THE EFFECT OF LOGISTICS MANAGEMENT ON THE PERFORMANCE OF GARMENT FACTORIES: THE CASE OF BOLE LEMI INDUSTRIAL PARK

BY

MERRAN WONDUANTE

A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER'S OF ART IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

ADVISOR

FESSEHA AFEWORK (ASST. PROF.)

Addis Ababa, Ethiopia
June 2019

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

This is to Certify that the thesis prepared by *Merran Wonduante Mulat*, entitled: "*The Effect of Logistics Management on the Performance of Garment Factories: The Case of Bole Lemi Industry Park*" submitted in partial fulfillment of the requirements for the degree of Master of Arts in *Logistics and Supply Chain Management* complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Advisor	Signature	Date
Busha Temesgen (Ph.D.)	_____	_____
Internal Examiner	Signature	Date
Biruk Solomon (Ph.D.)	_____	_____
External Examiner	Signature	Date
_____	_____	_____
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DECLARATION

I, the undersigned, declare that this thesis entitled "The Effect of Logistics Management on the Performance of Garment Factories: The Case of Bole Lemi Industry Park" is my original work and has not been presented for degree requirement in any other university, and all the sources used to support this particular study have been appropriately acknowledged.

Name: Merran Wonduante Mulat

Signature: _____

Date: _____

This thesis has been submitted for examination by my approval as a university advisor.

Name: Fesseha Afework (Asst. Prof.)

Signature: _____

Date: _____

Statement of Certification

This is to certify that Merran Wonduante Mulat has carried out this research work on the topic entitled, "The Effect of Logistics Management on the Performance of Garment Factories: The Case of Bole Lemi Industry Park" for the partial fulfillment of Master of Arts in Logistics and Supply Chain Management at Addis Ababa University School of Commerce. This study is an original work and not submitted earlier for any degree either at this University or any other University and is suitable for submission of Master Degree in Logistic and Supply Management

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Advisor: Fesseha Afework (Asst. Prof.)

ACKNOWLEDGEMENTS

First and foremost, praises and thanks to the God, the Almighty, for His showers of blessings throughout my research work to complete the research successfully.

I would like to express my deep and sincere gratitude to my research advisor Fesseha Afework (Asst. Prof.) for providing me invaluable guidance throughout this research.

I am very much thankful to my wife Yeshialem (mimi) and my sons Nolawi and Lioul for their love, understanding, prayers and continuing support to complete this research work.

Finally, my thanks go to all employees working in Shipping and Logistics Department of each factories at Bole Lemi Industry Park for their participation in this research as respondents of the questionnaire. Your inputs have supported me to complete the research work.

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List of Abbreviations and Acronyms

AEO	Autorized Economic Operators
ANOVA	ANalysis Of VAriance
BLIP	Bole Lemi Industrial Park
EDRI	Ethiopian Development Research Institute
FDI	Foreign Direct Investment
GTP	Growth and Transformation Plan
ICT	Information and Communication Technology
IPDC	Industrial Park Development Corporation
IS	Information System
IT	Information Technology
LPI	Logistics Performance Index
NIP	Net Inventory Position
NIST	National Institute of Standards and Technology
NS	Net Stock
OHS	On-Hand Stock
ROI	Return On Investment
SPSS	Statistical Package for Social Science
UNIDO	United Nations Industrial Developement Organization
VIF	Variance Inflation Factor

Abstract

Not surprisingly, an effective logistics sector is now recognized almost everywhere as one of the core enablers of development. The role of logistics in the global economy is better recognized today than it was 10 years ago. Good logistics services reduce the cost of trade. Logistics performance is about how efficiently supply chains connect firms to domestic and international opportunities. The purpose of this thesis was to examine the effect of logistics management on the performance of garment factories in Bole Lemi Industy Park. The study covers all the manufacturing factories in the park. The study used deductive approach and quantitative design to evaluate the magnitude, direction and significance of the various logistics management factors on performance. In the study both primary and secondary data were used. The primary data were collected using a survey method and applying questionnaire as a tool. 61 questionnaires were distributed and a response of 54 were analyzed using correlation and regression methods on SPSS version 20.0. Accordingly, the findings of the analysis confirmed the positive correlation between the independent variables (transport management, inventory management, order processing management and information flow management) and the dependent variable of the study (performance). On the other hand, the regression analysis outcome showed that 59.4% of the variance on performance is accounted for independent variables. Based on the findings of the study, the researcher recommends the factories to work on transport management system, to monitory the inventory level, to have accurate order fulfilment process to shortened order lead time and also to have smooth information flow along all logistics functions.

Key Words: Logistics management, transportation management, inventory management, order processing management, information flow management, performance

CHAPTER ONE

INTRODUCTION

This chapter deals with background of the study, statement of the problem, objectives of the study, significance of the study, delimitation of the study, definition of key terms and organization of the study.

1.1. Background

1.1.1. Background of the study

The study focuses on the impact of logistics management on the performance of garment factories, with a major emphasis on companies located at Bole Lemi Industry Park.

Mak and Parooj (1998) stated that in today's fast paced economic climate, many firms increasingly realize that globalization has made the world smaller and more competitive. A change in one place impacts another quickly. Also, customers seek products that can respond well to their specific needs. As such, firms are now looking at securing cost, quality, technological and other competitive advantages as a strategy to pursue in a globally competitive environment. One currently popular competitive advantage for firms is to promote and provide value to its customers by performing its supply chain activities more efficiently than competition. As a result, one area of increasing focus is on the logistical management of a firm's set of operations.

Martin (2011) stated that logistics is the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory (and the related information flows) through the organization and its marketing channels in such a way that current and future profitability are maximized through the cost-effective fulfilment of orders. Logistics management,

from this total systems viewpoint, is the means whereby the needs of customers are satisfied through the co-ordination of the materials and information flow that extend from the marketplace, through the firm and its operations and beyond that to suppliers.

Effective logistics management provides a major source of competitive advantage if it can control cost and enhance service differentiation. This unique role will help firms become both cost and value leaders. Thus, good logistics management is increasingly recognized as the key enabler, which allows a company to gain and maintain its competitive advantage and ensure maximum customer satisfaction. Truly, logistics is the last frontier in business competition (Martin, 2011).

Logistics management had received much attention over the past decade from practitioners and government (Varanya, Peraphon & Achara, 2012). Realizing the importance of sustainability in logistics management was critical for competitive advantage because operational performance had a positive impact on company's financial performance. Since logistics management consisted of many activities including customer service, orders processing, inventory management, transportation, storage, packaging, demand and forecasting, production planning, purchasing and procurement, facility location, and distribution that were supported by enormous information flow every organization wanted to impress the efficiency on its formation. This could only be achieved when, logistics performance is managed in order to ensure sustainability of the firm (Varanya et al., 2012).

The Logistics Performance Index (LPI): Overall (1=low to 5=high) of Ethiopian was last reported at 2.38 and ranked 126 in 2016, according to a World Bank report. On the report Germany leads LPI score by 4.23 and Luxembourg followed by 4.22. On the other hand, Equatorial Guinea, Mauritania, Somalia, Haiti and Syrian Arab Republic listed the bottom five countries.

Logistics Performance Index overall score reflected perceptions of a country's logistics based on efficiency of customs clearance process, quality of trade and transport related infrastructure, ease of arranging competitively priced shipments, quality of logistics services, ability to track and trace consignments, and frequency with which shipments reach the consignee within the scheduled time (World Bank, 2016) and also logistics performance is strongly correlated with the quality of service (World Bank, 2018).

According to Kabak et al. (2018) when the export level is becoming high, the logistics performance of countries is more than 3.4. This shows that in order to increase export level of a country to a higher level, the performance of a country in logistics indicators must also be higher. In order to increase the export level, a country has to focus on customs, logistics quality and competence, tracking and tracing and timeliness.

In line with the above and according to National Planning Commission (2016) one of the strategic directions and objective of The Federal Government of Ethiopian Growth and Transformation Plan II (GTP II) is to increase the logistics performance index from 2.59 to 3.07 or to improve its rank from 104th to 57th and to reduce the import and export transit time by 50%.

During the GTP II period, the transport and logistics sector is set to bring about fundamental changes. In view of the required high capacity in the transport infrastructure, it needs to be guided by a clear vision and integrated transport strategy or master plan.

Focus will also be given to maritime transport and logistics services given its key role in expanding manufacturing industry and export development. To realize its mission of creating modern information system, comprehensive, consistent, timely and accessible information will be provided to service providers and customers about the end to end shipping, logistics and support services (National Planning Commission, 2016).

As Assefa et al. (2013) stated the establishment of new export-oriented industrial parks in which all firms benefit from the Authorized Economic Operators (AEO) procedures for imports and exports. Additionally, as noted, Ethiopia's customs service has plans to significantly improve trade logistics by implementing the AEO system in export-oriented industrial parks. At the same time, competitive trade logistics is one of the factors to a country's ability to plug into global value chains.

According to Ethiopia Business Landscape Survey 2012 interviews (Precise Consult/BKP Development/The Africa Group, 2012), firms are successfully functioning in the current formal Ethiopian policy setting, and confirm that planned trade logistics improvements, including improved rail and road corridors and the application of the AEO concept by customs, will further facilitate the conduct of time-sensitive business in Ethiopia (Assefa et al., 2013).

The volume of goods traded between two countries is largely influenced by the availability and the quality of logistics services (Azmat, 2017). Thus, logistics play the positive role in increasing trade.

1.1.2. Bole Lemi Industry Park

Bole Lemi is Ethiopia's first industrial park developed by Industrial Park Development Corporation (IPDC). An Export Processing Park, upon completion it will be a "green" park, with more than 30 hectares of green areas being currently developed. Bole Lemi Phase 1 (156 hectares) has started operations in 2014, with all pre-erected factories already rented-out to 11 different corporations. Bole Lemi Phase 2 (186 hectares) is currently being developed in collaboration with the World Bank Group, and should include both serviced land (from beginning of 2016) and pre-erected factory sheds (from 4th quarter of 2016). In the future, a residential and recreational area adjacent to the site will also be developed.

It's designed to help companies such as textile manufacturers produce and sell value-added goods and boost revenue from exports. The government is building roads, electricity and telecommunications infrastructure at the site and it will offer tax incentives for industries based at the park (All Africa, 2018).

As reported on UNIDO (2018) there are eleven factories operating inside this park. Among these Shints ETP Garment pls has 5 sheds, Jay Jay Textile took three sheds, other three, Ashton Apparel Manufacturing plc, George Shoe Ethiopia Plc and Arvind Lifestyle Apparel Manufacturing Plc has two and the remaining six, namely, New Wide Garment (Ethiopian Branch), C & H Garments Plc, Lyu Shoutao Factory Plc, Vestis Garment Production Plc, KEI Industrial Engineering Consultancy Plc and Evertop Manufacturing pls are under operation with one shed. Four of the above factories are Indian base, three from China, two from South Korea and the remaining two are from Taiwan.

The investment activities are mainly focused on garments. However, there are factories such as Goerge Shoe Ethiopia plc working on leather shoes and Lyu Shoutao Factory producing leather products including gloves (UNIDO, 2018)

1.2. Statement of the Problem

The subject case has been studied by different researchers in case of service sector such as Muluneh (2017), Abreham (2017) and Godana (2017). Moreover, Muzeyin (2017) also undertook a research which is very similar to the subject under study but the study was also focused on service industry.

According to the Ethiopian Development Research Institute (EDRI), without improving efficiency in logistics, attracting and retaining FDI would have been difficult. Furthermore, logistics costs

related with transportation, distribution and communication are high, adding further difficulties for imports of raw materials and accessories and export of finished products (EDRI, 2017).

