliers, it's only viable to use equivalent small tonne trucks equivalent to order given to cut on costs. If the transport system is not carefully managed steel as a product which need more space inside the truck hence small truck for bigger structural schedules may cause accidents and prawn to police. This supported the 36% of the ones which carry more than 5 tonnes. "Bigger loads are carried at once rather than one load being carried at different intervals.

5.1.4 Influence of inventory costs on company profitability

Based on 39% of the respondents who supported that storage space inside warehouses consumes much cost on the expenses. Use of bigger warehouses and not utilizing its full capacity, thereby having unused space not fully maximized is very costly to Browncast steel. One of the managers explained further that fixed costs remain the same and output declining on renting costs. The researcher managed to get 33% responses carrying costs of steel. Costs associated with holding a quantity of goods for some time continue increasing. Obsolescence and capital cost carry lower responses of 9% and 19% respectively as the latter carries aspects of maintenance costs and to add on, steel products' obsolescence occur after a very long period of time and change in structural engineering work, thus it takes time for steel to become obsolete.

5.2 Recommendations

Conclusions reached have motivated the following recommendations

- Browncast steel merchant company may adopt the application of using internet when placing orders to steel suppliers since it enables quick movement of information. Telephones calls may be used as complimentary to make follow ups on given orders. Constant suppliers' locational information should be updated regularly to avoid practical visits since they are costly.

- The company may change its inventory management policy from inventory postponement to inventory speculation combining it with inventory consignment as some customer would want to see physical stock the company inside the warehouse. Browncast steel can also use Just in time control inventory system to avoid stock outs.
- Nature of the required order may be known in advance enabling quick planning of transport system to use especially the tonnage. For quicker deliveries to the company, collaborative transport may be used thus hiring transport agencies complimented by use of company vehicles.
- Unutilized storage space may be rented out in order spread costs to cost centers. Steel in demand should be the one readily available in stock to overcome carrying costs and obsolescence of stock.

5.3 Areas for further research

The company through its marketing department should carry out a similar research at an industrial level so as to get extensive results on influence of inbound logistics. This is because the researcher only focused on Browncast steel only which is not a representative of the overall industry population.

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APPENDICES

Appendix 1: Interview guide for management

1. How long have you been working for Browncast steel and what position do you hold at the company?
 - Influence of Logistics Information management on lead time
2. How do you place your orders and payments?
3. Do you have delivery problems if any specify?
 - effects of inventory management on reducing stock outs
4. What inventory policy do you use and do you encounter any problems?
5. Do you think your stock control system has contribution to stock outs?
 - influence of transportation system on product delivery to the firm
6. Do you think trucks used to deliver supplies to your company are efficient, explain?
 - influence of inventory costs on company profitability
7. What inventory costs do you incur and what efforts do you make to reduce inventory costs?

Appendix 2: Questionnaire for Steel suppliers

I am Omega Nyereyemhuka a student at Midlands State University undertaking Bachelor of Commerce Marketing Management Honours Degree. I am carrying out a research entitled, “The Influence of Inbound logistics on company performance of Browncast Steel Merchants”. I kindly ask you to participate in the research by answering questions with reliable and up to date information. The answers are for academic purposes only. Your contributions will be highly appreciated.

Background information

1. How long have you been doing business with the company? (*tick where appropriate*)

- | | | | |
|-----|-------------------|--------------------------|---|
| 1.1 | Less than 2 years | <input type="checkbox"/> | 1 |
| 1.2 | 3-4years | <input type="checkbox"/> | 2 |
| 1.3 | 5-8 years | <input type="checkbox"/> | 3 |
| 1.4 | More than 9 years | <input type="checkbox"/> | 4 |

2. How often does Browncast steel places order from your company?(*tick where appropriate*)

- | | | | |
|-----|-----------------|--------------------------|---|
| 2.1 | Annually | <input type="checkbox"/> | 1 |
| 2.2 | Biannually | <input type="checkbox"/> | 2 |
| 2.3 | Quarterly | <input type="checkbox"/> | 3 |
| 2.4 | Monthly | <input type="checkbox"/> | 4 |
| 2.5 | Twice per month | <input type="checkbox"/> | 5 |
| 2.6 | Everyday | <input type="checkbox"/> | 6 |

3. Do you give first preference to Browncast Steel when supplying steel?(*tick where appropriate*)

3.1 Yes 1

3.2 No 2

- Influence of Logistics Information management on lead time

4. How long does it take for your company to transfer the required order?(*tick where appropriate*)

4.1 Less than one day 1

4.2 One day 2

4.3 Two days 3

4.4 More than two days 4

5. Do you give the answers to order status inquiries?

5.1 Strongly agree 1	5.2 Agree 2	5.3 Not sure 3	5.4 Disagree 4	5.5 Strongly disagree 5

6. Which of the following information technology tools do you use in disseminating information for orders?(*tick where appropriate*)

6.1 Internet 1

6.2 Telephones 2

6.3 Other specify 3

- effects of inventory management on reducing stock outs

7. Which of the following describes the status of your the storage facility (*Tick Where Appropriate*)

- 7.1 Owned 1
- 7.2 Leased 2
- 7.3 Rented 3
- 7.4 Others specify 4

8. Which of the following inventory policies do you use?

- 8.1 Inventory speculation 1
- 8.2 Inventory postponement 2
- 8.3 Inventory consignment 3
- 8.4 Others specify 4

9. Does the storage facility status sustainable in fulfilling your operations?

5.1 Strongly agree 1	5.2 Agree 2	5.3 Not sure 3	5.4 Disagree 4	5.5 Strongly disagree 5

- Influence of transportation system on product delivery to Browncast steel.

