THE ROLE OF LOGISTIC MANAGEMENT INFORMATION SYSTEM PRACTICE ON THE LOGISTIC OPERATIONAL PERFORMANCE IN THE CASE OF ALLE BEJIMILA ETHIOPIAN TRADING ENTERPRISE

BY

REDIET BIZUAYEN

(GSD/2928/09)

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

Advisor: Shiferaw Mitiku (PhD)

MAY, 2019
ADDIS ABABA, ETHIOPIA

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DECLARATION

I, **Rediet Bizuayen** declare that the work which is presented in this thesis entitled "**The role of logistic management information system practice on the logistic operational performance in the case of Alle bejimila Ethiopian Trading Enterprise**" in partial fulfillment of the requirements for the Degree of Masters of Art in Logistics and Supply Chain Management at Addis Ababa University, is the original work of my own effort and done under the guidance of Shiferaw Mitiku (PhD), and that all the sources of materials used for the study have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other university for the purpose of earning any degree.

Name: Rediet Bizuayen

Signature _____

Date _____

CONFIRMATION

This is to certify that **Rediet Bizuayen** has carried out this research work on the topic entitled "**The role of logistic management information system practice on the logistic operational performance in the case of Alle bejimila Ethiopian Trading Enterprise**" under my supervision. This work is original in nature and has not been presented for a degree in any University and it can be submitted for the partial fulfillment of the requirements for the award of the degree of Masters of Art in Logistics and Supply Chain Management.

Dr. Shiferaw Mitiku

Signature_____

Date _____

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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Board of Examiners

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Advisor Signature	**Date**
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Examiner Signature	**Date**
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Examiner Signature	**Date**

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Rediet Bizuayen

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Acronyms and Abbreviations

LMIS: Logistics Management Information Systems.

LIS: Logistics Information Systems.

MLIS: Manufacturing Logistics Information Systems.

IT: Information Technology.

ICT: Information Communication Technology.

MOT: Ministry of Trade.

ERP: Enterprise Resource Planning.

GPS: Global Positioning System.

SCM: Supply Chain Management.

SMEs: Small and Medium-Sized Enterprises.

WMS: Warehouse Management System

SPSS: Statistical Package for Social Science

IM: Inventory Management

WM: Warehouse Management

TM: Transport Management

CM: Customer Service Management

IF: Information Flow Management

CR: Cost Reduction

CO: Competitiveness

CS: Customer Satisfaction

PR: Profitability

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Abstract

The study has been conducted with the role of logistic management information system practice on the logistic operational performance in the case of Alle bejimila Ethiopian Trading Enterprise. This study adopted a quantitative method, descriptive and explanatory research designs and survey as the research methodology. Accordingly, out of 130 employees taken as a population of the study, using random sampling technique, a questionnaire was distributed to 97employeesof Alle Bejimila head office working in logistics and supply chain department and cash and carry stores located in Addis Ababa and 69 usable questionnaires were collected with a response rate of 71%. Data obtained through questionnaire has been analyzed by using descriptive and inferential statistics: descriptive statistics for demographic variables, LMIS practice and LMIS performance in the form of frequencies, mean and standard deviation using tables, inferential statistics to show the effect of Logistic Management Information System Practice on logistic performance in Alle Bejimla the analysis were supported by SPSS 2005 software. The study focused and discovered the current logistics management information system activities that have an impact on overall logistics management performance of the company namely; inventory management, Warehouse management, transportation management, customer service management and information flow management. Empirical findings of the study showed that Alle Bejimla uses the required technology to manage its inventory, transport and warehouse system. However, there is a skilled man power gap to operate the technology and the system deployed. The enterprise shall train its employees so as to make them skillful to operate the technology employed in logistics management information system warehouse and inventory management system.

Key words: LMIS, Technology, Performance, logistic management, practice

CHAPTER ONE

INTRODUCTION

This chapter showed the general overview on the concept of logistics management information system and brief introduction of Alle Bejimila (Ethiopian Trading Enterprise) cash and carry wholesaler of food and Fast Moving Consumer Goods (FMCG) in Ethiopia along with the logistics management information system practices and its challenges that the enterprise facing. The chapter it includes background of the study, background of the Organization, statement of the problem, objective of the study, significant of the study, scope of the study, delimitation of the study, organization of the study and definition of terms.

1.1 Background of the study

In the present development of global economics, logistics play a key role in facilitating trade and, by extension, ensuring the success of business operations. Many businesses have come to the realization that to become competitive and also to maintain a competitive advantage in the current business environment they need to update their logistics system. Now a day's world is getting smaller and smaller everyday with advancement of technology. Customers' expectations are also increasing and companies are prone to more and more uncertain environment.

Logistics information systems (LIS) are specially designed to support all elements of logistics processes, including coordination of logistics activities, material flow, and inventory replenishment (Douglas M. Lambert, 1998). By necessity, this involves a combination of hardware and software in addition to supporting data exchange and capturing technologies, supported over the interconnected manufacturing and logistics phases between different companies by specialized manufacturing and logistics information systems (MLISs). It is recognized that overall supply chain performance can be improved by using information technology (IT) and while many firms have enabled transactional processing, they still request improvements to enable IT to support improved planning and decision support applications (Sundarakani, Tan, & Over, 2012). They have been used by both specific firms, as well as being a core enabler for many third-party logistics (3PL) firms to whom other companies outsource their logistics requirements (Srivastava & Wood, 2011).

Ethiopian logistics management system in general is characterized by poor logistics management system and lack of coordination of goods transport, low level of development of logistics infrastructure and inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling, transporting and in storage. The extent to which the organizations continue to face problems in relation to logistics management depends on its level of awareness and acceptance of its importance. The use of ICT in logistics is almost non-existent. Bar code reader is used at cash register of supermarkets but it is not connected with inventory or warehousing management system. MOT's plan is to introduce tracing and tracking using GPS, and software, databases and other logistics ICT applications (Fekadu, 2013).

Ethiopian trading enterprise (Alle Bejimla) is a public wholesale enterprise, established by the Ethiopian government council of Ministers proclamation NO. 285/2005, whose primary mandate is to increase affordability of goods to consumers, supports increased competition and investment in the private sector and to facilitate the development of a modern trade sector in Ethiopia. They provide food and other fast moving consumer goods through our modern "cash and carry" stores operating according to international best practices and consistently offering quality products at affordable prices. The aim develops a commercially viable business, while reducing consumer costs and inflation in the country.

ALLE's logistics management system implements Microsoft Dynamics NAV system enterprise resource planning (ERP) solution, it helps them to automate and connect their sales, purchasing, operations, accounting, and inventory management. ERP provides an integrated and continuously updated view of core business processes using common databases maintained by a database management system. ERP systems track business resources cash, raw materials, production capacity and the status of business commitments like orders, purchase orders, and payroll. The applications that make up the system share data across various departments (manufacturing, purchasing, sales, accounting, etc.). ERP facilitates information flow between all business functions and manages connections to outside stakeholders. The distribution of fast moving commodities from kality main warehouse to different "cash and carry" stores the transportation request system basically come from through email but they used GPS tracking system coordination with MELLA Communication Technology PLC. MELLA GPS Vehicle

Tracking System with a high accuracy fuel level sensor installed in the fuel tank you will be able to prevent fuel theft, fuel leak and monitor fuel consumption. Whenever there is a fuel theft, leakage or any rapid fuel drainage the system will immediately notify you through SMS, EMAIL and as an alarm on the system. Reports provide historic data analysis of Vehicle movements within specific date range. Some of the most common reports available are Distance Report, Speed Report, Photo Report, Trip report and Delivery Reports (Belay, 2018).

1.2 Background of the Organization

ALLE is the trade name of Ethiopian Trading Enterprise**,** a public enterprise, initiated by the Ethiopian government. The primary mandate of the enterprise is to increase affordability of goods to consumers, support increased competition and investment in the private sector, and facilitate the development of a modern trade sector in Ethiopia. The state enterprise that has an authorized capital of one billion birr, of which a quarter is paid-up capital, was initiated by the Ethiopian Government to be a commercially viable and privately managed business.

Alle aims to develop a commercially viable business, while reducing consumer costs and inflation within the country. Their vision is based on the belief that Ethiopians deserve a higher quality of life and a brighter future. By developing an efficient distribution platform, providing quality goods at competitive prices, and building a profitable business, can achieve their goal and create a lasting impact in their communities.

The enterprise is utilizing information communication technology to ascertain efficient storage and distribution of products and transparency in the trading business, according to Regulation No. 285/2013 which legally established the Ethiopian Trading Enterprise by the Council of Ministers. Alle's target customers are retailers, consumers' associations, service providers like hotels and restaurants, and the newly added one, civil servant unions (Kikubel, 2018).

Their vision is based on the belief that Ethiopians deserve a higher quality of life and a brighter future. By developing an efficient distribution platform, providing quality goods at competitive prices, and building a profitable business, they can achieve their goal and create a lasting impact in their communities (Alemayehu, 2014). The Enterprise has so far opened three stores in Addis

Ababa to supply food and non-food items to retailers and consumers as government initiative to control price. It is supplying over 252 food and non-food items through its three stores in Addis Ababa.

The Enterprise is striving to stabilize the market to curb price hike following the government's decision to raise salary of government employees. The wholesale market in Ethiopia has been dominated by few powerful suppliers and ALLE's introduction is expected to spur more competition into the market and ultimately bring prices down passed on to retailers. The government has decided to open these stores as a national initiative to control price by supplying items for wholesalers and keep the inflation at single digit. More than 3,000 retailers have made a deal with the Enterprise to buy items from the stores. Currently, the stores are trading items valued at 500,000 Birr a day. The Enterprise is working to increase trading amount to 1.3 million Birr a day, when it will open three additional stores in the city. The Enterprise has set target to open 36 stores in 27 towns around the country within the coming three years (Alemayehu, 2014).

1.3 Statement of the problem

In the present global economics, logistics play a key role in facilitating trade and, by extension, ensuring the success of business operations. However, changing consumer demands, complex business models and growing client demands are just some of the top factors that pose a challenge in streamlining logistics management (Abel 2017).

Ethiopian government by introducing Alle Bejimla Ethiopian trading enterprise wholesale enterprise principally is to control inflation of commodities price through enhancing competition in the market and promote modern trade sector in the country. Ethiopian trading enterprise (Alle Bejimla) logistics management system implements Microsoft Dynamics NAV system, ERP (Enterprise Resource Planning) solution, it helps them to automate and connect their sales, purchasing, operations, accounting, warehouse management and inventory management. The logistics transportation and distribution practices the GPS for vehicles tracking system integrated with MELLA Communication Technology PLC, to tracking fleet and fuel management systems. The software allows to track, monitor and manage fleets from anywhere in the world. Alle Bejimla is implementing ERP information systems that integrate applications to manage all

departments' functions like sales, purchasing, logistics, and inventory control warehouses and orders.

A preliminary interview made with the concerned staffs of the organization to understand the existing LMIS implementation practices and challenges, the following challenges were identified: Lack of inventory tracking practices, unnecessary expenditures due to waste, delay of shipment and order delivery to customers, lack of market information to analyze the trends to making informed operational decisions, high operational cost of running the ERP system as it is being managed by logistics management consultant, lack of experienced workforce to manage LMIS operation, resistance of employees in using LMIS to sharing internal information between departments, high turnover of experienced employee with ERP system and lack of training.

Similarly, the challenges facing in transportation and distribution network were identified at Alle Bejimila: they provide transportation service for three joint companies under Ethiopian trading enterprise therefore there is shortage of cars, Infrastructure problem mainly distributing to Dese cash and carry (wholesale) store, Coordination and Management problem, The car requesting management system is not organized and internet connection problem to send request and tracking the cars using GPS. These would have a paramount effect on the performance of the enterprise and investigating further is supposed to be important.

Therefore, the study tried to investigate the role of logistic management information system practice on the logistic operational performance of Alle Bejimila Ethiopian Trading Enterprise.

1.4 Research Questions

The main purpose of this study is to evaluate the role of logistic management information system practice on the logistic operational performance of Alle Bejimila Ethiopian Trading Enterprise.

- What it the effect of LMIS practice on inventory management operational performance?
- What is the effect of LMIS practice on warehouse management operational performance?
- What is the effect of LMIS practice on transport Management operational performance?
- What is the effect of LMIS practice on customer service management operational performance?

- What is the effect of LMIS practice on information flow management operational performance?

1.5 Objective of the Study

1.5.1 General Objective of the Study

The aim of the study is to assess the role of logistic management information system practice on the logistic operational performance of Alle Bejimila Ethiopian Trading Enterprise.

1.5.2 Specific Objectives of the Study

Derived from the general objectives of the study, the study has the following specific objectives.

- To explain the effect of LMIS implementation on inventory management operational performance.
- To explain the effect of LMIS implementation on warehouse management operational performance.
- To explain the effect of LMIS implementation on transport management operational performance.
- To explain the effect of LMIS implementation on customer service management operational performance.
- To explain the effect of LMIS implementation on information flow management operational performance.

1.6 Significant of the Study

Today it is no longer possible to run a successful operation without a working information system. A fully constructed information system contributes essentially to an organization's competitive advantage. These advantages are reflected in creating new, competitive positions, in cost reduction and achieving a certain dependency differentiation in operations, as well as in better results of all the logistics functions within the organization. The basic goal of an information system within logistics management is to make successful connections between suppliers, consumers, and competitors.

This study is expected to be used as a base for future study in the area of logistics management information system in relation to public wholesale enterprise sector, particularly in Ethiopia. In addition, since inefficient logistics management practices have the potential of impacting negatively on customer satisfaction and cost of doing business which in effect could spell dire consequences it will be very useful for managers to comprehend the significance and role of logistics management information system practices in the public wholesale enterprise sector. In particular, the dimensions and their constituent items offer a significant insight into the current logistics information system practices and their challenges in Alle Bejimila. It also gives a sign the area that need improvement so that Alle Bejimila will enable to fully take the benefits that information system within logistics management practices concept can offer for its success.

