INTEGRATED LOGISTICS AND SERVICE QUALITY AT NATIONAL HOUSING CORPORATION

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DECLARATION

I declare that this research project is my original work and has not been submitted to any other college, institution or university for an award of degree or any other certificate.

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D61/79281/2015

This research project is submitted for examination with our approval as the university supervisors

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DEDICATION

Special dedication to my husband Denice and daughter Leyna. Their relentless sacrifices and support were priceless during the entire course.

Furthermore I feel obliged to dedicate this project to my parents Mr. & Mrs. K'Obado, for their unceasing prayers, financial and moral support from as long as I can remember.

May God bless you.

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LIST OF ABBREVIATIONS

D.C:	Distribution Centre
E.D.I	Electronic data Interchange
E.P.S	Expanded Polystyrene
I.L.S:	Integrated Logistics Support
I.T:	Information Technology
L.P.M:	Logistics Performance Management
N.H.C:	National Housing Corporation
P.O.S	Point of Sale
R.D.T	Resource Dependence Theory
S.C.M:	Supply Chain Management
T.O.C	Theory of Constraints
T.T.T:	Total Time Travel

ABSTRACT

Integrated logistics is a popular practice within the construction industry in Kenya that various companies currently apply to improve their performance and ensure quality services to the clients. The objective of the study was to determine the effects of integrated logistics on service quality at the National Housing Corporation and by extension the construction industry in Kenya. The study established that transport management, performance strategy, communication, and warehousing management are the most integral components of integrated logistics. Nevertheless, most studies available have not delved into the logistics practices in the Kenyan construction industry. The population of study of the research consisted of 34 people drawn from the National Housing Corporation. It applied case study research design. Additionally, the study mainly depended on primary data collected through structured questionnaire form various people working at the NHC including a manger, estate officers, procurement specialists, finance officers, and administration officers. The response rate was 85%. The collected data was systematically and analyzed the findings using SPSS. The data analysis relied on regression, correlation analysis, and descriptive technique. The results established that the corporation depended on different components of logistics including facility location, logistics ICT, inventory management, warehousing management, and transport management in varying orders of significance. Proper implementation of integrated logistics has the propensity of enhancing company performance, ensuring quality services, and promoting customer satisfaction. It focused on the construction industry in Kenya, and specifically the National Housing Corporation, which may not b applicable in the other sectors of the economy. Therefore, the researcher recommends that the findings be applied in other industries to determine the integrated logistics practices and service quality that may be useful to the Kenyan and by extension the global economies.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Logistics encompasses movement of products from manufacturers to customers. The products pass through wholesalers and retailers. The linkage of the required information communicated among the parties involved in the logistics channel entails information flow. The information flow creates the need for the installation and reliance on a logistics information network. The standardized messages can be processed, interpreted, and transmitted directly. Such may rely on the similar data communication protocols (Nguyen, Crase, & Durden, 2008). The increased pre-occupation of forms just-in-time programs and response initiative is apparent that logistics known abilities and capabilities are just as vulnerable factors in the development of corporate strategies. The corporate strategies often aim at creating sustainable competitive advantage to ensure better performance within the supply chain systems (Nguyen et al., 2008).

Organizations and companies require a logistics process that ensures the support of other services in a consumer efficient and cost-effective manner (Rahman, 2008). The components to a manufacturing company movement of raw materials should have a degree of efficiency. The movements of the components to a manufacturing company and the management of the components should be efficient. The transportations of products from the point of manufacturing to the processing, the retail store and to the final consumer should be efficient and cost-effective (Nguyen et al., 2008). The change in preference from product to consumer oriented supply chains, and thus improved supply of resources, can provide customers with other ways of meeting their needs

(alternatives).Conversely, from both the outside and inside determination and implementing integrated logistics relates to no determinable defects, delivery on time schedule, and information exchanges. Both supplier and consumer can benefit from reduced cost of inventory, administration costs and capacity order handling. Mukopi & Iravo (2015) claims that timely implementation utilizes appropriate manufacturing and scheduling techniques.

1.1.1 Integrated Logistics

Integrated Logistics connotes an interactive and connected process that aims to create material and support strategy for the formulation of maximum function support, providing advantage for existing support and guidance for the whole system. According to Amin & Zhang (2012), the objective of the system is to boost performance via the application of contemporary technological inventions that serve to improve the logistics footprint. In the current business setting, the logistics system is widely applicable to commercial product support and customer service (Mukopi & Iravo, 2015).

The main aim of creating the integrated logistics support is to boost the levels of profitability and minimize the costs by promotion of long-term reliability and developing efficiencies. The true influence of the integrated system mostly depends on particular parameters such as reliability, maintainability, testability and availability. The key objectives of integrated logistics included but not limited to movement consolidation, rapid response, life cycle support, and the attainment of minimum inventory. Effective logistics is a key component of most firms and companies necessitated by the explosion of products variety that prompts improved logistics management (Huo, 2012). The

application of information technology forms an impeccable foundation for serious gains in distribution efficiency. `

1.1.2 Service Quality

According to Robinson & Malhotra (2005) quality is the extent to which features meet pre-set parameters. The parameters of quality include time, regulations, society expectations, shareholder demands, and consumer preferences. Service quality is more sophisticated because of the features of services, which include; intangibility, heterogeneity and inseparability. The management of quality in any organization requires a proactive approach, meaning that all the people involved must perform their duties and responsibilities at the right time and continue to perform the designated activities at the required level (Rahman, 2008).

