

FACTORS AFFECTING EFFICIENCY IN LOGISTICS PERFORMANCE OF TRADING AND DISTRIBUTION FIRMS BASED IN JOMO KENYATTA INTERNATIONAL AIRPORT AREA

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ABSTRACT

This study sought to establish factors affecting efficiency of logistics performance in trading and distribution firms based in Jomo Kenyatta International Airport (JKIA). The analysis of this study was conducted by discussing different concepts of information technology, competence and business to business relationship and their impact on logistics performance with conceptual framework. An analytical model is also presented. The study adopted a descriptive research design. The target population was the 42 respondents working in the logistics firms at JKIA. The study collected both primary and secondary data. Primary data was gathered using semi-structured questionnaires where the respondents were issued with the tool. A pilot study was done to test the validity and reliability of the questionnaires. Descriptive analysis conducted and this included the weighted means, standard deviation, relative frequencies and percentages. Statistical tools such as SPSS and MS excel assisted in the coding and extraction of these measures. Tables and other graphical presentations were appropriately used to present the data that was collected for ease of understanding and analysis. ANOVA and Chi-square data analysis methods were applied to test the

research hypothesis on whether there is any significant difference between the study variables. In addition, regression was used to establish the relationship between the study variables. The study found that information technology, level of competence, business to business relationship affects the efficiency of logistics performance in trade and distribution firms based in JKIA area. The study concludes that that information technology, level of competence and business to business relationship affects the efficiency of logistics performance in trade and distribution firms. The study recommends that the logistic firms should enhance the use information technologies that are compatible with their logistics activities. The trade and distribution firms should employ a change agents to oversee the staffs of the logistics forms undergo on the job training, in order to improve their skills and capabilities to enhance efficiency of logistics performance. Efforts should reach across the entire logistics industry to help streamline essential infrastructure and processes to enhance service delivery, reduce costs and improve responsiveness to customer demand in the logistics activities.

Key Words: *efficiency, logistics performance, trading and distribution firms, Jomo Kenyatta International Airport area*

INTRODUCTION

This chapter includes the following; back ground of the study, statement of the problem, purpose of the study, objective of the study, research questions, scope of the study which includes the conceptual scope, geographical scope and time scope and finally the significance of the study. The Council of Supply Chain Management Professionals (CSCMP) defines Logistics as that part of supply chain management that plans, creates and monitors the efficient, cost-effective flow

and storage of goods, semi-finished items and manufactured products as well as related information between the point of origin and the point of consumption in order to meet customers' requirements (Council of Supply Chain Management Professionals- CSCMP, 2013). Logistics management is an integrating function which coordinates and optimizes all logistics activities with other functions in supply chain and logistics management, including marketing, sales, manufacturing, finance, and information technology. Logistics must ensure that a recipient is supplied from a point of origin in accordance with his requirements with the correct product (in quantity and variety), in the right condition, at the right time and in the right place at minimum cost, (Smyth, 2004).

Logistics encompasses all of the information and material flows throughout an organization. It includes everything from the movement of a product or from a service that needs to be rendered, through to the management of incoming raw materials, production, the storing of finished goods, its delivery to the customer and after-sales service, (Pollitt, 2008). The scope of logistics has changed since the emergence of new technologies and strategic alliances in order to compete on flexibility and responsiveness. The growing importance of logistics arises from companies becoming globalized to gain access to new markets, realize greater production efficiencies, and tap technological competencies beyond their own geographical borders, (McFarlan, 2004). Currently, logistics operations include purchasing, distribution, the managing of inventories, packaging, manufacturing, and even customer services, (Bowersox, Closs& Stank, 2010).

The main objectives behind the outsourcing of logistics services are to: reduce operating costs, meet demand fluctuations and reduce capital investment. The general problems that arise in corporate logistics include delayed and inaccurate information, incomplete services, slow and inefficient operations, and a high product damage rate. The possible consequences are an inability to provide inter-linked services, high operating costs, a rate of high inaccuracy, and a lack of flexibility in responding to changing demand requirements, (Bowersox et al., 2010).