1.7 Scope of the Study

The study focused on the role of logistic management information system practice on the logistic operational performance of Alle Bejimila Ethiopian Trading Enterprise cash and carry wholesaler of food and Fast Moving Consumer Goods (FMCG) in Ethiopia along the major dimensions of logistics management information system, specifically inventory management, warehouse management, transportation management, information flow management and customer response. Alle Bejimila is planning to operate in 35 different cities in Ethiopia, and currently has opened 7 stores in total since now. Due to time and resource constraint the study only focused on stores located within Ethiopian capital, Addis Ababa. The number of stores currently operating in Addis Ababa totals 3 and operate in the areas of Bole, Kality and Merkato.

1.8 Limitations of the Study

The major limitations of the study was it used only cross sectional data collected from employees of different departments of the same institution and as such it didn't collect time series or panel data to see the changes of the logistics management information system across time.

1.9 Organization of the Study

This research paper consists of five chapters. Chapter one introduced the problem statement and described the specific problem addressed in the study as well as design components. Chapter two presents a review of literature and relevant research associated with the problem addressed in this study. Chapter three discussed about the methodology and procedures used for data collection and analysis. Chapter four contains an analysis of the data and presentation of the results. Finally, chapter five offers summary, conclusion and recommendations.

1.10 Operational Definition

LMIS: is a system of records and reports whether paper based or electronic used to aggregate, analyze, validate and display data (from all levels of the logistics system) that can be used to make logistics decisions and manage the supply chain. LMIS data elements include stock on hand, losses and adjustments, consumption, demand, issues, shipment status, and information about the cost of commodities managed in the system (Lisa Hare, John Snow, 2012)

Cost Reduction: The process of looking for, finding and removing unwarranted expenses from a business to increase profits without having a negative impact on product quality. Many business managers will engage in periodic cost reduction drives in order to make their company's operation more efficient and to boost profits (Business Dictionary, 2019).

Competitiveness: Ability of a firm or a nation to offer products and services that meet the quality standards of the local and world markets at prices that are competitive and provide adequate returns on the resources employed or consumed in producing them (Business Dictionary, 2019) .

Customer Satisfaction: is a term used to describe a scenario when an exchange meets the needs and expectations of its user. It captures the provision of goods or services that fulfill the customer’s expectations in terms of quality and service in relation to the price paid. Customer satisfaction, as a business term, can also be used to measure how the supply of products or services surpasses customer expectations (Harvard Business Review, 2007).

Profitability: is ability of a company to use its resources to generate revenues in excess of its expenses. In other words, this is a company's capability of generating profits from its operations (Business Dictionary, 2019).

CHAPTER TWO

RELATED LITERATURE REVIEW

The literature review of the study shows the basic concepts which provide definition for logistics and the role of information system in logistics management practice in recent trends. The review also discussed about the general practices of logistics management information system and challenges. The theoretical and empirical literatures are presented in combination with each other, explicitly they are not separated. Although, in the review of empirical studies, it was difficult to get many literatures that are matched with the title of the study, the basic findings from some related studies are included. Finally, a conceptual frame work of the study presented in diagram.

2.1 Theoretical Literature review

2.1.1 Logistics Management

Logistics is about getting the right product, to the right customer, in the right quantity, in the right condition, at the right place, at the right time, and at the right cost. The types of logistics are inbound and outbound logistics. Inbound Logistics refers to movement of goods and raw materials from suppliers to your company. In contrast, Outbound Logistics refers to movement of finished goods from your company to customers (Ben Benjabutr, 2018)

Logistics Management deals with the efficient and effective management of day-to-day activity in producing the company's finished goods and services (Paul Schönsleben, 2016). Logistics management based on strategy formulation, planning, material flow control, warehousing, inventory, work in progress, finished goods and adequate information - from the point of obtaining to the point of consumption - in order to adjust to the needs of customers and their satisfaction. Tasks of logistics management can be divided into supply logistics, production and distribution. Therefore, in this monograph it was decided to take into account the basic material flow phases in terms of enterprise and supply chain management (Adam Koliński, 2016).

2.1.2 Information system in logistics management

A logistics management information system (LMIS) is a system of records and reports whether paper based or electronic used to aggregate, analyze, validate and display data (from all levels of the logistics system) that can be used to make logistics decisions and manage the supply chain. LMIS data elements include stock on hand, losses and adjustments, consumption, demand, issues, shipment status, and information about the cost of commodities managed in the system (Lisa Hare, John Snow, 2012)

A supply chain is the network of suppliers, distributors and subcontractors used by a manufacturer to source its raw materials, components and supplies. Logistics companies store, transport and distribute supplies and work-in-progress within the supply chain and distribute finished products to customers or intermediaries. Integrating supply chain and logistics operations improves efficiency and reduces costs, increasing the manufacturer's competitive advantage. The role of Information technology in supply chain management it supports to restructure the entire distribution set up to achieves higher service levels and lower inventory and lower supply chain costs. Fundamental changes have occurred in today's economy. These changes alter the relationship we have with our customers, our suppliers, our business partners and our colleagues. IT developments have presented companies with unprecedented opportunities to gain competitive advantage. So IT investment is the pre-requisite thing for each firm in order to sustain in the market (Emmanson's Blog, 2012).

Information system is an important element of logistics in the chain of managing, organizing and operating in both profit and nonprofit organizations. The advantages of applying strategic management in the development of information technologies contribute to positive development of logistics functions in an organization or institution as a whole. A prerequisite for successful logistics management is systematic gathering of required business information. Today it is no longer possible to run a successful operation without a working information system. A fully constructed information system contributes essentially to an organization's competitive advantage. These advantages are reflected in creating new, competitive positions, in cost reduction and achieving a certain dependency differentiation in operations, as well as in better results of all the logistics functions within the organization (Kata Iviæ, 2008).

2.1.3 Inventory management system

A database used for storing and administering all types of data required for efficient and accurate warehouse inventory management. This may include modules or fields for keeping track of all items and locations, requisitions, back orders, required levels of inventory on hand, reorder points, lead times, inventory error tracking, and more. This type of system may interface with an ERP and other applications.

Without an inventory management system, the goods and products that flow through an organization will inevitably be in disarray. An inventory management system enables a company to maintain a centralized record of every asset and item in the control of the organization, providing a single source of truth for the location of every item, vendor and supplier information, specifications, and the total number of a particular item currently in stock (Nicole Pontius, 2019). Because inventory often consists of movable assets, inventory management systems are critical for keeping tabs on current stock levels and understanding what items move quickly and which items are more slow-moving, which in turn enables organizations to determine when it's time to reorder with greater accuracy. Overall, a comprehensive inventory management system offers benefits to companies including:

- Improved cash flow
- Better reporting and forecasting capabilities
- Reduction in storage costs (overhead)
- Reduced labor costs
- Enhanced transparency
- Improved supplier, vendor, and partner relationships

2.1.4 Warehouse Management System

Warehouse management systems (WMS) are software programs that track the location of goods within a warehouse. This primarily saves storage space and eases order picking to make the warehouse more efficient. WMS support varying configurations of automated and manual material handling operations. The fundamental purpose of a WMS is to record the real-time location of goods within a warehouse. Typically, WMS manage the inventory of finished goods

within an intermediary supply chain facility; raw materials are managed in manufacturing operations by materials requirement planning (MRP) or enterprise resource planning (EPR) strategies. Inventory management systems (IMS) are often a component of WMS, but are not equivalent. WMS distributors or manufacturers typically require a yearly license fee which supports software upgrades.

WMS have grown to accommodate the wide variety of sensors, processors, and automated material handling equipment available. They can significantly reduce or eliminate the need for personnel within warehouses, but require user-defined parameters and support personnel to maintain workflow fluidity. Robotic systems have become prominent. These systems minimize delays, equipment, inaccuracies, and labor to optimize warehouse efficiency. Since no two warehouses are alike, WMS must be scalable, modular, and configurable to the end user's needs. A WMS can typically support put-away and picking operations achieved by both automated machines and personnel. It calculates the best location for an item to reduce the overall spatial and labor investment of each item.

When a parcel or item arrives at the warehouse from a manufacturer, a barcode, microchip, or RFID tag is affixed so that the WMS data acquisition system can readily identify individual articles with common data acquisition equipment. A manufacturer may have already installed an identification device upon the item as part of another asset management system or to streamline distribution. Machine vision is another means of automated recognition. Many times, the WMS determines at which dock to unload a trailer.

Identification information is relayed to a processor and WMS software which acknowledges receipt of the item, determines the item's point-of-sale destination, and the item's warehouse destination for storage or loading. This data can be held in a physical memory or cloud-based data system. Additional information can be automatically queried, such as parcel weight or quality assurance. The software also manages information such as lot numbers, SKUs, control dates, or any other relevant information.

Warehouse Storage Put away image The WMS software determines the optimal location for storage within the warehouse while considering space constraints, shipping destination and date,

inventory, and other factors (i.e. products with the same destination or footprint will be stored together). This information is relayed to automated material handling equipment or personnel which will route the items to the determined warehouse location. Items are meant to be easy to find and relocate, and accounts can be referenced to determine inventories. Items for shipping are removed from their storage location by material handling equipment and are agglomerated in a staging area for loading into a container or other supply chain vehicle. This process is known as order picking, and WMS support all types of picking practices (order, wave, pick-and-pass, etc.). Items are once again scanned upon their departure to create a departed asset manifest (Philip Obal, 2008).

2.1.5 Transportation management system

A transportation management system (TMS) is a subset of supply chain management (SCM) that deals with the planning, execution and optimization of the physical movements of goods. In simpler terms, it's a logistics platform that enables users to manage and optimize the daily operations of their transportation fleets. TMS is offered as a module within enterprise resource planning (ERP) and SCM suites and helps organizations move inbound, procurement, outbound, shipment and freight using tools such as route planning and optimization, load building, operations execution, freight audit and payment, yard management, order visibility, and carrier management. The ultimate goals of using a TMS are to improve shipment efficiency, reduce costs, gain real-time supply chain visibility and enhance customer service. Typically, TMS serves both shippers and logistics service providers. Manufacturers, distributors, e-commerce organizations, wholesalers, retailers and third-party logistics (3PL) companies are some of the major users of TMS software (Gartner, 2016).

TMS has gained traction over the past decade, as it has emerged as an enabler of seamless global trade and logistics management. By enabling information exchange across functional silos; amid geographically disparate operations; and in various languages, currencies, and business units, it has developed into enterprise software that is finding growing appeal. Furthermore, its functionalities make it suitable for organizations that not only have complex logistics operations, but also those that may have basic transportation needs (Robert Steiner, 2017).

Transportation management system can benefit organizations in the following ways:

- **Transportation order planning and execution.** TMS integrates well with enterprise order management, warehouse management and purchasing systems, customer relationship management (CRM), supplier relationship management (SRM), and other systems for managing transport demand. It enables users to plan and manage both international and domestic shipments and determines the cheapest and most efficient carrier and mode using better route planning, load optimization, carrier mix and mode selection.
- **Supply chain visibility and better control of inventory management.** TMS enables users to track and monitor the lifecycle of orders and shipments in real time and get status updates on each. This offers users an accurate forecast for the inventory and improves the visibility and accountability of the supply chain network.
- **Reduce invoice errors.** By automating the freight payment and audit processes, users can reduce errors that may arise from manual procedures.
- **Transport intelligence.** Most TMS software offers users extensive insights and reporting capabilities that provide them with detailed visibility into freight data and metrics to help pinpoint any discrepancies. With this data, users can make the necessary changes to improve service delivery and reduce cost, and they can also create reports.

2.1.6 Customer Service Management System

Information Management System is a very effective tool of customer service and business should always use it to their advantage. Customers are always on the lookout for latest information on products, specifications and other information. The use of Information Management System for customer service will allow the organization to be a lean organization as far as customer service personnel are concerned if the organization allows the customer an access to all these information over the internet. If a customer is not satisfied with the information provided over the internet he can always call the customer service department of the organization and get his problems solved. Usually customers are also very happy if they can access all the required information sitting at their home or office about the product of their choice or any other information which may be of some use to them. The Information Management System should be strong enough to provide all the details which a customer may require. The customer should be

provided with details of product features, the delivery time, accompanying services and accessories, the guarantee period, the product return policy of the organization. It should also provide the details of alternatives available and the other items optionally available and finally the product pricing.

A three dimension tour of the product is helpful in case of consumer electronics so that the customer can get a look and feel of the actual product. For example, Amazon.com provides an extract of the table of contents and a few pages of each book they sell. Most mobile phone manufacturers provide an interactive three dimensional feature tour of their mobiles where the user is free to explore all the features available on the phone. This is the power of the Information Management System when interfaced with the internet. It takes you closer to your customers (Francis Buttle, 2004).

2.1.7 Information flow Management

Information can flow in four directions in an organization: downward, upward, horizontally, and diagonally. The size, nature, and structure of the organization dictate which direction most of the information flows. In more established and traditional organizations, much of the communication flows in a vertical—downward and upward—direction. In informal firms, such as tech start-ups, information tends to flow horizontally and diagonally. This, of course, is a function of the almost flat organizational hierarchy and the need for collaboration. Unofficial communications, such as those carried in the company grapevine, appear in both types of organizations (Dalmar Fisher, 2007).

