



## **Effects of Routing and Scheduling Plans, Logistical Procedures and Customer Service on Delivery of Courier Services at the Postal Corporation of Kenya**

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# Effects of Routing and Scheduling Plans, Logistical Procedures and Customer Service on Delivery of Courier Services at the Postal Corporation of Kenya

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## Abstract

Customer service is an important aspect in every business and courier services is no exception. Technological advancements as well as changing customer needs have put a lot of pressure on businesses because customers are demanding better services. This study evaluated the effects of Transportation determinants on the customer service delivery of courier business of Postal Corporation of Kenya. The main objective of the study was to investigate the Effects of Routing, Scheduling Plans, Logistical Procedures and Customer Service on Delivery of Courier Services at the Postal Corporation of Kenya. A case study of Postal Corporation of Kenya was adopted where the target population was 300 employees. A sample study of 169 respondents was selected from the total target population. The study was grounded Systems Theory. The researcher used questionnaires to collect data from employees in management level, the operation, fleet and logistic staff. The collected data was edited, coded and entered for analysis using the computer statistical package tool SPSS. Data was analyzed using both descriptive statistic and inferential statistics. Descriptive statistics was applied in analyzing general data and inferential was used to analyze the relationship of the variables. Analyzed data was presented in tables, graphs and charts for clarity. The study found that routing and scheduling plans had positive and significant effect on customer service delivery of courier services of Postal Corporation of Kenya; logistical procedures also had positive and significant effect on customer service delivery of courier services of Postal Corporation of Kenya. The study recommended on enhanced internal and external innovative ways of improving scheduling and routing that are unique, market acceptable, need

solving and can easily be used by target clients. The study also recommends that Postal Corporation of Kenya should have elaborate, detailed and well understood logistical procedures to improve performance. Better procedures improve service delivery which aid in minimizing the cost of corporation. Furthermore, the management should provide leadership and goodwill support in implementing the usage of logistic procedures

**Keywords:** *Routing and Scheduling Plans, Logistical Procedures, Customer Service, Delivery of Courier Services and Postal Corporation of Kenya.*

## **1.0 Introduction**

### **1.1 Background of the study**

Courier Services are companies that transport and deliver documents, packages, and larger shipments of products, although traditionally they specialized in the rapid delivery of such items as legal documents that required signatures. They provide services to companies and individuals who need rapid service, accountability, and tracking that regular mail does not accommodate. Major courier services that performed these functions in the early 2000s included commercial delivery services, the U.S. Postal Service, and bicycle messenger services (Cohen, 2005).

Courier services work on all scales, from inside particular towns or urban communities, to territorial, national and worldwide administrations. Substantial Courier services organizations offer administrations around the world, ordinarily through a center and talked display. In urban communities, there are regularly bike dispatches or bike messengers yet for relegations requiring conveyance over more prominent separation organizes; this may frequently incorporate Lorries, railroads and air ship. The beginning of 20th century witnessed upsurge in stiff competition in the previously monopolized Postal services sector. The coming up of other companies that could deliver the services faster than the traditional Post offices facilitated this. These companies are DHL International, Express Service International, United Parcel Services (UPS), Securicor Ltd, TNT Express Worldwide, passengers and cargo transporters among others. In most countries security companies are nowadays-undertaking courier services.

For Postal Corporation of Kenya (PCK), transportation involves the delivery of courier items from primary acceptance office to the final delivery office where the item is handed over to the customer i.e. the entire process of moving postal goods and services from the receiving business point (post office) to the delivery post office. Transportation costs are incurred for long or short haul trucking between sorting centers. Roads transport is used for both short and long distance travel but air and rail transport are mainly used for long haul movement. These transport means are usually affected

by the state and quality of national infrastructure facilities. e.g. the state and quality of the national road network. Logistical activities also form part of transportation system in Postal Corporation of Kenya, and plays a key role in optimal allocation or utilization of available fleet.