He& Lai (2012) established that service quality has five dimensions; Tangibility, which entails, equipment, appearance of personnel, and physical facilities, is the first dimension. The customers normally associate the degree of service quality by examining the physical facilities, personnel, the communication materials, and equipment used to achieve any service in the logistics process. Secondly, reliability forms an integral parameter. Reliability means that the firm delivers quality products on time. Additionally, reliability delves into the level of service provision, pricing, and problem solutions. Customers normally conduct businesses with companies that keep their promises. Responsiveness is the next parameter. Responsiveness as a dimension of service quality emphasizes on the promptness or the attentiveness to dealing with the customers' requests, questions, problems, and problems (Murfield, Boone, Rutner & Thomas, 2017). It depends on the

length of time that the customers have to wait for assistance or solutions to their problems. Assurance, which is about giving surety to deliver as promised, is the other dimension. Assurance is necessary for high-risk services or the ones that have a degree of uncertainty. Finally, empathy, which entails personalized care to clients, is a essential in service delivery. It is essential to provide personalized attention to the clients to show that the company has deep concerns to satisfy arising needs. Such will certainly improve customer loyalty.

1.1.3 National Housing Corporation

National Housing Corporation (NHC) works in close partnership with the Ministry of Transport and Communication in order to improve their projects through a smooth procuring process. NHC has nine (9) distinct branches (offices) located in various regions in Kenya. The corporation's headquarter is in Nairobi, where most operations of the corporation is conducted.

The corporation began operation of prefabs factory located in Mavoko in 2012. The factory manufactures Expanded Polystyrene (EPS) panels used in construction of prefabricated houses (Ondiek, & Odera, 2012). The corporation was established to make affordable housing dream a reality. The other offices are located in various areas namely Kisumu, Nyeri, Nakuru, Kakamega, Mombasa, Eldoret, and Kitale. Additionally, NHC works with construction and supplies companies such as MOHA Construction, PRISM Construction Kenya Limited, and Paveway Kenya Limited that have defined roles to execute in their projects. The private contractors and the suppliers make the industry competitive and efficient (Palma-Mendoza, 2014). The Ministry of Industry and Trade

works closely with the firms in the construction industry and uses its slogan "Opportunities for All" to create the best possible working environment for the success of business throughout Kenya. The government helps the companies and the professionals involved in various projects to maintain high levels of productivity, creativity, and enterprise (Ondiek & Odera, 2012)

The Kenyan government has expressed its policy regarding housing as a way of improving living standards. Government's main agency for implementation of housing policy is the National Housing Corporation (Ondiek & Odera, 2012).Placed within the wider economic context, by building houses, the NHC enhances economic performance and competitiveness on the global economic index or standing. Implementing a more integrated response to housing, as the one pursued by NHC, will certainly lead to economic development.

1.2 Research Problem

The concept of quality in logistics is necessary in that it enables the planning and the subsequent directing the establishment and development of logistics system and support requirements. The real goal is to formulate and subsequently maintain systems that require less support and last longer. Such systems increase return on investments by reducing related costs (Ondiek & Odera, 2012). In the contemporary system, quality systems in any organization form part of the organization's strategy. In essence, the high levels of competition requires firms to deliver quality products where and whenever requested by the clients.

Different construction firms in Kenya and around the globe apply integrated logistics support in planning and action in various disciplines in concert to ensure system availability. In this regard, the firms plan every aspect of logistic in coordination with the engineering at the site with each other to ensure the timely delivery of materials for efficient performance that in turn assure meeting of the pre-set deadline. The firms at times employ tradeoffs between the elements in order to attain a complete system that is transportable, affordable, environmentally sound, operable, and sustainable. They tend to rely on a pre-determined process and units of logistics support to establish the necessary tasks, responsibilities and duties within each element of logistics support (Mukopi & Iravo, 2015).

Okello & Were (2014) observed that in the contemporary time, particularly in Kenya, the construction firms are striving to minimize costs while simultaneously minimizing the number of transports and maintaining or reducing the number of inventories. The companies are in serious search of reliable, fast, and cheap transportation in undertaking comprehensive project such as the construction of prefabricated buildings. The corporation mainly relies on road transportation in the movement of construction materials. The choice of the road transportation is because of reliability, improved accessibility, and its ability to move moderate inventories (Amin & Zhang, 2012). Notably, the road transportation is not essentially sustainable due to the high levels of accidents, noise, congestion, and the wear associated with the same.

The degree to which construction companies such as the NHC have or own the knowledge on quality in logistics have a bearing on the improvement of logistics and

organizational innovation. Organizations need not only to possess the knowledge but also apply it efficiently and effectively to boost operational performance to reduce the time lapse and the cost to the business. Additionally, the knowledge on quality enhances operational flexibility, reliability, and responsiveness to the market demands. Rahman (2008) established that adherence to the quality the logistics standards has the propensity of increasing service delivery and competitiveness. Hull (2008) examined the possibility of policy integration to ensure sustainable transport solutions for companies. Lenny et al. (2007) investigated how logistics systems affect SMEs. Despite the mentioned studies on the subjects, a gap still exists and more information is needed on the integrated logistics and quality affects the performance of construction in Kenya. Therefore, the research aims to respond to the questions: What are the components of logistics system that determines quality at NHC? What are the effects of integrated logistics on quality at the NHC? And what are the challenges facing National Housing Corporation in attaining quality logistics support system?

1.3 Research Objectives

The study intends to investigate the effects of integrated logistics on service quality at National Housing Corporation. Definitive goals include:

i. To identify the components of logistics system that determines quality at National Housing Corporation.
ii. To appraise the influence of integrated logistics on quality at the NHC
iii. To probe the challenges facing NHC in attaining quality logistic support system.

1.4 Value of the Study

It is of immense significance to various interested parties. A lot of parties and stakeholders in the field of logistics will certainly find the research useful. To start with, the investors will find the study valuable since it outlines the various ways of utilizing information to attain quality within various points of supply chain management. Secondly, the study will be useful to suppliers since it will guide them on methods of engaging in fair and sincere business activities base on mutual trust. It means that suppliers will learn how to deliver quality products or raw material based on the pre-determined timelines. The government of Kenya, in particular, will benefit from the study in that the study will provide guidelines on how to regulate the construction industry without necessarily imposing hurdles to the stakeholders. Additionally, the study will help various entities, NHC in particular, to provide an ideal working environment that adheres to the stipulated regulations on safety and professional growth of each employee. Finally, the study will certainly benefit scholar interested in the field of logistics and related areas since it provides critical and significant guidelines and insights on integrated logistics on quality in organizations, particularly on weaknesses.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter contains a recapitulation of different literature on effects of integrated logistics on quality. The review of literature serves to compare the current finding with the findings of previous research works.