- **Downward Flow of Communication:** Communication that flows from a higher level in an organization to a lower level is a downward communication. In other words, communication from superiors to subordinates in a chain of command is a downward communication. This communication flow is used by the managers to transmit work-related information to the employees at lower levels. Employees require this information for performing their jobs and for meeting the expectations of their managers.
- **Upward Flow of Communication:** Communication that flows to a higher level in an organization is called upward communication. It provides feedback on how well the organization is functioning. The subordinates use upward communication to convey their

problems and performances to their superiors. The subordinates also use upward communication to tell how well they have understood the downward communication. It can also be used by the employees to share their views and ideas and to participate in the decision-making process. Upward communication leads to a more committed and loyal workforce in an organization because the employees are given a chance to raise and speak dissatisfaction issues to the higher levels.

- **Lateral / Horizontal Communication**: Communication that takes place at same levels of hierarchy in an organization is called lateral communication, i.e., communication between peers, between managers at same levels or between any horizontally equivalent organizational member.
- **Diagonal Communication**: Communication that takes place between a manager and employees of other workgroups is called diagonal communication. It generally does not appear on organizational chart. For instance - To design a training module a training manager interacts with Operations personnel to enquire about the way they perform their task.
- **External Communication**: Communication that takes place between a manager and external groups such as - suppliers, vendors, banks, financial institutes etc. For instance - To raise capital the Managing director would interact with the Bank Manager.

2.1.8 Challenges of logistics management system

In present day global economics, logistics plays a key role in facilitating trade and, by extension, ensuring the success of business operations. Logistics managers have seen increasing challenges to create and keep efficient and effective logistics and supply chain methods. Here we discuss five of the biggest logistics challenges faced on a daily basis (Leif Enarsson, 2006).

- **Customer Service**

Logistics management is all about providing the right product in the right quantity to the right place at the right time. Customers want full transparency into where their delivery is at all times. In this day and age, the whereabouts of a customer's shipment is as interconnected as your social network. In fact, as customer expectations have increased, their willingness to pay for fast

shipping has decreased, with just about 64 percent of consumers unwilling to pay anything extra for less than two-day shipping.

- **Transportation Cost Control**

One of the highest costs contributing to the 'cutting transportation cost' concern is fuel prices. Higher fuel prices are likely to increase transportation costs for U.S. shippers this year by pushing up fuel surcharges. Rising U.S. diesel fuel prices are escalating surcharges added to freight rates, which is reversing a two-year trend that cut into the revenue and earnings of truckers as fuel prices plummeted.

- **Planning & Risk Management**

In order to stay as efficient and effective as possible, periodic assessments and redesigns of each business sector are necessary. These adjustments are put in place in response to changes in the market, such as new product launches, global sourcing, credit availability and the protection of intellectual property. These risks must be identified and quantified in order to control and moderate.

- **Supplier/Partner Relationships**

It is important to create, understand and follow mutually agreed upon standards to better understand not only current performance, but also opportunities for improvement. Having two different methods for measuring and communicating performance and results wastes time and effort.

- **Government and Environmental Regulations**

Carriers face significant compliance regulations imposed by federal, state and local authorities. As well as federal regulations, environmental issues such as the anti-idling and other emission reduction regulations brought about by state and local governments has created concern that the compliance costs could exceed their benefits. With the landscape of business operation continuously changing, there is a shift in the ensuing challenges as well. Staying up to date with these changes and taking preemptive measures to ward off challenges is a sign of successful logistics management (Blog on July 10, 2018).

2.2 Empirical Literature Review

2.2.1 The Role of Information System in Inventory Management

Inventory management is essential to every company, having inventories. Companies need to have stock, but in such amount to avoid out-of-stock and overstock situations. Inventory management can improve company's inventory control existing situation and decrease costs of the company. Agent system, in turn, proposes the automation of this process, it can support several forecasting methods and it reacts to changes in the environment. In this paper, the existing inventory management situation is analyzed, twofold improvement is proposed to use inventory management with the aim to decrease company's inventory level and holding costs by avoiding overstocks and to apply the agent system in order to automate the inventory management processes and to timely react to demand deviations from the forecasted demand by making corrections in replenishment policies. According to experiments, it can be concluded that timely reaction to changes in the environment can propose better results. This can be done by a human or decision support system comparing the forecasted demand with real and making corrections in orders, or this can be done by an agent as it is proposed here. The next step of the present research will be the application of achieved results of demand forecasts, safety stock and reorder points into simulation software in order to achieve more accurate results (Darya Plinere, 2015).

It is widely accepted that firms can achieve effective inventory management with the right strategies. This study analyzed the inventory control strategies of small to medium-sized enterprises (SMEs) in Jamaica. The objectives of the study were to identify whether these companies used the "best practices" in inventory control, the effects of their strategies on business performance, and the factors that affected the development of their strategies. Firms that can implement the right inventory control strategies to effectively hold the right balance of inventory while keeping related costs at a minimum can benefit from an increase in financial performance. An objective of the research was to highlight the strategies of inventory control and their impact on business performance. Without an investigation into the financial performance, due to expected reluctance from the SMEs, it is difficult to adequately determine whether the

strategies being used were indeed successful in achieving higher financial performance. Nonetheless, this research has provided much insight into the level of IT investments in inventory management of Jamaican firms. This information is important given that few articles have examined the types of automation used in Jamaican SMEs for inventory control. The information from this research may be useful to ERP manufacturers to redesign or build systems tailored to Jamaican firms based on the environmental and regulatory constraints. ERP manufacturers should address the limitations that Jamaican SMEs experience and note that reproducing historical data is a 'must have' feature for these SMEs, and thus include this as a default feature in the development of any ERP system. This research is fitting and adds value to the wider assessment of inventory control strategies in SMEs. An implication of this research comes from a reframing of two issues: the misuse of automation in SMEs, that is available but mostly underutilized, and the incongruities of ITR as an acceptable measurement of inventory management performance. As a final implication, the findings of the study inspire new research into what is indeed the most appropriate measure of effective inventory control for SMEs and how to persuade SMEs to make feasible investments in IT for benefits to be realized over the long run. By way of institutionalism and the mimetic isomorphic behavior among the SMEs, it is likely that with one of two entities making larger investments in automation will create a benchmark that smaller and developing firms will adopt (Fashaya Johnson1 &Thanasak Ruankaew, 2017)

2.2.2 The Role of Information System in Warehouse Management

Companies nowadays are inserted in dynamic environments in which the inventory management becomes an item in the search for competitive advantage of organizations, compared to their competitors. (Hékis, 2013) point out that, when they look for alternatives in the inventory management, some organizations have chosen to supply their products via distribution center. These environments, as components of an organization need to evolve, reduce cost, keep track of their results and still, have focus on their clients' satisfaction. Viana and Rodrigues Neto (2012) emphasize that "to keep themselves competitively in the market and achieve efficiency in logistics operations it is essential the deployment of an information system". To meet this

informational demand, it has become increasingly the use of an information system that facilitates the location of products, reduce errors and still meet the needs of customers in a storehouse, warehouse or distribution center there are items with high obsolescence (Silva & Silva, 2013). Arbach (2011) mention that the WMS enables the operational optimization through the increase of the operational competitiveness, optimization of spaces, rationalization of resources both for movement and storing, providing this way an environment of increased productivity. In order to identify the benefits of using WMS, some studies have attempted to analyze theoretically their deployment as the research developed by Pereira, Toquetti, Ricci and Duarte (2010), Viana and Rodrigues Neto (2012) and Silva and Oliveira (2013). In this same line of thought, new studies have investigated the use or implementation of the system in centers of companies distribution (Silva, 2013), in organizations of the furniture sector (Costa & Gobbo Junior, 2008), the food segment (Martins, Brito, Freitas & Nunes, 2010; Arieira, 2012), in the textile sector (Hékis, 2013), in companies of supplies in the corporate market (Machado & Sellitto, 2012) or even, in the perspective of reverse logistics (Guarnieri, Chrusciak, Oliveira, Hatakeyama & Scandelari, 2006).

The deployment and use of the WMS allied to new information technologies, when properly used, become a strong differential between organizations that crave the excellence in service to their customers. In this way, organizations are increasingly seeking alternatives to facilitate the management of their activities, the increase in control and the obtaining of precise information, which may in fact accelerate the process of decision making and thus improve the level of service (Pereira, 2010). In this sense, it arises the central purpose of this research which is to try and describe the deployment of a system WMS (Warehouse Management System) of warehouse management, in a distribution center and wholesaler of the segment of personal hygiene and cleaning products.

2.2.3 The Role of Information System in Transportation Logistics

Effective operations of enterprises in almost every sector of the economy require a well-functioning transport. The presented definition: "transport is a set of activities related to the movement of people and material goods by appropriate means. It plays a very important role in

logistics, because of the goods movement of and the creation of ancillary services. Transport in the national economy enables the exchange of goods and services. Transport raw materials and semi-finished products for production (in industry, construction, etc.) And finished products for personal consumption" (Pracazbiorowa, 2008). The primary function of it is transport, which covers the period in which the charge remains at the center of transport, traffic and during parking. Additional activities are held in the transport collection point: loading, unloading and storage of short-term or long-term loads. The transport along with the movement also includes additional services such as logistics, freight forwarding, control etc. These services are related to the organization and management of the processes of movement, so are services that are intangible (Neider, 2006).

Transport management is the most important logistics thing. Costs associated with transport are often more than one-fourth of the overall logistics costs (Kisperska-Moroń & Krzyżaniak, 2009). Transport managers in the company are responsible for the decisions, whether to use own transport or external, in particular, are responsible for the choice of a particular carrier and the specific route of transporting cargo. The employee needs to know the cost of transport, the applicable rules of law in terms of rules and regulations concerning the transportation, and also have the ability to manage human and financial resources. Managers should have regard to the objectives of logistics and general business (Dima, Man & Vlăduţescu, 2012).

The essence of it is such an organization of transport, which can increase production and sales. Management determines the choice of the branch, type and method of transport. The choice of a particular transport mode depends on the physical parameters of load (width, height, length). Weight load will decide about the selection of vehicles carrying capacity. Transport should be characterized by reliability - loads should not get either too late or too early. An important feature is the speed of the carriage. In particular, the realization of late orders, transport of live organisms or documents. For the transport manager is also important the ability to control and monitor the traffic, this applies particularly to shipments of high value (Rydzkowski, 2005). The choice of transport mode or cargo carriage is only the first step; the next is an order specifying the type of cargo and its quantity, detailed definition of the term, type of transport, or special requirements. Another area of activity is the preparation of shipping documentation (the

most important is the waybill and invoice for transport). Waybill is a document of the contract between the consignor and the carrier, determines the conditions and form of transport service. In the past, the former economic system, transport management in the enterprise was treated very marginally caused by lack of competition. Currently, at the market are lot of competing firms producing similar goods, as well as companies engaged in the carriage of the goods, which led to the fact that companies try to invent newer and newer technologies, marketing tricks or techniques types of traffic (Dima& Man, 2013; Vlăduţescu, 2013).

Information are related with all processes occurring within a single enterprise. Unless you can determine where the process begins or ends, in the case of an information system, it does have neither beginning nor end (Vlăduţescu & Ciupercă, 2013). The steps of each process can be quite easy to distinguish, at least because of course, type and nature of the information that they acquire or generate. In contrast, information system acquires any kind of information as well as generates information addressed to all processes in the company. And that is what most reflects the character of the information system as a neural network girdling the enterprise. At the beginning, in order to realize the transport process, the following information were necessary: Information on the selection of mode of transport (road, rail, sea or air), Information about loads (size, type, quantity, weight, height), Information about senders and recipients (name, organization name, address), Start and end time (the date of dispatch of the cargo and the date of receipt of the load), And one should bear in mind, that before the transport process was focused on turnaround time (the shorter the better) (Siminică &Traistaru, 2013).

Currently, the transport process must also satisfy the quality requirements of the services provided (the form of its execution has the same level of importance as the time of delivery). This result, that in order to improve transport processes, many technologies in the preparation and transmission of information have been created. To run the transport process smoothly, companies are increasingly using modern tools of information systems. This need led to the creation of "telematics", a term which is a combination of two words: "telecommunications" and "information technology", and in accordance with the definition given by the New Encyclopedia of Universal means telecommunications department dealing with the transfer, exchange or dissemination of information in the form of immovable property picture of alphanumeric text,

logos, writing, drawings or photographs. (Kot, 2008) Telematics also means telecommunications solutions, computer and information and automatic control solutions used to meet the needs of supported physical systems - resulting from their jobs, infrastructure, organization, processes, maintenance and management - and integrated with those systems (Wydro, 2005; Smarandache & Vlăduţescu, 2014). In common usage telematics means devices and systems collecting data for the transmission of their distance using telematics and transform them into information for the final user (Traistaru, 2013)

2.2.4 The Role of Information System in Customer Services Satisfaction

Modern technology of information systems offers numerous alternatives for managing relations/transactions between companies and customers. Most of these systems are focused on customer service, while their satisfaction evaluation capabilities are rather limited. This is mainly explained by the lack of methods and techniques purely oriented to customer satisfaction measurement, and the availability of several statistical packages and data analysis applications that solve this particular problem. The aim of customer service information systems is mainly to satisfy customer requirements or manage customer complaints. In general, the primary requirements expressed by the customers during their transaction with business organizations are direct resolution of technical or other problems related to particular product/service, on line access to technical or other information provided by the company, and ability to provide interactive support (Yannis Siskos, 2009).

The importance of Information Technology in any organization in this modern day cannot be overemphasized. Information Technology plays vital roles in data entry, data processing and security, and information distribution. IT is needed to ensure that national pensions are administered with the highest form of integrity so that customers are duly satisfied during and after retirement. This research has brought to bear the immense benefits associated with providing value to customers through the use of Information Technology. Every organization in this modern era makes use of one or more information technology facilities to ensure their customers enjoy quality and immediate services.