### **1.2 Statement of the problem**

According to Kenya Bureau of Statistics December 2016, there are 170 courier operators in Kenya running their businesses in 1,599 outlets. The total number of courier items sent in Kenya has increased from 2.5 million in 2015 to 3.8 million in 2016. The growing numbers of innovations in Ecommerce are scheduled to increase the growth of courier related business services. This is creating competition in an industry that has been predominately a monopoly of the Government through the provision of Postal Related Services. According to Communications Authority of Kenya (CA) report of December 2016, there are 623 postal branches in Kenya that handles an average of 17.2 million letters posted locally, with 1.3 million total number of courier sent locally.

Kenya Courier services are predominantly offered by Postal administrations throughout the world. Nevertheless, this is not exclusively so because other companies such as DHL, FedEx, EMS International, TNT, UPS, and Aramex just to mention but a few have entered the market to offer the same service and filling the service gap Postal Administrations have been unable to (McAlister,2006). The Courier service will usually cost a lot more than the Post office regular mail though it is often more reliable, offer better security and quicker delivery as well as other premium services like tracking. Postal Corporation of Kenya transportation service has experienced a number of customer complaints and queries relating to delayed mail, parcels and large packets have persistently continued to rise over time (Corporate Call Centre register of complaints, 2016). According to Fleet Manager the number of transport vehicles was 205 in 2016 but there are only 180 operational vehicles as at 2017 transporting courier throughout the country. The performance of mail organizations depends largely on an effective and efficient transportation service (Onyando, 2016).The customers who visit the Kenya Post & Telecommunication Corporation in Kenya banking hall on daily basis continue to reduce with time. On average 200 customers visit for service delivery according to Cash Account Record (2011/2012). This figure is far below what their competitor G4S for instance serves according to CCK (August 2012) and considering that EMS Kenya has been in the business longer than the competitors. The number of EMS courier outlet has grown modestly in the year 2007 from 119 to 184 in the year 2012. But the growth in EMS traffic has not grown in consistent to the growth of the outlets. There have been a lot of

inconsistencies in the EMS traffic in this period. EMS National Revenue and Traffic Performance Report (April, 2013) shows how the traffic has been growing for the past five years (ENR and TPR, 2016).

It is critical for mail and courier business organizations to have efficient and effective transport service in order to achieve excellent performance and hence attain their overall business objectives of economic, financial viability, improved quality of service, product diversification, increased Postal volumes and revenue generation. Courier service sector contributes greatly to the country's Gross Domestic Product (GDP) by facilitating communication among citizens. The sector also generates employment opportunities for majority of Kenyan people, currently employing about 3,600 workers (PCK HRD, 2016). The study sought to investigate the effects of Routing, Scheduling Plans, and Logistical Procedures & Customer Service on Delivery of Courier Services at the Postal Corporation of Kenya

### **1.3 Specific objectives**

- i. To determine the effects of routing and scheduling plans on customer service delivery of courier services of Postal Corporation of Kenya.
- ii. To establish the relationship between logistical procedures and customer service and delivery of courier services of Postal Corporation of Kenya.

### **1.4 Research questions**

- i. What are the effects of routing, scheduling plans and customer service delivery of courier Services of Postal Corporation of Kenya?
- ii. What are the effects of logistic procedure and customer service delivery of courier services of Postal Corporation of Kenya?

## **2.0 Literature Review**

### **2.1 Theoretical review: Systems Theory**

Systems theory was brought forward by Ludwig von Bertalanffy in the 1940's. Later Aristotle emphasized that knowledge would only be gotten from understanding the whole part and not derived from single parts. He looked at nature, organization and society as a whole and not as single parts. Systems theory therefore refers to a theory that can be used to investigate every system in nature from a holistic point of view (Mele, Pels & Polese, 2010). Ludwig von Bertalanffy noted that real systems interact and are open to learning from the environment as well as acquiring

positive properties from the organization. Instead of looking at elements as properties of its parts, systems theory focuses on holism (Chen & Stroup 1993). For the performance of an organization to be determined, various areas that make up the whole organization for instance the different departments and sources of avenue need to be looked at. For an organization to deliver quality products and services, the various departments have to work together in order to satisfy customers' ever changing demands.