A report was carried out by United Nations Industrial Development Organization (UNIDO), department of Policy, Research and Statistics and found that focusing on the manufacturing sector, Ethiopia is prioritizing FDI in specific sectors: textile and apparel, leather and leather products, agro-processing, and pharmaceuticals and chemicals. The imperative is to build on the country's agricultural foundations by moving toward new tradable activities in manufacturing that absorb large numbers of young and semi-skilled workers (UNIDO, 2018).

UNIDO (2018) also stated that the textile industry is highly sensitive to cost and lead times of imports and exports. An estimated 50 to 60 per cent of the value of Ethiopia's garment exports consists of imported raw materials and components. Among the constraints of Ethiopian trade logistics: inadequate logistics service capacity, poor coordination, and lengthy customs and inland dry port clearance. Customs processes are unpredictable and that requirements and regulations are not clear.

The research report on EDRI (2018) Manufacturing Competitiveness in Ethiopia: Developments, Challenges and Prospects also confirmed the study undertaken by UNIDO in that there are various questions that relate to challenges, opportunities and possibilities with which the Ethiopian manufacturing sector could be defined and made able to succeed and among the argument from the government officials regarding challenges within the sector are lack of capacity within the sector, inefficiencies in logistics and other service provision, price and demand volatility, lack of honest and constructive dialogue between government and private sector and small industry population are the main challenges towards competitiveness in the global market.

Besides, both sets of the key informants, association leaders and government officials, underscored that both foreign and domestic owned firms usually face similar challenges in relation to inefficient public services (such as frequent power cut, poor logistics services and inefficient tax administration) (EDRI, 2018).

In his study of Ethiopia's Manufacturing Industry Opportunities, Challenges and Way Forward: A Sectoral Overview (Eshetie, 2018) stated that one of the challenges of Ethiopian manufacturing sector was the high logistics and transportation cost.

Other study on Ethiopian Investment Prospect: A Sectorial Review by Assefa et al. (2013) indicates that in the apparel sector, the main constraints are poor trade logistics and access to trade finance. The review also mentioned proven solutions as a green channel for apparel at customs, providing free and immediate access to foreign exchange, reducing the cost of letters of credit, and setting up an industrial zone close to the main port of export (Djibouti). Competitiveness could be reinforced by developing a textiles industry based on its high-quality cotton and cheap hydro-energy. Potential impact: while Ethiopia's apparel sector currently generates only about USD8 million in exports and 9,000 jobs, Vietnam has achieved USD8 billion in exports and created 1 million jobs with policies similar to those recommended above.

On the other hand, within these challenges, the garment manufacturing factories in the park are still survived in the market and even have taken new sheds from BLIP 2 for expansion. In addition, all the above studies and reports confirm the poor service capacity but didn't show the positive or negative influence of logistical activities and the garment manufacturing sectors. This study therefore will empirically examine how transport management, inventory management, order processing management and information flow management influence performance of garment factories located at Bole Lemi Industry Park (BLIP).

1.3. Research Question

This study is mainly aimed to adress the relationship between logistics management and performance of garment factories and more specifically the research targeted to answer the following questions

1. What is the effect of transport management on performance of garment factories?
2. How inventory management affects performance of garment factories?
3. How performance of garment factories impacted by order processing management?
4. What is the effect of information flow management on performance of garment factories?

1.4. Research objective

1.4.1 General Objective

The main objective of this paper was to examine the effect of logistic management on the performance of garment factories located at Bole Lemi industrial park.

1.4.2. Specific objectives

In addition of attaining the general objective, the study has the following specific objectives:

1. To analyze the extent to which transport management affects performance of garment factories

2. To examine the influence of inventory management on performance of garment factories

3. To investigate the influence of order processing management on performance of garment factories

4. To analyze the influence of information flow management on performance of garment factories

1.5. Significance of the Study

There are different factors which affect the performance of manufacturing firms. This study covers four of them regarding logistics management. Since majority of the raw materials, which are an input for the garment factories, imported abroad knowing these factors and their magnitude and giving attention on how to manage them would lead to a better performance. In this regard, the study was significant because it explained to what extent logistics management affect the performance of garment factories in the park. Furthermore, it can serve as source of information for other researchers who are interested in the subject area and extend their study to other industry park that are already in production. In addition, it increases knowledge of the researcher in the subject area.

1.6. Scope of the Study

There are five different industry zones developed by the Industrial Park Development Corporation (IPDC) and other privately owned which are under production at the time of this research. But due to scarcity of resources, this study is delimited to one of the parks which comprises eleven factories, Bole Lemi Industrial Park (BLIP) located within Addis Ababa, which is also the first park developed by the corporation. BLIP has started operation in 2014 (IPDC website). There are also different dimension of logistics management and performance of factories. However, this study was delimited to the factors of the logistics management dimensions through transport management, inventory management, order processing management and information flow management. On the other hand, performance dimensions were delimited through market share, profitability and customer satisfaction. Furthermore, the respondents of the study were also

delimited to only staffs of each factory in the logistics and shipping department because they do have the direct relation with the movement of the raw materials and finished goods.

1.7. Limitation of the Study

The study is limited to the eleven factories only. The conclusion that is drawn at the end of the study is limited to the information obtained by the logistics and shipping department of each factory's personnel. Another limitation is that firm performance might be affected not only by logistics management, but also by various other variables not considered in this study. Logistics management needs to be integrated with other functional areas of the firm such as marketing, finance, or operations to better support firm performance. In addition, due to time constraints the other factors which are part of the logistics management not included in the research.

1.8. Definition of terms

The following definitions are provided to ensure uniformity and understanding of these items throughout the study.

Logistics - Logistics is the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory (and the related information flows) through the organization and its marketing channels in such a way that current and future profitability are maximized through the cost-effective fulfilment of orders (Gattorna et al., 1991).

Logistics management - is to plan and co-ordinate all those activities necessary to achieve desired levels of delivered service and quality at lowest possible cost (Martin, 2011).

Supply chain - A supply chain is a network of partners who collectively convert a basic commodity (upstream) into a finished product (downstream) that is valued by end-customers, and who manage returns at each stage (Harisson, 2008).

Supply chain management - Planning and controlling all of the business processes – from end-customer to raw material suppliers – that link together partners in a supply chain in order to serve the needs of the end-customer (Harisson, 2008).

Inventory - An inventory is a stock or store of goods (William, 2015).

Inventory management - The co-ordination of a series of functions according to a plan which will economically utilize the plant facilities and regulate the orderly movement of goods through their manufacturing cycle from procurement of all materials to the shipping of finished goods at a predetermined rate (Charles et al., 1965)

Order processing time - Elapsed time from receipt of the customer's order until it is ready for assembly, i.e. how long does it take to get the order and put it into the system?

Market share – is the percentage of a market (defined in terms of either units or revenue) accounted for by a specific entity" (Farris et al., 2010)

Profit – is defined by Iyer (1995) as "excess of return over outlay" (Nimalathasan, 2009)

Profitability – is defined as by Iyer (1995) "the ability of given investment to earn a return from its use" (Nimalathasan, 2009)

Customer satisfaction - the number of customers, or percentage of total customers, whose reported experience with a firm, its products, or its services (ratings) exceeds specified satisfaction goals (Farris et al., 2010)

Firm's performance – According to Venkatraman, N. & Ramanujam, V. (1986) Business performance or firm performance is a subset of organizational effectiveness that covers both operational and financial outcomes (Selvam et al., 2016)

1.9. Organization of the study

This study has been organized into five chapters. The first chapter introduces the background of the study, research questions and the objectives of the project. Besides, it states the motivation of doing this study and also it includes limitations and delimitations of the study.

Chapter two examines related literatures in the areas of logistics management and firm performance. Theoretical and empirical reviews are part of this chapter. At the end, the conceptual framework is presented.

Chapter three deals with explaining the research design and methodology. The research approach, research design, population and sample, data collection procedures are included in this discussion. The chapter also comprised the data analysis methods and put ethical boundary used in the study.

Chapter four is about the presentation of the findings of data analysis and discussion has been made based on the result of the findings.

The last chapter is concerned on summarizing the findings of the study, then conclusions has been drawn. After that recommendations are given to improve the performance of garment factories at Bole Lemi Industry Park. Finally, the researcher gave his view on future research direction.

CHAPTER TWO

RELATED LITERATURE REVIEW

This chapter deals with theoretical and empirical review of the related literature on logistics management, transport management, inventory management, order processing management, information flow management and manufacturing firm performance. Finally, conceptual framework is presented.

2.1 Theoretical Review

2.1.1 Logistics Management

Logistics is considered to have a significant impact on a manufacturing organizational performance (Michael, 1998)

The function of traditional logistics is to achieve profit through cost reduction. This operational objective is too narrow to accommodate modern logistics activity management. Recent trends in business sustainability are to conduct business with a long-term goal of maintaining the well-being of the economy, environment, and society by efficiently utilizing the limited sources, flexibly coping with changing business environment, and timely responding to new customer demands (Varanya et al., 2012)

Logistics management has received much attention over the past decade from practitioners and government. Realizing the importance of sustainability in logistics management is critical for competitive advantage (Buyukozkan et al., 2008) because operational performance has a positive impact on company's financial performance (Horvath et al., 2005). In business, sustainability is defined as a capability to possess and hold continuous competitiveness (Kang et al., 2012).

Logistics management consists of activities from customer service, orders processing, inventory management, transportation, storage, packaging, demand and forecasting, production planning, purchasing and procurement, facility location, and distribution that are supported by enormous information flow (Celebi et al., 2010). Therefore, logistics performance is managed in order to ensure sustainability of the firm. Many firms applied information technology such as enterprise resource planning (ERP) and information systems (IS) in operational process management to cost effectively serve the customer's requirements (Tilokavichai and Sophatsathit, 2011). Thus, IS and strategic partnerships can be integrated to achieve the desired service level. However, the unavoidable uncertainties will have an influence on logistics performance management such as demand and price which are uncertainty parameters. These inherent uncertainties affect the performance of logistics operations (Hsiao et al., 2010). The advent of information technology (IT) revolutionizes logistics operation. Poor logistics performance reflects the firm's information capability which indirectly impacts financial performance (Shang and Marlow, 2005). Logistics management plays an important role of adding competitive advantage to a firm in customer support and business excellence (Buyukozkan et al., 2008). Effective logistics management provides the right product in the right place at the right time. It involves control of product and information flow to create value-added activities such that delivery is accomplished through suitable distribution channels (Narasimhan & Kim, 2001). It is managed to yield minimize cost and time but maximize service level, for example, on time delivery, minimum stock level, high quality or non-damage products (Celebi et al., 2010). Thus, logistics management is one of the contributing operations that encompasses activities ranging from customer service, order processing, inventory management, transportation, warehouse management, packaging, demand and forecasting, production planning, purchasing and procurement, facility location, and distribution. All of these

are supported by enormous information flow. Performance measurement is usually carried out in financial and non-financial terms, focusing on planning and controlling to monitor and improve logistics management (Garcia et al., 2011). Nevertheless, financial measures are not sufficient for decision making in strategic and policy planning. Additional non-financial measures such as quality, reliability, flexibility, and delivery performance must be incorporated to complement the decision (Laitinen, 2002).

In today‘s highly competitive environment, many companies are striving to gain a share of the global market and to take advantage of higher production and sourcing efficiency. A key determinant of business performance nowadays is the role of logistics management functions in ensuring the smooth flow of materials, products and information throughout the company’s supply chain (Kilasi et al., 2013). Due to the trend of nationalization and globalization in recent decades, the importance of logistics management has been growing in various areas. For firms, logistics management helps to optimize the existing production and distribution processes based on the same resources through management techniques for promoting the efficiency and competitiveness of enterprises (Tseng et al., 2005).

Logistics management plays an important role of adding competitive advantage to a firm in customer support and business excellence (Buyukozkan et al., 2008). Effective logistics management provides the right product in the right place at the right time that is why it has received much attention over the past decade from practitioners and government (Tilokavichai & Sophatsathit, 2011).