Information Technology is playing a vital role in helping the company achieve its goals. Information Technology is applied in every department in the organization, supporting the staff and management to enter process and distribute information concerning customers to ensure their retirement benefits are ready whenever they are to proceed on retirement. Information Technology ensures that customer data is as secured as possible. Customers of the company also find the use of their information technology services highly reliable and satisfactory. Most of these customers would prefer the company introduces even more technology to facilitate other operations in the organization (Rukia Vandyck, 2016).

The study presents in Malaysia on customer information system satisfaction and task productivity in the moderating effect of training, the study presents user satisfaction based on the End-User Computing Satisfaction success model, which captures the multidimensional and interdependent nature of customer information system success. The results indicate that ease of use, content and format are valid measures of customer information system success. Apart from the link from system satisfaction, the hypothesized relationships between the three success variables were significantly supported with the relation of employees' task productivity. On the other hand, the findings conclude that training did moderates the relationship between Ease of Use and Task productivity. But yet, it does not moderate the relationship between content and format satisfaction towards employees task productivity. This research provides several important implications for customer information system success research and management. The findings clearly indicate that the total effects of ease of use are substantially greater than those of system format and content. In order to increase employees' task productivity, management needs to cultivate a quality CIS system with good quality of content, format of data and a system that is easy to use (Sharidatul Akma, 2015).

Another study on service quality and customer satisfaction is simply described the attitudes and feelings that customers hold about an organization. Customer satisfaction and loyalty behaviors are a lead indicator of future organizational performance. Many organizations have failed to use the information generated by the customer surveys to improve satisfaction. This is not because customer satisfaction surveys do not work but because many are based on flawed methods. As

there were no previous researches handled in the Company X, it was a complexity to manage with what kind of research method should be applied. As employee of the company, the author meets service and customer satisfaction issues every working day, and was given many recommendations and varieties of choices how to organize the survey. The easiest way was to give direct questions to receive direct answers. The amount of respondents who took part in the survey, in comparing with the amount of daily market's customers, is sufficiently small, but the results are so unambiguous that more respondents were not needed. All opinions strongly divide into categories, which relate to the positive side in every section of the questionnaire (Asya Archakova, 2013).

2.2.5 Logistics management information system performance

Logistics management information system performance for program drugs in public health facilities of East Wollega Zone, the study find out that the quality and inventory record accuracy require improve-ments, nonetheless, their reporting rate was encour-aging. The major challenges that influence the facilities to manage their information system appropriately were identified to be a shortage of pharmacy professionals, lack of commitment from top-level management and in-ability to implement automated recording and reporting system. The study also identified staffs that have taken integrated pharmaceutical logistics system training yet not contributed to logistics management information system and even not volunteers to do so. Their main reasons were the burden of tasks and absence of an automated recording system in the facilities. Generally, factors like training of staffs, availability of automated record systems, supportive supervision and feedback report had a significant association with the RRF data accuracy. Therefore, pharmaceutical fund and supply agency and partners should increase their frequency of supportive supervision and also provide constructive feedback to the facilities. The facilities, especially the health centers together with the concerned stakeholders, should strengthen their LMIS by implementing auto-mated recording systems (Kefyalewu Tiye and Tadesse Gudeta, 2018).

According to Nyaberi and Mwangangi (2014), order process logistics management practices contributes to increase in profit, sales volume, service delivery, production levels and quality of

product. This therefore shows that the importance of logistics management in any of the organization cannot be underrated. It should be the core business of the business to formulate and design order processing logistics practices to enhance performance. According to them, Inventory control logistics management assists to reduce costs of maintenance of stock, to maintain quality of the product, to improve production flow and to reduce cost of breakages. This in turn leads to customer good will and a high volume of sales, hence improvement in overall performance of the business. Today's turbulent competitive environment mandates that a firm must have agility in the marketplace to survive and succeed. Therefore, logistics has become an increasing area of strategic concern for firms (Olavarrieta and Ellinger, 1997). In their study of logistics, strategy and structure: Stock in (1998) argued that as competition shifts from head to head competition between firms to competition between supply chains, competitive success will depend increasingly on the ability to coordinate and integrate the production activities at geographically dispersed and organizationally distinct locations. These "new" enterprises logistics will place a high priority on inter firm integration of logistics activities and sustainable commercial success.

A study done by Nge in (2016) concluded that logistics activities, factors of logistics activities and critical factors affecting those logistics activities are important element for business performance. Focusing on the enhancement of logistics capabilities is associated with superior firm performance (Olavarrieta and Ellinger, 1997).

A study done by Muslimin in (2015) shows that logistics operation has a significant impact on financial performance. According to them logistics cost and service qualities have positive impact on financial performance. According to the study conducted by Tilokavichai in (2012) about Analysis of Linkages between Logistics Information Systems and Logistics Performance Management under Uncertainty companies can achieve more efficient and higher performance if they systematically plan their logistics management strategy. In their study of logistics in the hospital: methodology for measuring performance, Serrou and Abouabdellah (2016) have shown the importance of logistics costs in health institutions, as well as performance analysis via the cost, safety and quality. From the research conducted by Tabeni (2006) about the impact of

inbound logistics activities on the operational performance of the postal services organization in South Africa, It has been revealed that there exists significant relationship between inbound logistics activities and the operational performance of the business. According to this study, it has been supported that inbound logistics activities and revenue generation are positively correlated. The research concluded that whatever improvement is done in respect of inbound logistics will help to enhance business performance in terms of increased revenue generated in a very cost effective way.

Kuswantoro and Rosli (2012) in their study Logistics Efficiency and Firm Performance: Evidence from Indonesian Small and Medium Enterprises, showed the significant impact of logistics innovations in information sharing and transportation coordination on firm performance is sufficient to explain the variation in performance. In addition, the finding of this study showed that the application of information technology, such as the internet enables firms to improve their market knowledge and relationship with clients and suppliers within the same value chain. This would improve logistics efficiency in terms of costs and delivery time and finally the performance. In addition, innovative transportation coordination was found to improve logistics efficiency, which directly influenced performance.

2.2.6 Challenges of Logistics Management

Logistics management system in Ethiopian it shows lack of coordination of goods transport, low level of development of logistics infrastructure and inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling, transporting and in storage. This coupled with lack of sea port resulted in poor linkage of producers (farmers) to the consumers (market) and non-competitiveness of Ethiopian goods on global market, which compromised livelihood of the people and economy of the country. Efficient and effective logistics system needs to be put in place to solve these socio-economic problems (Fekadu M. Debela, 2013).

A study by (McKinsey, 2011) highlighted unclear communication between logistics services providers and users lead to business interruption is one of the challenges. The distinct shortage of logistics and supply chain expertise, including information system support capabilities, which

have become hurdles to logistics and supply chain development (Long,2003). According to (Dolven, 2002) and (Kerr, 2005), inadequate logistics infrastructure coupled with lack of skilled workers and management is blamed for the high level of loss, damage and deterioration of stocks experienced. ICT is increasingly regarded as a vital resource that supports many business processes (Alshawi, 2001). In the logistics industry, ICT such as internet, extranet, Ethernet, electronic data interchange (EDI), facilitates the integration of supply chain activities (Angeles, 2000). These technologies range from tracking devices (RFID & EPCs), transport management systems, EDIs, point of sales systems, etc. Although these devices have great benefits, they still come with a great cost of acquisition.

Shaharuddin (2014) classified the obstacles from 38 articles into two major groups: internal barriers and external barriers in logistics management. There are 13 internal barriers and 7 external barriers, suggesting that there are ample opportunities for logistics to improve their managements since internal barriers are generally under the direct control of the firm. Hence, firms should consider taking extra motivation to tackle internal issues to improve environmental efforts. The internal barriers are employee attitude, top management support, communication, resources, wrong perceptions, culture, strategic capabilities, financial, performance metrics, and uncertainty of results, technology, risk issues, and infrastructure. External barriers consist of economics, competitive pressure, regulations, technical information, institutional weaknesses, support and guidance, and market barriers.

The current trend of changes in global business is highlighting the importance of logistics in the development of Third World business and industries. Literature reveals that many of these Third World nations lack logistics facilities; the task of developing a good logistics system in these nations is quite challenging. Attempts to understand these challenges by looking at Bangladesh, a new entrant from the Third World in the globalization race. Based on a survey of the country's logisticians, identifies five broad challenges facing logistics development in Bangladesh and proposes a schematic model that integrates efforts of, and inputs from, four sources to solve these problems. Argues that the proposed model is also adaptable in other developing nations (Mohammed Abdur, 1997).

A number of studies have been conducted on the state of logistics management issues in less developed countries. Many of the less developed countries lack logistics facilities; the task of developing a good logistics system in these nations is quite challenging. For example, according to a study conducted by (Goh and Pinaikul, 2002), inefficient logistics information systems, acute transportation bottlenecks, climate changes, lack of modern logistics management techniques and expertise, high cost of acquiring and installing automated logistics equipment, and the current inefficiency of the logistics information systems are the factors that hinder logistics development in Thailand.

2.3 Research Gaps

Research gap is a problem which has not been addressed so far in a particular field. Several studies have focused on LM practices and challenges but I couldn't find enough studies that have focused on LMIS practice and challenges especially on the government enterprise sectors. The study assessing the logistics management information system practices of Alle Bejimla, strove to identify measures that should be taken to improve the practices of LMIS. This will provide appropriate recommendations on challenges facing the implementations of LMIS practices. While the present assessment has contributed to the understanding of these practices and challenges, further analysis in some areas like the impact of logistics information system on operational efficiency of enterprise sector is required to ensure the capacity needs of logistics addressed adequately.

2.4 Conceptual Framework/Model

As can be seen the figure below the conceptual framework shows the relationship among variables under the study. Independent variables are presented in Logistics management information system practices of inventory management, warehouse management, transport management, customer service management and information flow management practices and the dependent variable is logistics management performance represented by cost reduction, competitiveness, customer satisfaction and profitability.

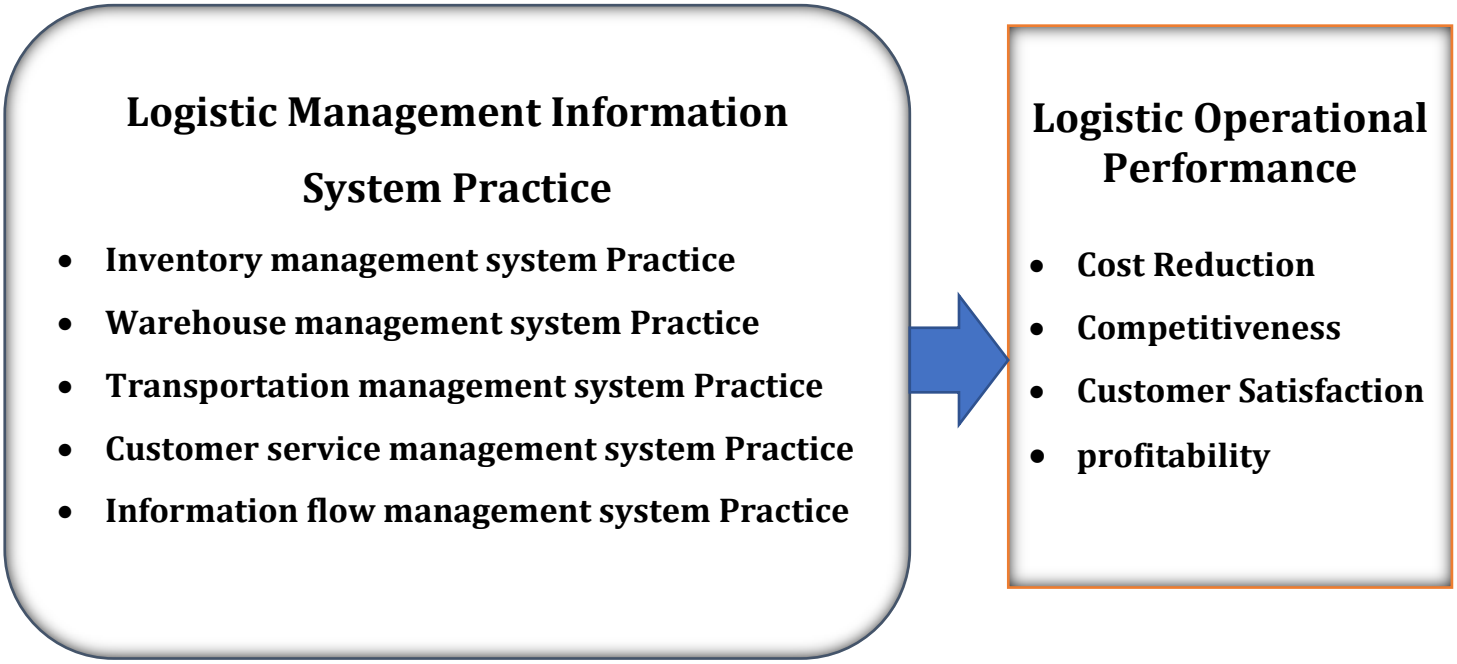

Fig. 1: Conceptual Framework adopted from Taylor (2005) and modified by the Researcher

CHAPTER THREE

RESEARCH METHODOLOGY

Description of the Study Area

This study evaluated the role of logistic management information system practice on the logistic performance of Alle Bejimila Ethiopian Trading Enterprise cash and carry wholesaler of food and Fast Moving Consumer Goods (FMCG) in Ethiopia; the reason is to implement best practices of logistics management. Methods of the study it shows the overall framework on how research results may be achieved through data collection and analysis. Basically this chapter deals with the methods that have been used in the research to come up with the findings of the study. The chapter it includes the research design, the research population and sample design, data collection procedure, ethical considerations, data analysis, validity and reliability test.