## **2.2 Empirical review**

Wang, Dessouky and Ordonez, (2012) conducted a study on routing courier delivery services in the USA with urgent demand and they noted that courier delivery services in many cases are faced with sporadic, tightly constrained, urgent requests in addition to regular demand. An example of such an application is the transportation of medical specimens, where an efficient delivery is crucial in providing high quality and affordable service. However, the presence of random urgent requests, due to medical emergencies, can create substantial additional costs if not taken into account. The results showed that this approach obtains significant improvement in travel costs as well as in route similarity over alternative methods. Weldon, (2013) conducted another study in Kenya that sort to understand the operations scheduling and service quality among errand service providers in Kenya. From the study it was found that operation scheduling has a positive impact on the services in ensuring effectiveness and efficiency is achieved. The operation scheduling methods engaged helped in reducing time spent in offering these services, cutting operational costs and meeting the client's demands effectively. This helped businesses capture their loyalty as a long-term benefit to the organization.

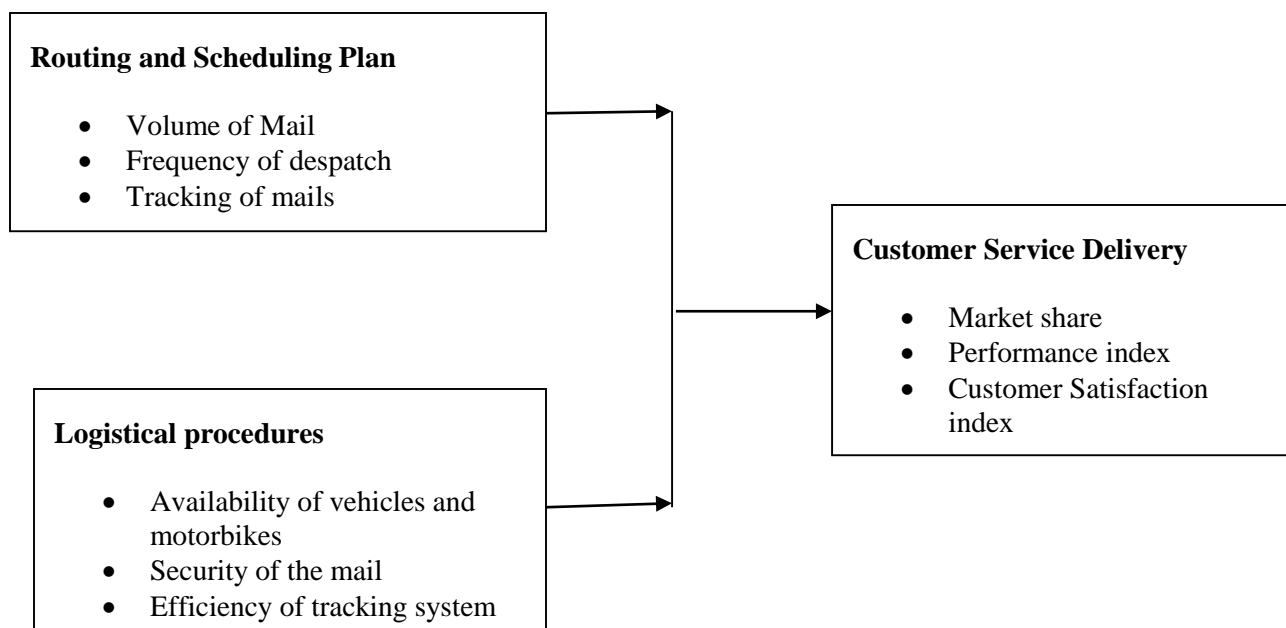
Nguyen, Crase and Durden, (2008) conducted a study in Australia on the organizational logistics procedures whereby they reviewed the extant literature pertaining to logistics processes within organizations. They determined the characteristics of logistics processes and logistics processes of international multimodal transport companies in Vietnam are specifically explored. The paper offers unique insights into the logistics processes in service-based firms and explores the nuances of logistics in the setting of a developing country. In addition to providing a useful typology for practitioners and scholars to consider logistics functions, the paper draws upon case analysis to operationalize the typology.