However, for logistics management to be considered contributing to a firm‘s performance, logistics performance needed to be measured (Keebler & Plank, 2009). In their study Fugate et al. (2010) confirmed that, due to increasing awareness of logistics management implications in firm

performance and growing awareness of the benefits of leveraging logistics to increase customer value, measuring of performance of logistics had become a high priority. There were at least three basic reasons why a firm would want to measure logistics performance: firms could reduce operating costs, use these measures to drive revenue growth, and hence enhance shareholder value.

Even valuable customers could be attracted and retained by improving the price value relationship of products offered through cost reductions and service improvements. Finally, returns to stockholder investments and the market value of the firm could have been significantly impacted by logistics performance improvements working through the processes that led to share price and dividend policy.

The study concentrated on evaluating the influence of logistics management core activities transportation, inventory, order processing and information flow Ballou (2004) on garment factories performance in Bole Lemi Industry Park. The support functionality of logistics warehousing, materials handling, and packaging also represents an integral part of a logistics operating solution. However, these functions do not have the independent status of those (core) previously discussed (Bowersox et al., 2010).

This research focused on forward logistics rather than reverse logistics (which refers to the activities involved in customers returning goods) and analyzed both physical activities and non-physical activities that were transportation management, Inventory management, order processing management and information flow management as independent variables.

2.1.1.1 Transport Management

Transportation will be defined as the activities involved in shipping any goods or finished products from suppliers to a facility or to warehouses and sales locations (Kenyon and Meixell, 2011).

Transportation is one of the significant factors for the success of logistics. It is one of the determinants to organization integration and efficiency. As a result, transportation is playing role of critical to logistics and can be seen as the glue that holds channel members together (Coyle et al., 2011). Transportation plays a competitive strategy for a business in consideration of the target customer's needs in the way to fulfill very high-level customer demand in a responsiveness manner. If the competitive strategy a firm use is price, then the company can use transportation earning the advantage by reducing the cost. Firms usual use inventory and transportation to increase responsiveness or efficiency (Chopra and Meindl, 2007)

Transportation occupied one-third to two-third of the amount in the logistics cost hence transport management influence the performance of logistics system immensely. Transporting is required in the whole production procedures, from manufacturing to delivery to the final consumers and returns. Only a good management and coordination between each component would bring the benefits of logistics to a maximum. A good transport management in logistics activities could provide better logistics efficiency, reduce operation cost, and promote service quality on firms (Bowersox et al., 2010).

From the logistical system point of view, three factors were fundamental to transportation performance: cost, speed, and consistency. The cost of transport is the payment for shipment between two geographical locations and the expenses related to maintaining on-transit inventory. Logistical systems utilized transportation that minimized total system cost. According to Bowersox el al. (2010) speed of transportation was the time required to complete a specific movement.

According to Ensermu (2013) the objective of transportation is to link all pick-up and delivery to points within the response time requirements of the customer service policy and the limitations of

the transportation infrastructure at the lowest possible cost. The logistics of transportation includes network design and optimization, shipment management, fleet and container management, carrier management and freight management.

A supply chain becomes increasingly longer in our global economy; the transportation function is connecting buyers and sellers that may be tens of thousands of miles apart. This increased spatial gap results in greater transportation costs. A study indicated that both inbound and outbound transportation costs 30.1 percent of sales which requires close management (Ensermu, 2013).

When transportation lacked consistency, inventory safety stocks are required to protect against service failure, impacting both the sellers and buyers overall inventory commitment. Speed and consistency combined to create the quality aspect of transportation (Bowersox et al., 2010).

Transportation services play a central role in seamless supply chain operations, moving inbound materials from supply sites to manufacturing facilities, repositioning inventory among different plants and distribution centers, and delivering finished products to customers (Ensermu, 2013).

2.1.1.2 Inventory Management

Stevenson (2009) defined inventory as a stock or store of goods. It is also considered as stocks of anything necessary to do business.

According to Bowersox at el. (2010) logistical strategies are designed to achieve customer service goals while maintaining the lowest possible financial investment in inventory. They continued to say that the key to effective logistical segmentation rested in the inventory priorities dedicated to support core customer‘s goal in order to achieve maximum inventory turns. A sound inventory management strategy was therefore based on a combination of five aspects of selective

deployment: core customer segmentation; product profitability; transportation integration; time-based performance; and competitive performance.

There are five initiatives that lead to increased return on inventory and increased inventory availability at the same time. These are improved forecast accuracy, reduced cycle times, lower purchase order/setup costs, improved inventory visibility and lower inventory carrying costs. These five initiatives are the foundation of any lasting progress in logistics and supply chain management (Ensermu, 2013).

The challenge facing inventory managers is to ensure that efficient inventory levels are in place in each of these inventory categories. Inventory levels should be minimized while satisfying customer service requirements.

Ensermu (2013) also divide the aspects of inventory management into six. These are inventory levels, stock outs, planning parameters, financial terms, demand terms and decision variables. Inventory level is commonly referred as on-hand stock (OHS), net stock (NS) and net inventory position (NIP). This is the number of units of inventory physically in storage. For a distribution center, the OHS is the number of unit on-hand in the distribution center.

Never being out of stock is like having an insurance policy with no deductible. The inventory carrying cost for never being out of stock is infinite, literally. As a result, not all demand can or should be satisfied directly from the shelf. This is because stock-outs are costly situations in terms of customer service and material handling. Managing unsatisfied demand is a critical dimension of inventory management (Ensermu, 2013).

Inventory management system is a set of techniques that are used to manage the inventory levels within different companies in a supply chain. The aim is to reduce the cost of inventory as much

as possible while still maintaining the service level that customers require. Inventory management takes its major inputs from the demand forecasts for products and the prices of products. With these two inputs, inventory management is an ongoing process of balancing product inventory levels to meet demand and exploiting economies of scale to get the best product prices.

Inventory is spread throughout the supply chain and includes everything from raw material to work in process to finished goods that are held by the manufacturers, distributors, and retailers in a supply chain.

Again, managers must decide where they want to position themselves in the trade-off between responsiveness and efficiency. Holding large amounts of inventory allows a company or an entire supply chain to be very responsive to fluctuations in customer demand. However, the creation and storage of inventory is a cost and to achieve high levels of efficiency, the cost of inventory should be kept as low as possible. Effective management of the flow of inventory in supply chains is one of the key factors for success as inventory typically represents the second largest component of logistics cost next to transportation (Ensermu, 2013).

Frazelle (2002) as cited on Ensermu (2013) stated the planning, storing, moving, and accounting for inventory is the basis for all logistics. Inventory availability is the most important aspect of customer service. Inventory carrying costs are typically the most expensive costs of logistics. It is very difficult to convert physical inventory into a liquid asset; hence inventory is a very risky investment. The goal of inventory management is to increase the financial return on inventory while simultaneously increasing customer service level.

2.1.1.3 Order Processing Management

As a consequence of increasing competition and higher market demands organizations are forced to act more and more customer-oriented. As a result, the classical conflict between external objectives such as delivery reliability, speed and the necessity of a broad product range on the one hand and internal objectives like low stock levels, short throughput times and large batches on the other hand seems to become really manifest within companies. In trying to find a proper balance between the internal and external objectives many efforts have been made to improve logistical interfaces both within and between organizations. It is probably also for this reason that organizations today focus more than ever on the use of Information and Communication Technology (ICT). By speeding up information processing and opening up information by means of ICT companies try to deal with customer demand more quickly and more flexible (Welker, 2002).

The ordering process is described and defined extensively within logistical literature. In many cases the terminology with respect to the ordering process is rather confusing and ambiguous. The ordering process is, for example, referred to as ‘order processing’, ‘order management’, ‘demand management’ and ‘the order fulfilment processes’. Not only the terminology but also the scope that is attributed to the ordering process differs.

The various authors, although having different opinions on which activities are included in the ordering process, agree on the view that matching market demand and production capabilities are a fundamental aspect of the ordering process. Ordering process is the process in which customer orders are translated into production orders (Welker, 2002).

On the other hand, Christopher (2005) define order processing as the term used to identify the collective tasks associated with fulfilling an order for goods or services placed by a customer and it formed the basis for the information flow in a logistics system.

The order processing procedure begun with the acceptance of the order from the customer, and it's not considered complete until the customer receives the products and determined that orders have been delivered accurately and completely (Stevenson, 2009).

In order to deliver the right products at the right time, demand requirements need to be translated by means of the ordering process into production orders. It is clear that in order to attain realizable order agreements production capacity and customer demand needs to be matched. Thus, the parties involved in order processing are sales and production.

Welker (2002) also stated the accuracy of entering the data is essential. The ordering process is not only a complex decision-making process but also a sequence of information processing activities consisting of preparation, receipt, entry, acceptation, confirmation, planning and scheduling of orders.

Many aspects of information were critical to logistics operations, the processing of orders was of primary importance. Failure to fully comprehend this importance resulted from not fully understanding how distortion and operational failures in order processing impact logistical operations (Bowersox et al., 2010).

Within the ordering process, information with respect to customer demand is matched with information about the state of the production system. So, not only information about demand specification has to be handled within the ordering process but also information about production constraints to make agreements with customers on specifications, volume and timing of the orders.

The matching of information is highly influenced by the logistical control concept of the organization.

Quick and accurate processing had a favorable effect on the entire flow of goods. As a result, a firm should always pay special attention to efficient processing. The capability and efficiency of order processing should have been evaluated regularly using indicators that tracked the reliability and flexibility of order handling.

2.1.1.4 Information Flow Management

Characteristics such as speed of reaction, order accuracy, operational flexibility and sustained quality have become fundamental in successful business today. The success of aligning a supply chain to attain these characteristics depends largely on the use of efficient communication and information technology. Communication between supply chain members requires that relevant information is transferred from its point of inception to the next point(s) of use. The transfer of information entails an efficient flow of information between systems, between systems and humans and between humans, which is directly associated with the effective interoperability between the various entities handling the relevant information. Accordingly, the realization of interoperability will mean a faster information flow and, thus, an effective decision-making process.

Information flow was defined as the flow of data in different directions with variable contents between various data base (department) within a company. Before, the information flow within the logistics had become vital since it enabled chains to respond on real time and accurate data (Harisson & vanHoell, 2002). Firms then, looked at information flow as an asset, since it was not possible to have efficient and reliable materials flow without it (Mattsson, 2002).

The National Institute of Standards and Technology (NIST) has offered a general definition by stipulating that information refers to “any communication or representation of knowledge such as facts or data, in any medium or form, including textual, numerical, graphical, cartographic, narrative or audiovisual forms” (NIST, 2010 as cited on Maurer, 2011).

Information sharing was a key to success of logistics performance (Whipple et al., 2002). Information flow had become an important element that reflected collaboration within the logistics management and firm performance. Sharing of information on transfer; exchange of information indicating the level and position of inventory; sales data and information on the forecasting; information about the status of orders, production schedules and delivery capacity, and firm performance measures had become essential to all firms (Wardaya et al., 2013).

Besides the importance of an efficient information flow, it is also clear from the various contributions that it is essential that the information flow be managed in SCM with the measurement of efficient information flow forming an integral part of the management of information flow.

Supply chain information is represented by a collection of facts about the supply chain, and structured and interpreted in such a way that they have additional value beyond the pure facts and data themselves (Maurer, 2011).

One of the key enablers, widely recognized in the literature for improving the efficiency of the supply chain, is information sharing within supply chain. Researchers have highlighted the importance of sharing different types of information such as forecasting data, inventory levels and capacity planning data, demand and order data. Some of these studies prove that inter-organizational information sharing can reduce the bullwhip effect. It is proved, based on results from two experiments, that integrated information systems have the potential to reduce the

bullwhip effect. Also suggested that based on different information-sharing scenarios, that exchanging information on demand with suppliers and dealers is the key enabler for reducing the bullwhip effect (Madenas et al., 2014).