3.1 Research design

The purpose of this study is to examine the role of information system in the logistics management practice. A research design is a general framework of how the researcher intends to go about answering the research questions. Saunders et al. (2007) and Cooper and Schindler (2006) assert that research design is a blueprint for collection, measurement and analysis of data. The study used explanatory and descriptive research designs. Explanatory approach has been used to study the effect of logistics management information system practices on logistics operational performance Alle Bejimila (Ethiopian Trading Enterprise). The study also used descriptive research design to assess the status of logistics management information system using frequencies, mean and standard deviation.

3.2 Research Approach

This research adopted quantitative research approach. Quantitative method is used for data collected through close ended questionnaire. According to Silverrman (2001), quantification gives greater confidence in the accuracy of conclusions derived from qualitative data; and it

gives the reader a chance to think through the data on their own to cap on the researcher's findings.

3.3 Population and Sample Design

The population consists of the set all measurements in which the investigator is interested (Aczel and Sounderpandian, 2006). In this study the population consisted of the employees of Alle Bejimila head office working in logistics and supply chain department and cash and carry stores of Alle Bejimla located in Addis Ababa. The total population of Alle Bejimla is 273, and from the total population 95 employees are from logistics and supply chain department plus 35 from retailing customers, therefore 130 will be the Participants. The sample size was determined using Krejcie and Morgan's (1970) formula.

$$S = \frac{X2NP(1-P)}{D2(N-1) + x2P(1-P)}$$

Where:

s = required sample size

X2 = the table value of 95% confidence interval

P = the population proportion (assumed to be 0.5 for it provides the maximum sample size)

D = the degree of accuracy expressed as a proportion (0.05)

N = the population size

X= Range 0.05 = 1.96 X= 1.96

Hence, in this study

X2 = 3.84 N= 130

D2 = 0.05 P = 0.5

$$S = \frac{X2NP(1-P)}{D2(N-1) + x2P(1-P)}$$

$$S = \frac{3.84 \times 130 \times 0.5(1-0.5)}{0.05 \times 0.05(130-1) + 3.84 \times 0.5(1-0.5)}$$

S= 3.84 x 130 x 0.5 x 0.5

0.05 x 0.05 x 129 + 3.84 x 0.5x 0.5

S= 124.8

1.2825

S= 97

Total Population = **130** and Sample size = **97**

Table for Determining Sample Size of a Known Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Note: N is Population Size; S is Sample Size *Source: Krejcie & Morgan, 1970*

Table 3.1: Sample Size Determination Table by Krejcie and Morgan (1970).

3.4 Data collection Procedure

Data were collected both from primary and secondary sources. Primary data were collected through questionnaires while secondary data were gathered from relevant documents such as articles, journals, useful texts, academic books and relevant documents from the company. As this study entails the use of a case study to investigate the practice and performance of logistics management information system at Alle Bejimla Ethiopian trading enterprise, the questionnaire is assumed to be the most suitable data collection method for the primary source.

3.5 Method of data analysis

The data collected using Likert scale questionnaire were analyzed in descriptive and inferential data analysis techniques. Descriptive analysis was conducted using frequencies, mean and standard deviation of responses from respondents in tables and wordings. Inferential data analysis was also conducted using SPSS by running four multiple linear regression models as the study has four dependent variables (performance of logistics management information system). Cause and effect was studied in the regression models and analyzed accordingly.

3.6 Validity and Reliability Test

Validity

Validity refers to the extent to which an instrument measures what it is supposed to measure (Bryman and Bell, 2007). A measure's validity relies on the definitions of the variable which is used to design the measure. There are different types of validity such as content, face, internal and external validity. Content validity was ensured by formulating the questions in simple language for clarity and ease of understanding. Questionnaires included a variety of questions on the knowledge of the top management officials and their staff about practice and challenges of logistics management information system of Alle Bejimila. The questionnaire was also initially evaluated by PhD candidates and university lecturers and they responded that the contents included in the questionnaire were good and easy to understand implying that the instrument fulfills content validity. The questionnaire was also checked by the aforementioned people to see how it looks such as its visibility and size and they recommended that it is okay which implies it

fulfills face validity. The questionnaire has adequate sample size to make inference about the population as a result it fulfils external validity or the study can generalize about the population based on the sample.

Reliability

Bordens and Abbott (2014) showed that reliability related to the extent to which a test measured consistently regardless of what it measured or whether or not a test produced the same results on different occasions. The measure was reliable when respondents gave the same answer in different situations. A question might be unreliable because it contained words which could be misunderstood and, consequently, which might cause confusion. Researchers use multiple-item indicators to create reliable indicators.

The values of Cronbach's alpha range from 0 (observed items are not consistent) to 1 (they completely correlate). This means that internal consistency will be acceptable if Cronbach's alpha is high (George and Mallery, 2003). Hair et al. (2010) reported that Cronbach's alpha ought to be equal to or above 0.70 or 0.60.

For better consistency, the current study used 0.7 as a minimum value of Cronbach's alpha and the results are presented in the table below. And the result shows that the minimum value is 0.71 which implies the questionnaire is reliable.

Table 3.2: Test for Reliability

Variable	No. Items	Cronbach's alpha
Inventory Management Practices (IM)	4	0.84
Warehouse Management Practices (WM)	4	0.72
Transport Management Practices (TM)	4	0.76
Customer Service Management Practices (CM)	4	0.82
Information Flow Management Practices (IF)	4	0.73
Cost Reduction (CR)	3	0.86
Competitiveness (CO)	4	0.81
Customer Satisfaction (CS)	5	0.91
Profitability (PR)	3	0.77
Reliability Test Grand Total	35	0.80

Source: Own Computation April, 2019

3.7 Ethical Considerations

All the information gathered from the respondents has been treating with confidentiality without disclosure of the respondents' identity. Moreover, no information was be modified or changed, hence information gathered was presented as collected and all the literatures collected for the purpose of this study were acknowledged in the reference list.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter of the study comprises of data testing, model fit tests, descriptive statistics for demographic variables, LMIS practice and LMIS performance in the form of frequencies, mean and standard deviation using tables, inferential statistics to show the effect of Logistic Management Information System Practice on logistic operational performance in Alle Bejimla.

4.2 Data Testing

4.2.1 Testing for Non-Response Bias

It is likely that data may not fully collect if the instrument is questionnaire. Test for non-response bias needs to be conducted if there are questionnaires distributed but not collected. In this study 97 questionnaires were distributed but 69 usable questionnaires were collected with a response rate of 71%. Therefore, there is a need to test for non-response rate to check if there is any mean difference between late and early respondents using independent t-test in SPSS. There is common agreement as to how many respondents to take to test for non-response bias. There was no consensus around the number of items which should be tested. Armstrong and Overton, (1977) used 53 of the 112 items (47%); Lambert and Harrington (1990) chose 28 of 56 original questions; whilst Yaghi (2006) used 20 of the 74 items. This study used 50% of the collected data half of which are late respondents and half of them are early respondents. The t-tests results showed that for almost all of items (96.77%) there was no significant difference between the late and early respondents (sig. >.05) indicating that non-response bias was not a problem for the data as can be seen in the table below.

Table 4.1: Independent sample t-test

Item	Levene's Test for Equality of Variances		Item	Levene's Test for Equality of Variances	
	F	**Sig.**		**F**	**Sig.**
IM1	.0211	.821	IF3	.053	.819
IM2	4.531	.038	IF4	36.763	.000
IM3	.720	.400	CR1	2.216	.143
IM4	.440	.510	CR2	.028	.868
WM1	1.384	.245	CR3	.884	.352
WM2	.029	.867	CO1	.129	.721
WM3	3.999	.051	CO2	1.061	.308
WM4	.028	.868	CO3	2.430	.126
TM1	.874	.355	CO4	.100	.753
TM2	.009	.926	CS1	0.0211	0.821
TM3	1.353	.251	CS2	0.009	0.926
TM4	.016	.898	CS3	0.016	0.898
CM1	2.509	.120	CS4	0.019	0.89
CM2	.019	.890	CS5	0.028	0.868
CM3	.677	.415	PR1	0.028	0.868
CM4	.195	.661	PR2	0.028	0.868
IF1	2.586	.114	PR3	0.028	0.868
IF2	.784	.380			

Source: Own Computation April, 2019

4.2.2 Assessing Missing Data

In social science research, missing (or incomplete) pieces of data are a common problem. There are many reasons for the occurrence of missing data which, usually, are beyond the researcher's control. As example, the respondent forgot to answer some items in the questionnaire and he/she was absent on the day of data collection or some questions were sensitive for the respondent or missing data might occur because the questionnaire is too long. On the other hand, missing data may cause the following two negative effects on the research results: (1) it may produce biased estimates‟ and (2) it reduces the model's fit (Ahmed 2014). Hair et al, (2010) reported that variables or cases ought to be omitted if they had 50% or more missing data. Therefore, the

researcher omitted 3 cases. The number of responses was reduced from 72 to 69 usable questionnaires.

4.2.3 Assessing Outliers

Outliers are extreme values which are either on one or a set of variables (Tinsley and Brown, 2000). Outliers can cause negative effects on data analysis. For example, data can contain collinearities and non-normality which can lead to negative variance estimates (Brown, 2006). These effects can deform statistical results which cannot be generalized. Outliers can occur as "a result of an error in the data file (e.g., entry of an incorrect value), a programming error (e.g., an error in recoding or transforming variables or a failure to identify missing data values correctly), or the presence of a valid but exceptional data point" (Tinsley and Brown, 2000). Outliers can be univariate related to cases with an extreme value on a single variable or these values exist in cases of two or more variables (multivariate outliers) (Kline, 2005). In order to find univariate outliers, the researcher used the frequency distributions of z scores. If the Z score is greater than 3.29 in absolute value with $p < .001$, it indicates that there is a univariate outlier (Tinsley and Brown, 2000). Accordingly, based on the previous rule, there were some outlier cases (2.62% of the data point) in this study.

There are two common techniques of dealing with outliers namely trimming and winsorizing. Trimming is eliminating data points from analysis usually done when data is out of range or entry error and winsorizing is assigning outlier the next highest or lowest value found in the sample that is not an outlier done when small amounts of scores are legitimate outliers. Trimming or winsorizing less than 5% of the data points will not likely affect the hypothesis testing outcome (Rocky Mountain University, 2015). In order to address these outliers the questionnaires were reviewed to ensure that the data of outliers' cases was entered correctly and there were no data entry errors and winsorizing techniques was applied because all the outliers were legitimate and after that all outliers were completely cleaned from the original data set.

4.2.4 Assessing Normality Assumption

Normality focuses on the extent to which the sample data distributes according to normal distribution (Hair et al., 2010). The researcher used skewness and kurtosis to evaluate the normality of the observed items. Skewness is "a measure of the asymmetry of the probability distribution of a real-valued random variable". On the other hand, kurtosis refers to "the peaked or flatness of the distribution compared to the normal distribution" (Landau and Everitt, 2003). Values of skewness can be positive, negative, or zero. Skewness"s value, which is zero, indicates a perfectly symmetrical distribution, whilst a positive skewness value indicates that the tail on the right side is longer. On the contrary, a negative value refers to left- tailed. On the other hand, a kurtosis value is zero for normal distributions, whilst it is negative for flat distributions (low kurtosis) and a positive value for peaked distributions (high Kortosis). As a rule of thumb, the values of skewness and kurtosis should be between -2 and +2 in order to obtain a reasonably normal distribution (Bachman, 2004). The study examined the indicators" univariate kurtosis and skewness and the values of skewness and kurtosis were well within their respective rule-of-thumb ranges (between -2 and 2) which provided support for univariate normality as shown below. The test result shows the Skewness and Kurtosis values are within the normal range and the normality assumption was fulfilled.

Table 4.2: Test for Normality

Descriptive Statistics

N = 69				
	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
AlleBejimla's inventory planning and management is supported by technology.	-1.293	.289	.506	.570
AlleBejimla's inventory planning and management technology is operated by skilled man power.	-.664	.289	-.308	.570
AlleBejimla's inventory optimization system is integrated with ERP system.	-1.511	.289	.289	.570
The inventory model used to determine the quantity ordered is based on real demand analysis in the enterprise.	-.609	.289	-.685	.570

AlleBejimla warehouse is supported by technology.	-1.073	.289	.158	.570
The design of the warehouse is integrated with ERP system, which helps easily to access items in the stock at the enterprise.	-.795	.289	-.410	.570
The warehouse operators are skilled to use computer and other technologies to perform warehouse activities in AlleBejimla.	-.448	.289	-.621	.570
The enterprise has an information communication technologies (E-ordering) and database systems to facilitating ordering practices.	-.331	.289	-.252	.570
The transportation Practices of the enterprise is supported by technology to satisfy customers by timely and safely delivery.	-.149	.289	.007	.570
The Transportation Management System of AlleBejimla is integrated with ERP system.	.568	.289	.105	.570
AlleBejimla's applied Transport Management system for vehicle scheduling, tracing and tracking practices.	-.356	.289	.474	.570
GPS technology for vehicle tracking system with fleet and fuel management system is Practiced at AlleBejimla.	-.506	.289	.095	.570
Employee in customer service management has enough knowledge to serve customers at AlleBejimla's.	-.775	.289	-.703	.570
The enterprise applies electronic communication like EDI or ERP with other section for joint planning.	-1.310	.289	.793	.570
The enterprise uses up to dated information for forecasting customer's needs.	-.133	.289	-.040	.570
AlleBejimla's customers ordering system is online and fulfilling customer orders in the promised date.	-.612	.289	.042	.570
The enterprise invested in LMIS that provides real-time information flow.	-.030	.289	-.159	.570
The enterprise has integrated data base system for information flow between departments and customers.	-.283	.289	-.597	.570
AlleBejimla applying computer applications in the departments using EDI to Improve the speed and accuracy of information flow.	-.813	.289	-.324	.570
The enterprise uses online systems regarding monitoring of orders, schedules and inventories.	-.265	.289	-.640	.570