The growth of IT poses opportunities and challenges for logistics. As internet retailing increases, the companies are accepting orders from their clientele across the borders. On such occasions the companies have no option but to turn towards 3rd party logistics operators for physical flow of goods. Investment in technology in supply chain management has been found to have positive effect in the efficiency of logistics performance in companies. According to Petrovic-Lazarevic and Prascevic (2010), integrating technology in supply chain management helps on reduction of lead time as well as efficiency in logistics. Yeung and Tung (2010) revealed that technology integration helps in effective management of the supply chain and has a significant importance to achieving and sustaining a competitive advantage for firms.

Competences of staff and staff skills have been found to influence the efficiency of logistics performance in different industries. It is nowadays crucial to understand the importance of logistics both in the levels of the individual firm and the total economy, because it influences not

only costs but also services and service quality perceived by the customers. Christopher, Peck and Towill (2006) found that organization that had their employees trained on logistic and supply chain management were found to be efficient in management of their supply chain and had competitive advantage over their rival in the industry. Logistics has become more prominent and is recognized as a critical factor in competitive advantage for any organization (Bowersox et al., 2010).

Several empirical studies conducted support that business to business relationships have a positive effect on efficiency of logistics performance and it enhances firm's financial performance. Liu & Yen, (2010); Luo, (2011); and Yeung & Tung (2012) studied a Hong Kong logistics service provider and found that a successful implementation of a quality management system is the key to survival and long-term prosperity for a logistics company. Several empirical studies have been done in Kenya, for example, Gichuru (2012) did a study on critical success factors in business process outsourcing of logistics companies in Kenya. She identified these factors to include investment of international companies in the local economy; internet connectivity; top management support; creation/expansion of a potential niche and necessary expertise.

Mulama (2012) also did a study on logistics outsourcing but was comparing logistics outsourcing practices and performance of large manufacturing firms in Nairobi. He concluded that logistics outsourcing practices being adopted by the large manufacturing firms resulted in increased productivity, organizational effectiveness, increased profits, continuous improvement and improved quality. Moreover, Kariko (2012) did a study on logistics outsourcing and supply chain performance of universities in Nairobi County where he found that logistics outsourcing improved supply chain performance.

STATEMENT OF THE PROBLEM

A lot has been written and studied about the logistics and trade facilitation environment in East Africa. In developing the 2012 Logistics Performance Index (LPI) for East Africa, reference was made to a number of similar initiatives developed elsewhere. Such initiatives include the World Bank Logistics Performance Index, the 2011 KSC Logistics Performance Index for East Africa, the Business Climate Index and the World Bank country economic updates for East Africa. The Shippers Council of East Africa has tried to identify key factors affecting logistics performance as regional road infrastructure, non – tariff barriers and ICT infrastructure; however it does not zero in on country specific factors neither mentions trading firms based at JKIA area. Hence, the methodology designed for measuring the logistics performance in trading and distribution firms is designed to fill this information gap.

Katana (2011) did a study on electronic procurement adoption: the case of Kenya ports authority. His study showed that firms' that acquire extensive IT resources are able to create competitive advantage. However his study did not clearly provide evidence on positive relationship between

information technology and procurement process and hence the findings suggests that a more in depth analysis is required. According to Banda (2009), many procuring organizations do not have staff with the right competence critical to good procurement process management. There is need for authorities to give much greater emphasis to developing such competence and to adopt best practice more widely. For big projects, the cost of employing advisers is very high and in many cases exceeded budgets by a substantial margin. Kangaru (2011) while researching on challenges of business outsourcing at the Kenya Power found out that third party logistics providers are ahead of manufacturing companies that operate logistics departments on quality implementation and improvement issues in logistics services. This proves that companies that enter into business to business relationships have a greater chance of improving on logistics efficiency. There was limited empirical evidence on information technology, competence and business to business as factors influencing the efficiency of logistics performance based in JKIA area which leaves a knowledge gap. This study sought to narrow some of the gaps by establishing the factors affecting efficiency of logistics performance in trading and distribution firm based in JKIA area.

GENERAL OBJECTIVE

To investigate the factors affecting efficiency of logistics performance in trading and distribution firms based in JKIA area.

SPECIFIC OBJECTIVE

1. To determine the effect of information Technology on efficiency of logistics performance in trade and distribution firms based in JKIA area.
2. To determine the effect of competence of staff on efficiency of logistics performance in trade and distribution firms based in JKIA area.
3. To determine the effect of business to business relationship on efficiency of logistics performance in trade and distribution firms based in JKIA area.