2.1.2 Manufacturing Firm Performance

In order to understand firm performance, it is prudent to first understand what performance measurement was all about since it was through performance measurement that firm performance could be realized. According to Prathap and Mittal (2010), performance measurement is a crucial criterion for evaluating the competence and achievement of an organization. Tuttle and Heap (2008) defined performance measurement as the process of quantifying action, where measurement is the process of quantification and action leads to performance. They emphasized the importance of satisfying customer requirements with greater efficiency and effectiveness than the competitors. Here the effectiveness referred to the extent to which customer requirements were met, largely with the essence that customer was always right and the efficiency referred to the measurement as to how economically the firm ‘s resources were utilized (i.e. total output against total input) to provide a specific level of customer satisfaction.

In clarifying the multidimensional relationship between logistics management and firm performance, a clear definition of firm performance was required. According to Richard et al. (2009) firm performance encompasses three specific areas of firm outcomes: financial performance (profits, return on assets, return on investment); market performance (sales, market share) and customer satisfaction/value added. Firm performance comprised the actual output or results of an organization as measured against its intended outputs (or goals and objectives), it involved the recurring activities to establish organizational goals, monitor progress toward the

goals, and make adjustments to achieve those goals more effectively and efficiently. In addition to the three performance measures, customer satisfaction was added because previous studies have indicated that customer satisfaction was directly related to firm performance and logistics managers were aware of their firm's overall level of customer satisfaction (Jay et al., 2008)

There happened to be at least three basic reasons why a firm wanted to measure logistics performance, firms reduce operating costs, use these measures to drive revenue growth, and hence to enhance shareholder value. Measuring operating costs could identify whether, when and where to make operational changes to control expenses, point out areas for improved asset management and could attract and retain valuable customers by improving the price value relationship of products offered through cost reductions and service improvements. Finally, returns to stockholder investments and the market value of the firm could have be significantly impacted by logistics performance improvements working through the processes that led to share price and dividend policy (Keebler and Plank, 2009)

Conceptually, logistics performance may be viewed as a subset of the larger notion of firm or organizational performance. The latter has attracted a large volume of diverse research over the years and illustrates the futile nature of the search for the "one best way" of defining performance. For example, Gleason and Barnum chose to distinguish between effectiveness and efficiency. They defined effectiveness as "the extent to which an objective has been achieved", while efficiency was defined as "the degree to which resources have been used economically" Simply put, efficiency is "doing things right", while effectiveness is "doing the right thing". Sink and his colleagues, on the other hand, defined seven dimensions in order to capture their conception of "what performance means": they are effectiveness, efficiency, quality, and productivity, quality of

work life, innovation and profitability/budgetability. Many dimensions of logistics performance lend themselves well to hard performance measures. (Garland et al, 1994)

Hard performance measures such as net income or order fill rate are typically impersonal, accurate and easy and inexpensive to collect. Measures such as net income, and accounting ratios such as return on investment (ROI) are useful ways of capturing profitability, and will often be easy and inexpensive to collect, particularly where logistics is treated as a profit center. Profitability is a particularly useful goal because it directly reflects the goals of all of the organization's internal constituent groups to one extent or another, although it may not be a good indicator of the viability of the firm in the long run. (Garland et al., 1994)

Logistics performance indicators and criteria include costs, time, and reliability (Hotrawaisaya et al., 2014), which can be used to measure the logistics operations performance among partners in the supply chain. Several specific criteria are particularly important, including on-time delivery, lead time, error-free delivery, scheduled delivery fulfillment, order fill rate, damaged orders, delivery of urgent orders, deliveries in periods of high demand, short transit time, availability of cargo space, and the condition of vehicles and containers (Miriam et al., 2018).

2.2 Empirical Review

A study on logistics performance and the influence it had to firm performance, done in USA by Fugate et al. (2010) revealed that increase in logistics efficiency, effectiveness, and differentiation decreased expenses, inventory, cash requirements and increased inventory availability, timely delivery, on-time and damage-free deliveries, line-item fill rates and sales which improved net margin and asset turnover, which improved return on assets and overall firm performance.

One of the main objectives of any organization was to achieve customer satisfaction. In their study, Zhang, Zhang, and Lim (2005) examined the impact of logistics flexibility on manufacturing firm‘s customer satisfaction. This was done through a survey of 273 manufacturing firms in USA and the results indicated that logistics flexibility had significant, positive and direct impact on the customer satisfaction. This confirmed that, firms could achieve customer satisfaction by developing logistics flexibility which enabled quick replenishment of incoming materials and rapid delivery of finished products to customers (Zhang et al., 2005).

Morash and Clinton (1998) investigated the creation of customer value through the logistics/supply chain integration alternatives of collaborative closeness and operational excellence. They illustrated models identifying logistics as the unifying link intra-organizationally between the production and marketing functions and inter-organizationally between suppliers and customers. In their study, Tracey and Tan (2001), examined the influence of supplier selection and involvement, customer satisfactory and firm performance. The study was based on the perspective of 53 manufacturing firms across United States. The empirical result confirmed that customer satisfaction and firm performance was directly and positively influenced by suppliers with ability to provide quality components and reliable delivery.

In recent days, a number of researchers had confirmed that improved information exchange could have a substantial impact on overall firm performance and efficiency (Bowersox and Closs, 2004)

2.3 Conceptual Framework

The conceptual framework explained the relationship between the independent and the dependent variables in the study. In this study the dependent variable is firm performance. The independent

variables in this case will be the core factors that led to success of logistics management and they included: transport management, inventory management, order processing management and information flow management.

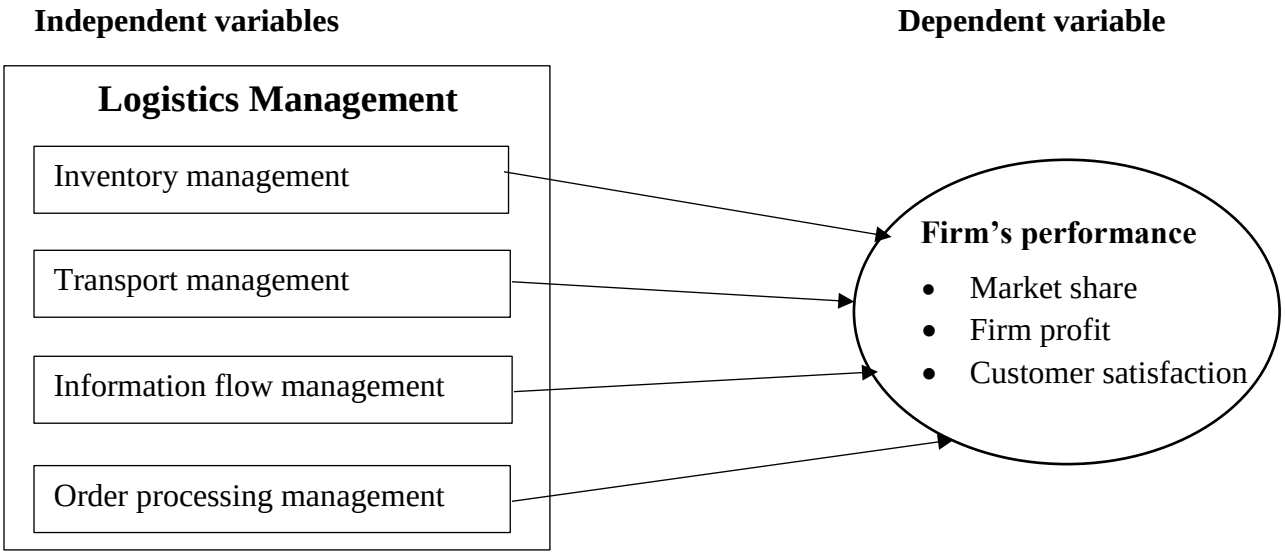

Figure 2. 1Mwangangi (2016) Conceptual Framework adopted and modified

2.4 Gaps in Literature

The researched did not find empirical evidence on logistics management concept and performance link targeting garment factories of Ethiopia located in the industry parks. Which was the driving reason to study this topic.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This chapter deals with description of the study area, research design, types and sources of data, study population and sample design, data collection methods, data analysis & presentation, validity and reliability test and ethical consideration.

3.1. Description of the study area

The Bole-Lemi Industrial Park is located in Addis Ababa, Bole sub-city at woreda11 in the north east direction, at about 15-20 km distance from the center of Addis-Ababa administration limits and in its peripheries.

3.2. Research approach

Since this research starts with theory, developed from the academic literature, and designed to test the theory, implies the study employed **deductive approach** as a research approach**.** Deduction possesses several important characteristics. First, there is the search to explain relationships between concepts and variables. Second, in deduction concepts need to be operationalized in a way that enables facts to be measured, often quantitatively (Saunders et al., 2012)

3.3. Research design

The study adopts both descriptive and explanatory research design as in descriptive study, the researcher must be able to define clearly, what he wants to measure and must find adequate methods for measuring it along with a clear-cut definition of 'population' he wants to study. Since the aim is to obtain complete and accurate information in the said studies, the procedure to be used

must be carefully planned. The research design must make enough provision for protection against bias and must maximize reliability, with due concern for the economical completion of the research study (Kothari, 2004). Whereas, explanatory study emphasizes on studying a situation or a problem in order to explain the relationships between variables (Saunders, 2012).

Quantitative research examines relationships between variables, which are measured numerically and analyzed using a range of statistical techniques. It often incorporates controls to ensure the validity of data, as in an experimental design (Saunders et al., 2012)

The goal of this research was to examine the relationship between independent variables, which includes inventory management, transport management, information flow management and order processing management with a dependent or outcome variable, which is the performance of garment factories, within a population. To do this, variables were measured and analyzed using statistical techniques. Thus, quantitative research strategy was used to establish the magnitude, direction and significance of various logistic management factors on performance of garment factories at Bole Lemi Industry Park.

As a research strategy, the study employed **survey method**. Surveys using questionnaires allow the collection of standardized data from a sizeable population, allowing easy comparison. The survey strategy also allowed the researcher to collect quantitative data which could be analyzed quantitatively using descriptive and inferential statistics. In addition, data collected using a survey strategy were used to suggest possible reasons for particular relationships between variables and to produce models of these relationships (Saunders et al., 2012)

As the time frame for this research was short the study was used **cross-sectional study** as time horizon. So, the survey had undertaken with specific time and from this data conclusion was made that indicate the relationship between those variables.

3.4. Population and sample

The government of Ethiopia is building industrial parks across the country. Among these Bole Lemi industry park is the first park developed by the IPDC. Then, Hawassa followed. After that Mekele and Kombolcha Industry Parks became operational and recently Adama Industry Park has been inaugurated officially. At the same time a number of parks are under construction at different parts of the country. Of all these, the sheds in Bole Lemi park are fully functional than others (own observation). The population of the study were therefore all factories in side this park. The sampling frame of this study is, therefore, composed of 61 employees who have been working in the factorys' logistics and shipping department. The main reason for using this category of people is that their activities directly or indirectly has a bearing on logistics activities within applicable area which is the scope for the study and the researcher has collected data from every employees of the mentioned department. Since the populations is manageable it was more sensible to collect data from the entire population. Therefore, the study employed **census** method to conduct the research over the given case.

3.5. Data source and type

The source of data was both primary and secondary. The primary data was collected directly from employees using questionnaire. Annual reports and journals were the source of secondary data (data that have already been collected for some other purpose). It is clear from the previous statements the data type is quantitative.

3.6. Data collection procedure

Since the design of the study were census implies that all the employees of the logistics and shipping department were part of the population in the research. Therefore, data was collected from the entire population.

Before the full-scale survey, pilot survey was undertaken for a sample of respondents. The objective of the pilot survey was to check whether the desired result using the questionnaire is obtained or not and to identify and exclude potential problems associated with content in the questions and wordings. Based on feedback received from the test respondents few modifications were made in order to make it clearer and more understandable to the full-scale survey respondents.