The enterprise ERP system helped to decreases freight cost through better truck utilization.	-1.011	.289	.048	.570
AlleBejimla's LMIS adoption helped to decrease labor cost.	-.947	.289	-.137	.570
The enterprise Implemented ERP system to lowering the overall LMIS operation cost (like warehouse costs, handling, transportation, and reduced damage in the process).	-.868	.289	.034	.570
The enterprise Practicing LMIS to achieve the lowest operational costs and the lowest prices better than competitors.	-.754	.289	.047	.570
The enterprise Practicing LMIS to provide new products and services with better quality and variety for costumer.	-.886	.289	-.283	.570
The enterprise Practicing LMIS to enable a specific market focus and serve this narrow target market better than competitors.	-.050	.289	-.918	.570
An LMIS is being used to tighten linkages with suppliers and develop intimacy with customers at AlleBejimla.	-.077	.289	-.671	.570
AlleBejimla offers a delivery service for customers purchase and ensures it is always on time using LMIS.	-1.057	.289	1.065	.570
The enterprise offer quality product for customer using LMIS.	-.930	.289	-.159	.570
AlleBejimla Arranged convenient time for shopping to customers with the help of ERP.	-.733	.289	-.474	.570
The enterprise offer competitive pricing for products and services due to ERP adoption.	-.401	.289	-.039	.570
AlleBejimla's Provide excellent customer service using LMIS.	-.759	.289	.126	.570
The enterprise constantly improved its operational efficiency to achieve higher profitability with the help of LMIS.	-.295	.289	.609	.570
LMIS play a major role in the enterprise in providing new products and services to increase profitability.	-.760	.289	-.392	.570
AlleBejimla's practicing ERP system in the logistics management to reduce its expenses and increase profitability.	-.849	.289	.304	.570
Valid N (listwise)				

Source: Own Computation April, 2019

4.3 Profile of Respondents

Table 4.3: Demographic Analysis

No	Demographics		Frequency	Percentage
1	Gender	Female	25	36
		Male	44	64
2	Age(Years)	Below 25	12	17
		26-35	31	45
		36-45	13	19
		Above 45	13	19
3	Marital Status	Single	24	35
		Married	42	61
		Divorced	2	3
		Separated	1	1
4	What is your level of Education?	Grade 1-12	0	0
		Certificate holder	1	1
		Diploma holder	5	13
		Bachelor Degree holder	38	55
		Master Degree holder	21	30
5	How long have you been working in this company?	Less than 5 years	11	16
		5-10 years	19	28
		11-15 years	21	30
		More than 15 years	18	26
6	In which process, department or section are you working at Alle Bejimla Ethiopian Trading Enterprise?	Warehouse	11	16
		Transport	6	8
		Customer Service	26	38
		Procurement	14	20
		Other	12	18

Respondents were asked to respond about their gender, age, marital status, level of education, work experience in the company and the department or section which they are working. As per

their response, 64% of them are male. The majority are married, between 26 to 35 years of old, bachelor degree holders and worked in the enterprise between 5-15 years (55%). Of the respondents 16%, 8%, 38%, 20% and 18% work in warehouse, transport, customer service, procurement and other units respectively.

4.4 Descriptive Statistics

The descriptive part presents respondents' response in tables using frequencies, mean and standard deviation. And all the nine variables are presented separately in two sections. First section is about LMIS practice and the second section presents performance of LMIS.

4.4.1 Logistic Management Information System Practice

Values were assigned 1, 2, 3, 4 and 5 for Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A) and Strongly Agree (SA) respectively.

Under LMIS practices there are five variables namely; inventory management system, warehouse management system, transportation management system, customer service system and information flow management system and responses of each of the variable are presented and described below.

Table 4.4 Descriptive Analysis for LMIS Practice

	N = 69								
LMIS Practices	**Questions**	**Counts**	**SD**	**D**	**N**	**A**	**SA**	**Mean**	**Std. D**
Inventory Management System Practices	Alle Bejimla's inventory planning and management is supported by technology.	Frequency	0	0	6	17	46	4.58	0.65
	Alle Bejimla's inventory planning and management technology is operated by skilled man power.	Frequency	0	8	10	32	19	3.9	0.94
	Alle Bejimla's inventory optimization system is integrated with ERP system.	Frequency	0	0	0	14	55	4.8	0.41
	The inventory model used to determine the quantity ordered is based on real demand analysis in the enterprise.	Frequency	0	0	2	29	38	4.52	0.56
	Grand Total							**4.375**	**0.67**

Warehouse Management System Practices	Alle Bejimla warehouse is supported by technology.	Frequency	0	0	2	22	45	4.62	0.55
	The design of the warehouse is integrated with ERP system, which helps easily to access items in the stock at the enterprise.	Frequency	0	0	0	22	47	4.68	0.47
	The warehouse operators are skilled to use computer and other technologies to perform warehouse activities in Alle Bejimla.	Frequency	0	3	16	27	23	4.01	0.87
	The enterprise has an information communication technologies (E-ordering) and database systems to facilitating ordering practices.	Frequency	0	0	1	32	36	4.51	0.53
	Grand Total							**4.445**	**1.14**
Transport Management System Practices	The transportation Practices of the enterprise is supported by technology to satisfy customers by timely and safely delivery.	Frequency	0	8	1	39	21	4.06	0.89
	The Transportation Management System of Alle Bejimla is integrated with ERP system.	Frequency	0	40	22	3	4	2.58	0.83
	Alle Bejimla's applied Transport Management system for vehicle scheduling, tracing and tracking practices.	Frequency	0	3	5	23	38	4.39	0.81
	GPS technology for vehicle tracking system with fleet and fuel management system is Practiced at Alle Bejimla.	Frequency	0	0	3	8	58	4.8	0.5
	Grand Total							**3.96**	**0.7**
Customer Service Management System Practices	Employee in customer service management has enough knowledge to serve customers at Alle Bejimla's.	Frequency	0	0	1	25	43	4.61	0.52
	The enterprise applies electronic communication like EDI or ERP with other section for joint planning.	Frequency	0	0	2	19	48	4.67	0.53
	The enterprise uses up to dated information for forecasting customer's needs.	Frequency	0	0	15	33	21	4.09	0.72
	Alle Bejimla's customers ordering system is online and fulfilling customer orders in the promised date.	Frequency	0	5	1	25	38	4.39	0.84

	Grand Total							**4.44**	**0.61**
Information Flow Management System Practice	The enterprise invested in LMIS that provides real-time information flow.	Frequency	0	0	7	44	18	4.16	0.58
	The enterprise has integrated data base system for information flow between departments and customers.	Frequency	0	0	6	37	26	4.29	0.62
	Alle Bejimla applying computer applications in the departments using EDI to Improve the speed and accuracy of information flow.	Frequency	0	0	5	26	38	4.48	0.63
	The enterprise uses online systems regarding monitoring of orders, schedules and inventories.	Frequency	0	0	4	37	28	4.35	0.59
	Grand Total							**4.32**	**0.55**

Source: Own Computation April, 2019

Descriptive Statistics discussion for logistic management information system practice

- **Inventory Management System Practices in Alle Bejimla**

As can be seen in the table above, respondents were asked to give their response about the inventory management practice in Alle Bejimila using four questions. They were asked about if inventory planning and management is supported by technology and the majority, 46 of them strongly agree, 17 agree while only 6 are neutral about it. This implies that the inventory planning and management is being supported by technology as the majority, 63, agreed about it.

Respondents response about if the inventory planning and management technology is operated by skilled man power is the 19 of them strongly agree, 32 of them agree, 10 neutral while 8 respondents disagree. This shows that Alle Bejimla not only uses technology for the planning and management of its inventory but also its inventory management and planning technology is operated by skilled man power but still there exist unskilled man power operating the technology.

Alle Bejimla's inventory optimization system is integrated with ERP systems as 55 respondents strongly agree while the rest 14 agree.

Respondents were also asked if the inventory model used to determine the quantity ordered is based on real demand analysis in the enterprise. Accordingly, 38 strongly agree, 29 agree while only 2 were neutral. This implies that real demand analysis is being practiced at Alle Bejimla to determine quantity demanded.

The inventory management practice at Alle Bejimla shows inventory planning and management is supported by technology and operated by skilled man power, its inventory optimization system is integrated with ERP system and the inventory model used to determine the quantity ordered is based on real demand analysis in the enterprise. However, there exists unskilled man power.

- **Warehouse Management System Practices in Alle Bejimla**

Warehouse management practice was captured with four questions. As can be seen in the table above, 45 respondents strongly agree, 22 agree while 2 of the respondents neutral about the support of technology to Alle Bejima's warehouse. This shows that technology is there to support the warehouse system.

Respondents were asked if the design of the warehouse is integrated with ERP system, which helps easily to access items in the stock at the enterprise and 47 of them strongly agree and the rest 22 agree.

23 respondents strongly agree, 27 agree, 16 neutral and 3 disagree to the question of "the warehouse operators are skilled to use computer and other technologies to perform warehouse activities in Alle Bejimla? This shows the existence of unskilled operators in the warehouse to use the computer and other technologies to perform warehouse activities.

Respondents were also asked if the enterprise has an information communication technology (E-ordering) and database systems to facilitating ordering practices and 36 of them strongly agree, 32 agree while only 1 respondent was neutral.

The warehouse management practice shows the warehouse is supported by technology, integrated with ERP system, has an information communication technologies (E-ordering) and database systems. But in the warehouse there are unskilled operators to use the computer and other technologies to perform warehouse activities.

- **Transport Management System Practices in Alle Bejimla (Ethiopian Trading Enterprise)**

As can be seen in the table above, the transport management practice of Alle Bejimla was also captured with four questions. Respondents were asked the transportation Practices of the enterprise is supported by technology to satisfy customers by timely and safely delivery and 21 of them strongly agree, 39 agree, 1 neutral while 8 of them disagree.

They were also asked if the Transportation Management System of Alle Bejimla is integrated with ERP system. Accordingly, 4 strongly agree, 3 agree, 22 neutral while the majority 40 disagree.

"AlleBejimla's applied Transport Management system for vehicle scheduling, tracing and tracking practices" was the third question forwarded to them and 38 strongly agree, 23 agree, 5 neutral while 3 disagree.

Respondents were also asked if GPS technology for vehicle tracking system with fleet and fuel management system is practiced at Alle Bejimla. Accordingly, the majority 58 strongly agree, 8 agree, and only 3 neutral.

Based on the responses, the transportation management practices at Alle Bejimla show not well supported by technology and transport management system, not integrated with ERP system but supported by GPS technology for vehicle tracking system.

- **Customer Service System Management Practice in Alle Bejimla**

Four questions were asked to assess the Customer Service Management Practice in Alle Bejimla. They were asked if employee in customer service management has enough knowledge to serve customers at Alle Bejimla's. Accordingly, 43 strongly agree, 25 agree while only 1 neutral. The result of the study contradicts with a study conducted by

Abel (2017) about logistics management practice in Awash bank SC and who found that employees didn't had enough knowledge to serve customers.

There were also asked if the enterprise applies electronic communication like EDI or ERP with other section for joint planning and 48 strongly agree, 19 agree while only 2 neutral.

Respondents were asked if the enterprise uses up to dated information for forecasting customer's needs and 21 strongly agree, 33 agree, while 15 neutral.

The forth question was if Alle Bejimla's customers ordering system is online and fulfilling customer orders in the promised date, and 38 strongly agree, 25 agree, 1 neutral while 5 respondents disagree.

The customer service management practice in Alle Bejimla shows employees have enough knowledge to serve customers, applies electronic communication like EDI and ERP, uses up to date information, customers ordering system is online and fulfilling customers order as a promised date.

- **Information Flow Management System Practice in Alle Bejimla**

Respondents were asked to evaluate the information flow management practice in Alle Bejilma with four questions. There were asked if the enterprise invested in LMIS that provides real-time information flow and 18 strongly agree, 44 agree, while only 7 respondents were neutral.

About the existence of integrated database system for information flow between departments and customers, 26 strongly agree, 37 agree but 6 were neutral.

They were also asked if Alle Bejimla applying computer applications in the departments using EDI to improve the speed and accuracy of information flow. Accordingly, 38 strongly agree, 26 agree while 5.

The forth question forwarded to them was if the enterprise uses online systems regarding monitoring of orders, schedules and inventories and 28, 37, 4 respondents strongly agree, agree and neutral respectively.

The assessment of the information flow management practice in Alle Bejilma shows that the enterprise invested LMIS that provides real time information flow, has integrated database system for the information flow between departments and customers, applied computer applications in the departments and used online systems to managing orders, schedules and inventories.

4.4.2 Logistic Management Information System Performances

Values were assigned 1, 2, 3, 4 and 5 for Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A) and Strongly Agree (SA) respectively.

Under LMIS performances there are four variables namely; Cost Reduction, Competitiveness, Customer Satisfaction and Profitability the responses of each of the variable are presented and described below.

