

## **Improving automotive service through e-logistics: a case of Moenco Hawassa, Ethiopia**

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**Abstract:-** E-logistics is relatively a new industry has been gained momentum since the emergence of computerized global market and internet in particular E-Commerce. The integration of IT with logistics management is becoming a prerequisite for good logistic management hence the development of E-logistics. The purpose of this study was to determine the effects of E-logistics on logistics performance in order to improve automotive service industry by taking up this technology. The problems have been observed in automotive service was traditional way of service, longer lead times and low customer service level, which highly affects the customer; results major economic impact on the company. So these existing problems can be rectified by using E-logistics that can serve to increase integration of operation and customer service level. In order to meet the key objectives of the research, qualitative and quantitative methods and combination of primary and secondary sources of data have been used. Primary data was collected using observation, interview and questionnaires. A majority of the respondents were being selected from the departments who were directly involved in administering of E-logistics within the company. After the fieldwork, the data was coded and tabulated by use of tables and charts. Data analysis was done using Statistical Package for Social Sciences (SPSS version 25.0). The results provided support for the conceptual frame work, the E-logistics has a positive influence on the performance of the company and adopt it in order to be more competitive in the service business.

**Key-Words:** -E-logistics, E-commerce, IT, automotive service improvement, Hawassa

### **1 Introduction**

Currently, the booming of E-Commerce and network economy has driven rapid development in emerging business applications and created noteworthy market opportunities. Grow from manual to electronic with E-logistics taking a large change by converting many business processes and practices from manual to electronic. Historically, the use of E-Business system began around early 1960s with systems such as materials requirements planning (MRP) as well as inventory management system (IMS) and distributed resource planning system among others [1]. The development of logistics falls into three stages, namely military logistics, business logistics and E-logistics, in which the E-logistics has been the latest word appearing in the logistic industry and historical development. E-logistics is used interchangeably with internet enabled logistics or e-commerce where it supports the delivery of goods and services through utilization of ICT as part of the business activities and in execution of various logistics activities [2]. There has been continues development by internet based community systems, mobile apps. The most often used tools of cooperation in the virtual scope of E-logistics are: internet portal, electronic

platform, electronic catalogue, data warehouses, information services of offers and purchasing, transactions systems, systems and communication tools, systems and software. More specifically, E-Business can facilitate effective information exchange and the removal of unnecessary players in the supply chain, for example, by helping in minimizing one of the well-documented problems, the ‘bullwhip effect’ [3]. Creating better information flows between organizations can also help to reduce uncertainties in demand or supply, and the need to build expensive inventory buffers.

E-Commerce has brought new challenges as well as opportunities to logistics management. The cost of logistics and transportation has a large impact on a company’s profitability [4]. Therefore, a key determinant of business performance is the role of the logistics function in ensuring the smooth flow of materials, products and information throughout a company’s integrated logistics. The automobile servicing garage business is a viable business provided that it is operated with a good business acumen that involves having a thorough knowledge and experience of the repair and service operations. The key component in the setting-up of an E-logistics system is developing a logistics community network with suitable internet

technologies. The increasing power of communication systems makes intra-organizational integration possible in order to improve coordination between organizational units. There is a collection of literature indicating the importance of clusters and networks not only between companies but also along the value chain and across service industries. The networks inherent in these clusters are integral for knowledge generation and diffusion, technology transfer, sharing risks and costs, allowing service industries to access new markets and opportunities and, finally, building comparative advantage in the implementation of E-logistics to automotive service business.

### 1.1 Statement of problem

Despite the growing automotive service business sector in Ethiopia, the servicing trend is more traditional and the business focuses on the gaining of the revenue. The problem was observed in automotive service industries is longer lead times more than week even sometime months and year which highly affects the customers; results major economic impact on the organizations. According to Oliver (2007) as cited by Datsomor (2012), for the automobile industry, made up of dealers and manufacturers (suppliers), customer satisfaction through quality service remains one of the main factors affecting customer loyalty [5]. Hence, customer satisfaction plays an important role for the success and continuous existence of the company. Low customer service level, which result in loss of customers that have large economic impact on the company. Therefore, these problems can be rectified using E-logistics that can serve to increase customer service level by integrating the overall system. The technological readiness pillar measures the agility with which an economy adopts existing technologies to enhance the productivity of its industries, with specific emphasis on its capacity to fully leverage ICTs in daily activities and service processes for increased efficiency and enabling innovation for competitiveness. Until recently, cars were controlled purely by mechanical means but now, advancements in digitalization, more cars have embedded computer systems to arrange control flows automotive service have systematic means of getting to answers to business problems and improve the traditional way of customer service. It is for this reason that E-logistics practices are becoming the subject of studies as companies need to cope with increased competition more efficiently and effectively to ensure profitability and growth [6]. Therefore this study will hopefully lead to enhance knowledge and understanding about e-

logistics concept and practices of business service quality and its effect on customer satisfaction in the automotive service industry in Ethiopia. Some findings agree that e-logistics in one way or the other, directly influences the operations of logistic companies and the researchers agree that it positively influence management systems. The behaviour and role of logistics management will be different in e-logistics from those of traditional logistics systems which are based on centralized resources. It influences firms' infrastructure and maximize automated system.

Existing literature focuses on companies in developed countries such as western countries and China. Developing countries face a number of challenges when implementing e-logistics, notably economic and educational barriers, lack of ICT infrastructure, low internet penetration and internet access, lack of competition, high telecommunications costs, no privatization and lack of payment mechanisms (credit card), security and trust issues, and localization problems [7]. This study focused on MOENCO Hawassa Automotive Service which is company in a developing country. Effects of information technology on logistics management mostly point out to the benefits and challenges generally on the automotive company's business development. The main objective of this research is to investigate and improve automotive service through E-logistics for the case of MOENCO Hawassa.

## 2 Literature Review

This section looks at past studies of E-logistics and the theoretical literatures were reviewed. It also looks at the effect of E-logistics and its conceptual frame work on the service business performance improvement.

### 2.1 Electronics logistics

E-logistics is one of the areas of functioning of logistics. Due to the rising levels of competition in both local and international markets coupled by utilization of effective competitive advantage areas, many companies have shaped technological changes with innovation becoming part of running businesses as part of improving competitiveness. This has revolutionized the interaction and operations between companies and customers [8]. Companies normally will consider E-logistics as an extra channel for running business through reduction of costs, as an avenue for improving service delivery a totally new area or doing business

with potential of creating huge business gains [9]. E-logistics gives businesses an opportunity to reach customers almost anywhere anytime. The objectives of E-logistics are: reducing operating costs, meeting service delivery deadlines, and improving customer services [10]. The role of E-logistics in the modern economy is beyond doubt. In order to meet the challenges, it is necessary first of all to deal with logistical problems, which are more and more numerous. It is necessary to individualize the offer of products and services, and thereby diversify them, the customers must be provided with quick and small supplies, the business partners must have a guarantee of increasing reliability and operational flexibility, and the goods must be moved quickly and efficiently almost all over the world. The ultimate objective is to deliver the right products in right quantities at the right place and time to the right customers.