During the full-scale survey, the questionnaire was administered to the target population through personal contact by the researcher. Respondents were kindly requested to fill the questionnaire. Out of the total 61 distributed questionnaires 56 were collected back.

3.7. Reliability and Validity

In order to have quality of data reliability coefficient test was made. According to Field (2009) that reliability means that a measure (or in this case questionnaire) should consistently reflect the construct that it is measuring.

Internal consistency involves correlating the responses to questions in the questionnaire with each other. It thus measures the consistency of responses across either a subgroup of the questions or all the questions from your questionnaire. There are a variety of methods for calculating internal consistency, of which one of the most frequently used is **Cronbach's Alpha**. It consists of an alpha

coefficient with a value between 0 and 1. Values of 0.7 or above indicate that the questions combined in the scale are measuring the same thing (Saunders et al., 2012).

Table 3. 1 Reliability Statistics Test Result

Variables	Cronbach's Alpha	N of Items
Transport Management	.840	4
Inventory Management	.769	4
Order Processing Management	.706	4
Information Flow Management	.779	4
Market Share	.891	4
Firm's Profit	.889	4
Customer Satisfaction	.779	4

Source: Respondents opinion analyzed using SPSS version 20

The above table indicates the existence of internal consistency among all the independent and dependent variables. The overall reliability of the independent variable is .827 and that of the dependent variable is .925. To ensure reliable data the researcher undertook pilot survey to check the research instrument before applying on the study population.

Validity refers to whether an instrument measures what it was designed to measure (Field, 2009). Often, when discussing the validity of a questionnaire, researchers refer to content validity, criterion-related validity and construct validity (Bloomberg et al. 2008) as cited on Saunders et al. (2012). Content validity refers to the extent to which the measurement device, in our case the measurement questions in the questionnaire, provides adequate coverage of the investigative questions. Judgement of what is 'adequate coverage' can be made in a number of ways. One is through careful definition of the research through the literature reviewed and, where appropriate, prior discussion with others. Another is to use a panel of individuals to assess whether each

measurement question in the questionnaire is ‘essential’ ‘useful but not essential’ or ‘not necessary’ (Saunders et al., 2012).

In this regard, the survey questionnaires are valid as it was used by different researchers and supported by literatures. Therefore, the researcher has confidence that the constructs can measure the effect of logistics management on the performance of garment factories at Bole Lemi Industry Park.

3.8. Data analysis

Quantitative data need to be processed to make them useful, that is, to turn them into information. The study used a computer program called Statistical Package for Social Science **(SPSS)** software to code and analyze the data.

The researcher applied both descriptive statistics and inferential statistics (correlation and regression). The correctness of the data was checked by the researcher at the initial stage. Then using descriptive statistics (frequency and percentage) the characteristics of respondents were analyzed.

The correlation analysis (Spearman rho correlation Co-efficient) was used to analyze the relationship between logistics management and performance of garment factories.

Multiple regression analysis was made to see the effects of the independent variable on the outcome variable. Before applying the regression analysis, the study undertook scatterplot matrix plot to check the linear relationship between the dependent and independent variables. It is also noted that all assumptions to make this analysis was taken in to consideration.

3. 9. Ethical consideration

Individuals will have a right to privacy and should not feel pressurized or coerced into participating. Participants will have the right not to take part. This means that participants have the right to withdraw, and that they may decline to take part in a particular aspect of the research. Maintain the objectivity of the study in the process of collecting the data accurately and fully in analysis stages as well. In addition, data collected remain confidential (Saunders et al., 2012). Based on this, effort was made to make the research process professional and ethical. In addition, participants were informed to the purpose of the study and the confidentiality of their response.

CHAPTER FOUR

RESULTS, INTERPRETATIONS AND DISCUSSIONS

This chapter deals with the presentation, analysis, and interpretation of data collected through questionnaire and document analysis.

4.1. Introduction

This chapter presents the analysis of data obtained from the respondents and discuss the findings on the relationship between logistics management parameters with the performance of garment factories located at Bole Lemi Industry Park.

4.2. Response rate

The study sought to collect data from 61 employees working in logistics and shipping departments of 11 factories of Bole Lemi Industry Park but the researcher managed to collect 56 questionnaires. Among these, 2 of them were incomplete and rejected from the analysis at the coding stage. Therefore, the total usable data were obtained from the 54 questionnaires.

Table 4. 1 Response rate

Response	Number	Percent
Number of questionnaires distributed	61	100
Questionnaire collected	56	91.8
Incomplete questionnaires	2	3.27
Total usable questionnaires	54	88.52

Source: Survey Result

The data subject to analysis was 54 which is 88.52% of the total. As per Grove (2006) and Babbie (2007) “A review of the published social research literature suggests that a response rate of at least

50 percent is considered adequate for analysis and reporting. A response of 60 percent is good; a response rate of 70 percent is very good."

4.3. Demographic information of the respondents

The study found that majority (70.4%) of employees were aged between 26 and 35 years followed by 25.9 percent aged in the range 18 and 25. Only 2 percent of the respondents indicated that they were between 36 and 45 years old. Therefore, 96.3 percent of the respondents were aged 35 years and below (Table 4.2).

Table 4. 2 Age of the respondents

It. No.	Respondent profile	Choice	Frequency	Percent	Cumulative Percent
1	Age	18 - 25	14	25.9	25.9
		26 - 35	38	70.4	96.3
		35 - 45	2	3.7	100.0
		Total	54	100.0	
2	Gender	Male	36	66.7	66.7
		Female	18	33.3	100.0
		Total	54	100.0	
3	Level of Education	Diploma	4	7.4	7.4
		First Degree	42	77.8	85.2
		Master Degree	8	14.8	100.0
		Total	54	100.0	
4	Work Experience	< 1 year	13	24.1	24.1
		1 – 2 years	17	31.5	55.6
		2 – 5 years	22	40.7	96.3
		> 5 years	2	3.7	100.0
		Total	54	100.0	

Source: Survey result

Regarding gender of the respondents, majority (66.7%) of the respondents were male while 33.3 percent of the respondents were female (Table 4.2). This suggests a good representation of gender thereby the study collected views from both genders.

As explained in table (Table 4.2.) their education level is from Diploma to Master's degree with first degree having the highest percentage (77.8). 14.8 percent of the respondents qualified to Master's degree. The rest with 7.4 percent is below first degree.

On the other hand, respondent data on work experience depicts that 96.3 percent are 5 years and below with majority of them have work experience between 2 and 5 (40.7%). Since the sector is new to the country, five years and below work experience was expected.

4.4. Descriptive analysis

This section presents descriptive analysis for variables used in the model. The section is divided into two sections namely; descriptive analysis for the independent variables and dependent variable. The independent variable includes constructs from transport management, inventory management, order processing management and information flow management.

Mesfin (2016) used a kind of rule of thumb to create equal intervals for a range of five points Likert scale (that ranges from strongly disagree to strongly agree in the survey questionnaire). A calculated mean value that ranges from 1 to 1.80 implies strong disagreement, a mean range from 1.81 to 2.6, from 2.61 to 3.4, from 3.41 to 4.2 and from 4.21 to 5.00 represented respondents' perceptions of somewhat disagree, neutral, somewhat agree and strongly agree respectively (as cited on Tamru, 2017)

In the process of examining of the data, standard deviation was used. Small standard deviations (relative to the value of the mean itself) indicate that data are close to the mean whereas a large standard deviation (relative to the mean) indicates that the data points are distant from the mean. The mean is a poor fit of the data. Standard deviation is a measure of how well the mean represents the data (Field, 2009).

Table 4. 3 Descriptive Statistics

Variables	N	Mean	Std. Deviation
Transport management	54	2.9583	.89515
Inventory management	54	3.4259	.80773
Order processing management	54	3.5509	.71272
Information flow management	54	3.6528	.72101
Performance	54	3.5617	.75169

Source: Respondents opinion analyzed using SPSS version 20

Accordingly, except the transport management which shows somewhat status the mean values of all other variables show that the response was found to agree with ideas of the questionnaire to some extent. The standard deviation indicates that data of order processing and information flow management are closer to the mean by 0.71272 and 0.72101 than other variables.

4.4.1 Descriptive Analysis for Independent Variables

4.4.1.1. Transport management

The mean values for all the constructs of transport management the response from the respondents lie neither agree nor disagree, which is neutral.

Table 4. 4 Descriptive Statistics of Transport Management

	N	Mean	Std. Deviation
The current transportation performance provides efficiency in logistics	54	2.93	1.147
The current transportation management enable your firm's business to grow	54	3.02	1.124
The current transportation management reduces the total lead time	54	2.78	1.127
The quality of transportation management is getting better	54	3.11	.945

Source: Respondents opinion analyzed using SPSS version 20

The above table (Table 4.4) shows the descriptive statistics of transport management dimensions. As can be seen from the table the mean score of the respondents for transport management dimensions are within the range of 2.61 to 3.4 which implies respondents neither agree nor disagree to the dimensions. Though the mean scores lie in the same range the above table depicts that there are variations in the response of participants. The mean score for the current transportation management reduces the total lead time is the lowest by 2.78. On the other hand, the speed and consistency, which is the quality, of transportations is getting better is the highest by 3.11.

4.4.1.2. Inventory management

The inventory level at stock to satisfy customers order and the inventory model used to minimize overall inventory cost found to be not enough to affect the performance of the factory positively or

negatively. Respondents agree with feature within the inventory system that alert the user if inventories are below or above the optimum level and also the company's inventory policy has a positive outcome towards its profitability.

Table 4. 5 Descriptive Statistics of Inventory Management

	N	Mean	Std. Deviation
There is enough inventory level at stock to satisfy your customers order	54	3.26	1.169
The inventory model used target to minimize overall total inventory cost	54	3.24	.970
There is a feature within the inventory system that alerts the user if inventory levels are below or above	54	3.41	.962
The company's inventory policy is one of the factors to maximize its profitability	54	3.80	1.088

Source: Respondents opinion analyzed using SPSS version 20

Table 4.5 indicates the descriptive statistics of inventory management dimensions on the performance of BLIP factories. As can be seen in the table, the company's inventory policy was one of the factors to maximize its profitability with mean score 3.80. on the other hand, the mean score regarding feature within the inventory system that alert the user if inventory levels are below or above was 3.41. This shows that the respondents agree these two dimensions affect performance of the garment factories positively.

The mean score for the other two dimensions, that is for there is enough inventory level to stock to satisfy customer order and the inventory model used target to minimize overall total inventory cost were 3.26 and 3.24 respectively. Though, these two are in nether agree nor disagree range the scores are very close to the above margin.

4.4.1.3. Order Processing Management

Result found neutral for accurate order fulfilment process and the current order processing management shortened order lead time. On the contrary, respondents agree with the order processing management of the company gives better customer experience and the company improves its process efficiency.

Table 4. 6 Descriptive Statistics of Order Processing Management

	N	Mean	Std. Deviation
Accurate order fulfilment process	54	3.19	1.117
Shortened order lead time	54	3.24	1.063
The company improved its process efficiency	54	3.85	.833
The order processing management of the company gives better customer experience	54	3.93	.866

Source: Respondents opinion analyzed using SPSS version 20

The above table shows the descriptive statistics of order processing management dimensions. The mean score for order processing management of the company gives better customer experience was 3.93 with the highest score. The score for the company improved its process efficiency was 3.85. With these two scores, respondents agree to the dimensions.

Accurate order fulfilment process and order process management shortened order lead time show mean scores 3.19 and 3.24 respectively. This shows that respondents confirm their neutral positions to the dimensions.

4. 4.1.4. Information Flow Management

According to the below table (Table 4.7) respondents agreed to the ideas of the constructs that sharing of information improved the factory service quality, better utilization of information

improves customer responsiveness and due to the improved information management, the company gained control over the shipments. However, result found neutral for smoothness of information between logistics functions.