Table 4.5 Descriptive Analysis for LMIS Operational Performances

	N = 69								
LMIS Performance	**Questions**	**Counts**	**SD**	**D**	**N**	**A**	**SA**	**Mean**	**Std. D**
Cost Reduction	The enterprise ERP system helped to decreases freight cost through better truck utilization.	Frequency	0	0	4	23	42	4.55	0.61
	Alle Bejimla's LMIS adoption helped to decrease labor cost.	Frequency	0	0	0	20	49	4.71	0.46
	The enterprise Implemented ERP system to lowering the overall LMIS operation cost (like warehouse costs, handling, transportation, and reduced damage in the process).	Frequency	0	0	4	12	53	4.71	0.57
	Grand Total							**4.66**	**0.59**
Competitiveness	The enterprise Practicing LMIS to achieve the lowest operational costs and the lowest prices better than competitors.	Frequency	0	0	3	14	52	4.71	0.55
	The enterprise Practicing LMIS to provide new products and services with better quality and variety for costumer.	Frequency	0	0	6	24	39	4.48	0.66
	The enterprise Practicing LMIS to enable a specific market focus and serve this narrow target market better than competitors.	Frequency	0	0	2	39	28	4.38	0.55
	An LMIS is being used to tighten linkages with suppliers and develop intimacy with customers at Alle Bejimla.	Frequency	0	0	3	40	26	4.33	0.56
	Grand Total							**4.48**	**0.66**

Customer Satisfaction	Alle Bejimla offers a delivery service for customers purchase and ensures it is always on time using LMIS.	Frequency	0	4	0	39	26	4.26	0.74
	The enterprise offer quality product for customer using LMIS.	Frequency	0	0	2	24	43	4.58	0.55
	Alle Bejimla Arranged convenient time for shopping to customers with the help of ERP.	Frequency	0	0	6	27	36	4.43	0.65
	The enterprise offer competitive pricing for products and services due to ERP adoption.	Frequency	0	0	0	15	54	4.78	0.42
	AlleBejimla's Provide excellent customer service using LMIS.	Frequency	0	0	0	12	57	4.83	0.38
	Grand Total							**4.58**	**0.56**
Profitability	The enterprise constantly improved its operational efficiency to achieve higher profitability with the help of LMIS.	Frequency	0	0	5	18	46	4.59	0.63
	LMIS play a major role in the enterprise in providing new products and services to increase profitability.	Frequency	0	0	5	27	37	4.46	0.63
	AlleBejimla's practicing ERP system in the logistics management to reduce its expenses and increase profitability.	Frequency	0	0	5	11	53	4.7	0.6
	Grand Total							**4.58**	**0.62**

Source: Own Computation April, 2019

Descriptive Statistics discussion for logistic management information system Operational performance

- **Cost reduction**

Alle Bejimila's cost reduction performance was captured by three questions. As can be seen from the table above, 42 respondents strongly agree that the enterprise ERP system helped to decreases freight cost through better truck utilization while 23 and 4 respondents agree and neutral.

The majority of respondents 49 strongly agree that Alle Bejimla's LMIS adoption helped to decrease labor cost while the rest 20 respondents agree.

Respondents were also asked if the enterprise Implemented ERP system to lowering the overall LMIS operation cost (like warehouse costs, handling, transportation, and reduced damage in the process). Accordingly, the majority 53 strongly agree, 12 agree while 4 were neutral.
AlleBejimla decreased labor cost due to adoption of LMIS, its ERP system helped to decrease freight costs and other operational costs.

- **Competitiveness**

Competiveness of Alle Bejimla was assessed using four questions. As can be seen in the table above responses forwarded seem similar for all questions. More than 65% of the respondents agree that the enterprise practicing LMIS to achieve the lowest operational costs and the lowest prices, provide new products and services with better quality and variety, enable a specific market focus and used to tighten linkages with suppliers and develop intimacy with customers better than competitors. Less than 35% of the respondents were neutral about the competitiveness of the enterprise but none of the respondents neither strongly agree nor disagree to those questions.

- **Customer Satisfaction**

The level of customer satisfaction in Alle Bejimla was assessed using five questions. As can be seen in the table above all of the respondents agreed that the enterprise provides excellent customer service and offer competitive pricing for products and products using LMIS.
Almost all, except 4 who disagreed, of the respondents agreed that AlleBejimla offers a delivery service for customers purchase and ensures it is always on time using LMIS. Also almost all of the respondents agreed that the enterprise offer quality product for customer using LMIS and arranged convenient time for shopping to customers with the help of ERP as only 3% and 9% of them were neutral respectively.

- **Profitability**

As can be seen in the table above, with the exception of 7% of the respondents, almost all agreed that the enterprise improved profitability through ERP and LMIS as it were able to constantly improved its operational efficiency and introduced new products and services.

4.6 Table: Descriptive Analysis summary for LMIS practice and Logistic operational performance.

Variables	Mean	Std. Deviation
Inventory Management System Practice	4.38	0.67
Warehouse Management System Practice	4.45	1.14
Transport Management System Practice	3.96	0.70
Customer Service Management System Practice	4.44	0.61
Information Flow Management System Practice	4.32	0.55
Cost Reduction Performance	4.66	0.59
Competitiveness Performance	4.48	0.66
Customer Satisfaction Performance	4.58	0.56
Profitability Performance	4.58	0.62

As can be seen in the table above, of the Logistic Management Information System Practices, warehouse management System (WMS) has the highest value followed by inventory management System practices (IMS) while transport management System (TMS) had a smallest value.

Logistic Management Information System Performance in Alle Bejimla has been measured from four perspectives. Cost reduction, competitiveness, customer satisfaction and profitability are among the perspectives. All these perspectives seem to have similar values. But in relative terms performance of Allle Bejimila on cost reduction seems better followed by profitability.

4.5 Model Test

4.5.1 Assessing Linearity Assumption

Linearity defines the dependent variable as a linear function of the predictor (independent) variables. Standard multiple regression can only accurately estimate the relationship between dependent and independent variables if the relationships are linear in nature. As there are many instances in the social sciences where non-linear relationships occur (e.g., anxiety), it is essential to examine analyses for non- linearity. If the relationship between independent variables and the dependent variable is not linear, the results of the regression analysis will under-estimate the true relationship. This under- estimation carries two risks: increased chance of a Type II error for that independent variables, and in the case of multiple regression, an increased risk of Type I errors

(over- estimation) for other independent variables that share variance with that independent variables. If linearity is violated all the estimates of the regression including regression coefficients, standard errors, and tests of statistical significance may be biased (Keith, 2006). The study conducted curve estimation for all the relationships in the model and all the relationships were sufficiently linear to be tested using a covariance based structural equation modeling algorism.

4.5.2 Assessing Multicollinearity Assumption

Multicollinearity refers to the assumption that the independent variables are uncorrelated. The researcher is able to interpret regression coefficients as the effects of the independent variables on the dependent variables when collinearity is low. This means that we can make inferences about the causes and effects of variables reliably. Multicollinearity occurs when several independent variables correlate at high levels with one another, or when one independent variable is a near linear combination of other independent variables. The more variables overlap (correlate) the less able researchers can separate the effects of variables (Keith, 2006). If this assumption is not satisfied, autocorrelation is present. Multicollinearity can result in misleading and unusual results, inflated standard errors, reduced power of the regression coefficients that create a need for larger sample sizes (Jaccard et al., 2006; Keith, 2006).

Widely used technique of identifying the existence of multicollinarity is calculating variance inflation factor (VIF) between all independent variables. The VIF is an index of the amount that the variance of each regression coefficient is increased over that with uncorrelated independent variables (Keith, 2006). When a predictor variable has a strong linear association with other predictor variables, the associated VIF is large and is evidence of multicollinearity (Shieh, 2010). A rule of thumb of collinearity VIFs is 3.3 or lower to suggest no multicollinearity in the model (Kock, 2013). As can be seen in table below, the study calculated VIF for all independent variables in SPSS and the results revealed that all of the VIF results are below the threshold of 3.3 indicating there is no multicollinearity problem for the data.

Table 4.7: Test for Multicollinearity

Variable	VIF	Tolerance
IM	.328	3.047
WM	.393	2.545
TM	.381	3.162
CM	.397	2.517
IF	.392	3.121

Source: Own Computation April, 2019

4.5.3 Results: Model Fit

There are four linear regression models as there are four dependent variables and eleven independent variables. A model fit index of each model is presented below.

Model fit in regression models could be seen from different perspectives and one of these is the value of R-squared. The model is assumed to be fit when R-squared value is higher.

R-squared is a goodness-of-fit measure for linear regression models. This statistic indicates the percentage of the variance in the dependent variable that the independent variables explain collectively. R-squared measures the strength of the relationship between your model and the dependent variable on a convenient 0 – 100% scale. It can be calculated in the formula below:

$$\text{R-squared} = 1 - \frac{\text{sum of squared residual}}{\text{sum of squared total}}$$

Model 1:

Table 4.8: Model fit R-squared summary of all models

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	Dependent Variable
1	.844[a]	.713	.657	.26129	1.556	CR
2	.817[a]	.667	.602	.27719	2.064	CO
3	.789[a]	.622	.549	.23509	2.229	CS
4	.795[a]	.632	.560	.33986	1.682	PR

a. Predictors: (Constant) IM, WM, TM, CM, IF

As can be seen in the above table, all of the models are fit as they have higher R-squared value.

4.6 Inferential Statistics

In inferential statistics the study is trying to see in the below table the Effect of LMIS Practices on the overall logistic performance (cost reduction, competitiveness, customer satisfaction and profitability) at Alle Bejimla.

Table 4.9: The Effect of LMIS Practices on the Logistic operational performance (cost reduction, competitiveness, customer satisfaction and profitability)

Inferential Statistics Model 1	The Effect of LMIS Practices On the logistic cost reduction	Standardized Coefficients Beta (β)	T	Sig.
Model 1	(Constant)		1.181	0.243
	Inventory Management Practice	0.401	3.384	0.004
	Warehouse Management Practice	0.461	3.539	0.001
	Transport Management Practice	0.266	2.342	0.019
	Customer Service Management Practice	0.459	3.01	0.009
	Information Flow Management Practice	-0.008	-0.058	0.954
	Dependent variable: Cost Reduction			
Inferential Statistics Model 2	**The Effect of LMIS Practices On the logistic Competitiveness**	**Standardized Coefficients Beta (β)**	**T**	**Sig.**

Model 2	(Constant)		1.614	0.112
	Inventory Management Practice	0.363	2.542	0.019
	Warehouse Management Practice	0.152	1.242	0.219
	Transport Management Practice	0.396	2.742	0.008
	Customer Service Management Practice	-0.127	-1.046	0.3
	Information Flow Management Practice	0.348	2.68	0.012
	Dependent Variable: Competitiveness			
Inferential Statistics Model 3	**The Effect of LMIS Practices On the logistic Customer Satisfaction**	**Standardized Coefficients Beta (β)**	**T**	**Sig.**
Model 3	(Constant)		1.526	0.133
	Inventory Management Practice	0.217	1.528	0.132
	Warehouse Management Practice	0.166	1.278	0.206
	Transport Management Practice	0.332	2.238	0.026
	Customer Service Management Practice	0.396	2.742	0.008
	Information Flow Management Practice	0.374	2.552	0.01
	Dependent Variable: CS			
Inferential Statistics Model 4	**The Effect of LMIS Practices On the logistic Profitability**	**Standardized Coefficients Beta (β)**	**T**	**Sig.**
Model 4	(Constant)		-0.398	0.692
	Inventory Management Practice	0.397	2.782	0.007
	Warehouse Management Practice	0.366	2.542	0.01
	Transport Management Practice	0.396	2.882	0.004
	Customer Service Management Practice	0.075	0.59	0.558
	Information Flow Management Practice	0.144	0.969	0.337
	Dependent Variable: PR			

As can be seen in the above tables, the regression models' equations can be presented as follows:

$CR = \beta_0 + e + \beta_1 IM + \beta_2 WM + \beta_3 TM + \beta_4 CM$

$CO = \beta_0 + e + \beta_1 IM + \beta_2 TM + \beta_3 IF$

$CS = \beta_0 + e + \beta_1 TM + \beta_2 CM + \beta 3 IF$

$PR = \beta_0 + e + \beta_1 IM + \beta_2 WM + \beta_3 TM$

4.6.1 Discussion of Results

This part of the chapter discusses empirical findings of the study in two major sections. The effects of logistics management information system practices on logistics management information system performance (cost reduction, competitiveness, customer satisfaction and profitability) are presented.

4.6.2 Logistics Management Information System Practices

Under this section there are five variables (inventory management, warehouse management, transport management, customer service management and information flow management practices. Discussions of the results of each variable are presented as follows;

- Inventory Management Practices (IM)

Empirical findings of the study shows inventory management practices had a statistically significant positive effect on cost reduction, competitiveness and profitability with beta coefficients of (β = .401, P = 0.004, β = .363, P = 0.019 and β = .397, P = 0.007) respectively at AlleBejimla. The highest effect is on cost reduction while inventory management practice didn't have a statistically significant effect on customer satisfaction. This implies that the enterprises is becoming efficient by managing its inventory well as it is capable of reducing cost, increase its profitability and eventually became competitive in the market where it is operating. The result of the study supports the results of Frazelle 2002, Meng 2006 and Taylor 2005 in that. They also claim that inventory management has a tradeoff between customer satisfaction and cost reduction and the result of this shows inventory management didn't have significant impact on customer satisfaction.

- Warehouse Management Practices (WM)

The findings of the study shows that warehouse management practices had a statistically significant effect on cost reduction and profitability with beta coefficients of (β = .461, P = 0.001, β = .366, P = 0.010) from the highest to the lowest respectively. However, warehouse management practices didn't have a statistically significant effect on competitiveness and

customer satisfaction. This might be due to the fact that warehouse management activities do not have a direct attachment with customers.

The result of the study supports the findings of Jinxinang (2010), Shiau and Lee (2009) and Min (2010) in that warehouse management has effect on cost reduction and profitability.

However, the empirical findings of the study contradicts with the findings of the aforementioned researchers in that they claim warehouse management has customer satisfaction while the study founds out warehouse management didn't have significant effect on customer satisfaction and competitiveness.

- Transport Management Practices (TM)

Transport management practice has a statistically significant effect on cost reduction, competitiveness, customer satisfaction and profitability with standardized coefficients of (β = .266, P = 0.019, β = .396, P = 0.008, β = .332, P = 0.026 and β = .396, P = 0.004) respectively.

This implies that transport management practices of AlleBejimla affected all of the performance indicators of LMIS. The result of the study supports the findings of Taylor (2005) in that he claims transportation costs would go up to one third of the total cost of the inventory.