The terms electronic logistics, E-logistics, internet-enabled logistics or e-business (e-commerce) logistics have been loosely used in both academia and practice. Some consider E-logistics as a supportive delivery process for fulfilling online e-commerce orders. According to Council of Logistics Management; E-logistics can be defined as the transfer of goods and services using internet communication technologies such as electronic data interchange (EDI), World Wide Web (WWW). E-logistics is a dynamic set of communication, computing, and collaborative technologies that transform key logistical processes to be customer centric, by sharing data, knowledge and information with the supply chain partners. It also enables synchronization of events and right decision-making. E-logistics leverages the power of the internet and other technologies (such as wireless) to provide robust information to supply chain participants and offer unprecedented levels of visibility across the entire supply chain [11]. It is used interchangeably with internet enabled logistics or e-business where it supports the delivery of goods and services through utilization of ICT as part of the business activities and in execution of various logistics activities. E-logistics is defined to be the mechanism of automating logistics processes and providing an integrated, end-to-end fulfilment and supply chain management services to the players of logistics processes. Those logistics processes that are automated by E-logistics provide supply chain visibility and can be part of existing e-commerce or Workflow systems in an enterprise. Another possible definition can be that E-logistics simply means processes necessary to transfer the goods

sold over the internet to customers according to [12].

The behaviour and role of logistics managers will be different in E-logistics from those of traditional logistics systems which are based on centralized resources. E-logistics implies the use of information and communication technology to support the provision and execution of a broad range of logistics activities [2, 13]. While the former narrowly defines the E-logistics utility in an online business to customer (B2C) or business to business (B2B) setting, the latter offers a broader concept focusing on utilizing ICT to manage information and information flows in supply chains or supply networks. E-logistics is a dynamic set of communication, computing, and collaborative technologies that transform key logistical processes to be customer centric, by sharing data, knowledge and information with the supply chain partners. It also enables synchronization of events and right decision-making. A growing number of E-logistics solution providers and service companies are tapping into this opportunity by addressing logistics issues such as supplier selection, asset utilization, pricing, inventory management, order visibility, and order fulfilment.

## 2.2 E-logistics benefits

Companies normally see E-logistics as an extra channel for running business through reduction of costs, as an avenue for improving service delivery a totally new area or doing business with potential of creating huge business gains. [9]. The importance of E-logistics as an area where Internet transactions benefits save customers time and move in acquiring goods and services. According to Ramanathan et al. (2012) E-logistics reduces cost of marketing and marketing research by facilitating collection analysis and dissemination of important information to customers through E-logistics channels and information technology channels in general [14]. For instance, a marketing manager can utilize E-logistics effectively by generating and storing data on purchasing patterns of customers and the capability of to gather important information from analysis and using such information to create award winning business processes.

Other advantages of E-logistics to organizations include capability to dealer in the international market with limited resources as suggested by [15]. Companies which would have otherwise been unable to reach international markets due to lack of resources are given opportunity to trade in such markets by ICT. E-logistics gives businesses an opportunity to reach customers almost anywhere

anytime. Besides reducing operating costs and increased efficiency and effectiveness, it gives the company an opportunity to reach open new market areas.

### 2.3 E-logistics challenges

E-logistics is faced by various challenges such as issues of trust by customers with information, lack of market readiness as well as technology standardization which appear to be hindering the adoption of information technology. Some of the challenges are summarized below: Lack of technical knowledge in development and maintaining of E-logistics and inadequate telecommunications bandwidth and ever changing software for developing such systems has been a great challenge across many firms forcing them out of the many advantages of Information Communication and Technology (ICT) advantages in general [14]. According to Kim et al. (2009), trust issues have always come into play whenever customers are interacting with companies. In most instances, crucial information such personal phone numbers may be required and some customers may not be willing to share such [15]. This is a draw back as many customers would rather get services without sharing such information. E-logistics is capable of linking different cultures across the globe where customers, companies as well as countries are interacting. Unfortunately adoption of this platform among other technology platforms is affected by readiness of such markets to utilize them. For instance Molla et al. (2006) have advised that in third world countries on a developing scale, effective implementation of E-logistics strategy in a company is largely depended on e-readiness at strategic, environmental and organizational contexts of such companies [16]. Reduced level of technology distribution in an economy can also inhibit the level of E-logistics knowledge, an attribute often taken by policy makers in developed countries. English language is challenge to use for online shopping. Lack of reliable power supply is a key challenge for smoothly running E-logistics in developing countries like Ethiopia because of power interruption.

### 2.4 E-logistics framework

E-logistics has evolved from modern logistics and E-Commerce. Modern logistics itself has evolved from traditional logistics. Traditional Logistics is the goods storage, transport and its subsidiary formed by the logistics business activity patterns. Modern logistics is the basis of modern information technology, integrated transport, storage, handling,

packaging, distribution, circulation, processing, reverse logistics, customer service and logistics functions, such as information processing and formation of integrated logistics activity patterns [17]. Figure 1 shows the framework of e-logistics with its components systematically.

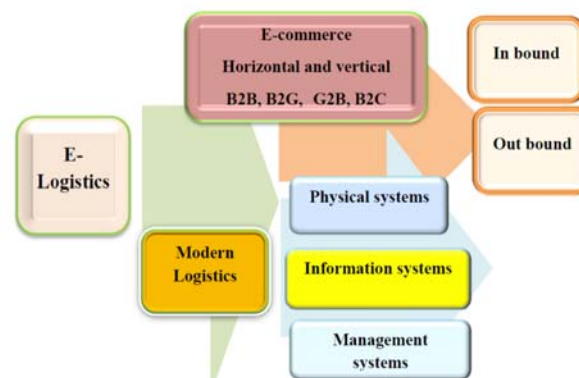


Fig.1: E-logistics framework [18]

#### 2.4.1 Systematize E-logistics performance measurement

Systematize the performance measurement system proposed by the selected authors, the literature was classified taking into account the E-logistics this framework has four major dimensions: strategic planning, partnership formation, inventory management and, information management. All of the four dimensions are interdependent and have been identified as the major enablers of a successful logistics system to deliver the goods at the right time and at minimum cost. Figure 2 illustrates a conceptual model for the development of an E-logistics system.

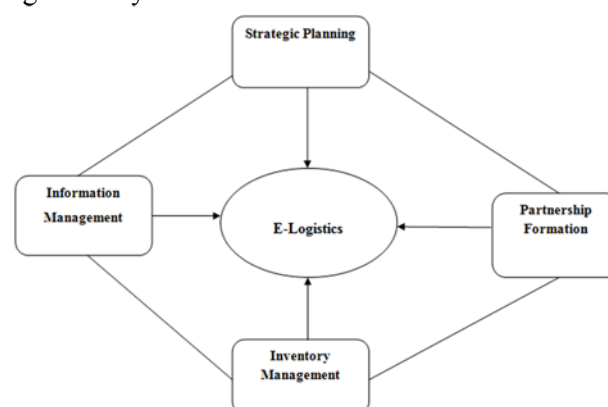


Fig.2 : A Framework for Systematized E-logistics performance measurement [19]

Companies are now focusing on strategic planning for logistics with the objective of developing long-term plans and changes to their organizational

logistics operations and in turn to improve their competitiveness through good logistics services. Strategic planning, taking into account both external and internal factors that influence the logistics performance of an organization, requires the involvement of top management [18]. In logistics, strategic planning involves deciding on outsourcing logistics service requirements, making strategic alliances based on core competencies in logistics, deciding how to handle competitive pressures, planning the locations of distribution centres, and making budgeting and capital investment decisions in logistics, including the number of distribution centres and warehouses, and transportation capacity [19]. Strategic planning for E-logistics should be based on developing suppliers related to logistics and core competencies in providing various logistics services. Many companies are decentralizing their operations by outsourcing logistics service requirements. However, the recent trend indicates that companies consolidate their service offerings through merger and acquisitions. For 3PL companies like DHL, Fed Ex and UPS are companies wanting to distribute their products to targeted markets or customers, as well as consumers from the downstream link of the logistics chain [20]. Partners are seen primarily as a means to gain a better reach in the market through technology, financial or manpower resources. For E-logistics, information is needed on product characteristics, customer requirements, partners' services and performance in terms of cost, quality, flexibility and responsiveness; offering logistics services at competitive prices. Many Small to Medium Sized Enterprises (SMEs) become partners in a logistics chain as they offer a variety of logistics services for order fulfilment [18].