10. Which of the following type of vehicle do you use for deliveries to the company? (*tick where appropriate*)

- 10.1 Less than 2 tonne trucks 1
- 10.2 3-4 tonne trucks 2

10.3 More than 5tonnes trucks 3

11. Do you contract out other delivery agencies to deliver the steel orders? (*Tick where appropriate*)

11.1 Yes 1

11.2 No 2

12. Which methods do you use to handle and load the Consignment?

12.1 Specialized Machinery 1

12.2 Manual Labour 2

12.3 Others specify 3

- Influence of inventory costs on company profitability

13. Which form of payment does the company do? (*Tick where appropriate*)

13.1 Cash 1

13.2 Transfers 2

13.3 Credits 3

13.4 On account 4

14. Are your payment terms negotiable? (*Tick where appropriate*)

14.1 Yes 1

14.2 No 2

15. Which of the following inventory costs do you incur most? (*Tick where appropriate*)

15.1 Capital costs 1

- 15.2 Carrying costs 2
- 15.3 Storage space cost 3
- 15.4 Obsolescence cost 4
- 15.5 Other specify 5

THANK YOU FOR YOUR TIME AND SUPPORT!!!

Appendix 3: Questionnaire for Employees

I am Omega Nyereyemhuka a student at Midlands State University undertaking Bachelor of Commerce Marketing Management Honours Degree. I am carrying out a research entitled, “The Influence of Inbound logistics on company performance of Browncast Steel Merchants”. I kindly ask you to participate in the research by answering questions with reliable and up to date information. The answers are for academic purposes only. Your contributions will be highly appreciated.

Background information

1 How long have you been working at the company? (*Tick where appropriate*)

- | | | | |
|-----|-------------------|--------------------------|---|
| 1.1 | Less than 2 years | <input type="checkbox"/> | 1 |
| 1.2 | 3-4years | <input type="checkbox"/> | 2 |
| 1.3 | 5-8 years | <input type="checkbox"/> | 3 |
| 1.4 | More than 9 years | <input type="checkbox"/> | 4 |

2 How often does Browncast steel places order from Suppliers? (*tick where appropriate*)

- | | | | |
|-----|-----------------|--------------------------|---|
| 2.1 | Annually | <input type="checkbox"/> | 1 |
| 2.2 | Biannually | <input type="checkbox"/> | 2 |
| 2.3 | Quarterly | <input type="checkbox"/> | 3 |
| 2.4 | Monthly | <input type="checkbox"/> | 4 |
| 2.5 | Twice per month | <input type="checkbox"/> | 5 |
| 2.6 | Everyday | <input type="checkbox"/> | 6 |

3. Are you given first preference when buying steel from suppliers’ steel? (*Tick where appropriate*)

3.1 Yes 1

3.2 No 2

- Influence of Logistics Information management on lead time

4. How long does it take for your company to get the required order?(*tick where appropriate*)

4.1 Less than one day 1

4.2 One day 2

4.3 Two days 3

4.4 More than two days 4

5. Do you do order status inquiries?

5.1 Strongly agree 1	5.2 Agree 2	5.3 Not sure 3	5.4 Disagree 4	5.5 Strongly disagree 5

6. Which of the following information technology tools do you use in disseminating information

for orders? (*Tick where appropriate*)

6.1 Internet 1

6.2 Telephones 2

6.3 Other specify 3

- effects of inventory management on reducing stock outs

7. Which of the following describes the status of your the storage facility (*Tick Where Appropriate*)

- 7.1 Owned 1
- 7.2 Leased 2
- 7.3 Rented 3
- 7.4 Others specify 4

8. Which of the following inventory policies do you use?

- 8.1 Inventory speculation 1
- 8.2 Inventory postponement 2
- 8.3 Inventory consignment 3
- 8.4 Others specify 4

9. Does the storage facility status sustainable in fulfilling your operations?

5.1 Strongly agree 1	5.2 Agree 2	5.3 Not sure 3	5.4 Disagree 4	5.5 Strongly disagree 5

- Influence of transportation system on product delivery to Browncast steel.

10. Which of the following type of vehicle do you use for deliveries to the company? (*tick where appropriate*)

10.1 Less than 2 tonne trucks 1

10.2 3-4 tonne trucks 2

10.3 More than 5tonnes trucks 3

11. Do you contract out other delivery agencies to deliver the steel orders? (*Tick where appropriate*)

11.3 Yes 1

11.4 No 2

12. Which methods do you use to handle and load the Consignment?

12.1 Specialized Machinery 1

12.2 Manual Labour 2

12.3 Others specify 3

- Influence of inventory costs on company profitability

13. Which form of payment does the company do? (*Tick where appropriate*)

13.1 Cash 1

13.2 Transfers 2

13.3 Credits 3

13.5 On account 4

14. Are your payment terms negotiable? (*Tick where appropriate*)

14.1 Yes 1

4.5 No 2

15. Which of the following inventory costs do you incur most? (*Tick where appropriate*)

15.1 Capital costs 1

15.2 Carrying costs 2

15.3 Storage space cost 3

15.4 Obsolescence cost 4

15.5 Other specify 5

THANK YOU FOR YOUR TIME AND SUPPORT!