THEORETICAL REVIEW

This research examines the nature of logistics performance and the contribution of logistics to the firm by investigating the impact of logistics performance on organizational performance. Logistics performance is tested as a second-order formative construct comprised of two dimensions: logistics efficiency; and logistics effectiveness. According to Brian, Mentzer and Stank, (2010) their results indicated that logistics performance positively impacts organizational performance. Theoretical and empirical support will be provided for measuring logistics performance to give an indication on whether efficiency and effectiveness are trade-offs or complementary.

Efficiency

Efficiency refers to the internal functioning of logistics and generally is considered best represented through some ratio of normal level of inputs to the real level of outputs (Brian et al., 2010). Specifically it is the ratio of resources utilized against the results derived (Mentzer & Konrad, 2008). It is considered the ability to provide the desired products/service mix at a level of cost that is capable to customer. In broader sense, it is the ability of logistics function to manage resources wisely. Thus, we adopt the definition of efficiency as the measure of how well the resources expended are utilized.

Logistics Theory

Logistics is defined as the planning, organization, and control of all activities in the material flow, from raw material until final consumption and reverse flows of the manufactured product, with the aim of satisfying the customer's and other interest party's needs and wishes to provide a good customer service, low cost, low tied-up capital and small environmental consequences (Christopher, 2007). Logistics is also defined as those activities that relate to receiving the right product or service in the right quantity, in the right quality, in the right place, at the right time, delivering to the right customer, and doing this at the right cost. In most of the cases logistics is seen from the perspective of an operative way of transporting or moving materials from one point to another or producing service. The credibility of this operation is based on how good is the design of the system that leads to this kind of logistics. Logistics systems encompass operative responsibilities, which include administration, operation and purchase and constructive duties as well as detailed design, (Lieb, Millen & Wassenhove, 2013).

Logistics management is that part of procurement management that plans, implements, and controls the efficient, effective forward and reverses flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customer's requirements. Logistics management activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network design, inventory management, supply or demand planning, and management of third party logistics services providers. To varying degrees, the logistics function also includes sourcing and procurement, production planning and scheduling, packaging and assembly, and customer service. It is involved in all levels of planning and execution strategic, operational, and tactical. Logistics management is an integrating function which coordinates and optimizes all logistics activities, as well as integrates logistics activities with other functions, including marketing, sales, manufacturing, finance, and information technology (Morris & Imrie, 2012).

Business to Business on Customer Satisfaction by Use of IT

Customer satisfaction can be efficiently done by offering good customer services through business to business relationships on behalf of the company. Providing after sales services at

door step of customer within no time on customer's single phone or single email should be sufficient enough to respond back to customer immediately. 3PL's can also have online feedback and complaint system for their customers. Measurement of how much business to business relationships satisfy a customer can be done with the help of two factors; service level and service ability of the company. 3PL service provider has good service level and ability to serve the customer by giving good customer services actually to both of its customers, client and consumer of product. By performing well, giving on time and full delivery, good customer services, IT system, after sales service, feedback system, goods tracking system, efficient logistics with all aspects according to the research by Regan and Song, (2000) then they can really satisfy the customers, not only satisfy they can enhance the customer satisfaction. So, business to business relationship with information technology can increase the customer satisfaction.

Supply Chain Management Theory

A number of researchers discuss logistics outsourcing from the Supply Chain Management point of view. Rao, Young and Norvick (2013), suggest that firms consider outsourcing of logistics to an external Logistics Services Provider (LSP) when logistics complexity is high. Wilding and Juriado (2011), observe that cost reduction is the main motivation for logistics outsourcing. Welch and Nayak (2012) mentioned that firms which outsource for operational and cost-based reasons tend to restrict the Logistics Service Provider's involvement to the basic logistics functions. Therefore, an outsourcing decision might be influenced by a firm's supply chain characteristics logistics complexity and demand uncertainty or logistics strategy.

CONCEPTUAL FRAMEWORK

The conceptual framework adopted for this study presupposes those factors that affect efficiency of logistics performance.