Inventory management is still considered the most important managerial task in logistics operations. The management of inventories should also include the equipment for the handling of goods and materials. There is no doubt that IT/IS such as MRP II, RFID, and ERP have helped to manage inventory along the supply chain in a more cost effective manner and made possible the provision of improved logistics services to customers. Inventory management in E-logistics requires real-time information so that the volumes and locations of different materials can be tracked and updated [21]. This will also help a company to understand and meet customers' expectations. Good logistics management is heavily reliant on the availability of accurate information. IT plays a major role in bringing all parties, including customers and suppliers, to a single platform in an integrated

logistics system to provide cost-effective and quality logistics services. Nowadays, web-based information systems are widely used to track orders and communicate with both customers and suppliers.

## 2.5 Impact on logistics operations

The initiatives highlight the need for real-time, accurate logistics information that can be shared by supply chain players to allow for more intelligent logistics decision-making and timely responses to planned and unplanned events in the supply chain [22]. E-business in particular is accelerating the way logistics are managed by companies across the entire value chain. The size of shipments are shrinking, shipment frequencies are increasing and the ubiquity of the internet is providing new opportunities and challenges for companies serving customers who are geographically dispersed, difficult to predict and sensitive to price and service levels. Table 1 demonstrates the major differences between traditional and e-logistics.

Table 1: The Difference between traditional and E-logistics [23]

	Traditional Logistics	E-logistics
Shipment Type	Bulk	Parcel
Customer	Strategic	Unknown
Customer Service	Reactive, Rigid	Responsive, Flexible
Distribution Model	Supply-driven Push	Demand-driven Pull
Inventory/ Order Flow	Unidirectional	Bidirectional
Destinations	Concentrated	Highly Dispersed
Demand	Stable Consistent	Highly Seasonal, Fragmented
Orders	Predictable	Variable

Historically, supply chains have been structured to "push" products from suppliers to consumers with limited if any information available approach typically results in supply chain distortions marked by excess inventories, obsolete products, unsatisfied consumer demand and an inability to forecast accurately. On the other hand, "pulling" products across the supply chain helps to ensure supply and demand are synchronized by feeding information about actual not forecasted orders to the enterprise, suppliers and third party logistics providers. The

benefits of a pull system are obvious but realizing them requires fundamentally rethinking how logistics should be managed throughout the entire order to delivery process [23]. As a result, the logistics operations of most shippers, customers and logistics providers themselves function in an extremely information poor environment despite the fact that logistics plays a critical role in their business operations the timely and cost-effective delivery of goods to customers.

## 2.6 Building B2B2C E-logistics Systems and Integrating IT Components

When business finds out there will be problems on supply chain, and know the impacts of choosing a suitable e-commerce technology, the business will start to consider or plan their process of implementation such as building phases and IT components. The E-logistics system-building phase is shown in Figure 3. Both materials flow and information flow are not directly from customers to supplier, or directly from supplier to customers, it exists in a cycle of a supply chain. Building of an E-logistics system, there are three-phase strategies as follows [24].:

- **Un-integrated e-commerce stage:** this stage represents that a supply chain has not been electronically integrated yet. That is a traditional trade environment. The connection between upstream and downstream used traditional ways, such as telephone, fax or post mail. The electronic infrastructure, for instance network structure, internet, software, hardware and so on, needs to be done. E-Business tools can be used including ERP, BPR, and business intelligent systems.
- **Integrating e-commerce stage:** Setting an integrating center to integrate upstream and downstream manufacturers. The reasons are suppliers and distributors were easily controlled, the information of the end users was properly noted and logistical arrangements were smoothly made. In this stage, the IT applications of suppliers and distributors include: (1) suppliers: EDI for industrial and commercial aspects; (2) distributors: electronic data synchronization (EDS), vendor managed inventory (VMI), advance ship notice (ASN), electronic invoice, and electronic funds transfer (EFT).
- **Integrating B2B2C e-commerce stage:** this stage is also setting manufactures as an integrated center, which combines the final customers with retailers. This is because that the

final customers' needs or information is more uncertain than the upstream. In this stage, customers or retailers using collaborative planning, forecasting, and replenishment as electronic tools.

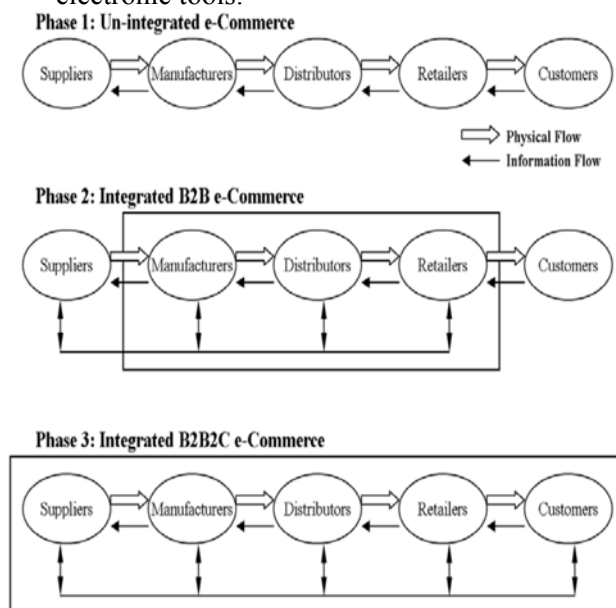


Fig.3: The building phases of B2B2C e-commerce with e-logistics system [24]

## 3. Methodology

This section covers the methodology utilized in carrying out the research. It comprises of the research design, target population, sample size, sampling techniques, data collection, and data analysis. In order to meet the key objectives of the research, qualitative and quantitative methods and combination of primary and secondary sources of data have been used.

### 3.1 Research design

A research design, which is a function of the research objectives, is defined as “a set of advance decisions that makes up the master plan specifying the methods and procedures for collecting and analysing the needed information” [25]. An appropriate research design is essential as it determines the type of data, data collection technique, the sampling methodology and the budget [26]. Descriptive research design was used to carry out this research as it attempts to describe, explain and interpret conditions of the present i.e. “what is”. The research also followed a correlational approach in order to address the aforementioned objectives. Correlation approach aims to ascertain if there is a significant relationship between two variables [27]. Hence, after the data were collected, then was analysed by using correlation, particularly

Pearson's correlation coefficient to show the relationship among E-logistics flexibility and cost management, E-logistics responsiveness and E-logistics data management roles and the logistics performance in automotive service improvement.

