

# Role of ICT Integration in Supply Chain Performance of a Distribution Organization: Case of Metro Logistics Ltd

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**Abstract:** This study addresses the supply chain management in its practical dimensions, the organizations objectives as per the missions and goals achieved in establishing the role of ICT integration in supply chain performance in distribution sector in Kenya. This research gives an elaborate explanation on how ICT integration enhances supply chain performance of an organization in a distribution sector. The areas examined include the core areas in ICT integration which include the ICT systems used in organizations, Challenges faced by ICT technologies i.e. security challenges and the significant elements with effect on ICT integration to enhancing supply chain performance. Various data collection methods were also employed as follows; administering questionnaires to the sampled respondents and use of survey techniques. After data collection, analysis was done using SPSS. Data was then organized, and summarized using descriptive measures: percentages, mean, standard deviation and frequency distribution tables while tables were used for presentation of the findings. Pearson's correlations coefficients were in place to examine the relationship between the independent and the dependent variables as per the objectives of the research. The findings were realistic and positive that is, it was revealed that ICT integration, did have significant effect in enhancing supply chain performance, and hence ICT integration plays a great role in supply chain performance. The study recommended skill development through training on ICT integration and development of clear policies on the use of ICT to help curb criminalization which is the biggest threat in the ICT environment.

**Keywords:** ICT integration, skill development, organizations objectives.

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## 1. INTRODUCTION

### Background of the study:

Beginning 1990s managers have understood that, by just delivering quality products was insufficient to live up to customers' desires and to retain ever long lasting buyer supplier relationships. Customers are presently starting to request similar levels of value in the products as well as in the benefits attracted to it. Delivering the products to the clients when, where, how and in the amount they need, offering the product in a low cost, constituted an altogether new sort of challenge. Searching for approaches to react to every one of these necessities, today's organizations have come to understand the significance of ICT integration in supply chain management and creating a chain of buyers and suppliers. Supply chain managers have to be included not just in the management of the system of upstream firms that give inputs but at the same time put into consideration the system of downstream firms in charge of delivery and post-retail services. The outcome of these activities has led to the development of the new idea of ICT consideration in supply chain management just like supply chain activities can be integrated ICT can as well be integrated to enhance supply chain management. ICT integration can be explained as the use of ICT to introduce, reinforce, supplement and extend skills (Pisapia, 1994).

There is a requirement for latest research idea tending to these current improvements in information diffusion on the grounds that traditional methodologies were created under request and can no longer be generalized in the new business world. Moreover there have been reports, from different sources, of contrasting responses to Electronic Information Exchange (EDI) benefits, while some were extremely content with enhanced information whereas other scholars were opposed to general influence (Armistead, Mapes (1993) and Takac (1992)). The prominent press is brimming with stories about organizations disappointed with their Enterprise resource planning (ERP) systems. It is evaluated that 70% of all ERP systems don't recover from their investments creating speculations about their consequences (InfoWorld, October 2001). Since there could be varying notions behind these constant disappointments, the way that organizations are not proficient at utilizing the information given by these ERP systems become a bigger challenge. These are just but a few ICT systems integrated in the interest of supply chain management.

### 1.2 Statement of the problem:

Supply chain performance is affected by a number of categories of factors among them including; customer perspective, financial perspective, internal business perspective, innovation and learning perspective (Bhagwat & Sharma 2007) and the latest supply chain optimization (Turan, Eren and Hadi,2012); supply chain optimization which has not been well researched on is composed of the following significant elements; ICT integration, organizational policies, cost reduction and buyer supplier relationship management; this study however focused on ICT integration as a contributor to supply chain performance. In Kenya the main challenge is to build its genuine GNP development rate. Maintained fast economic growth is fundamental if the country is to address its high unemployment rate which is in excess by 40% and persistent poverty. Development is likewise fundamental for Kenya to accomplish the objectives laid out in its Vision 2030 development strategy, which plans to make Kenya an all-around focused nation by 2030. Achieving high growth in the general economy, however, will rely on better economic governance, greater economic reforms and extensive research to improve the country's investment in the key areas such as distribution, logistics and information communication technology to improve supply chain performance. ICT integration has brought about numerous new plans of action normally entitled as the "new economy". ICT can be an empowering influence of operation or supply chain management and enhances supply chain performance. In any case, the encounters from different firms demonstrated that ICT is not a silver slug for all organizations looking for performance changes or upper hand. Umble and Umble (2002) demonstrated that in the vicinity of half and 75% of U.S. firms encounter some level of failures when actualizing propelled manufacturing or latest adoption of information technology. Several studies have shown new ways of using ICT to store, process, distribute and exchange information both within companies and with customers and suppliers in the supply chain but little have been said about the role of ICT integration in supply chain performance which forms basis of my research work.

## 2. LITERATURE REVIEW

### Empirical review:

There is a fast improvement in the utilization of information and communication technology (ICT) in logistics and supply chain management. ICT is currently being considered in various organizations and operational activities. It has given better approaches to store, prepare, disperse and share information both inside organizations and with customers and suppliers in the supply chain network. ICT used in sharing information in supply chain is frequently identified as inter-organizational ICT or inter organizational information systems (IOIS). In supply chain management, ICT has particularly been perceived as an empowering influence for information sharing which organizations in the supply chain can use for disposing of the alleged bullwhip-impact (Lee et al., 1997). Information sharing is additionally a key part in a hefty portion of the current Automatic replenishment programs (ARP) (Daugherty et al., 1999). Activities, for example, Vendor managed inventory (VMI) and collaborative planning, forecasting and replenishment (CPFR) depend on an expanded level of automation in both the stream of physical materials and merchandise and the stream of information between organizations to enhance the productivity in the whole supply chain.