2.2 Theoretical Review

The proposed study uses the Resource Dependent Theory and the Theory of Constraints to formulate a foundation for the study.

2.2.1 Resource Dependency Theory (RDT)

RDT claims that organizations depend on or utilize resources from other organizations. Additionally, organizations or companies depend on other organizations for sustainable growth. It means that it not possible for any organization to be completely self-reliant. Organizations will always need critical resources and products that other organizations provide (Biermann & Harsch, 2017). Therefore, for growth and development and survival, organizations need to form strategic alliances, which will certainly enable them to acquire strategic resources. The theory postulates that organizations can minimize uncertainty by strategically controlling their reliance on external environment by trading resources (skill-based, material) with different organizations. For NHC projects to be successful, NHC should collaborate with other organizations. In the supply management context, RDT postulates that member organizations collaborate and be dependent on one another, which a requirement for higher performance gains. Such type of cooperation is

less risky and quite beneficial when compared to pursuing short-term benefits in isolation. In this regard, RDT emphasizes on partners (such as buyers of the completed NHC houses and suppliers of the raw materials required for construction work).

Owing to the above perspective, it is clear and evident that supply chain management is based on RDT theory, aims at performance efficiency and effectiveness. In logistics, a proper implementation of the resource dependent theory creates an organization that attracts logistics resources from their suppliers while simultaneously commanding great power over the suppliers. For instance, NHC has attracts logistics resources because of the impressive logistical blueprint. Such translates to having required resources when and where needed, consequently ensuring competitive advantage and improved customer satisfaction, which are the true hallmarks of quality.

2.2.2 Theory of Constraints (TOC)

The most important concept of TOC is that each organization usually has at least one constraint that hinders it from attaining its set targets and goals. Scarcity of resources is a major constraint in NHC's supply chain management, (Puche et al., 2016). Notably, the Theory of Constraints constantly prioritizes the identification and the subsequent eradication of the identified constraint. Towards this end, NHC constantly outsources additional finances form various institutions such as banks and international organizations such the World Bank to meet the growing consumer demand for proper housing. Effective implementation of theory of constraints will ensure increased profitability, faster delivery of raw materials to the construction site, improved capacity,

reduced lead times, and the elimination of existing bottlenecks, which essentially translate to the attainment of quality.

2.3 Components of Logistics Support System

Logistics support is vital to assembly and manufacturing industries that are goods-oriented, but also to transport, retailing, and service-oriented industries. The contemporary retail businesses have diversified into travel services, commodity supplies, agriculture, restaurants, rental and leasing services (Fernandez & Aalbers, 2017).

Transportation management is very essential since logistics encompasses the movement of products (finished goods parts, raw materials, and supplies) from the production to the consumption point. The management and the subsequent operation of transportation have a bearing on the efficiency and the effectiveness of moving products (Ghiani, Laporte, & Musmanno, 2013). An effective and efficient system needs a concise transport implementation, frame of logistics, and the right techniques or methodology to link the production procedures. Proper transport management mechanisms and process are essential in assisting logistics managers, transportation planners, and researchers in defining and understanding the basic views of logistics (Ghiani et al., 2013).

Material handling refers to the movement, storage, protection and control of products and materials. Material handling is dynamic. From a logistics perspective, information flow, inventory level, billing, and customer data have a bearing on channel performance. Information can be shared and managed in many ways. Technologies are helpful to coordinate activities to manage the process of supply. Warehousing is a crucial aspect of

the logistics control system since it provides storage for the products. Closely related to that is the fact that it allows the consolidation or centralization of goods. The accumulation or deliberate consolidation of the goods permits a warehouse keep balance between the supply and demand of goods.

The main focus or objective of logistics is to boost effectiveness and efficiency. Effective facility location may lead to improvement in customer service levels and cost reductions (Ghiani et al., 2013). The factors that affect facility location decision include but not limited to personnel, installing and moving equipment, company preferences, supplier networks, transportation (availability), raw materials and transport, and incentives for industrial development, and proximity to market and customers((Ahmed & Hassan, 2003).Logistics management requires a critical evaluation of the advantages, opportunities, challenges that each possible location portend to the company. Finally, inventory control involves the firm's attempt to build the lowest level of inventory that will still enable it to meet customer demands. Managing vendor and customer interactions is a very important aspect of managing supply chains. Inventory storage and movement defined the stated relationship.

2.4 Integrated Logistics Support and Service Quality

Shi et al. (2012) state that the key drivers towards a comprehensive integrated logistics include communication, trust, corporate culture, information and knowledge sharing, the evaluation of the supplier development process, and the sharing of certain common goals such as the disposal of waste and improving the degree of efficiency. Mose, Njihia, & Magutu (2012) stipulates that the Kenyan construction industry should adapt to meet the

international standards in terms of the speed of the execution of various tasks and the outcome of the overall desired quality. To this end, there is need to educate the construction workforce, understanding the roles, responsibilities and functions of other firms within the supply chain, adhering to the rules and regulations of chain partnership and integration, and having impeccable knowledge of new contractual documents since the industry and the economic times are volatile and changes are inevitable. Project financiers and managers have a valuable role to play and have the function of adding value to the construction project, and any other place for that matter. The company should be willing to share knowledge and information that pertain to the project with the partners.

2.5 Challenges Facing Logistics Support Systems

The main function of the logistics professionals is to set their objectives and then make the necessary improvements as the process progresses. While that may sound easy in theory, in practice the execution of the process has various challenges as discussed below.