### 3.2 Target population and sample techniques

The study used a representative sample from each department to form the sample size of the total population of MOENCO Hawassa. From each department targeted populations are sampling technique as a process that involves stratification followed by selection of all subject from each department have been adopted for this study. This is because of the heterogeneity of the population and all respondents have an equal opportunity of participation. The population was stratified into the various functions and the employees then selected proportionally. The managers of each department were purposively selected to be part of the study because of their knowledge input. A majority of the respondents were being selected from the departments who were directly involved in administering E-logistics within the organization i.e. customer service, sales, finance, technical leaders, administration and human resource departments. Then for purposes of administering questionnaires, the researcher specifically selects sufficient number of sample from both companies. Finally, E-logistics is a strategic issue which should be handled by top management of an organization, thus the questionnaire purposely administered to the top managers of the company.

### 3.3 Data collection

In the field study, data collection done through: observation, interview, and questionnaire. In addition, secondary data is collected from existing literature on E-logistics relevant books, articles and journals. Due the nature of the study the research work based on both primary and secondary data. Observation of their works has been under taken parallel with the interviews. Interviewing is also the other most important data collection instrument of the study. Researchers have interviewed three managers, three foremen and two quality control personnel from both branches. In customer side nine governmental organizations and seven private garages was interviewed. The interview process mostly took 25-30 minutes to complete. Questionnaires are used to gain general picture of E-logistics practices, opportunities and challenges in automotive service. Twenty questionnaires were distributed to departments who were directly involved in administering E-logistics within the

organization to gather information from servicing company, concerning the issues under study.

### 3.4 Data measurement

In addition to other close ended and open ended questions, the questionnaires also included likert scaled questions. So the data measurement for the questions used likert method, a self-report techniques for attitude measurement in which respondents were asked to indicate there degree of agreement or disagreement with each of a number of statements. According to Churchill (1989) as cited by Belayneh (2013) the data measurement for the questions used likert method, a self-report techniques for attitude measurement in which respondents were asked to indicate there degree of agreement or disagreement with each of a number of statements. In fact, researchers indicate that a five-point scale is just as good as any other. Thus, a five-point Likert scale was used in this research, specifically the Response Options are: 1=strongly disagree, 2=disagree, 3= Neutral, 4=agree, 5=strongly agree( Level of agreement) 1= Very low, 2= Low, 3= Medium/average, 4= High, 5= Very high, 1=Very Poor, 2= Poor, 3= Fair, 4= Good, 5= very good (Level of Quality).

### 3.5 Data analysis and presentation

After primary and secondary data are collected, all have been analysed in accordance with the objective of the research. To analyse the data collected using questionnaire from the company, descriptive analysis which represent and interpret the Data using tables make in order to display the collected data in a concise and meaningful way, percentage to show the respondents position towards automotive service improvement through E-logistics activities. After the fieldwork, the data was coded and tabulated by use of tables. Data analysis has been done using SPSS version 25.0 for windows. Descriptive statistics such as mean and percentages were used to present the various characteristics for the data sets.

## 4 Results and Discussions

This section represents results of this study based on the formulated objective presented in section one. This section also contains the findings and discussions of the study and attempts to answer the research questions as derived from the research objective. Data analysis involves selecting the appropriate data analysis strategy, coding the responses and screening the data.



#### 4.1 Company's website and IT department

Web Services is a set of related web pages located under a single domain name. It is technically feasible and leads to potential business opportunities. The existence of company website and IT department enhance to the development of E-logistics practice in the company. In table 4 show below that majority of company 87.5% responds, there have their own website /home page, the remaining 12.5% responds, there is no own website. A website is information resource that is suitable for any party who wants to get information about the company, accessed through www.com. The customers can browse a company website at any time of day or night to learn about company and the services it offers. It gives the business an opportunity to create a greater awareness of its product and service to its customer. Thus; it necessitated the development of website/ home page and online linkages with business partners to facilitate the efficient flow of, order, payments, information and etc.

The majority of company (75%) respondents, responded that they have an IT department, the remaining 25% respondents have no an IT department. It is known that information technology department plays great role in providing Information and Communication Technology (ICT) services and support other functional area in order to enable the company to achieve its goals and objectives. It might also develop policies and procedures to ensure safe, secure, efficient data retrieval and give training and support staff with upgrade technology. It is somewhat difficult to think about full scale adoption of E-logistics and E-Commerce without involvement of IT department. Therefore it is important to have IT department in order to improve the service business and to take proactive measures before security breach, risk and other vulnerabilities are occurred.

#### 4.2 E-logistics level of awareness

Figure 4 show that 37.5 % of respondents have low level of awareness and 31.25% of respondents have medium knowledge and awareness, 18.75% of respondents have very low level of awareness, whereas both 6.25 % of respondents have high and very high level of awareness about concepts of E-logistics and E-Commerce respectively. This indicates that more than half of the respondents are not familiar with both E-logistics and E-Commerce and how it works. This may lead to a higher inclination amongst them to give service using conventional basis.

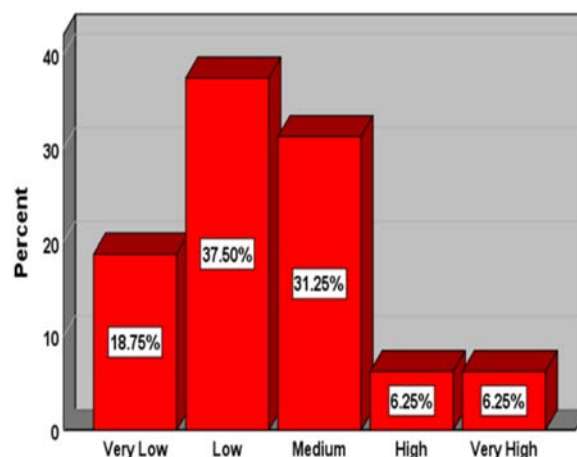


Fig. 4: Result of E-logistics level of awareness in company (Survey data, 2019)

This low level of awareness about concepts of E-logistics leads to a higher inclination amongst them to purchase products using conventional basis. Even though application of ICT and E-logistics is poor in the company use the application of ICT technology with different extent and application. It also indicated that the top three applications with the largest usage frequency by the company are: email with the major stake, looking actual prices and compare it to other products" price and identifying the sellers and its product.

Respondents were asked whether the company is using internet and other ICT tools to simplify business operation from simple information searching, comparing price of product, information exchange with customer and supplier, electronic ordering and payment even more. To this end, and E-logistics can be defined as the transfer of goods and services using Internet communication technologies such as electronic data interchange (EDI), World Wide Web (WWW) and your answer should consider different application of ICT to simplify your business operation.

#### 4.3 E-logistics application to minimize time

E-logistics system that supports all the characteristics of electronic commerce, needs to provide and maintain a value for which customer has decided to buy products and service in the electronic way, rather than in the traditional way. The ability to transport goods quickly, safely, economically and reliably (logistics) is seen as vital to success of service businesses. From the respondent data analysis, below 50% and 37.7% respond very good and good respectively to utilize lead time using E-logistics application.

The respondents 50% responds good, 37.5% responds very good and 12.5% responds fair, E-logistics minimize lead time for service activity.