Another study was conducted by Pholsuwanachai, (2007) whereby he examined the conceptual model of logistic service quality in a courier company in Thailand and the effect on customer satisfaction. The findings indicated that the proposed conceptual model of logistic service quality has a significant influence on customer satisfaction. The researcher concluded that the findings will help managers to understand the business performance and level of customer satisfaction, in order to improve the service. This in turn helps the company to enhance its reputation, help it gain more market share and helps make the company a success.

Okeundo, (2012) conducted research in Nigeria where he sort to analyze the impact of human resources management in logistic service providers and supply chain capabilities. The study collected data using questionnaires which were issued to human resource managers and the results indicated that training and development, recruitment and selection, reward management and performance appraisal were effective in building logistic and supply chain capabilities. From past studies, Puttibarncharoensri, (2015) on Transportation Issues in Local and Global Firms in Thailand. Nguyen, and Crase, (2011) study on Vietnam's state-owned enterprise reform: An empirical assessment in the international multimodal transport sector. Furuhata, Dessouky, Ordóñez, Brunet, Wang, and Koenig, (2013) study on the state-of-the-art and future directions it is clear that a number of scholars have undertaken keen interest in issues related with transportation in the communication industry especially in developed countries. Yet its effect on developing countries does not seem to have been adequately studied. It is this gap that this proposed study seeks to look into in-depth the effect of transportation service on the performance of courier business of Postal Corporation of Kenya.

### **2.3 Conceptual framework**

According to educational researcher (Smyth, 2004) conceptual frameworks are structured from a set of broad ideas and theories that help a researcher to properly identify the problem they are looking at, frame their questions and find suitable literature. Figure 1 shows the conceptual representation.



**Figure 1: Conceptual framework**

### **3.0 Research methodology**

The study adopted a descriptive research designs. A research design is the strategy and the plan to be carried out (Cooper & Schindler, 2001). It specifies the methods and procedures for the collection, measurement, and analysis of data. Gupta (2008) avers that a research design is the basic plan that indicates an overview of the activities that are necessary to execute the research project. The target population was 300 employees of PCK and at the Headquarters in Nairobi. The specific targeted employees were structured as 20 management staff, 180 operations officers for mails and courier, 100 fleet and logistics officers. The sample size was 169 selected from a target population of 300 using Krejcie and morgan sample size table as cited by Oso and Onen 2013.

Stratified sampling method was applied in carrying out the study as per the table 3.2 and therefore 169 respondents constituted the sample population for the study. A sample is a small group obtained from accessible population; Sampling is the technique a researcher uses to gather people, places or things to study. The study used primary data sources in gathering data for analysis. The primary data source was collected by the use of a semi-structured questionnaire consisting of both open and close-ended questions. A questionnaire is a pre-formulated written set of questions to which the respondents record the answers usually within rather closely delineated alternatives.



Structured questions were so as to capture the opinion of the respondent. Likert-type questions are useful because the respondents are not restricted to a common way of answering the questions. A pilot test was conducted in one of the Postal Corporation offices within Nairobi to test the reliability and the validity of the data to be collected using the questionnaire (Kothari, 2009). The questionnaires were tested to a selected sample which was similar to the actual sample. Same procedures were used in the actual data collection exercise for pretesting study. The pretest sample was 10% of the 169 respondents sample size population which was enough for piloting study (Mugenda & Mugenda, 2003). The study employed both construct validity and content validity to check on the validity of the instruments. To check on the construct validity, the questionnaire was separated into a number of sections making sure each section was evaluating certain information for a certain objective, and also making sure it closely tied to the conceptual framework of the study. For content validity, the research instrument was subjected to comprehensive examination by 5 arbitrarily chosen industry experts and the supervisor. They were requested to give their views on the statements in the questionnaire for importance and their meaningfulness. From evaluation received, the instrument was appropriately accustomed before being subjected to the final exercise of data collection. Their reviewed comments were the utilized to make sure that content validity was effectively enhanced.