The first challenge is inefficient strategy. A company may set out to accomplish some lofty goals, but fall short because it lacks logistics performance strategy. Logistics performance management (LPM) is essential for the logistics performance process (Ahmed & Hassan, 2003). A sound LPM requires an experienced decision-maker that will help decipher the information provided by the data, so that they can respond in a timely fashion. The second challenge experienced by logistics systems is the apparent lack of a clear definition of the performance metrics. The data obtained on the logistics

processes tend to be useless if a company lacks the right performance metrics, which is essential for the tracking of all aspects of performance.

Lagging logistic technology is another challenge experienced by logistic systems. The adoption and the subsequent application of technology are subject to constant change (Robinson & Malhotra, 2005). Organizations should ensure that they update their software to the point that it conforms to the company's performance metrics. The next challenge is inadequate employee skills. The sector particularly underperforms in education and training (World Economic Forum, 2014).Finally, unethical practices are prevalent in logistics support practice and management. Unethical behavior concepts like dishonesty, lack of integrity, improbity, laziness, unfairness, and lack of confidentiality will certainly derail the industry (Mukopi & Iravo, 2015). Engagement in unethical practices will definitely hinder quality within the sector.

2.6 Empirical Review

It includes the local studies and global studies and on the mentioned topic for the period 2007-2018.

Hull (2008) examined the possibility of policy integration to ensure sustainable transport solutions for companies. The study explored institutional and organizational issues of policy implementation, and integration the mechanisms. The study outlines the policy context regarding of powers, responsibilities, and resources of local transport planners. Furthermore, it delves into the tools of government that are extensively applicable for better efficiency of the transport system. It concludes that policy

integration is integral to the attainment of sustainable logistics system. However, the study did not examine the efficiency or the effectiveness of proper transportation network, but rather concentrated on the effects of emissions to the environment.

Lenny et al. (2007) investigated the how logistic systems affect SMEs. It concluded that creating and validating a multi-dimensional construct of SCM practices provides SCM personnel, particularly the managers, with effective evaluation tools SCM practices. The provision or the availability of evaluating tools enables the management to determine and consequently rectify areas of weakness while maintaining the aspects of the system that work well. Nevertheless, the findings were not so comprehensive or conclusive because the researcher mainly focused on SMEs located in Turkey and not various places across the globe.

2.7 Conceptual Framework

It will investigate the interrelationship between the identified variables. The study seeks to investigate how adoption of independent variables, the components of integrated logistics support can lead to realization of dependent variables, quality.

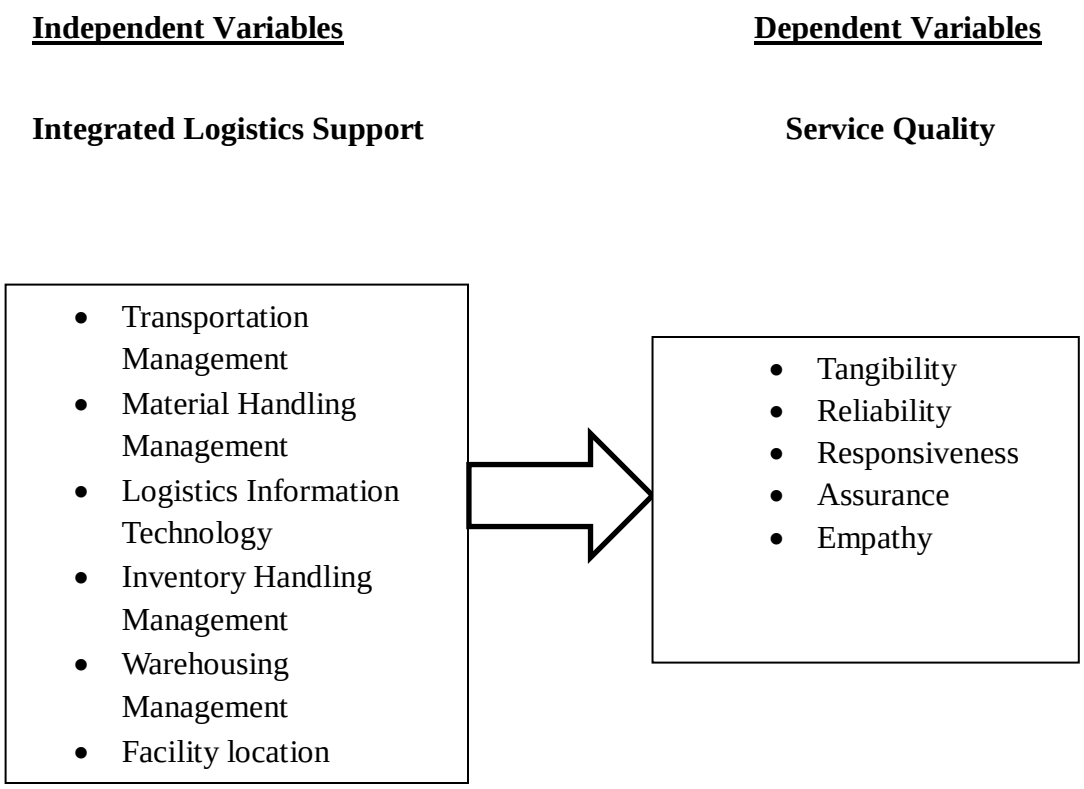

Figure 1: Conceptual framework

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The selection of Research methodology and design was on the basis of its capability to test both study hypothesis and research model. It contains methodology, research design and population. Furthermore, it contains data collection methods and analysis.

3.2 Research Design

It adopted case study design to determine the effects of integrated logistics quality at NHC. Case study design aims to accurately and systematically obtain disruptive information and attain an in-depth knowledge on the concept in this study.

3.3 Population

Population under study constituted all the nine (9) branches of the National Housing Corporation located in various identified parts of Kenya. This population has been chosen to enable comparison of service quality delivery among all the branches.

3.4 Sample Design

The study applied purposive sampling approach to select the respondents. The approach is necessary to ensure the inclusivity of various staff cadres in various departments of the corporation. The chosen sample consisted of procurement officers, branch managers (Estate officers), and finance staffs of NHC.