Table 4. 7 Descriptive Statistics of Information Flow Management

	N	Mean	Std. Deviation
There is smooth information flow to all logistics functions	54	3.33	1.099
Sharing of information improves the organization service quality	54	4.04	.846
Due to the better utilization of information, your company improves its customer responsiveness.	54	3.59	.901
Due to the improved information management, you have gained control over your shipments.	54	3.65	.850

Source: Respondents opinion analyzed using SPSS version 20

4.4.2 Descriptive Analysis for Dependent Variables

The dependent variable of the study is performance of garment factories of Bole Lemi Industry Park. Performance was measured in terms of market performance, financial performance and customer satisfaction. The descriptive analysis for each measure of firm performance is discussed as follows:

4.4.2.1. Market share

Respondents neither agree nor disagree for market share increase over the past years. However, they have agreed with the increase of sales volume, sales grow in currency and the company's marketing strategy contributes to the increase in market share.

Table 4. 8 Descriptive Statistics of Market Share

	N	Mean	Std. Deviation
Average market share increases over the past years	54	3.37	.977
Average sales volume increases over the past years	54	3.70	1.021
Average sales (in currency) grows over the past years	54	3.72	1.054
The company's marketing strategy contributes to the increase in market share	54	3.67	1.028

Source: Respondents opinion analyzed using SPSS version 20

As the above table depicts that respondents agreed that the average sales in currency of the factories increased over the past years by mean score 3.72. The mean score for average sales volume increases over the past years and the company's marketing strategy contributes to the increase in market share were 3.70 and 3.67 respectively. The average market share increases over the past years was the list of all with mean score 3.37.

4.4.2.2. Firm's Profit

Majority of the respondents indicated that their firms improved profitability, return on assets and increased in return on investment by mean scores 3.50, 3.48 and 3.48 respectively. However, the mean score of company growth in return on sales was 3.24 lies on neither agree nor disagree.

Table 4. 9 Descriptive Statistics of Firm's Profit

	N	Mean	Std. Deviation
Firms profit over the past years is getting improved	54	3.50	1.005
The company grows in return on sales	54	3.24	1.063
The company grows in return on assets	54	3.48	.986
Increased in return on investment	54	3.48	1.059

Source: Respondents opinion analyzed using SPSS version 20

4.4.2.3. Customer Satisfaction

According to the response from the respondents the mean value is in the range between 3.41 and 4.20 for all the dimensions listed in Table 4.13 implies that they agreed to some extent on provision of quality product to customers, decrease on customer compliant and get compliment from their customers and the company grows in value added products.

Table 4. 10 Descriptive Statistics of Customer Satisfaction

	N	Mean	Std. Deviation
Provision of quality products to customers	54	3.74	1.031
Decrease on customer complaints	54	3.46	1.145
Customers compliment to the firm	54	3.54	.794
The company grows in value added products	54	3.83	1.005

Source: Respondents opinion analyzed using SPSS version 20

4.5. Correlation Analysis

According to Marczyk et al. (2005) correlations are the most basic and useful measurement of association between variables. Hence, the correlations result of the study that fall in the range of 0.01 to 0.30, in the range of 0.30 to 0.70, in the range of 0.70 to 0.90 and in the range of 0.90 to 1.00, their relationship considered small, moderate, large, and very large respectively. The significance level of the correlation test of the two variables used a p-value of 0.05 (5% probability of finding a fluke). Consequently, only those results of the probability test statistic with very low (usually p = 0.05 or lower or when significance level become 95% and more) considered for interpretation (Saunders et al., 2009).

I stressed the importance of looking at your data graphically before running any other analysis on them. I just want to begin by reminding you that our first starting point with a correlation analysis should be to look at some scatterplots of the variables we have measured (Field, 2009)

This type of plot allows the researcher to see the relationship between all combinations of many different pairs of variables (Field, 2009). The study concern is the effect of logistics management with the four activities on the performance of garment factories. The scatterplot shown on the annex indicates some general trend in the data, shown by the regression line, such that all the independent variables have a positive association with the performance. Another noticeable trend in the data is that the relationship between transport management and performance is weaker than the relationship between other variable with performance.

Field (2009) explained that if that model can explain a lot of the variation in the data collected (the probability of obtaining that test statistic is less than .05) then you infer that the effect you're looking for genuinely exists in the population. If the probability of obtaining that test statistic is more than .05, then you conclude that the effect was too small to be detected. Rather than rely on significance, you can also quantify the effect in your sample in a standard way as an *effect size* and this can be helpful in gauging the importance of that effect.

SPSS Output shown in Table 4.11 provides a matrix of the correlation coefficients for the four variables. Underneath each correlation coefficient both the significance value of the correlation and the sample size (*54*) on which it is based are displayed. Each variable is perfectly correlated with itself (obviously) and so $r_s = 1$ along the diagonal of the table. Transport management is positively related to performance with a Spearman's rho correlation coefficient of $r_s = .311$ and the significance value is less than .05 (as indicated by the single asterisk after the coefficient). This significance value

tells us that the probability of getting a correlation coefficient this big in a population of 54 people if the null hypothesis were true (there was no relationship between these variables) is very low (close to zero in fact). Hence, we can gain confidence that there is a genuine relationship between transport management and performance. The criterion for significance is usually .05 so SPSS marks any correlation coefficient significant at this level with an asterisk. The output also shows that inventory management, order processing management and information flow management are positively related to the performance of garment factories, with a coefficient of r_s=.636, .610 and .586, which are also significant at $p < .001$.

As depict on the scatterplot matrix, since the significant value for these correlation coefficients are less than .05; therefore, it can be concluded that there is a significant relationship between logistics management and performance of garment factories. Finally, the correlation result shown in Table 4.11 is summarized as follows:

- ✓ There was a significant relationship between transport management and performance of garment factories, $r_s = .311$, $p < .05$
- ✓ Inventory management was significantly correlated with the performance of garment factories, $r_s = .636$, $p < .01$
- ✓ Order processing management was significantly related with performance of garment factories, $r_s = .610$, $p < .01$
- ✓ Information flow management was significantly related with performance of garment factories, $r_s = .586$, $p < .01$

Table 4. 11 Correlations between Independent and Dependent Variables

			Transport Management	Inventory Management	Order Processing Management	Information Flow Management	Performance
Spearman's rho	Transport Management	Correlation Coefficient	1.000	.213	.107	-.129	.311*
		Sig. (2-tailed)	.	.122	.442	.354	.022
		N	54	54	54	54	54
	Inventory Management	Correlation Coefficient	.213	1.000	.611**	.399**	.636**
		Sig. (2-tailed)	.122	.	.000	.003	.000
		N	54	54	54	54	54
	Order Processing Management	Correlation Coefficient	.107	.611**	1.000	.527**	.610**
		Sig. (2-tailed)	.442	.000	.	.000	.000
		N	54	54	54	54	54
	Information Flow Management	Correlation Coefficient	-.129	.399**	.527**	1.000	.586**
		Sig. (2-tailed)	.354	.003	.000	.	.000
		N	54	54	54	54	54
	Performance	Correlation Coefficient	.311*	.636**	.610**	.586**	1.000
		Sig. (2-tailed)	.022	.000	.000	.000	.
		N	54	54	54	54	54

*. Correlation is significant at the 0.05 level (2-tailed).

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

Source: Respondents opinion analyzed using SPSS version 20

4.6. Regression analysis

In addition, a multiple regression analysis has been made so as to determine the effect between the four predictor variables on performance of garment factories. The researcher applied the statistical package for social sciences (SPSS) to code, enter and compute the measurements of the multiple regressions for the study.

Before proceeding further, the researcher has checked whether assumptions have met for multiple regression analysis. Some of the assumptions are presented as below:

Outlier: An outlier is a case that differs substantially from the main trend of the data. Outliers can cause the model to be biased because they affect the values of the estimated regression coefficients. Referring the figure on the annex there is no significant outlier.

Multicollinearity: Multicollinearity exists when there is a strong correlation between two or more predictors in a regression model. Perfect collinearity exists when at least one predictor is a perfect linear combination of the others (the simplest example being two predictors that are perfectly correlated – they have a correlation coefficient of 1). If there is perfect collinearity between predictors it becomes impossible to obtain unique estimates of the regression coefficients because there are an infinite number of combinations of coefficients that would work equally well. One way of identifying multicollinearity is to scan a correlation matrix of all of the predictor variables and see if any correlate very highly or above .80 or .90 (Field, 2009). In this regard, the correlation matrix in Table 4.11 shows that all the correlation coefficient between the independent variables is less than 0.65 which attests collinearity didn't exist in the model.

The other collinearity diagnostics is the Variance Inflation Factor (VIF), which indicates whether a predictor has a strong linear relationship with the other predictor(s). Although there are no hard and fast rules about what value of the VIF should cause concern, Myers (1990) as cited on Field (2009) suggests that a value of 10 is a good value at which to worry. What's more, if the average

VIF is greater than 1, then multicollinearity may be biasing the regression model (Bowerman & O'Connell, 1990 as cited on Field, 2009). Related to the VIF is the tolerance statistic, which is its reciprocal (1/VIF). As such, values below 0.1 indicate serious problems although Menard (1995) as cited on Field (2009) suggests that values below 0.2 are worthy of concern.

Table 4. 12 Collinearity statistics **Coefficients**[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.189	.437		-.432	.667		
	Transport Management	.211	.078	.251	2.713	.009	.892	1.120
	Inventory Management	.302	.100	.325	3.014	.004	.660	1.514
	Order Processing Management	.281	.128	.267	2.206	.032	.524	1.909
	Information Flow Management	.299	.118	.286	2.521	.015	.594	1.684

a. Dependent Variable: Performance

Source: Respondents opinion analyzed using SPSS version 20

Above SPSS Output (Table 4.12) provided some measures of whether there is collinearity in the data. For our current model the VIF values are all well below 10 and the tolerance statistics all well above 0.2; therefore, we can safely conclude that there is no collinearity within our data. To calculate the average VIF we simply add the VIF values for each predictor and divide by the number of predictors. The average VIF, which is 1.556, is very close to 1 and this confirms that collinearity is not a problem for this model.

Independent test: For any two observations the residual terms should be uncorrelated (or independent). This eventuality is sometimes described as a lack of autocorrelation. This assumption can be tested with the Durbin–Watson test, which tests for serial correlations between errors. Specifically, it tests whether adjacent residuals are correlated. The test statistic can vary

between 0 and 4 with a value of 2 meaning that the residuals are uncorrelated. A value greater than 2 indicates a negative correlation between adjacent residuals, whereas a value below 2 indicates a positive correlation. The size of the Durbin–Watson statistic depends upon the number of predictors in the model and the number of observations. As a very conservative rule of thumb, values less than 1 or greater than 3 are definitely cause for concern (Field, 2009). However, the SPSS output in Table 4.13 confirmed that the Durbin-Watson value is 2.141 which is closer to 2. This indicates that the residual terms are uncorrelated.

Table 4. 13 Durbin-Watson Test - **Model Summary**[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.790[a]	.624	.594	.47917	2.141

a. Predictors: (Constant), Transport Management, Inventory Management, Order Processing Management, Information Flow Management

b. Dependent Variable: Performance

Source: Respondents opinion analyzed using SPSS version 20

Normally distributed test: It is assumed that the residuals in the model are random, normally distributed variables with a mean of 0. This assumption simply means that the differences between the model and the observed data are most frequently zero or very close to zero, and that differences much greater than zero happen only occasionally (Field, 2009)

To test the normality of residuals, we must look at the histogram and normal probability plot in Figure 4.2. As indicated in the histogram the distribution is roughly normal.

The normal probability plot below (Figure 4.3) also shows up deviations from normality. The straight line in this plot represents a normal distribution, and the points represent the observed residuals. Therefore, in a perfectly normally distributed data set, all points will lie on the line. The

P-P plot indicates that the points are almost lie on the slope of the line which clearly indicates normality of the distribution.