The cronbach alpha was calculated in a bid to measure the reliability of the questionnaire. This was done by subjecting the seventeen (17) questionnaires to respondents that were randomly selected. All the variables were reliable since their Cronbach alpha was above 0.7 which was used as a cut-off of reliability for the study. The data collected was coded summarized then analyzed by the use of the computer package SPSS (statistical package for social sciences). Hypothesis testing was done using Pearson correlation and regression techniques. Pearson correlation was used to measure the nature of relationship between independent and dependent variables while regression analysis was used to measure statistical relationship between two variables.

The regression model adopted was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + e$$

Where:

$Y$  = Customer Service Delivery

$X_1$  = Routing and Scheduling Plans

$X_2$  = Logistical Procedures

$e$  is error term

$\beta_0$  represents the constant

$\beta_{1,2}$  are regression coefficients

## 4.0 Results and findings

### 4.1 Routing and Scheduling Plans

#### 4.1.1 Descriptive statistics

In this section, Effects of Routing and Scheduling Plans on Customer Service Delivery were measured by four questions. The respondents were asked to give their opinion regarding Routing and Scheduling Plans. Specifically, they were asked to rate on a scale of 1 to 5 where 5 represented the highest and 1 represented the lowest rate.

**Table 1: Effects of Routing and Scheduling Plans**

Statements	Lowest	2	3	4	Highest	Mean	Std. Dev
Volume of Mail	6.9%	5.4%	31.5%	33.8%	22.3%	3.59	1.11
Frequency of Dispatch	3.8%	5.4%	22.3%	30.0%	38.5%	3.94	1.08
Tracking of mails	3.1%	10.8%	26.9%	27.7%	31.5%	3.74	1.11
Allocation of Workload	5.4%	13.1%	33.8%	26.2%	21.5%	3.45	1.13
<b>Average</b>						<b>3.68</b>	<b>1.11</b>

According to results in Table 1 majority of the respondents who represented 33.8% of the respondents rated a scale of 4 on the statement that volume of mail affect customer service delivery. 31.5% rated a scale of 3, 22.3% rated the highest scale of 5, 6.9% rated the lowest scale of 1 while 5.4% rated 2 on how volume of mail affected customer service delivery. On the rating of how frequency of dispatch affected customer service delivery, 38.5% rated the highest scale of 5, 30.0% rated a scale of 4, 22.3% rated a scale of 3, 5.4% rated a scale of 2 while 3.8% rated the lowest scale of 1. The third statement on effects of routing and scheduling plans was how tracking of mails affected customer service delivery, 31.5% indicated a scale of 5 which was the highest scale, 27.7 indicated a scale of 4, 26.9% indicated a scale 3, 10.8% indicated a scale of 2 while 3.1% indicated the lowest scale of 1. Lastly the respondents were asked to indicate on a scale of 1 to 5 on how allocation of workload affected customer service delivery, 33.8 indicated a scale of 3,

26.2% indicated a scale of 4, 21.5% indicated a scale of 5, the highest scale, 13.1% indicated a scale of 2 while 5.4% indicated the lowest scale of 1.