The selection of sample size was done as tabled below:

Table 3. 1:

Sample Design

	SAMPLE
Managing Director	1
Senior Procurement officers	12
Technical Managers	2
Finance officers	10
Estate officers	9
Total	**34**

3.5 Data collection

Standard questionnaire was the main source of primary data. The administration of the questionnaire relied on by drop and pick technique. The researcher obtained permission from the respondents before embarking on the actual process of data collection.

The researcher settled on the questionnaire since it accords the respondents the opportunity to answer the questions structurally. Such helped in the acquisition of the just-in-point information. The questionnaire had 4 (four) distinguishable parts. The first part encompassed questions that provided information regarding the respondent. The second part consisted of questions about logistics integration at NHC. The third section was about quality achievement at NHC. Finally, the forth section was about challenges facing logistics support at NHC

3.6 Data analysis

The collecting data was succeeded by the scrutiny of the questionnaires. The main goal of the exercise was to determine the existence errors and possibly occurring omissions. Then they were coded and the data being captured. On instances where corrections are not plausible, the questionnaires were discarded. The researcher then tabulated the collected data systematically and analyzed the findings of the study with the aid of SPSS. The analysis wholly depended on descriptive technique and regression analysis. Furthermore correlation analysis was applied to analyze data generated from different parts to meet the research objectives as summarized in the table below;

The regression equation took the form:

$$\mathbf{Y=\beta_0+\beta_1 X_1+\beta_2 X_2+\beta_3 X_3+\beta_4 X_4+\beta_5 X_5+\beta_6 X_6+\varepsilon}$$

Where: Y = Quality, X_1 = Transportation Management;X_2 = Material Handling Management;X_3 = Logistics Information Technology;X_4 = Inventory Handling Management;X_5 =Warehouse Management;X_6 =Facility Location control, β_0 = Constant;β_1 =Coefficient of transportation Control Variable; β_2 =Coefficient of Material Handling Control Variable;β_3 =Coefficient of Logistics Information Technology Variable;β_4 =Coefficient of Inventory Handling Management Variable;β_5 =Coefficient of Warehousing Control Variable;β_6 =Coefficient of Facility Location Management Variable; ε = Error term.

Table 3. 2: Data Collection, Analysis Summary

	Objectives	**Data Collection Method**	**Data Analysis Method**
1	To identify the components of logistics system that determines quality at National Housing Corporation.	Questionnaire	Descriptive technique
2	To establish the effects of integrated logistics on quality at the National Housing Corporation.	Questionnaire	Regression and correlation
3	To establish the challenges facing National Housing Corporation in attaining quality logistics support system.	Questionnaire	Descriptive technique

CHAPTER FOUR: RESULTS, DATA ANALYSIS AND DISCUSSION

4.1 Introduction

The chapter delves into the analysis of data gathered. It also explores the discoveries on the effects of integrated logistics on service quality at National Housing Corporation. The last part of the chapter contains the conclusion, recommendation and challenges.

4.2 Information on Demographics

4.2.1 Rate of Response

As depicted by the table below, the results show that out of the 34 targeted respondents, 29 successfully filled the questionnaire, which is a response rate of 85%. The noted response rate is near excellent since it permits the determination of the phenomenon that exists, as it is in line with Mugenda and Mugenda (2008) conclusion, which asserts that a response rate of above 75% is recommended for the establishment of accurate and believable findings.

Table 4.1: Determined Rate of Response

Response	**Frequency**	**Percentage**
Response	29	85.3
Non Responses	5	14.7
Total	**34**	**100**

Source: Research Data (2019)

4.2.2 Respondents Gender

The section classifies the respondents by gender. Such is important since it helps in the determination of diversity and gender balance. The table below shows the results.

Table4.2: Gender of Respondents

Gender	Frequency	Percentage
Female	16	55
Male	13	45
Total	**29**	**100**

Source: Research Data

The results obtained showed that 55% were female, while the female occupied the remaining 45%. It is evident from the figures that the representation of both genders, thus no biasness.

4.2.3 Period Worked in the Corporation

The table 4.3 below, which contains information on the respondents' period worked in the corporation. This was used in assessing their experience and familiarity with the corporations' processes.

Table 4.3: Duration Worked at NHC

Duration	Frequency	Percentage
Below 1 year	1	3
1-3years	9	31
4 - 6 years	11	38
Over 6 years	8	28
Total	**29**	**100**

Source: Research Data

The findings shows that 31% had worked for a period of 1-3 years, 38% for a period of 4-6 years, 28% for over 6 years and only 3% for less than 1year. This shows that a bigger fraction of respondents had worked with the corporation for a long period (more than 3 years) hence all were well informed on logistics integration in the corporation.

4.2.4 Department of the Respondents

41% of the respondents were procurement officers, 34% as administration officers (who included the real estate officers) and 24% as finance officers. This is a good representation of the various departments hence no biasness in how the departments are interconnected in performance of their activities.

Table 4.4: Department

Department	Frequency	Percentage
Procurement	12	41
Administration	10	34
Finance	7	24
Total	**29**	**100**

Source: Research data (2019)

4.2.5 Success in the Logistics Department

This section aims at determining the extent of success of logistics practices. The results are tabled below:

Table 4.5: Degree of Success

Extent	Frequency	Percentage
Not successful	1	3.45
Somewhat Successful	6	20.69
Successful	9	31.03
Very Successful	13	44.83

Total	**29**	**100**

Source: Research data (2019)

The findings shows that 44.8% were very successful, 31% were successful, 20.69% were somehow successful while only 3.45% were not successful.

4.3 Components of Logistics Support at National Housing Corporation

The study sought to establish the effects of integrated logistics on service quality at National Housing Corporation. The respondents were requested to indicate the extent of changes in the various logistics practices. The practices included; transportation management, facility location, warehouse management, logistics I.C.T and inventory management. A 5-point Likert scale was used to rate the extent of adoption of the indicators whereby 1 point was accorded to 'no extent', 2 points to 'little extent', 3 points to 'moderate extent', 4 points to 'great extent' and 5 points to 'very great extent'. Table 4.6 presents an analysis of the ranking of the logistics practices in ascending order as indicated by the respondents.