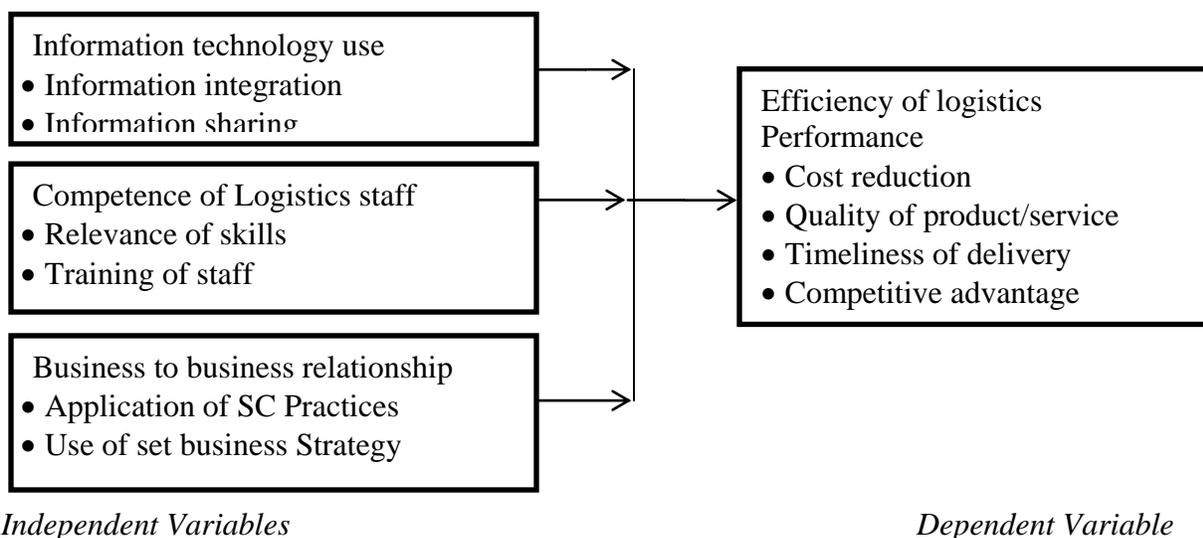


Figure 1: Conceptual Framework

EMPIRICAL REVIEW

Logistics is that part of the Supply Chain Management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods services and related information from the point of origin and the point of consumption in order to meet customers' requirements (CSCMP, 2007). The ultimate objective of logistics function is to support corporate goals by delivering products to the consumer at a time and place of his choosing. However this objective must be balanced against the cost of providing the service. Logistics is one of the major enablers of growth and commerce activity in a country.

Many companies are trying to find tools for performance improvement in response to turbulent business markets and to efficiently control their business activities. The objectives of performance measurement are to improve the efficiency and effectiveness of a supply chain (Beamo 2011). In addition, Keeber (2010) also stated that the purpose of performance measurement is to reduce operating costs and customer service in logistics activities, improve firm's revenue growth, and enhance shareholder value.

In today's highly competitive environment, many companies are aiming to gain a share of the global market and to take advantage of higher production and sourcing efficiencies. A key determinant of business performance nowadays is the role of the "logistics function" in ensuring the smooth flow of materials, products and information throughout a company's supply chains (Smyth, 2004). More recently, logistics has become more prominent and is recognized as a critical factor in competitive advantage (Bowersox & Closs, 2010). The logistics operations process includes the inputting, storing, transporting and distributing of physical goods. Over the years, logistics has developed from single-party logistics (self-managed) to multi-party, using e-logistics networks focusing on global operations.

RESEARCH METHODOLOGY

Research Design

According to Mugenda and Mugenda (2003) descriptive research is used to obtain information concerning the current status of the phenomena to describe "what exists" with respect to variables or conditions in a situation. The study considered a descriptive cross-sectional research design appropriate since it would facilitate gathering of reliable and accurate data that would clearly describe factors affecting efficiency of logistics performance in trading and distribution firms based in JKIA area. The study gathered quantitative data that helped to answer the research questions.

Target Population

A population is a total collection of elements about which the researcher wishes to make inferences (Cooper and Schindler, 2006). Accordingly, target population is a universal set of the study of all members of real or hypothetical set of people, events or objects to which an

investigator wishes to generalize the result. Mugenda & Mugenda, (2003), explain that the target population should have some observable characteristics, to which the researcher intended to generalize the results of the study. The target population in this study consisted of 42 managers in the logistics service department in trade and distributions firms based in JKIA area. This was also because the targeted respondents had vast information on the area under study. In this regard, senior or middle management staffs were considered from the logistics firms to participate in this study. As such, the respondents selected from the various departments since they are the ones conversant with the factors affecting efficiency of logistics performance in trading and distribution firms based in JKIA area.