On a five-point scale, the average mean of the responses was 3.68 which mean that majority of the respondents' relatively high scale on how routing and scheduling affected customer service delivery. The answers, however, were varied as shown by a standard deviation of 1.13. The highest of the mean scale was 5 while the lowest was 1. The finding considerably implies that routing and scheduling affected customer service delivery. This finding is consistent with that of Weldon, (2013) study who found out that operation scheduling had a positive impact on the services in ensuring effectiveness and efficiency is achieved in Kenya. The operation scheduling methods engaged helped in reducing time spent in offering the services, cutting operational costs and meeting the client's demands effectively. This helped businesses capture their loyalty as a long-term benefit to the organization.

## 4.2 Logistical Procedures

### 4.2.1 Descriptive statistics

In this section, Logistical Procedures on Customer Service Delivery was measured by four questions. The respondents were asked to give their opinion regarding Logistical Procedures. Specifically, they were asked to rate on a scale of 1 to 5 where 5 represented the highest and 1 represented the lowest rate.

**Table 2: Logistical Procedures**

Statements	Lowest	2	3	4	Highest	Mean	Std. Dev
Availability of Vehicles and Motor Bikes	8.4%	17.6%	18.3%	7.6%	48.1%	3.69	1.43
Security of the Mail	3.8%	13.7%	27.5%	26.7%	28.2%	3.62	1.15
Efficiency of the tracking system	3.8%	12.2%	24.4%	30.5%	29.0%	3.69	1.13
Competence of the Staff	3.1%	7.6%	19.1%	35.9%	34.4%	3.91	1.06
<b>Average</b>						<b>3.73</b>	<b>1.19</b>

According to results in Table 2, majority of the respondents who represented 48.1% of the respondents rated the highest scale of 5 on the statement that Availability of Vehicles and Motor Bikes affected customer service delivery. 18.3% rated a scale of 3, 17.6% rated scale of 2, 8.4% rated the lowest scale of 1 while 7.6% rated 4 on how Availability of Vehicles and Motor Bikes affected customer service delivery. On the rating of how Security of the Mail affected customer service delivery, 28.2% rated the highest scale of 5, 27.5% rated a scale of 3, 26.7% rated a scale

of 4, 13.7 % rated a scale of 2 while 3.8% rated the lowest scale of 1. The third statement on logistic procedures was how efficiency of the tracking system affected customer service delivery, 30.5% indicated a scale of 4, 29.0 indicated the scale of 5 which was the highest scale, 24.4 indicated a scale of 3, 12.2% indicated a scale 2, while 3.8% indicated the lowest scale of 1. Lastly the respondents were asked to indicate on a scale of 1 to 5 on how Competence of staff affected customer service delivery, 35.9 indicated a scale of 4, 34.4 % indicated the highest scale of 5, 19.1 indicated a scale of 3, 7.6% indicated a scale of 2 while 3.1% indicated the lowest scale of 1.

On a five-point scale, the average mean of the responses was 3.73 which mean that majority of the respondents indicated a relatively high scale on how logistic procedures affected customer service delivery. The answers, however, were varied as shown by a standard deviation of 1.19 which measures the difference from the mean. The highest of the mean scale was 5 while the lowest was 1. The finding considerably implies that logistic procedures affected customer service delivery. This finding is consistent with that of Pholsuwanachai, (2007) who examined the conceptual model of logistic service quality in a courier company in Thailand and the effect on customer satisfaction. The findings indicated that the proposed conceptual model of logistic service quality has a significant influence on customer satisfaction.

#### **4.3 Correlation Analysis**

A correlation analysis finding is present in table 3

**Table 3: Correlation Table**

		<b>Customer Service Delivery</b>	<b>Routing and Scheduling</b>	<b>Logistical procedures</b>	<b>Network Outlets</b>	<b>Fleet Policy</b>
Customer Service Delivery	Pearson Correlation	1.000				
	Sig. (2-tailed)					
Routing and Scheduling	Pearson Correlation	0.111	1.000			
	Sig. (2-tailed)	0.005				
Logistical procedures	Pearson Correlation	.200*	-0.037	1.000		
	Sig. (2-tailed)	0.002	0.677			

\* Correlation is significant at the 0.05 level (2-tailed).  
 \*\* Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis results in table 3 revealed that there was a positive and a significant relationship between routing and customer service delivery of courier services of Postal Corporation of Kenya ( $r=0.111$ ,  $p=0.005$ ). The results indicated that there was a positive and a significant relationship between logistical procedures and customer service delivery of courier services of Postal Corporation of Kenya ( $r=0.200$ ,  $p=0.002$ ).