Table 4.6: Components of Integrated Logistics

	N	Minimum	Maximum	Mean	Std. Deviation
Inventory management	29	2.60	4.20	3.6621	.34684
Transport management	29	2.67	5.00	3.8161	.56755
Logistics ICT	29	3.25	5.00	4.3103	.45638
Facility location	29	4.00	5.00	4.4368	.25360
Warehouse management	29	3.67	5.00	4.5172	.40421

Source: Research data (2019)

The results shows that bigger fraction the respondents think that between moderate to large extent Transport and inventory management sectors have been enhanced in the corporation. Facility location, warehouse management and logistics ICT on the other hand are between large and very large extent efficient.

4.4 Service Quality

The study aims at determining the degree to which NHC has achieved various indicators of service quality by applying integrated logistics. The instructions required the respondents to indicate the extent of the service quality presented in the questionnaire and how it has been applied in the NHC offices and departments. The parameters included empathy responsiveness and assurance. Additional parameters included tangibility and reliability. Under tangibility, the respondents indicated degree of corporation aesthetics improvement and the physical appeal of the product and the corporation in general have been achieved and if the quality of the construction material has improved. Under reliability the characteristics were accurate and dependable service performance practices at NHC. In addition, the respondents were to indicate product handling procedures undertaken by staff and less damage to commodities due to error minimization and on time delivery. Under responsiveness the indicators were; the level of coordination of various departments to satisfy the customers has improved, timely and cost effective ways of meeting customer demands, positive perception by clients to the organization's performance and the organization applies information technology in streamlining supplier activities e.g. E-commerce. Under assurance the indicators were; clients' level of trust to the organization's ability towards their needs, good relations and the level of respect

accorded to the clients, the competence levels and the attitude conveyed to the clients. Lastly under empathy the indicators were; the enhancement of the employees' abilities to show genuine concerns to the needs of the clients, the approachability of the customer service representatives, sensitivity and the levels of understanding of the nature of the customer representatives, proper records and accuracy in customer demands has been improved

From the table 4.7 below, the overall weighted mean from all the service quality parameters had a mean of 4.41 which suggests most of the employees think that NHC has to a large or a very large extent achieved high service quality. The table also presents an analysis of the ranking of the indicators of service quality as hypothesized by the respondents

Table 4.7: Service Quality

Service Quality			
	N	Mean	Std. Deviation
Tangibility	29	4.3908	.40892
Reliability	29	4.4598	.38228
Responsiveness	29	4.3563	.35558
Assurance	29	4.2529	.51682
Empathy	29	4.5690	.29045
Weighted Mean		**4.40576**	

Source: Research data (2019)

4.5 Challenges of Logistics Support System.

The study also sought to establish challenges facing National Housing Corporation in attaining quality logistic support system. The respondents were to indicate the degree of logistics challenges at NHC.

The challenges included; communication barrier, employees resistant to change, inadequate employee skills, inefficient strategy, lack of management support, lack of appropriate technology, high cost associated with quality, logistics service providers delays, unethical practices, unclear performance metrics, information privacy loss, increased logistics risks and government policies. The respondents were requested to indicate degree that the challenges affect the logistics support. The results were analyzed and presented in the table 4.8 below. The results shows that a formidable fraction of the respondents reported that they have not been experiencing most of the challenges as shown in the mean. The challenges are arranged in order of least experienced to the most experienced.

Table 4.8: Challenges of Logistics Support

	N	Mean	Std. Deviation
Communication barrier	29	1.59	.733
Employees resistant to change	29	1.72	.702
Inadequate employee skills	29	1.76	.739
Inefficient strategy	29	1.76	.739
Lack of management support	29	1.83	.711

Lack of appropriate technology	29	1.86	.833
High cost	29	1.86	.743
Logistics service providers delays	29	1.86	.743
Unethical practices	29	1.97	.906
Unclear performance metrics	29	2.48	1.022
Information privacy loss	29	2.72	.797
Increased logistics risks	29	2.76	.830
Government policies	29	4.34	.670

Source: Research data (2019)

4.6 Integrated Logistics and Service Quality

To boost an inferential analysis of the relationship between integrated logistics and service quality at National Housing Corporation, the respondents were requested to indicate the extent to which integrated logistics had contributed to service quality. The mean responses for achievement of service quality are summarized in table 4.7.

This section was meant to achieve both general and specific objectives in establishing the relationship that exists between the study variables.

4.6.1 Regression Analysis

Regression analysis was applied to determine the interrelationship between variables. Independent variables included facility warehouse management, location, logistics ICT systems, transport management, and inventory control, while the dependent variable was

service quality. The regression model summary result obtained is shown on Table 4.9 below

Table 4.9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.428[a]	.183	.005	.20320

Source: Research Data (2019)

The coefficient of determination R square is 0.183 which means the predictor variables combined could only account for 18.3% of service quality. This implies that the remaining 81.7% of service quality arise from factors omitted by the study.

For an independent variable to be able to adequately explain the dependent variable in a simple linear regression model the Pearson's R should be greater than 50% (0.5) and R-Square should be greater than 25% (0.25), that is, the independent variables of a regression model should be able to explain at least half of the dependent variable. In the table 4.9 above, neither of the two holds the condition; therefore, the model explains 18.3% of the total service quality, which is considerably small. Therefore, the model needs improvement to include more factors. Such will improve its effectiveness and reliability.

4.6.2 The ANOVA

Shown is the ANOVA table, representing the properties of the regression, residuals and the totals of the regression model.

Table 4.10: Anova Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.213	5	.043	1.030	.423[b]
	Residual	.950	23	.041		
	Total	1.162	28			

Source: Research Data (2019)

The p-value (0.423) from the ANOVA table indicate that 0.423>0.05 which implies that the model is not significant.