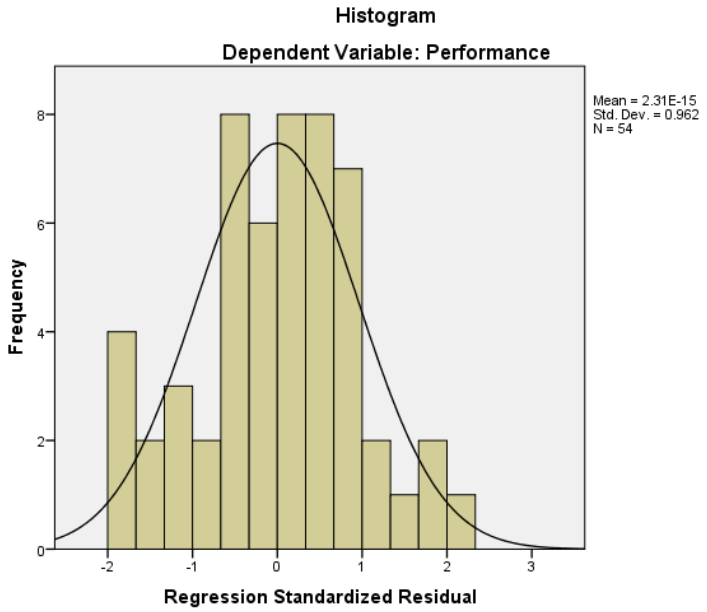

Figure 4. 1 Histogram

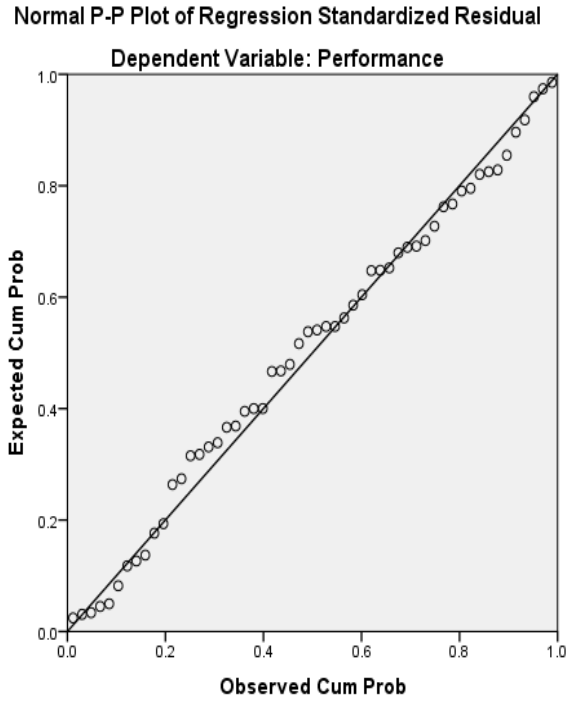

Figure 4. 2 P-P Plot

Linearity test: The mean values of the outcome variable for each increment of the predictors lie along a straight line. In plain English this means that it is assumed that the relationship we are modelling is a linear one (Field, 2009). As noted on the scatterplot matrix on the annex there is a linear relationship between all predictor variables and the outcome variable.

Since test for assumptions has been met successfully, the researcher undertook multiple regression analysis. As indicated Table 4.14 the multiple correlation coefficient between the independent and outcome variable was .790, which clearly indicates that there is a high degree of relationship between the constructs of independent and dependent parameters.

Table 4. 14 Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.790[a]	.624	.594	.47917

a. Predictors: (Constant), Information Flow Management, Transport Management, Inventory management, Order Processing Management

Source: Respondents opinion analyzed using SPSS version 20

The adjusted R square of the multiple regression measures of how much of the variability in the outcome is accounted for by the predictors (Field, 2009). Here the value is .594 implies that 59.4% of the variance in performance is due to the predictor variables transport management, inventory management, order processing management and information flow management while other factors not studied in this research contributed 40.6% of the performance on garment factories at Bole Lemi Industry Park.

Table 4. 15 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.696	4	4.674	20.357	.000[b]
	Residual	11.251	49	.230		
	Total	29.947	53			

a. Dependent Variable: Performance

b. Predictors: (Constant), Information Flow Management, Transport Management, Inventory management, Order Processing Management

Source: Respondents opinion analyzed using SPSS version 20

Field (2009) explained that the ANOVA tells us whether the model is a significant fit of the data overall (look for values less than .05 in the column labelled *Sig.*). The SPSS output in Table 4.15 shows that the model is significantly better at predicting the outcome variable (performance of garment factories) as the significant value *p* is less than .001.

Table 4. 16 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.189	.437		-.432	.667
	Transport Management	.211	.078	.251	2.713	.009
	Inventory management	.302	.100	.325	3.014	.004
	Order Processing Management	.281	.128	.267	2.206	.032
	Information Flow Management	.299	.118	.286	2.521	.015

a. Dependent Variable: Performance

Source: Respondents opinion analyzed using SPSS version 20

The B-values in the above coefficients table tells about the relationship between performance of garment factories and each independent variable in the study. As indicated in the above table

(Table 4.16) all the coefficient values are positive .211 for transport management, .302 for inventory management, .281 for order processing management and .299 for the information flow management. The value of these positive result indicates that there is a positive relationship between the independent and dependent variables with $p < 0.05$. The above table also depicts to what degree each predictor affects the outcome if the effect of other predictors is held constant.

On the other hand, the standardization coefficient specifies the number of standard deviations that the outcome will change as a result of one stand deviation change in the predictor. The standardized beta values are all measured in standard deviation units and so are directly comparable: therefore, they provide a better insight into the 'importance' of a predictor in the model. (Field, 2009)

The standardized beta value for transport management, inventory management, order processing management and information flow management are .251, .325, .267 and .286 respectively indicating that all the variables have a comparative degree of importance in the model.

These values can be interpreted as:

- Transport management (*standardized* $\beta = .251$): this value indicates that as the transport management increase by one standard deviation, the performance on the factories increases by 0.251 standard deviation. This is true only if the effects of inventory management, order processing management and information flow management are held constant.
- Inventory management (*standardized* $\beta = .325$): this value indicates that as management of inventory increase by one standard deviation, performance of garment factories increases by 0.325 standard deviation assuming that the effect of transport management, order processing management and information flow management held constant.

- Order processing management (*standardized β* = .267): this value indicates that the increase in order processing management by one standard deviation, performance of garment factories increase by 0.267 standard deviation holding the effect of other independent variable constant (transport management, inventory management and information flow management).
- Information flow management (*standardized β* = .286): this value indicates the increase in information flow management by one standard deviation, performance of garment factories increases by 0.286 standard deviation. This is true only if the effects of transport management, inventory management and order processing management are held constant.

4.7. Discussion

This research demonstrated the interrelationships and effect among logistic management practices and performance of factories at Bole Lemi Industry Park. According to the results, researcher found from the analyzed data at the descriptive analysis and inferential level such as scatterplot matric, correlation analysis and multiple regression analysis that the results of the study confirm that there is a interrelationships and positive effects among logistics management practices (transport management, inventory management, order processing management and information flow management) and performance of garment factories at Bole Lemi Industry park.

The findings of the study that performance of garment factories has been positively influenced by logistic management practices replicates the findings of the study on Kenyan manufacturing firms by Mwangangi (2016). Certainly, differences in the specific criteria used to define transport management. Since factories in Bole Lemi do not own transportation vehicles for their inbound and outbound goods the study used to define this as the service from the other party.

It supports the findings of Tseng et al. (2005) that transport management was the most important economic activity among the components of business logistics system and do influence firm performance.

The results of the study also show that inventory management positively affects the garment factories performance, i.e. an increase in standard deviation of inventory management increases the performance of the company by a positive unit standard deviation.

The result of the analysis indicates that there is a significant relationship between inventory management and firm performance; $p < .05$ ($p = 0.004$). The value shows that inventory management statistically and significant predicts the firm's performance and that inventory management significantly influence the performance of the garment factories at Bole Lemi Industry Park. Prior research had provided same empirical support that inventory management was important to business and vital to logistics success (Bowersox et al., 2010).

The findings of the study also indicate that there is a positive relationship between order processing management and performance of garment factories. As the output of the regression shows that order processing significantly predicts the performance.

These findings are in agreement with the Bowersox at el. (2012) that, logistics capabilities of a firm could only be as good as its order processing competency hence creation of firm performance, and it is the principal functions for a firm as it creates flow of goods from out and in of the firms.

Order processing has three principal functions for a firm, it creates a flow of information that preceded the goods, accompanies them and follows them (goods) the end user and by doing that creates customer satisfaction, (Mangarulkar et al., 2012). The more quickly an order is transmitted, entered and processed, the more time (lead time) management had for planning transportation and inventory activities while meeting the required customer service levels. The logistics capabilities

of a firm could be as good as its order processing competency and more so when managed efficiently (Stevenson, 2009).

The findings also shows that information flow management positively affects the firm‘s performance, i.e. an increase in standard deviation of information flow increases the performance of the factories by a positive unit. The influence of information flow management on the performance of the manufacturing firms was therefore examined.

These findings are in agreement with the contentions by: Han and Trienekens, (2009) that in today‘s competitive environment, effective and timely responses to ever-changing customer tastes and preferences have become essential components for successful business performance can be made possible by having vibrant management of information flow in the organizations operations.

The study agrees with the findings of Wardaya et al. (2013) that information flow management has become an important element that reflected collaboration within the logistics management and firm performance.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter will provide a summary of the purpose, methodology, and results of this study. Then, conclusions will be discussed based on researcher insights gained regarding study findings and limitations. In addition, recommendations are presented.

5.1. Summary of the study findings

The purpose of this study was to examine the effect of logistics management on performance of all manufacturing factories in Bole Lemi Industry Park. Based on literatures **logistics management** was defined as the plan and co-ordinate all those activities necessary to achieve desired levels of delivered service and quality at lowest possible cost whereas **firms performance** or business performance was explained as a subset of organizational effectiveness that covers both operational and financial outcomes.

In the study four variables were identified to measure logistic management. These are transport management, inventory management, order processing and information flow management. On the other hand, factories performance was measured in terms of dimensions such as market share, profitability and customer satisfaction.

Appropriate research design and methodology was used for the study. Then research instrument was developed. The research instrument was pre-tested before distributing to the study population to check the internal consistency of the constructs.

Different studies have been undertaken on the subject area but most of them were focused on service industries. This research differs from the other in that it covers manufacturing factories located in same industry park.

The study intended to achieve four specific objectives and based on these specific objectives, research questionnaires were developed and distributed to the logistics and shipping departments of each factories under study. Then the data obtained was analyzed with SPSS version 20 and obtained the below result.

- **To analyze the extent in which transport management affect performance of garment factories**

The study findings have shown that performance was significantly influenced by transport management positively. This study therefore established that transport management provides better efficiency in logistics, reduces total lead time, the speed and consistency of transportation management is also getting better and also the current transportation management enables the business to grow.

- **To examine the influence of inventory management on performance of garment factories**

The study finding has shown that inventory management positively influences performance of garment factories. The inventory management includes controlling stock lever to satisfy customer order, the model used to minimize the total inventory cost such as ordering and holding costs, features within the inventory system to alert the user when the inventory level is below or above the limit and the company inventory policy to maximize its turn.

- **To investigate how order process management affect performance of garment factories**

The finding from the scatterplot matrix, correlation and multiple regression shows that order process management significantly influences performance in that an improvement in order

processing would lead to rise in performance of garment factories. Order processing is the communication network which provides information necessary for the management of the interface between logistics and the other functional areas of the firm.

- **To analyze the effect of information flow management on performance of garment factories**

As the other predictor variable on the outcome, the finding of this revealed that information flow management do have positive influence on the performance of factories. This implies due to the smooth information flow among different logistics functions and better utilizing of information the company improves its customer responsiveness.