Therefore a majority of the respondents agreed that E-logistics had role in minimize lead time for service activity and enhancing the internal control to the financial system of the organization. E-logistics system that supports all the characteristics of electronic commerce, needs to provide and maintain a value for which customer has decided to buy in the electronic way, rather than in the traditional way E-logistics represents a shift in the logistics system that is changing traditional organizational models, business processes and customer relationships. The new system of E-logistics requires an organization to integrate and synchronize the strategic vision and tactical delivery of products and service to its customers with the information technology and service infrastructure needed to meet that vision and process execution.

#### 4.4 The purpose of E-commerce technologies

E-logistics reducing operating costs and increased efficiency and effectiveness, it gives the company an opportunity to automate the system using

computer technology. MOENCO Hawassa's mostly used popular application is email (100%), the company from this study use email as one of E-logistics and computer technology application. The second most popular application is to use E-catalogues (75%) followed by electronic ordering from suppliers (68.75%) and evaluating spare part service 68%. Table 2 shows e-commerce technologies application,

Table 2: E-commerce technologies application (Survey data, 2019)

No.	Statements	N	Response	%
1	E-mail	16	16	100
2	Identify sellers and its product	16	8	50
3	Evaluate spare parts and services	16	10	62.5
4	To see actual price	16	3	18.75
5	Compare prices	16	7	43.75
6	Manage internal operations	16	3	18.75
7	To use E-Catalogs	16	12	75
8	Electronic ordering to customer	16	1	6.25
9	To reach new customers	16	4	25
10	Electronic payment from customer	16	2	12.5
11	Electronic ordering from suppliers"	16	11	68.75
12	Electronic payment to suppliers and others	16	2	12.5

Small percentage of the company used it for, electronic payment to supplier and from customer (12.5%) and electronic ordering to customer (6.25%). Lastly, however, no one ever used e-commerce as a medium of payment, to reach new customer, and electronic ordering to customer. This situation is affected by existing e-payment and telecommunication infrastructure.

Eighty one percent respond have information systems strategies, long term strategic, and short term tactical plans been formulated to support the overall e-commerce adoption and information systems requirements and the remaining very small percentage (18.8%) of them respond have no information systems strategies, long term strategic, and short term tactical plans been formulated to support the overall E-Commerce adoption and information systems requirement. It is a clear indication that the rise of the information economy and the challenges of the global market have created opportunities and challenges to company for e-commerce.

#### 4.5 Service time per day

The essence of E-logistics is twenty four hours/ seven days in week/ three hundred sixty five days in a year are not considered by the companies. They serve their customers half days each day. From E-Commerce point of view this very is short time, time aspect of E-Commerce and E-logistics is 24/7, 24 hours per day, 7 days per week. Potential operational efficiency benefits of e-commerce as perceived by the imports sector, top four operational efficiency benefits are: Reduced paper work, improving transaction speeds, reducing travel time and cost and potential to increase company profits. But company hesitate benefits of, reducing errors, quality of information flow. Moreover, the companies conceptualize service benefits like, Improved customer service, overcome geographical limitations, provide up to date information, encourages price transparency, mainly open all the time, provide comparison shopping much more than operational efficiency benefits.

The transition from paper-based transactions to electronic communications has therefore generated doubts and concerns regarding the trust. Of course in paper based transactions, there are collateral assurances of genuineness: the letterhead, the hand written signature, the company name and logo on

the invoice or purchase order. Electronic communications do not have these assurances. It is known that trust is an important element within company and in business transactions. So trust level is an important factor that inclined the company to adopt of e-commerce. As shown below in table 87.5% and 12.5% respond strongly agree and agree respectively e-commerce has substantial advantages over traditional face to face, paper based service.

Clearly, it can be deduced that electronic commerce has substantial advantages over traditional face-to-face, paper-based commerce. This is a good tendency to introduce e-commerce among companies, of course without forgetting potential challenges it impose. For the question rose does your company use advanced information technology (like ERP, EDI, and internet etc...) in order to integrate its supply chain, 87.5% of the respondents replied yes, when the rest 12.5% answered no. Majority of the respondents replied that they use advanced information technology to effectively communicate with inter departments and outside the company in order to integrate its supply chain. As per the interview made, there was no ERP and EDI practice in company but there was LAN.

For the question rose does your company give you training on new or upgraded technology, 93.75% of the respondents replied yes, and the rest 6.25% answered no. The management to make formal education possible and allowing staff members to have the education and technical support to staff computers skill, software products or other electronic or mechanical services.

#### 4.5 Perceive benefit of e-commerce technologies

Perceived benefits are the gains or improvements derived from existing ways of operating business transactions using e-commerce applications. The following section summarizes respondents' views of expectations and perceived benefits for e-commerce deployment. For analysis purpose perceived Benefits are classified in to operational efficiency and service benefits. Table 3 shows the potential operational efficiency benefits of e-commerce as perceived by the imports sector. Based on the frequency of respondents response the top four ranked operational efficiency benefits are as follows.

Table 3: Operational efficiency benefits (Survey data, 2019)

No.	Statements	N	Response	%
1	Reducing travel time and cost	16	15	93.75
2	Reducing errors	16	7	43.75
3	Improving service speeds	16	9	56.25
4	Reduced paper work	16	14	87.5
5	Improving quality	16	6	37.5
6	Potential to increase company profits	16	6	37.5
7	Improved customer service	16	10	62.5
8	Overcome geographical limitations	16	4	25
9	Providing up-to-date information	16	4	25
10	Encourages price transparency	16	3	18.75
11	Remain open all the time	16	3	18.75
12	Provide comparison shopping	16	3	18.75
13	Quality of information flow	16	4	25

Reduced travel time and cost (93.75% of respondents), reduce paper work (87.5%) improve customer service (62.5%), Improving service speeds (56.25%). It can be inferred that the knowledge and awareness about e-commerce may prone them to make error, and making transaction with unknown business partner make them to hesitate on quality of information flow.

#### 4.6 Result of E-logistics responsiveness

E-logistics has brought new challenges, as well as opportunities to logistics management. The cost of logistics and transportation has a large impact on an organization's profitability and the extent to which it can position itself through this competitive business. It makes logistics function to deliver the goods and services as quickly as possible at the lowest cost [29]. Therefore, a key determinant of business performance is the role of the logistics function in ensuring the smooth flow of products and information throughout a company's supply chain. E-logistics provides the power of the internet and other technologies to provide enough information to logistics participants and offer unprecedented levels of visibility across the entire logistics supply. Therefore, concerning E-logistics responsiveness, the researcher pose statements to understand the extent to which respondents agreed or disagreed and their position on them. Table 4 below had the results.

The statements posed to respondents regarding E-logistics elicited varied reactions. To begin with, the researcher wanted to know the extent to which the respondents agreed or disagreed on the statement that Customers can log in complains online and get service online. The aim of the statement was to understand how the company has integrated itself with the customer using online

measures. About 75% of the respondents strongly agreed with the statement, 12% of the respondents just agreed while 6.25% of them were not very sure. 6.25 respondents disagreed. From this response, it was imperative that E-logistics was the most preferred mean through which the organizations channelled their service activities to their customer.