At 5% level of significance, the null hypothesis of the overall significance of the model is accepted since the p-value of 0.423 is greater than the level of significance. This means that the model does not adequately represent the data at hand. It should, however, be noted that there exists; a positive relationship between the service quality and transportation management, a negative relationship between service quality and logistics ICT, a negative relationship between service quality and inventory management , a positive relationship between the service quality and warehouse management and a negative relationship between the service quality and the facility location.

4.6.3 Model Coefficients

Table 4.11: Model Coefficients

Model		Unstandardized Coefficients	Standardized Coefficients	t	Sig.		
		B	Std. Error	Beta			
1		(Constant)	4.650	.992		4.688	.000
		Facility Location	-.105	.153	-.131	-.686	.500
		Transportation management	.008	.072	.022	.112	.912
		Inventory management	-.125	.116	-.212	-1.078	.292
		Warehouse management	.155	.103	.308	1.507	.146
		Logistics ICT	-.013	.090	-.028	-.140	.890

Source: Research Data (2019)

The output presents the model below;

$$\boldsymbol{Y = 0.008X_1 - 0.013X_2 - 0.125X_3 + 0.155X_4 - 0.105X_5 + 4.650}$$

Where; Y – Service Quality , X_1 – Transportation Management, X_2 – Logistics ICT, X_3 – Inventory Management, X_4 – Warehouse Management and X_5 – Facility Location

The p-value of the constant is less than the level of significance used in the study (that is, 0.000 < 0.05), implying that the null hypothesis is rejected. That is, the constant is significant in the model and cannot assume the value zero at 5% level of significance. On the other hand, the p-value of the coefficients of all the independent variables is greater than the level of significance used (that is, 0.500, 0.912, 0.292, 0.146, 0.890 > 0.05), implying that the null hypothesis is not rejected. This leads to the conclusion that the coefficients of all the independent variables can assume the value zero. That is, they are not significant to the model at 5% level of significance.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECCOMMENDATIONS

5.1 Introduction

The chapter mainly summarizes the entire study. Additionally, it presents conclusions and then recommendations made from the findings. Finally, it provides suggestions future research.

5.2 Summary and Discussion

The aim of this study was to evaluate the effects of integrated logistics on service quality at National Housing Corporation. The study population comprised of all the nine branches of NHC. Questionnaire was the only too for data collection. Descriptive analysis was applied to analyze the data. The findings obtained are summarized below as per the study's specific objectives.

Objective number one of the study was to identify the components of logistics system that determine quality at National Housing Corporation. The researcher used arithmetic mean to evaluate and analyze study findings and answers. The finding scored a mean of between 3.66 and 4.52; this therefore indicates that transport and inventory management, whose score was between moderate to large extent, the two sectors have been enhanced. Facility location, warehouse management and logistics ICT on the other hand are between large and very large extent efficient.

The second objective was establishing the relationship between integrated logistics and service quality. The finding was that there's a weak relationship between the identified variables. Though the regression model proved a weak determination, the other results in this section shows that logistics components influences service quality. In the case of ANOVA, the findings showed that integrated logistics at NHC influence service quality as a whole. The regression model also linked the integrated logistics and service quality and the relationship of the variable can be used to predict service quality.

The third objective was to establish the challenges facing National Housing Corporation in attaining quality logistic support system. Several challenges were found to be an obstacle to the achievement of service quality. The findings however suggest that a government policy is the highest ranked challenge for the attainment of service quality. Other major challenges include unclear performance metrics, information privacy loss and increased logistics risks.

5.3 Conclusions of the Study

The study concluded that integrated logistics has a bearing on the quality of service delivery in the construction industry, which has effects on the performance on the National Housing Corporation. The parameters that determine the improvement in the service quality include assurance, tangibility, and reliability. It also included responsiveness and empathy. Under tangibility, the respondents indicated the degree of incorporation of aesthetics, the physical appeal of the product, and the corporation in general. Furthermore, it included the quality of the construction material. Under reliability the characteristics were accurate and dependable service performance practices

have been achieved by the organization, proper product handling procedures have been undertaken by staff and less damage to commodities due to error minimization and on time delivery. The improvement of the stated parameters means that the service quality had certainly improved within the logistics aspects of the National Housing Corporation. The noted improvements generally led to reduced waste, reduction in the lead time, and improved efficiency in the construction process.

The provision of construction service has been operational at the NHC for more than two decades. It is worth noting that most companies that provide construction services are international entities. The construction practices adopted by the corporation in terms of rank include warehousing management is highly adopted with a mean of 4.52, facility location 4.44, Logistics ICT 4.31, transport management 3.82, and transport management 3.66. The figures clearly show that the company values warehousing management as a practice that the rest of the components. Nevertheless, the average mean score of the other components also show that they are integral to the corporation's performance hence the high level of due seriousness.

The study concluded that in the course of adopting the components or the practices of integrated logistics in the construction industry, a number of challenges emerged. The identified challenges include but not limited to communication barrier, employees resistant to change, inadequate employee skills, inefficient strategy lack of management support, lack of appropriate technology, high cost associated with quality, logistics service providers delays, unethical practices, unclear performance metrics, information privacy loss, increased logistics risks and government policies. Unethical practices, lack

of appropriate technology, and communication barrier are some of the intense challenges faced by the construction industry in Kenya that require immediate mitigation for performance improvement. While most respondents agreed that the identified three are the most pressing challenges, they also agreed that lack of a performance strategy could just be as detrimental. The urgent need to eradicate or to minimize the challenges is, therefore, urgent for better performance improvement at the logistics aspects of the NHC's provision of construction services.

5.4 Recommendations

Based on the findings of the study, it is recommended that all construction companies and corporations in Kenya adopt integrated logistics as a way of improving service quality and operational performance. The government should set clear policies on the implementation of logistics practices by corporations and communicate to the construction firms and corporations on the content and implications. The objective is to embrace the acceptance of integrated logistics as a viable way of improving quality service delivery and enhancing performance.