5.2 Conclusions

The study aimed to establish the effect of logistics Management on the performance of manufacturing factories. The performance has been measured using dimensions such as market share, profitability and customer satisfaction. Analysis of the survey data in the study shows that there is a positive effect of logistics management variables transport management, inventory management, order processing management and information flow management on performance of factories. These variables, which affect the outcome, contributes 59.4% of the constructs.

- ✓ Holding other variables constant, the effect of transport management is 11.5% on the performance of factories. This is relatively lower than the others and also this is against literatures as it is given the huge influence on performance.
- ✓ Assuming all other variables remains the same, 41.4% of the contribution to factories performance is based on the management related to inventory. Based on this study, the researcher concludes that there is a significant and positive influence of inventory management practices on performance of garment factories at Bole Lemi Industry Park.

- ✓ Order processing management contribution to the performance of Bole Lemi factories is 40.8%, assuming that other independent variables are constant. In this regard the study also confirm that order processing management practices are crucial to the performance of manufacturing factories in side Bole Lemi Industry Park.
- ✓ Holding other predictor constant information flow management affects performance of garment factories by 31.1%. This depicts that the better the information flow management practices the better will the performance of factories in Bole Lemi Industry Park.

Subsequently, the study has a basis to conclude that, collectively, logistics Management affects performance of the garment factories at Bole lemi Industry Park.

5.3 Recommendations

Based on the study findings, the following recommendations are given under the study specific objectives:

- ✓ As per the research finding there is a significant statistical relationship between the logistics management practices and performance of garment factories. It is also noted that almost sixty percent of the study variables transportation management, inventory management, order processing management and information flow management explain the outcome variable. Therefore, it is recommended that managers of the respective factories to consider these and below listed points in their strategic plan:
    - Monitoring the inventory level
    - Minimizing total inventory costs

- To have inventory system that alerts the user if inventory levels are below or above
- To have accurate order fulfilment process which shortened order lead time
- To have smooth information flow along all logistics functions
- To have a better utilization of information management which will increase the factory service quality
- To work on their transport management system to make it efficient, to reduce the total lead time and to make the speed and consistency of transport better than before.

5.4. Areas of future research

- ✓ The researcher advises those who are interested to study of same topic in another method like case study. In this case it will be necessary to consider those active stakeholders.

- ✓ From the study, the researcher has learnt that even if transport management affect performance of garment factories the magnitude is small. On the other hand, literatures mentioned that the impact of transport on performance is high. Therefore, future research will be recommended to see how strong will be the influence of transport on performance by studying it separately as an independent variable with performance.

- ✓ Still forty percent the outcome variable (performance) remains unexplained in this study. So, if researchers are interested to conduct the same study even on the same industry park,

they do have the space to measure the effect of performance with other independent variables in related to logistics management.

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APPENDIX

Addis Ababa University
Faculty of Business and Economics
School of Commerce
Department of Logistic and Supply Chain Management

Research Questionnaire

Dear Respondents:

I am conducting a thesis entitled "***The Effect of Logistics Management on the Performance of Garment Factories: the case of Bole Lemi Industry Park***" for partial fulfillment of M.A. in Logistics and Supply Chain Management at Addis Ababa University School of Commerce.

The purpose of this study is be to examine the effect of logistic management on the performance of garment factories located at Bole Lemi industrial park.

This questionnaire has been designed to seek information for purely academic purposes and hence would not affect any one in any case. Please respond to all questions, using your best estimate. The information collected through the questionnaire is kept confidential.

If you have any questions or comments about this survey, you may contact me anytime with the below preferred means of communication.

Thank you for your support and cooperation

Your faithfully

Merran Wonduante
✆ +251-911-566324
💻 merran.wonduante@gmail.com

General Direction

1. You are not required to write your name.
2. Respond to all close-ended question items by putting "**X**" mark in the boxes

Thank You in advance.

Section One - General Questions

1. Age?
18-25 ☐ 26-35 ☐ 36-45 ☐ >45 ☐

2. Gender?
Male ☐ Female ☐

3. How long have you been working in the factory?
Less than 1 Year ☐ 1-2 Years ☐ 2-5 years ☐ >5 years ☐

4. Marital Status
Married ☐ Single ☐

5. Current Educational qualification
Diploma ☐ First Degree ☐ Master's Degree ☐

Above Master's Degree ☐ Other_____

Section Two – Logistics Management

(Likert Scale)

Note: 1 = Strongly Disagree
2 = Disagree
3 = Somewhat
4 = Agree
5 = Strongly Agree

6. Indicate your level of agreement on **transportation management** practices in your factory

It. No	Transport performance parameters	1	2	3	4	5
1	The current transportation performance provides efficiency in logistics					
2	The current transportation management enable your firm's business to grow					
3	The current transportation management reduces the total lead time					
4	(Speed and consistency combine create the quality aspect of transportation) The quality aspect of transportation is getting better					

7. Indicate your level of agreement on **inventory management** practices in your factory

It. No	Inventory performance parameters	1	2	3	4	5
1	There is enough inventory level at stock, every time, to satisfy your customers order					
2	The inventory model used target to minimize overall total inventory cost like holding cost and ordering cost					
3	There is a feature within the inventory system that alerts the user if inventory levels are below or above					
4	The company's inventory policy is one of the factors to maximize its profitability					

8. Indicate your level of agreement on **order processing management** practices in your factory

It. No	Order processing management parameters	1	2	3	4	5
1	Accurate order fulfilment process (Order fulfillment process refers to all the steps companies must take from the moment they receive an order until the items received in customers' hands)					
2	Shortened order lead time (order lead time is the time period between placing of an order and receiving it)					
3	The company improved its process efficiency					
4	The order processing management of the company gives better customer experience					

9. Indicate your level of agreement on **information flow management** practices in your factory

It. No	Information flow management parameters	1	2	3	4	5
1	There is smooth information flow to all logistics functions					
2	Sharing of information improves the organization service quality					
3	Due to the better utilization of information, your company improves its customer responsiveness.					
4	Due to the improved information management, you have gained control over your shipments.					

Section Three – Performance

(Likert Scale)

Note: 1 = Strongly Disagree
2 = Disagree
3 = Somewhat
4 = Agree
5 = Strongly Agree

Please indicate the extent to which your firm has realized improved performance over the last years.

10.

It. No	**Market Share**	1	2	3	4	5
1	Average market share increases over the past years					
2	Average sales volume increases over the past years					
3	Average sales (in currency) grows over the past years					
4	The company's marketing strategy contributes to the increase in market share					

11.

It. No	**Firms Profits**	1	2	3	4	5
1	Firms profit over the past years is getting improved					
2	The company grows in return on sales (Return on sales (ROS) is a ratio used to evaluate a company's operational efficiency. This measure provides insight into how much profit is being produced per dollar of sales)					
3	The company grows in return on assets (Return on assets is a profitability ratio that provides how much profit a company is able to generate from its assets. In other words, return on assets (ROA) measures how efficient a company's management is in generating earnings from their economic resources or assets)					
4	Increased in return on investment (Return on Investment (ROI) measures the gain or loss generated on an investment relative to the amount of money invested. ROI is usually expressed as a percentage and is typically used for personal financial decisions, to compare a company's profitability or to compare the efficiency of different investments)					

12.

It. No	**Customer Satisfaction**	1	2	3	4	5
1	Provision of quality products to customers					
2	Decrease on customer complaints					
3	Customers compliment to the firm					
4	The company grows in value added products					

13. Do you believe efficient logistics management contributes to business growth?

Yes ☐ No ☐

If your answer is Yes/No explain it why

_____
_____
_____

14. If you have any other comment

_____
_____
_____
_____

Thank you for your response

ANNEX

Scatterplot matrix: This option produces a grid of scatterplots showing the relationships between multiple pairs of variables (Field, 2009).

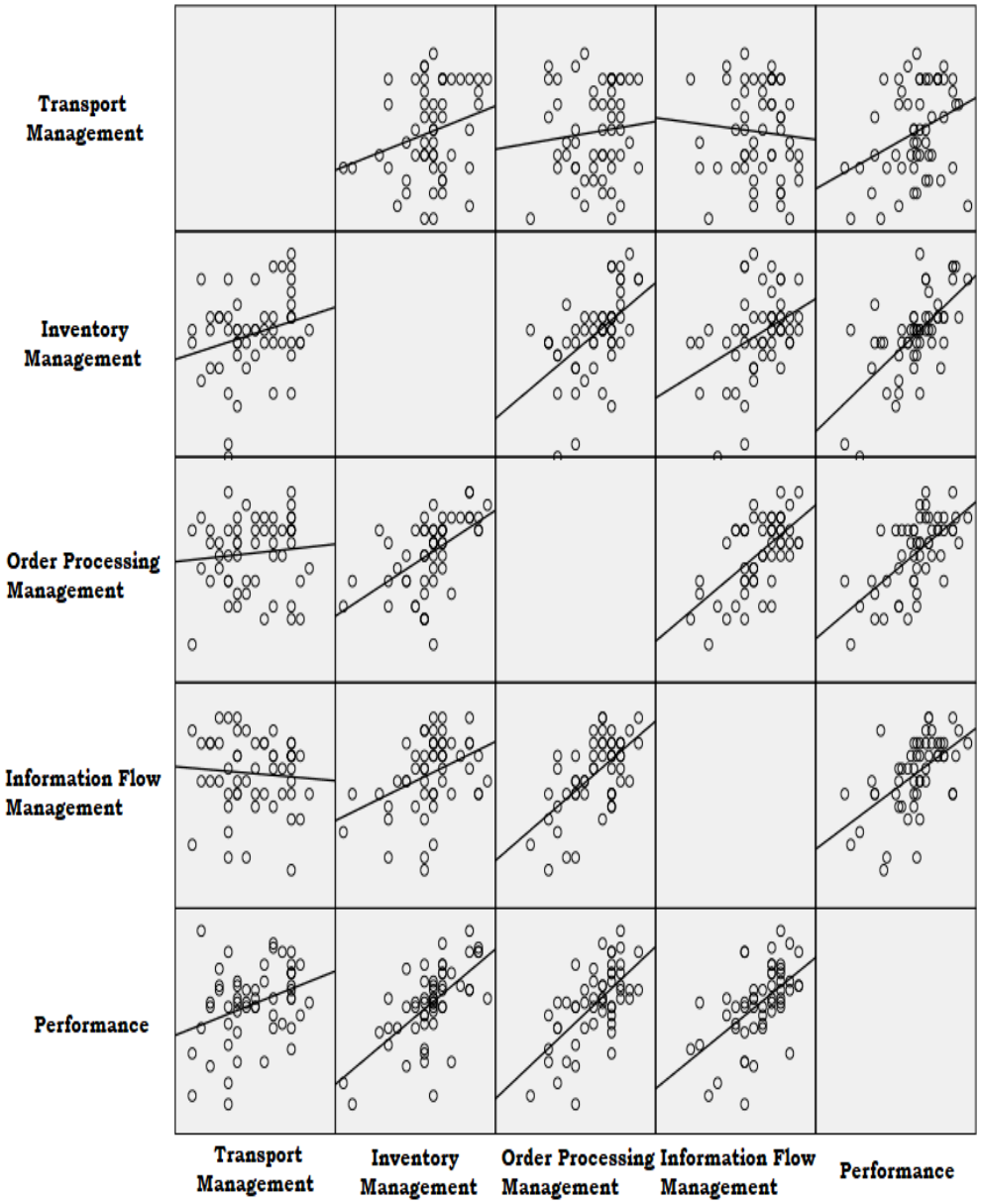

Figure 4. 3 Matrix scatterplot of Transport Management, Inventory Management, Order Processing Management, Information Flow Management and Performance

Source: Respondents opinion analyzed using SPSS version 20