Table 4: Descriptive statistics result of responsiveness in E-logistics (Survey data, 2019)

Statement	N	Mean	Std. Deviation	1	2	3	4	5
Customer can log in complains online and get service online	16	1.44	0.892	75.00%	12.50%	6.25%	6.25%	0.00%
The response time is faster online than when manually done	16	1.44	0.629	62.5%	31.25%	6.25%	0.00%	0.00%
Customers/ clients prefer being served online than manually	16	2.13	1.025	31.25%	37.50%	18.75 %	12.5%	0.00%
Online attendance is more fulfilling than manual attendance	16	2.19	0.750	18.75%	42.5%	38.75 %	0.00%	0.00%
Ability to reach a wider range of customers with online services	16	1.87	0.806	31.50%	56.00%	6.25%	0.00%	0.00%
E-Logistic has enabled improve traditional way of service	16	1.63	1.088	62.5%	25.00%	6.25%	6.25%	0.00%

A customer is an integral entity to any organization and therefore must seek for means of ensuring that they are satisfied at all cost. Majority of the respondents, above 85% actually did agree with the statement. The response time is faster online than when manually done, about 62.5% of the respondents strongly agreed with the statement, 31.25% of the respondents just agreed while 6.25% of them were not very sure. Majority of the respondents, above 90% actually did agree with the statement. The respondents 62.50% responds strongly agree, 25% responds agree and 6.25% responds not sure and strongly disagree with the statement respectively. E-logistics improve traditional way of service activity. Therefore a majority of the respondents also agreed with this statement, an implication that E-logistics was so much favoured by the respondents that doing activities manually. Automobile retailing of such spare parts has been greatly affected by such information technology advancements. About 68.75% of the respondents strongly agreed with the statement, 25% of the respondents just agreed while 6.25% of them were not very sure. On-line retailing has been maturing, in the Business-to-Consumer (B2C) area [24]. The automobile service industry has to capitalize on this gain beyond traditional information sharing. The current and potential developments in the B2B area of the E-commerce world need to focus regarding the relationships between manufacturers and suppliers, such as e-supply management.

The researcher also wanted to identify the extent to which respondents agreed or disagreed with the position that E-logistics is a source of product differentiation in the market and if it has improved customer service delivery efficiently. The 68.75% of the respondents strongly agreed with the statement, 25% of the respondents just agreed while 6.25% of them were not very sure. A business cannot succeed without customers. What is a product without a customer to buy it, or a service without a customer to serve? It's how companies use those products and services to get, keep and grow customers that counts. For this reason, the ability to more effectively market to, sell to and serve customers has made its way to the centre of corporate strategy. That is the reason as to why most of the respondents agreed on ensuring that E-logistics is manifested in their company. Majority of the respondents strongly agreed with the statement.

#### **4.7 Result of E-logistics data management**

Data management, reliability and the accuracy of logistics and supply chain information are critical to

any organization. Inaccurate, incomplete and untimely data management can be one of the biggest challenges when it comes to effectively exchanging information between the organization, its suppliers, logistics providers and even transportation carriers. The view of the researcher was to identify how E-logistics had enabled proper data management within MOENCO Hawassa. Figure 15 indicated how respondents could describe the quality of decisions made on the basis of data collected using E-logistics.

E-logistics is an important tool in decision making of an organization. The time frame between the start of the decision making and the implementation has always been greatly reduced by the use of E-logistics. This was because majority of the respondents, 50% respondents indicated that the quality of the decisions made on the basis of data collected using E-logistics was very good, 43.75% of the respondents indicated that it was good while the rest 6.25% indicated that it was bad to them. E-logistics leverages the power of the internet and other technologies (such as wireless) to provide robust information to supply chain participants and offer unprecedented levels of visibility across the entire supply chain. This prompted the researcher to pose statements to understand to what extent the respondents agreed or disagreed in regards to E-logistics data management.

One of the fundamental tools of supporting business processes have become electronic data interchange through the Internet. To make the collected data useful for decision making, it must be aggregated and analysed, and then shared with the appropriate decision makers. Data-driven decision making exists at the intersection of data quality and decision quality, where quality data supports quality business decisions. Customers' demands customize spare parts delivered at very high speed with complete order flexibility and convenience. Today's online customers want to be able to track their orders instantly from the moment they click the Buy button until the moment the package arrives at their doorsteps and be able to reroute packages, determine delivery costs. Coordination is easier with online sharing of information compared to sharing it manually. Majority of the respondents 43.75% strongly agreed with the statement while 37.5% of the respondents agreed and 18.75% respond disagree with statement. Above 80% agree with statement this was an indication that E-logistics had integrated the coordination of activities within the company. Accuracy of information was better with E-logistics as compared to manual documentation. This was because also majority of the respondents

had strongly agreed 37.5% with the statement while 43.75% of the respondents agreed. A good E-logistics management is heavily reliant on the availability of accurate information. Automotive service company must try to develop information system more accurate and timely information can be exchanged to help decision making and provide competitive spare parts logistics services.

The visibility of data has been enhanced by E-logistics, the response was as follows; 46.67% of them strongly agreed, 20% just agreed, 6.67% were not sure while 20% disagreed and 6.67% strongly disagreed with the statement. Data organization was easier with E-logistics as compared to manual documentation. The response was as follows; 50% of them strongly agreed, 18.75% just agreed, 12.5% were not sure, 12.5% disagreed and 6.25% strongly disagree. So, from the respondents' majority are strongly agreed with the statement. E-logistics plays a major role in bringing all parties, including customers and suppliers, to a single platform in an integrated logistics system to provide cost-effective and quality logistics services. The importance of E-logistics in the logistics management is highlighted by the fact that customers can track, trace and generate advanced logistics reports so that timely decisions can be made and corresponding actions taken.

## 5 Proposed Implementation

### Frameworks for E-Logistics System

The result of E-logistics system research in this study opens up many avenues for further research and improvement. There are many issues which should be addressed with appropriate system for optimizing the logistics process configuration given the implications of logistics information systems. Strategic planning has been considered as very important in managing any system including E-logistics. However, this poses a great challenge for selecting the optimal strategic choices taking into account the corporate objectives/goals. The E-logistics system will be adopted as a new service delivery which used as a solution templates for MOENCO Hawassa automotive service. Hence, the researchers has developed implementation framework thoroughly a company research result. It is developed based on both the knowledge gained through the literature review, observation and interviews results.

#### 5.1 Adopt E-commerce logistics gradually

Adopt as initial E-logistics adoption and the next as the institutionalization of E-logistics. In this step the company is able to understand and use E-logistics

towards its business concept within the business scope. For an automotive service company in MOENCO Hawassa, especially a competent one, institutionalization is a very important step, especially when it comes to intruding the business. An immature institutionalization cannot enable the automotive service to utilize E-logistics towards its own business scope, and such an E-logistics failure may delude the company to a different scope which will be very misleading and costly. The advantages in adoption E-logistics in service companies web enables businesses, to distribute data and software online, reduce transaction cost, services with high margin for example: advertising, subscription, transaction, and intermediary, less dependency on forecasting and better control over supply chain management.

#### 5.1.1 Requirement to adopt E-logistics

First look at the factors that affect e-commerce adoption particularly in developing countries. A major barrier to wide-scale adoption of e-commerce logistics and its associated activities is the lack of Internet use, economic resources and standards of education in developing countries. Most of the world still does not use credit cards. Not only are the payment mechanisms lacking, there are deeply ingrained cultural issues and significant levels of fraudulent activity [30].