Sample Frame

Since the target population is small census method was used and the target population was taken as the sample frame. Therefore, the sample frame was 42 managers in the logistics service department from the study area. Census method was adopted in selecting the sample of the study because the target population was small. A sample size of 42 managers in the logistics service department from the study area was therefore, selected.

Data Analysis

Before processing the responses, the completed questionnaires were edited for completeness and consistency. Descriptive analysis was used. Data collected was purely quantitative and it was analyzed by descriptive techniques. The descriptive statistical tools such as Statistical Package for Social Sciences (SPSS) helped the researcher to describe the data and determine the extent used. This included the use of weighted means, standard deviation, relative frequencies and percentages (Mugenda & Mugenda, 2003). The Statistical Package for Social Sciences (SPSS) computer software was used for analysis to generate data array that would be used for subsequent analysis of the data. SPSS has descriptive statistics features that would assist in variable response comparison and give clear indications of response frequencies. The data was then coded to enable the responses to be grouped into various categories. Descriptive statistics were used to summarize the data. This included percentages and frequencies. Tables and other graphical presentations were appropriately used to present the data that were collected for ease of understanding and analysis. An analysis of variance (ANOVA) and Chi-square data analysis method were applied to test the research hypothesis on whether there is any significant difference between the study variables. ANOVA is a parametric used to determine the statistical significance of the difference between the means of two or more groups of values, while Chi-square is a statistical test commonly used to compare observed data with data we would expect to obtain according to a specific hypothesis. The study proposed the following hypotheses:

H_{0i}: There is no relationship between competence of staff and the logistics performance of trade and distribution firms based in JKIA area.

H_{0ii}: There is no relationship between business to business and efficiency of logistics performance in trade and distribution firms based in JKIA area

H_{0iii}: There exist no relationship between information technology and efficiency of logistics performance of trade and distribution firms based in JKIA area

In addition, regression was used to establish the relationship between the study variables. The regression equation was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Whereby Y = Efficiency of logistics performance, X₁= Information technology, X₂= Competence, X₃= Business to Business Relationship, β_0 is the value of Y when X=0, while β_1 , β_2 and β_3 are coefficients of the independent variables X₁, X₂ and X₃.

RESEARCH RESULTS

The study found that the activities carried out by the logistics firms include full container/trailer loads, warehousing and distribution, bulk/break bulk cargo and courier services. In addition, the timeliness of delivery, the quality of product/service, the place of delivery and competitive advantage play a role in determining efficiency of logistics performance to great extents while the cost of a product/service and quantity affect efficiency of logistics performance to moderate extents.

Information Technology

The study found that information technology affects the efficiency of logistics performance in trade and distribution firms in JKIA area. According to the results, IT is a major determinant of the efficiency of the logistics performance. It was clear from the study that IT ensures future viability for the firm and its position in value chain and information technology has greatly increased the ability of logistic firms to conduct their business faster and more accurate over a wide range of time at reduced cost with the ability to customize. According to the results, IT integration facilitates communication between focal firm and its suppliers and customers, information systems fasten communication between managers in the supply chain, information technology integration enhances quality, reduces time and costs, enhances competitiveness and generates future growth and that information technology sharing aids replacement of inventories aiding in fast decision making. IT also promotes and facilitates more frequent communication, interaction and information sharing between a supplier and a buyer and that information technology helps managers in redesigning their business strategy to add more value to resources.

Competence of Staffs

The study found that the level of competence is a determinant of the efficiency of logistics performance in logistic firms. It is necessary to have staff with sufficient skills to ensure efficient logistics performance of a company, professional qualification of logistics staffs affects efficiency of logistics performance in a company and the level of education of logistics staff

affect the efficiency of logistics performance. The study found that training of logistics staffs have an effect on the efficiency of logistics performance in the trade and distribution firms based in JKIA area. The study established that staff competence helps in applying acquired educational skills in logistics activities, it plays a major role in determining the job/role/tasks that can be performed by a given staff and makes work easier in regard to understanding what needs to be done in a given area of operation.