#### 4.4 Regression Analysis

Regression analysis was performed by using the composites of the key variables. The data was input to the SPSS software. Results were then presented in Tables 4, 5 and 6.

**Table 4: Model Fitness for the Regression**

<b>Indicator</b>	<b>Coefficient</b>
R	0.776
R Square	<b>0.602</b>
Adjusted R Square	0.590
Std. Error of the Estimate	0.27741

The results presented in Table 4 present the fitness of model used in the regression model in explaining the study phenomena. This is supported by coefficient of determination also known as

the R square of 60.2%. This means that routing, scheduling plans and logistical procedures explain 60.2% of the variations in the dependent variable which is the customer service delivery. This results further means that the model applied to link the relationship of the variables was satisfactory. Table 5 provides the results on the analysis of the variance (ANOVA).

**Table 5: Analysis of Variance**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	14.798	4	3.7	48.075	0.000
Residual	9.773	127	0.077		
<b>Total</b>	<b>24.572</b>	<b>131</b>			

The results indicate that the overall model was statistically significant. Further, the results imply that the independent variables are good predictors of the implementation of sand dam drift project. This was supported by an F statistic of 13.735 and the reported  $p=0.00$  which was less than the conventional probability of 0.05 significance level.

**Table 6: Regression of Coefficients**

Model	Unstandardized Coefficients	Standardized Coefficients		t	Sig.
	B	Std. Error	Beta		
(Constant)	1.571	0.318		4.942	0
Routing and Scheduling	0.139	0.048	0.164	2.886	0.005
Logistical Procedures	0.107	0.04	0.149	2.649	0.009

Regression of coefficients results in table 6 showed that routing and scheduling had a positive and significant effect on customer service delivery of courier services of Postal Corporation of Kenya. ( $r=0.139$ ,  $p=0.005$ ). Logistical procedures had a positive and significant effect on customer service delivery of courier services of Postal Corporation of Kenya ( $r=0.107$ ,  $p=0.009$ ).

## 5.0 Conclusions

The first objective was to determine the effects of routing and scheduling plans on the customer service delivery of courier services of Postal Corporation of Kenya. Findings from regression analysis showed that routing and scheduling plans has a positive and significant effect on the customer service delivery of courier services of Postal Corporation of Kenya. This means that an improvement in routing and scheduling plans lead to a positive improvement on the customer service delivery of courier services of Postal Corporation of Kenya. The study concluded that routing and scheduling helps in reducing time spent in offering services, cutting operational costs

and meeting the client's demands effectively hence capturing their loyalty as a long-term benefit to the organization. The second objective was to determine the effects of logistical procedures on the customer service delivery of courier services of Postal Corporation of Kenya. Regression results findings revealed that logistical procedures had a positive and significant effect on the customer service delivery of courier services of Postal Corporation of Kenya. The study concluded that a positive change in logistical procedures lead to a positive improvement on the customer service delivery of courier services of Postal Corporation of Kenya.

## 6.0 Recommendations

The study's conclusion led to the recommendation that since scheduling and routing had positive effect on the customer service delivery of courier services of Postal Corporation of Kenya, the management should relook both internal and external to come up with innovative ways of improving scheduling and routing that are unique, market acceptable, need solving and can easily be used by target clients. The study also recommended that Postal Corporation of Kenya should have elaborate, detailed and well understood logistical procedures to improve performance. Better procedures improve service delivery which aid in minimizing the cost of corporation. Furthermore, the management should provide leadership and goodwill support in implementing the usage of logistic procedures.

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