Cultural E-readiness in developing countries often has diverse cultures and business philosophies, which bound the applicability and transferability of the e-commerce models planned by Western countries. Organizational E-readiness is represents perception of e Commerce elements in the organization environment; which includes comprehension of their meaning through an understanding of e-Commerce technologies, business models, requirements, benefits and threats and projection of the future trends of e-Commerce and its impact. This awareness can be evaluated through a set of question lists from Top managers and executives. The changes will be made upon people, investment and finance, facilities and systems (both legacy and Information Systems). There will be a mutual effect between the change process and organizational e-readiness which is an internal factor and thus under control. In the second step of implementation phase the adoption starts and can reach various levels of maturity. According to Molla et al. (2006), the levels of e-commerce adoption maturity are as follows [16]:

- No e-commerce (no email, no internet)
- Connected e-commerce (email, internet)

- Statics e-commerce (publish of information on web with no interactivity)
  - Interactive e-commerce (website accepts queries, emails)
  - Trans-active e-commerce (online sell and purchase and customer service)
  - Integrated e-commerce (integrated with back-office systems and its business transactions).
- Figure 4 demonstrates adoption E-commerce logistics gradually based on Molla et al. (2006)

In the third step of the implementation phase, differentiate between entry-level adoption and its extent. First step adopt performed as initial e-Commerce adoption and the next as the institutionalization of e-commerce. The third measure of implementing adoption,

institutionalization, indicated the extent of e-Commerce utilization. In this step the organization is able to understand and use e-commerce towards its business concept within the business scope and model. An immature institutionalization cannot enable the company to utilize e-commerce towards its own business scope, and such an e-commerce failure may delude the company to a different scope which will be very misleading and costly. Even if the company change it's heading towards a new business scope based on a meticulous financial evaluation the cost of intruding the business rules may still remain. As such a naïve institutionalization will lead to a higher cost.

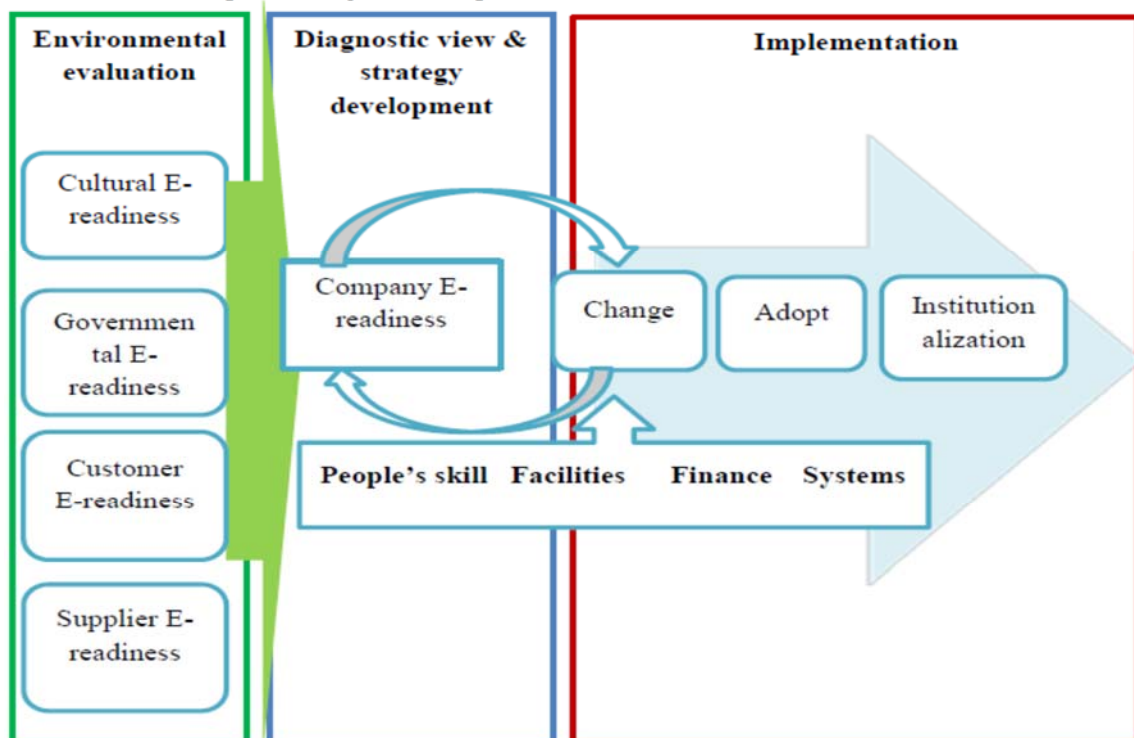


Fig.4: Adoption E-commerce logistics gradually [16]



## 5.2 Building B2B2C E-logistics systems

Integrating B2B2C E-logistics system this stage is also setting supplier as an integrated center, which combines the final customers with retailers. When business finds out there will be problems on supply chain, and know the impacts of choosing a suitable e-commerce technology, the business will start to consider or plan their process of implementation such as building phases and IT components. Partnership formation is not a new approach, but E-logistics requires a different set of criteria in selecting the partners including the geographical location of the company, technological infrastructure and expertise available as well the

organizational choice of logistics productivity and competitive performance objectives. According to Gunasekaran et al. (2007), B2B2C e-commerce can be used for integrating the activities of suppliers and customers along the logistics value chain. This demonstrates the importance of Internet, Intranet and Extranet technologies. The overarching critical success factor in logistics under the new economy is establishing an information-based supply chain that improves continuously and provides flexibility and responsiveness to changing customer requirements. Researchers have observed IT applications like the Internet, WWW, and E-commerce as a major source of E-logistics system improvement. Figure 5 has proposed B2B2C E-logistics system based on [24].

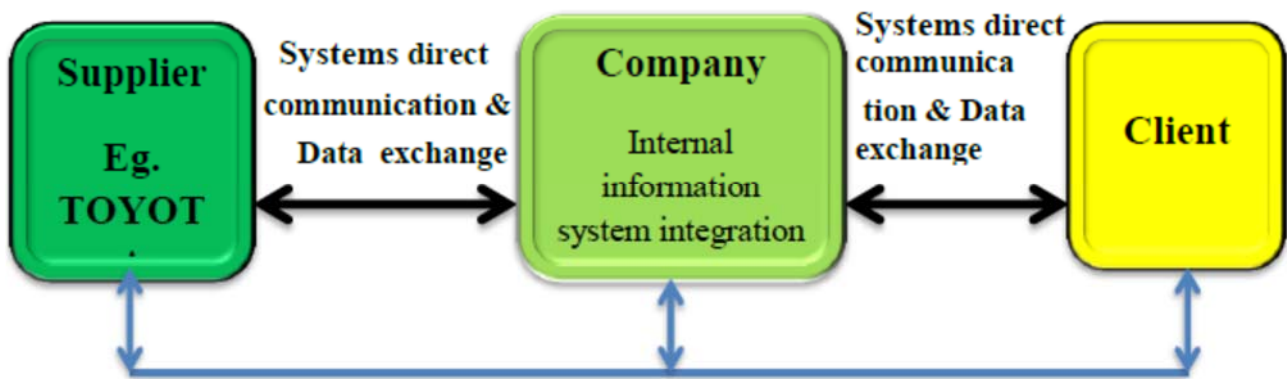


Figure 5: The proposed B2B2C E-logistics system based on Pansy et al. (2015)

### 5.3 Proposed E-logistics system

From the survey, there was a significant relationship among the functional role of IT, e-commerce and logistics performance. Therefore, it was sensible for researcher to propose E-logistics system. When it comes to logistics, the challenge has always been how to deliver products to customers as quickly as possible. By coordinating all resources, logistics have to ensure that service levels agreements with customers are honoured. E-logistics can automate the logistics system and providing an integrated, end-to-end fulfilment and supply chain management services to the players of logistics processes. Researcher considers an E-logistics system within a non-manufacturing service company.