Business to Business Relationship

The study further found that business to business relationship affects the efficiency of logistics performance in trade and distribution firms based in JKIA area. A firm's efficiency of logistics performance depends on the selected supply chain management, there is a higher volume of Business to business transactions in the supply chain as compared to Business to consumer transactions, a company's success is dependent on business strategies, supply chain management is driven by cost, quality, quantity, timeliness and place of delivery and that business strategy should be considered as a starting point for maximization of efficient logistics performance. Competitive advantage and cost pressures are forcing firms to pursue low-cost supply chain management strategies and business practitioners should establish supply chain activities that reflect business strategy. From the inferential analysis, the chi square tests revealed that the three null hypotheses were rejected and hence there exist a relationship between information technology, competence of staff and business to business relationship with efficiency of logistics performance in trade and distribution firms based in JKIA area. The ANOVA test shows that the overall model was significant since F calculated is greater than the F critical.

RELIABILITY ANALYSIS

The reliability of an instrument refers to its ability to produce consistent and stable measurements. According to Cooper and Schindler (2003) reliability tests the stability, equivalence and internal consistency of an instrument. The reliability of an instrument refers to its ability to produce consistent and stable measurements. Bagozzi (1994) explains that reliability can be seen from two sides: reliability (the extent of accuracy) and unreliability (the extent of inaccuracy).

The most common reliability coefficient is the Cronbach's alpha which estimates internal consistency by determining how all items on a test relate to all other items and to the total test - internal coherence of data. The reliability is expressed as a coefficient between 0 and 1.00. The higher the coefficient, the more reliable is the test. In this study to ensure the reliability of the instrument Cronbach's Alpha was used. Cronbach Alpha value is widely used to verify the reliability of the construct. Therefore, Cronbach Alpha was used to test the reliability of the proposed constructs. Reliability of the constructs is shown in table 1.

Table 1: Reliability Test of Constructs

Factors affecting efficiency of logistics performance	Reliability Cronbach's Alpha	Number of Items	P-Significant Values	Comments
Information technology	0.814	4	.0015	Accepted
Competence of staff	0.898	7	.0041	Accepted
Business to business relationship	0.734	4	.0435	Accepted

The significance was 5% (0.05). The findings indicated that information technology had a coefficient of 0.814, competence of staff had a Cronbach's Alpha value of 0.898, and Business to business relationship showed an alpha value of 0.734. All constructs depicted that the value of Cronbach's Alpha are above the suggested value of 0.6 thus the study was reliable. On the basis of reliability test it was supposed that the scales used in this study is reliable to capture the constructs. The significant values of the factors under study were satisfying the required threshold where information technology had a significant value of 0.0015, competence of staff showed a significant value of 0.0041 and business to business relationship had a value of 0.0435.

REGRESSION ANALYSIS

Inferential Analysis

Precisely, this study needed to establish relationship between; the sub variable (indicators) of each of the four factors affecting the efficiency of logistics performance, as well the relationship with the dependent variable (logistics performance). The inferential statistics analysis aimed to reach conclusions that extend beyond the immediate data alone between the independent variables in this study. The coefficient of correlation (r), determine the degree (strength) of relationship and its value is between -1 and 1 (Patton, 2002). A value 0 implies no relationship, 1 implies a perfect positive relationship, -1 means a negative relationship. An absolute value of r between 0.5 and less than 1 implies a strong relationship between the variables. If the value r is greater than 0.3 and less than 0.5 then the relationship is moderate. The relationship is weak if the value of r is less than 0.3. This inferential analysis involved Chi-square tests, analysis of variance (ANOVA) and regression analysis. The hypotheses were:

H_{0i}: There is no relationship between competence of staff and the logistics performance of trade and distribution firms based in JKIA area.

H_{0ii}: There is no relationship between business to business and efficiency of logistics performance in trade and distribution firms based in JKIA area

H_{0iii}: There exist no relationship between information technology and efficiency of logistics performance of trade and distribution firms based in JKIA area

Chi-Square Tests

The null hypothesis was undertaken for analysis. The chi-square (χ^2) test is used to determine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories. To achieve this, a Chi-square (χ^2) test of significance was used to determine whether or not a relationship other than chance existed between the variables investigated. A statistic that is often used to test the null hypotheses, i.e. that the row and column variables are independent, is the Pearson Chi-square. The calculated Chi-square was computed and then compared with the critical points of the theoretical Chi-square distribution to produce an estimate of how likely or unlikely this calculated value was if the two variables were in fact independent. Any decision to reject the null hypothesis was based on the probability or the observed significance level. The study tested three null hypotheses.