There is a lot of research showing a positive effect of ICT in the supply chain management. As organizations look to enhance the proficiency in the supply chain through expanded mix, ICT can be considered as a key factor in supply chain management through its capacity to back information sharing and shortening information processing time. Supply chain management can however be communicated in an extensive variety of measurements, for example, coordination of

procedures, information, systems and organizations (Bowersox et al., 1999; Mouritsen, et al., 2003). So also, the effect of ICT can be shown as far as for example changes in relationships, organizations and performance (Wilson, Vlosky, 1998).

A number of management perspectives in which supply chain integration can be communicated and the variety of components in which the effect of ICT can be characterized as far as integration demonstrates that past research has been restricted to concentrate on a couple of performance and control factors. The part of how to control and coordinate the action between the organizations in supply chain, and how ICT influences the level of integration in supply chain is still not clear. The information and communication technologies (ICT) encourage the integration of business procedures across supply chain process by encouraging the information diffusion, which is important for planning a business action. ICT are centered mostly on gaining and sharing information keeping in mind the end goal to make information useful in organizational learning (Dewett and Jones, 2001). A hefty portion of the qualities of ICT appear to be quite recently the correct response for an effective supply chain optimization. Between organization integration and coordination by means of information sharing, in this manner, has turned into a key to enhanced supply chain performance.

### 3. METHODOLOGY

Here the research part deals with which and how the methods are used in the study, it provides a comprehensive discussion by outlining how the data was obtained, validated and treated, the population of the study, sampling frame and sampling techniques, research design strategies. Burns and Woods (2003) explained the term research design as a blue print for leading a review with most extreme control over variables that may meddle with the legitimacy of the discoveries". A research design is therefore a plan that outlines how, when and where data are to be gathered and analyzed.

The conceptual structure of research design within which research was conducted provides a descriptive technique used under a survey method of data collection to establish the role of ICT integration in supply chain performance. This study considered and used questionnaires both closed and open ended in various forms for data collection. The population of the study encompasses 72 of employees from which a sample size of 42 was picked including corporate customers; this data can be got from metro logistics 2016 yearly report. The population was categorically divided into various classes as follows: top management; middle level managers, supervisors, subordinates staff, corporate customers. The study involved stratification of the population from which the sample was obtained; which implies that the fundamental features of the target population be predetermined so that the population can be stratified before obtaining a sample (Fowler, 2009).

#### **Data Processing and analysis:**

The data collected provided descriptive analysis for all independent and dependent variables in the study. According to Mbwesa (2006) descriptive statistics processes large groups of members into a smaller and manageable form. The finding were then interpreted to affirm the consistency with the research questions as well as the developed hypothesis both quantitative and qualitative data were collected and results summarized in tables and figures using the statistical computation for testing the major inferential questions or hypothesis relate variables or compare groups in terms of variables from which inferences were drawn. Measurement is the process of describing some property of a phenomenon of interest, usually by assigning numbers in a reliable and valid way. The numbers convey information about the property being measured; when numbers are used the researcher must have a rule for assigning a number to an observation in a way that provides an accurate description. Measurement was performed using various measurement scales such as ranking scale, nominal scale and ratio scales to help ascertain the required results.

### 4. CONCLUSIONS

The results on ICT integration as indicated by the respondents showed that ICT integration plays a significant role in supply chain performance. This response rate was contributed by undertaking research on the general ICT challenges, specific security challenges and various ICT systems used in supply chain management organizations, for example it was noted that ERP is the widely adopted systems by Supply chain organizations and the greatest security threat to these systems was identified as failures and breakdowns. ICT resource shortages (hardware and software's, high cost of ICT devices and techno-literacy) also proved significant challenge to its performance. Findings from metro logistics Ltd, indicated that role of ICT integration in supply chain performance could be measured by rating flexibility, cost saving,

better quality and reduced lead times in supply chain, However the respondents to a small extent disagreed with the results on the above mentioned factors on the extent of the role they have in supply chain performance and did suggest the little impact they may have in supply chain performance, the value from the analysis was very small and this defeats logic to ascertain that ICT plays a significant role in supply chain performance. It was revealed from the findings that ICT integration plays a special role in supply chain performance, since the rapid technological advancements over the world has demonstrated the need for information technology in goods protection, information sharing and new product developments, the positive findings could be as a results of the challenges that have been overcome by the use of ICT. From this research it can therefore be conclude that ICT integration had demands a bigger share in supply chain optimization. Flexibility, cost savings and reduced lead times are some of the benefits cited by the researchers findings.

## 5. RECOMMENDATIONS

After deep analysis of the findings the study recommends the development of skills through training on ICT integration in order to be relevant and overcome the challenges posed by negligence which would lead to system failure and breakdowns. Further it would be necessary to seek assistance or outsource on ICT use whenever necessary. In my opinion having skilled man power would support in-house system development such as ERP, rather than outsourcing, for it is cheaper to maintain and support a system that you own unlike the outsourced one. It is also necessary to develop stringent policies that govern the use of ICT to help minimize criminalization using the knowledge of Technology.

### Suggestion for further research:

The research attempted to unveil the role of supply chain optimization in supply chain performance in the distribution sector in Kenya, the study conducted in metro logistics Ltd Company on the Kenyan soil which provided the researcher with more information that was important to be used for academic reference. This is however, still limited other organizations could be used under different methodology to study the same; it was also difficult to believe whether these organizations understand the role concepts of; ICT and ICT integration as used in supply chain management. Future scholars in this field should go ahead to ascertain the independent uniqueness of these terms and their connection to supply chain. The nature of optimizing supply chain is quite unusual keeping in mind the rapid technological advancement, the influence and the challenges it comes with becomes a menace, to shed light on this it would be important to explore the area of e-supply chain and supply chain performance.

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