To implementation of E-logistics system, the first step is defining and clarifying business problems of logistics system to clearly describe the business problems such as the problems occurring in the supply and business operation. Followed by configuring IT architecture of e-commerce as the second step, it considers the impact of using e-commerce technologies to solve the problems of e-commerce. IT/IS as an enabler in logistics management to get the right products to the right place in the right quantity at the right time, and to provide quality services to satisfy the customer's needs. There is no doubt that e-commerce is the catalyst across the supply chain network. From literature review, it is clear e-commerce has an enormous impact on the performance of a logistics system. The third step is proposed to integrated IT components to implement e-logistics systems in company. This step can be used to explain various situations taking place at different integrated phases. Finally, the last step is to measure and assess the performance. It can help company validate the collaborative efforts of the implementation of e-logistics system for their sustainable competitive advantages. The E-Logistic system can provide instrumental guidelines to assist the company in developing their own core capability through the implementation of E-logistics systems. Supporting powers and activities continue to display many areas of weakness, particularly with regard to the provision of market information, payment and financing services, intellectual property rights management. In these areas, company needs assistance from governments to build up an environment conducive to the development of E-Logistic system activities.

### 5.4 Practical implications

Companies in the new economy are focusing on core competence, providing real-time information,

globalizing service demand, visibility in KPIs, collaboration in supply chain operations, and e-commerce development. It is also important to have partners with a clear understanding of the local business environment. Credibility and reputation are two key criteria that E-logistics Services Company aim for when selecting partners. Adherence to timeliness and thoroughness in performance is just as important.

E-logistics poses numerous managerial challenges in terms of establishing strategic alliances based on core-competencies while developing a logistics value chain. Moreover, how the logistics component of the value chain can be integrated with the rest of the supply chain needs to be addressed so that an integrated business process can be achieved. The behavior and role of logistics managers will be different in E-logistics from those of traditional logistics systems which are based on centralized resources. E-logistics is based on an IT/IS integrated logistics system, so the manager's function in E-logistics will be more of knowledge management involving close control over the strategic operations of logistics and leveraging the application of web-based logistics information systems.

Furthermore, the type of education and training required to operate in an E-logistics environment should also be investigated so that the right skills can be made available for managing E-logistics systems efficiently. Incentive schemes need to be developed so that appropriate scales can be used to evaluate managers for their contribution in providing quality logistics services in E-logistics environments. Some key performance indicators may be helpful.

### 5.5 E-logistics implementation

E-logistics implementation is in line with the reasons for the company to implement E-logistics. Why use E-commerce technologies to construct an E-logistics system for Auto servicing business Company? The researcher can firstly think about the processes of a supply chain of spare parts. Implementation of E-logistics strategy in a company is largely depended on e-readiness at strategic, environmental and organizational contexts of such companies. It may connect a number of suppliers, manufacturers, distributors, retailers and customers to delivery products and services from source through users. Implementing new technology means change. It is expected that the new technology will make service much easier for users by providing better mechanisms for performing and managing regular organizational tasks. From researcher interview, what is your future plan about E-

logistics? The manager's answers the company was already started E-catalogues, mobile commerce, SMS to interact with customer and also E-mail with suppliers. The mobile phone offers the potential for this medium to evolve for E-logistics facility and growth. The drivers of implementation can be reactive or see to be proactive depending on company's strategy. Also the primary purpose of implementing EDI and ERP will upgrade the business, in a rapidly changing and highly competitive environment, far better than before. If the company implements ERP systems, it has been the ultimate solution for business problems still the company can't be integrated. In future, the company plan to implement new inventory management and automotive service software near future. These decisions will enhance for the base for the implementation of E-logistics. The company should follow their customer interest to interactions through web service in order to retain and enhance business operations towards improving service delivery.

## 6 Conclusions & Recommendations

The study aims to improve automotive service through E-logistics on MOENCO Hawassa two branches of automotive service company. Customer service is the provision of the service to customers before, during and after. MOENCO Hawassa both branches and with other five branches still can't be integrated with online and IT technology. The company should use modern technology like EDI, ERP, inventory management and WMS to properly utilize because still the system is traditional coding. The level of awareness was very low so, the company commitment to give training to organization staff on E-logistics to become successful in logistics service system performance development. To minimize lead time for A, B, C and D type service they should be at system level approach by integrating through IT technology their spare part management, supplier and customers. Automotive service business sector in Ethiopia is growing fast, without improving the service trend they can't satisfy their customers.

On E-logistics responsiveness, the researcher posed statements to understand the extent to which respondents agreed or disagreed and their position on them. The following were the conclusions:

- Majority of the respondents agreed on the statement that customers can log in complains online and get services online.
- It can also be concluded from the study that response time was faster online than when manually done.
- The cost of employing customer service attendants had reduced while serving customers online as there was a majority positive response on the statement.
- It is also evident from the study that E-logistics had opened a wide range of customers with online services and it was more fulfilling for the customers to be served online rather than manually. This is a majority of the respondents concurred with this statement.
- It was also deduced from the outcome of the study that E-logistics is a source of product differentiation and can improve customer service delivery efficiency.
- That MOENCO had become more flexible with adapting to changes in the environment with the use of E-logistics. All the respondents overwhelmingly agreed with the statement.
- There was an indication from the outcome of the study that E-logistics can deliver urgent requests to customers and help to easily manage the varying number of spare part delivery.

Based on the conclusions, the following recommendations were made on effects of E-logistics responsiveness to improve logistical performance:

- Existing Automotive service system of the MOENCO Hawassa be revised and the future servicing system be redesigned with E-logistics in consideration of the growth demand of the economy sector.
- To have integration with in the company, means of effective communication like ERP should be implemented.
- The company should use modern technology like inventory management system and WMS to properly utilize because still the system is traditional coding.
- E-logistics improves the accuracy and timeliness of information as compared to manual documentation and logistic firms should therefore implement it.
- The company should develop awareness raising campaigns to its client about benefit of using new technologies in business.
- Company should manage spare parts using software is a good for them to increase the efficiency where there is a lot of potential in it

because almost all client not satisfied on spare part delivery.

The company should give training to staff on E-logistics to become successful in logistics service system performance development. Finally, it is recommended that government should adopt a nationwide strategy and build a platform to promote strong, forward-looking policy favoring electronic communication. It is recommended that the study is replicated in other logistic sectors such distributing, warehousing, 3PL and manufacturing companies in order to establish whether E-logistics will have the effect on logistical performance improvement manufacturing and service industry. The response time is faster with E-logistics hence it can provide faster response to customer needs which is a requirement for survival in the competitive servicing industry. E-logistics helps to streamline and automate business process to improve efficiency and keep costs low and should be implemented by logistic firms as it makes customer service more cost effective.

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