Table 2: Chi-Square Tests between the Factors and Logistics Performance

Variables	Value	df	Asymp. Sig. (2-sided)
Information technology	33.8794 (a)	30	0.028
Competence of Staffs	15.686(a)	30	0.035
Business to Business relationship	37.344(a)	30	0.011

According to the results in table 2, the chi -square analysis showed a value of 33.8794 at 2 degrees of freedom. This value was more than P value of 0.028. Therefore, the null hypothesis was rejected. Thus there exist a relationship between information technology and efficiency of logistics performance of trade and distribution firms based in JKIA area.

The second hypothesis was: competence of staff does not affect the logistics performance of trade and distribution firms based in JKIA area. The chi-square analysis showed a value of 15.686 at 2 degrees of freedom. This figure value was more than P values of 0.359. Therefore, the null hypothesis was rejected. Thus there exist a relationship between competence of staff and the logistics performance of trade and distribution firms based in JKIA area.

In the third hypothesis, the researcher hypothesized that ‘there is no relationship between business to business and efficiency of logistics performance in trade and distribution firms based in JKIA area’. From the chi- square results above, a Pearson Chi-square value of 37.344 was established at $p = 0.011$. The chi-square value is more that the p value hence we reject the null hypothesis. This depicts insignificant association between business to business relationship and efficiency of logistics performance in trade and distribution firms based in JKIA area.

Analysis of Variance

Table 3: ANOVA

	Sum of squares	Df	Mean Square	F	Sig or P-value
Regression	46.294	30	11.574	11.815	000(a)
Residual	97.953	30	980		
Total	144.248	1			

Predictors: (Constant), information technology, competence of staff and business to business relationship

ANOVA findings as explained by the P-value of 0.000 which is less than 0.05 (significance level of 5%) confirms the existence of correlation between the independent and dependent variables. The model shows the model fitness i.e. how well the variables fit the regression model. The sum of squares gives the model fit and hence the variables fit the regression model. From the results, the F ratio of 11.815 and the significance of 0.000 shows that there was not much difference in means between dependent and independent variables. Since F calculated is greater than the F critical (value = 11.815), this shows that the overall model was significant.

Data analysis was based on a multiple regression model, whereby the dependent variable in this study was efficiency of logistics performance of trade and distribution firms based in JKIA area, while the independent variables were information technology, competence of staff and business to business relationship. The “simultaneous” method was used whereby the researcher specified the set of predictor variables that made up the model. The success of this model in predicting the criterion variable was then assessed. The coefficients indicate that the correlation coefficient (R) between the independent variables and efficiency of logistics performance of trade and distribution firms based in JKIA area is 0.863 which is a positive strong relationship. The adjusted R Square value gives the most useful measure of the success of the model. Hence it is evident that the factors studied accounted for 69.1% of the efficiency of logistics performance of trade and distribution firms based in JKIA area.

Table 4: Coefficients of Determination

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	2.837	.112		4.358	0.000
Information technology	0.637	.075	0.235	1.379	0.020
Competence of staff	0.420	.120	0.224	1.922	0.028
Business to business relationship	0.553	.146	0.330	2.276	0.024

The data used for this logistic regression analysis was collected from 29 respondents working with the trade and distribution firms based in JKIA area. The explanatory variables that were used in this study were information technology, competence of staff and business to business relationship. Table 4 shows the coefficients on the influence of the individual independent variables on the dependent variable. The Beta coefficients indicate the extent to which efficiency of logistics performance changes due to a unit change in the independent variable. The positive Beta coefficients indicate that a unit change in the independent variable leads to a positive change in efficiency of logistics performance of trade and distribution firms based in JKIA area. Below is the logistic equation used to predict the dependent variable from the independent

variable as given in chapter three of the research project. Using the coefficients established in the regression model above, the regression equation becomes:

$$Y = 2.837 + 0.637X_1 + 0.420X_2 + 0.753X_3 + 0.553X_4$$

Table 4.21 also presents the level of significance also called the p value. This is the coefficient that is used to test hypothesis and the significance of the independent variables. The level of significance for this study is 0.05 and therefore if the p value is less than 0.05 we fail to accept the null hypothesis and accept if the p value is greater than 0.05. At the 0.05 level of significant, the findings as shown in Table 4.21 shows that information technology, competence of staff and business to business relationship are statistically significant with p-values less than 0.05 (i.e. $p < 0.05$). These findings indicate that if all the independent variables are held constant at zero, the efficiency of logistics performance of trade and distribution firms recorded would be 2.837 units. The results also suggest that information technology contributes 0.637 units, competence of staff accounts for 0.420 units, customer satisfaction generates 0.753 units and business to business relationship contributes to 0.553 units of efficiency of logistics performance of trade and distribution firms each when the other factors are kept unchanged. The model results also indicate that there is a significance association between the variables and the efficiency of logistics performance of trade and distribution firms based in JKIA area.

CONCLUSIONS

Information Technology

The study concludes that that information technology affects the efficiency in logistics performance of trading and distribution firms based in JKIA area. From the findings, the study concludes that information technology integration facilitates communication between focal firm and its suppliers and customers, information systems fasten communication between managers in the supply chain, information technology integration enhances quality, reduces time and costs, enhances competitiveness and generates future growth and that information technology sharing aids replacement of inventories aiding in fast decision making. Accordingly, a stable and successful business in IT context is essential for efficiency in logistics performance. In this regard the study deduces that the efficiency and effectiveness of logistics operations have improved considerably due to increase in IT advancements. The movement of information via IT systems helps in reducing the cost of logistics operations due to increased coordination between the various activities across the supply chain.

Competence of Staffs

The study deduces that the level of competence affects the efficiency of logistics performance in logistic firms in JKIA area. From the findings, sufficient skills, professional qualification of logistics staffs, training of logistics staffs and the level of education of logistics staff have a significant influence on the efficiency of logistics performance in the companies. The study established that staff competence helps in applying acquired educational skills in logistics

activities, it plays a major role in determining the job/role/tasks that can be performed by a given staff and makes work easier in regard to understanding what needs to be done in a given area of operation. It is clear that highly qualified employees are key to having an effective logistics performance among the logistics firms.

Business to Business Relationship

The study further concludes that business to business relationship affects the efficiency of logistics performance in trade and distribution firms. From the findings, the study deduces that the efficiency of logistics performance depends on the selected supply chain management, there is a higher volume of business to business transactions in the supply chain, companies' success is dependent on business strategies, supply chain management is driven by cost, quality, quantity, timeliness and place of delivery. Accordingly, competitive advantage and cost pressures are forcing firms to pursue low-cost supply chain management strategies, business practitioners establish supply chain activities that reflect business strategy and business strategy is considered as a starting point for maximization of efficient logistics performance. This reveals that the ultimate objective of logistics function is to support corporate goals by delivering services and products to the consumer at a time and place of his choosing.

RECOMMENDATIONS

Information Technology

Since the study established that information technology affects efficiency of logistics performance in trade and distribution firms, the study recommends that the logistic firms should enhance the use information technologies that are compatible with their logistics activities. In this regard there is need for urgent changes to allow IT to be utilized to facilitate free and expeditious flow of real time information within the logistics firms responsible for ensuring efficiency of logistics performance in the firms. They will enable in dealing with processes, products and services and technological knowledge/skills, roadblocks to collaboration between departments which hinders logistics performance.

Competence of Staffs

The study recommended that the trade and distribution firms should employ a change agents to oversee the staffs of the logistics forms undergo on the job training, in order to improve their skills and capabilities to enhance efficiency of logistics performance. The employees need to be trained frequently on aspects of logistics performance. This could be during induction and through short courses, workshops and seminars conducted by organizations in order to make the whole idea of efficiency of logistics performance understood and fully supported as a way of improving and organizational performance.

Business to Business Relationship

The study also recommends that since business to business relationship affects the efficiency of logistics performance, efforts should reach across the entire logistics industry to help streamline essential infrastructure and processes to enhance service delivery, reduce costs and improve responsiveness to customer demand in the logistics activities. This would be a cutting edge since organizations that utilize B2B relationship as a strategic tool in business management are likely to have a competitive edge in their respective areas of operations. As such, there is need for the logistics firms to collaborate especially in the provision of transport and distribution and need to develop supply chain partnerships/collaborations in an attempt to reduce costs, improve service and to gain competitive advantage.

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