- Customer Service Management Practices (CS)

As can be evidenced from empirical findings of the study, customer service management practices positively affected cost reduction and customer satisfaction with standardized coefficients of (β = .459, P = 0.009, β = .396, P = 0.008) respectively whereas customer service management practice didn't had a statistically significant effect on competitiveness and profitability. The result of the study is consistent with the results of Yannis (2009) and Neider, (2006).

- Information Flow Management Practices (IF)

Information flow management practices had a statistically significant positive effect on competiveness and customer satisfaction with standardized coefficient of (β = .348, P = 0.012, β = .374, P = 0.010). However, it didn't have a statistically significant effect on cost reduction and profitability. This effect is similar to customer service management practice had on performance

of LMIS. This might be due to the fact that those information flows hugely affect customer satisfaction as customers need information about the enterprise. The empirical finding of the study supports the findings of Nge et al (2016), Neider (2006) and Rydzkowski (2005).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This Chapter deals with the summary of finding conclusion and recommendation that have been provided as per the findings of the study to improve logistics management information system practice of Alle Bejimla (Ethiopia Trading Enterprise). Based on the empirical findings of the study the following summary, conclusions and recommendation are made.

5.1 Summary

- The study was conducted with the aim assessing evaluating LMIS practices and performances at Alle Bejimla.
- The population of the study was employees working at Alle Bejimla and the sample size were 97.
- A five point Likert scale questionnaire was used to collect primary but quantitative data from 69 respondents as 71% was the response rate.
- Descriptive and explanatory research design was used to analyze the collected data.
- Random sampling technique was employed to select respondents.
- Inventory planning and management is supported by technology and its inventory optimization system is integrated with ERP system and the inventory model used to determine the quantity ordered is based on real demand analysis in the enterprise. However, there exist unskilled man powers that operate the technology.
- The warehouse management practice shows the warehouse is supported by technology, integrated with ERP system, has an information communication technologies (E-ordering) and database systems. But in the warehouse there are unskilled operators to use the computer and other technologies to perform warehouse activities.
- Transport management system did not integrate with ERP system.
- There exist significant positive correlations among the relationships of variables.
- Inventory management practices and employee skills didn’t affect competitiveness.

- Transport management practices and Leadership factors affected all the performance indicators.
- Warehouse management practices affected only cost reduction and profitability.
- Customer service management practices affected only cost reduction and customer satisfaction.
- Information flow management practices affected only competitiveness and customer satisfaction.

5.2. Conclusion

The objective of this thesis work is to assess the logistics management information system practice of Alle Bejimla (Ethiopian Trading Enterprise). The conclusion of each concept of data included the main points of logistics management information system practices such as customer service management, transportation management, inventory planning management, warehouse management and information flow management.

The following conclusion made by the structure that a researcher put in the framework of the thesis about logistics management information system practice. Based on the research findings & respondents' response the result of this study show that the major findings observed in logistics management information system practices of Alle Bejimla are as follows;

- There exist significant positive correlations among the relationships of variables.
- Alle Bejimila was poor at transport management and employee skill.
- Alle Bejimla uses the required technology to manage its inventory and warehouse system. However, there is a skilled man power gap to operate the technology.
- Logistics management information system practices had a positive effect on cost reduction.
- Logistics management information system practices had a positive effect on customer satisfaction.
- Logistics management information system practices had a positive effect on profitability and competitiveness in Alle Bejimila.

5.3 Recommendations

Base on those finding of research and conclusions drawn from them, the researcher suggests the following possible & plausible recommendation for action to be under taken by Alle Bejimla on its logistic management information system practice.

- The enterprise shall train its employees so as to make them skillful to operate the technology employed in LMIS warehouse and inventory management system. The organizational structure shall be destructed in a way that supports decision making and ease for communication.
- Alle Bejimila shall quickly integrate the transport management with its ERP system.
- Improvement on logistics information systems does influence the performance of primary functions of logistics management that is; transportation management, inventory management, warehouse management, customer service and information flow and by extension influences firm performance. As a result, the study recommends that Alle Bejimla should include information management in its strategic plan and in particular investment in information technology which may make good information sharing
- The company should assign adequate, experienced and skilled manpower on logistics management information system and related departments equally with core business department.
- The enterprise shall strengthen to giving attention to the rest of factors for better future performances.

5.4 Direction for Future Research

This study provides a lot of facts and findings about the logistics management information system practices of Alle Bejimla (Ethiopian Trading Enterprise). Apart from the findings that this research had described and explained, it has also provided valuable implications for studying implementing information system in logistics and its practice for future research and future researchers could consider logistics management information system challenges as a moderating factor between practices and performances of logistics management information system.

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Annex 1

ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE
DEPARTMENT OF LOGISTICS & SUPPLY CHAIN MANAGEMENT

Questionnaire

Dear Participant,

I am a MA student in Logistics and Supply Chain Management at Addis Ababa University School of Commerce under the department of logistics and supply chain management. Currently, I am conducting a research on logistics management information system practices at Alle Bejimla Ethiopian Trading Enterprise. The main purpose of this questionnaire is to collect necessary data for the study on logistics management information system practice in Alle Bejimla Ethiopian Trading Enterprise will be purely for academic purpose and your response will be kept confidential. The objective of the study is to assess the current logistics management practices and problems related to logistics management of Alle Bejimla. The major participants of these questioners are the logistics department and retail customers of Alle Bejimla. As a result, the outcome of this study will depend upon your response, Therefore I would like to request you to fill the questionnaire as per the instruction.

INSTRUCTIONS

- In order to make the research outcomes complete, reliable and fruitful, please complete the questionnaire by considering each question thoughtfully and honestly.
- As I mentioned above your answers will be treated with the highest degree of confidentiality and data collected from this research will be used solely for academic purposes and will reported in aggregate.
- If you have any questions or dilemma, please contact me via Tel. +251911547780 or Email:free2redi@gmail.com

Thank you in advance for your cooperation, and honesty in answering the following questions.

Part I: Demographic Profile of the respondent

1. **Gender** i. Female ☐ ii. Male ☐
2. **Age**
   - i. Below 25 Years ☐
   - ii. 26-35 Years ☐
   - iii. 36-45 Years ☐
   - IV. Above 45 Years ☐
3. **Marital status**
   - i. Single ☐
   - ii. Married ☐
   - iii. Divorced ☐
   - iv. Separated ☐
4. **What is your level of education?**
   - i. Grade 1 to 12 ☐
   - ii. Certificate holder ☐
   - iii. Diploma holder ☐
   - iv. Bachelor's degree holder ☐
   - v. Master's degree and above ☐
5. **How long have you been working in this Company?**
   - i. Less than 5 years ☐
   - ii. 5 to 10 years ☐
   - iii. 11 to 15 years ☐
   - iv. More than 15 years ☐
6. **In which process, department or section are you working at Alle Bejimla Ethiopian Trading Enterprise?**
   - i. Warehouse ☐
   - ii. Transport ☐
   - iii. Customer Service ☐
   - iii. Procurement ☐
   - iv. Other ☐

Part II: Logistic Management Information System Practice

Please rate your level of agreement using the following 5 point scales Where,

1. **Strongly Disagree, 2. Disagree, 3. Neutral, 4. Agree and 5. Strongly Agree.**

A. Inventory Management Practices in Alle Bejimla

No	Variables	1	2	3	4	5
1	Alle Bejimla's inventory planning and management is supported by technology.					
2	Alle Bejimla's inventory planning and management technology is operated by skilled man power.					
3	Alle Bejimla's inventory optimization system is integrated with ERP system.					
4	The inventory model used to determine the quantity ordered is based on real demand analysis in the enterprise.					

B. Warehouse Management Practices in Alle Bejimla

No	Variables	1	2	3	4	5
1	Alle Bejimla warehouse is supported by technology.					
2	The design of the warehouse is integrated with ERP system, which helps easily to access items in the stock at the enterprise.					
3	The warehouse operators are skilled to use computer and other technologies to perform warehouse activities in Alle Bejimla.					
4	The enterprise has an information communication technologies (E-ordering) and database systems to facilitating ordering practices.					

C. Transport Management Practices in Alle Bejimla (Ethiopian Trading Enterprise)

No	Variables	1	2	3	4	5
1	The transportation Practices of the enterprise is supported by technology to satisfy customers by timely and safely delivery.					
2	The Transportation Management System of Alle Bejimla is integrated with ERP system.					
3	Alle Bejimla's applied Transport Management system for vehicle scheduling, tracing and tracking practices.					
4	GPS technology for vehicle tracking system with fleet and fuel management system is Practiced at Alle Bejimla.					

D. Customer Service Management Practice in Alle Bejimla

No	Variables	1	2	3	4	5
1	Employee in customer service management has enough knowledge to serve customers at Alle Bejimla's.					
2	The enterprise applies electronic communication like EDI or ERP with other section for joint planning.					
3	The enterprise uses up to dated information for forecasting customer's needs.					
4	Alle Bejimla's customers ordering system is online and fulfilling customer orders in the promised date.					

E. Information Flow Management Practice in Alle Bejimla

No	Variables	1	2	3	4	5
1	The enterprise invested in LMIS that provides real-time information flow.					
2	The enterprise has integrated data base system for information flow between departments and customers.					
3	Alle Bejimla applying computer applications in the departments using EDI to Improve the speed and accuracy of information flow.					
4	The enterprise uses online systems regarding monitoring of orders, schedules and inventories.					

F. Logistic Management Information System Performance in Alle Bejimla

- **Cost reduction**

No	Variables	1	2	3	4	5
1	The enterprise ERP system helped to decreases freight cost through better truck utilization.					
2	Alle Bejimla's LMIS adoption helped to decrease labor cost.					
3	The enterprise Implemented ERP system to lowering the overall LMIS operation cost (like warehouse costs, handling, transportation, and reduced damage in the process).					

- **Competitiveness**

No	Variables	1	2	3	4	5
1	The enterprise Practicing LMIS to achieve the lowest operational costs and the lowest prices better than competitors.					
2	The enterprise Practicing LMIS to provide new products and services with better quality and variety for costumer.					
3	The enterprise Practicing LMIS to enable a specific market focus and serve this narrow target market better than competitors.					
4	An LMIS is being used to tighten linkages with suppliers and develop intimacy with customers at Alle Bejimla.					

- **Customer satisfaction**

No	Variables	1	2	3	4	5
1	Alle Bejimla offers a delivery service for customers purchase and ensures it is always on time using LMIS.					
2	The enterprise offer quality product for customer using LMIS.					
3	Alle Bejimla Arranged convenient time for shopping to customers with the help of ERP.					
4	The enterprise offer competitive pricing for products and services due to ERP adoption.					
5	Alle Bejimla's Provide excellent customer service using LMIS.					

- **Profitability**

No	Variables	1	2	3	4	5
1	The enterprise constantly improved its operational efficiency to achieve higher profitability with the help of LMIS.					
2	LMIS play a major role in the enterprise in providing new products and services to increase profitability.					
3	Alle Bejimla's practicing ERP system in the logistics management to reduce its expenses and increase profitability.					

Annex 2

Interview

Interview Questions

1. What can you say about your company's logistics management information system practices?

_____
_____

2. Do you think your organization is well performing in the logistics management information system process? If no what are the challenges?

_____
_____

3. Do you believe all the delivered goods and services are procured at the right time from the right supplier in right quality and quantity with the right price using logistics management information system at Alle Bejimla? If no what do you think the reason and your suggestion to solve these problems?

_____
_____

4. What is the role of logistics management information system in inventory management, warehouse management, transportation management, customer service and information flow management at Alle Bejimila?

_____
_____

5. What is the advantage and disadvantage of using ERP system in the logistics management at Alle Bejimla?

_____
_____

6. What are the external and internal challenges of logistics management information system implementing in the inventory management, transportation management, customer service, warehouse management, and information flow management at Alle Bejimila?

_____
_____

Annex 3

Correlation

The relationship between LMIS practice and Logistic operational Performance.

Correlations

		IM	WM	TM	CM	IFM	CR	CO	CS	PR
IM	Pearson Correlation	1	.691**	.681**	.592**	.522**	.346**	.534**	.582**	.387**
	Sig. (2-tailed)		.000	.000	.000	.000	.004	.000	.000	.001
	N	69	69	69	69	69	69	69	69	69
WM	Pearson Correlation	.691**	1	.594**	.649**	.588**	.444**	.554**	.603**	.454**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000
	N	69	69	69	69	69	69	69	69	69
TM	Pearson Correlation	.681**	.594**	1	.579**	.737**	.597**	.762**	.633**	.570**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000
	N	69	69	69	69	69	69	69	69	69
CM	Pearson Correlation	.592**	.649**	.579**	1	.579**	.579**	.483**	.597**	.522**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000
	N	69	69	69	69	69	69	69	69	69
IFM	Pearson Correlation	.522**	.588**	.737**	.579**	1	.566**	.708**	.643**	.607**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000
	N	69	69	69	69	69	69	69	69	69
CR	Pearson Correlation	.346**	.444**	.597**	.579**	.566**	1	.448**	.620**	.596**
	Sig. (2-tailed)	.004	.000	.000	.000	.000		.000	.000	.000
	N	69	69	69	69	69	69	69	69	69
CO	Pearson Correlation	.534**	.554**	.762**	.483**	.708**	.448**	1	.575**	.621**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000
	N	69	69	69	69	69	69	69	69	69
CS	Pearson Correlation	.582**	.603**	.633**	.597**	.643**	.620**	.575**	1	.493**

	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000
	N	69	69	69	69	69	69	69	69	69
PR	Pearson Correlation	.387**	.454**	.570**	.522**	.607**	.596**	.621**	.493**	1
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.000	.000	.000	
	N	69	69	69	69	69	69	69	69	69

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