The study highly recommends the application of integrated logistics in the construction industry. The recommendation is based partly on the benefits that the application of integrated logistics practices portends not only for the National Housing Corporation but also the entire Kenyan construction industry. A full implementation of recommended practices will ensure better performance and quality delivery of service. Proper implementation of integrated logistics will certainly improve the services delivered to customers, better financial and output performance, and improve the efficiency of

service. All the benefits are requirement in achieving the mandate of any construction work and improving customer satisfaction. Therefore, the construction industry in Kenya should build a culture of integrated logistics within cross functional teams comprising of service providers and transport companies. Essentially, construction firms and corporations should proper adoption and subsequent implementation of logistics practices, and strive to mitigate all the challenges for quality service delivery and industry performance.

5.5 Limitations of the study

The concept of integrated logistics is quite wide. There, it is reasonable to infer that the study did not cover all the aspects and practices of integrated logistics that constitute quality, the components of logistics, service quality, and challenges that face integrated logistics. The study was limited to the construction industry, specifically to the National Housing Corporation. The short time available to conduct and subsequently complete the study was a limiting factor. The duration of the interviews was very short and the data required had limited time to be collected. Finally, the dynamic nature of the service industry means that the response received may not be relevant in future. The findings may not be applicable across the time.

5.6 Suggestions for Further Research

There is little research done in the area of integrated logistics in Kenya. It is therefore recommended that more research be done not only in the Kenya service sectors but also in manufacturing setting and compare the results from both. The studies should focus in

different sectors not only manufacturing but also the hospitality, education, and service industry. Towards this end, there is need to carry out a similar study in a period of five years within a similar setting to verify the validity and the accuracy of the results contained herein.

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APPENDICES

Appendix I: Research Questionnaire

Section A: General Information

1. Gender:

   Male ( ) Female ( )

2. How long have you worked in NHC?

   a) Below 1 year ( )
   b) 1-3years ( )
   c) 3-6 years ( )
   d) Over 6 years ( )

3. Which department of NHC do you work for

   a) Procurement ( )
   b) Administration ( )
   c) Finance ( )

4. To what extent is the corporation successful in managing its logistics

   a) Not Successful ( )
   b) Somewhat successful ( )
   c) Successful ( )

d) Very successful ( )

Section B: Logistics integration

5. Please indicate the extent to which you agree with the following statements on the extent to which your organization has been practicing the following logistics practices.

   Scale of 1- not at all, 2- Small extent, 3- Moderate extent, 4-Large extent, 5- Very large extent.

	Transport Management	**1**	**2**	**3**	**4**	**5**
1.	Degree of vehicle scheduling improvement					
2	Achievement of Route optimization					
3	Change in fleet tracking					
	Warehousing Control	**1**	**2**	**3**	**4**	**5**
1	Attainment of Good housekeeping practices					
2	Improvement of proper receipt procedures					
3	Less damage attached to proper storage					
	Logistics I.C.T	**1**	**2**	**3**	**4**	**5**
1	Improvement in interdepartmental visibility					
2	Enhancement of paperless operations at NHC e.g. EDI					
3	Improved information flow at NHC					
4	The use of IT in logistics e.g. E-commerce					

	Facility Location	**1**	**2**	**3**	**4**	**5**
1	Enhancement of client accessibility					
2	Good relations with transporters is maintained by the organization					
3	Productivity has been improved					
	Inventory Management	**1**	**2**	**3**	**4**	**5**
1	Proper flow of inventory enhanced					
2	Efficiency attached to improved handling equipment					
3	Attainment of good inventory turns					
4	Attainment of Proper records and accuracy in inventory					
5	Improvement of inventory quality check e.g. use of inspection					

6. Any other? Please indicate

……

……

……

Section C: Service Quality

7. Please indicate the extent to which you agree with the following statements on the extent to which your organization has achieved service quality.

   Scale of 1- not at all, 2- Small extent, 3- Moderate extent, 4-Large extent, 5- Very large extent.

	Tangibility	**1**	**2**	**3**	**4**	**5**
1.	Corporation aesthetics has improved					
2	The physical appeal of the product and the corporation in general have been achieved					
3	The quality of the construction material has improved					
	Reliability	**1**	**2**	**3**	**4**	**5**
1	Accurate and dependable service performance practices have been achieved by the organization					
2	Proper product handling procedures have been undertaken by staff					
3	Less damage to commodities due to error minimization and on time delivery					
	Responsiveness	**1**	**2**	**3**	**4**	**5**
1	The level of coordination of various departments to meet the needs of the customers has improved					
2	Timely and cost effective ways of meeting customer demands					

3	Positive perception by clients to the organization's performance					
4	The organization utilizes information technology in coordinating its activities with suppliers e.g. E-commerce					
	Assurance	**1**	**2**	**3**	**4**	**5**
1	Clients' level of trust to the organization's ability towards their needs					
2	Good relations and the level of respect accorded to the clients					
3	The competence levels and the attitude conveyed to the clients					
	Empathy	**1**	**2**	**3**	**4**	**5**
1	The enhancement of the employees' abilities to show genuine concerns to the needs of the clients					
2	The approachability of the customer service representatives					
3	Sensitivity and the levels of understanding of the nature of the customer representatives					
4	Proper records and accuracy in customer demands has been improved					

8. Any other crucial issues? Please indicate

……

……

Section D: challenges facing National Housing Corporation in attaining quality logistics standards management

9. To what extent is each of the following challenges experienced in your organization's Logistics department? Use a five point scale, where: 1= Not at all, 2= Small extent, 3= Moderate extent, 4=Large extent, 5= Very large extent.

No.	Statement	1	2	3	4	5
a)	Lack of appropriate technology					
b)	Inefficient strategy					
c)	Lack of top management support					
d)	Inadequate employee skills on quality					
e)	High costs associated with quality					
f)	Government policies					
g)	Lack of clear definition of performance metrics					
h)	Unethical practices					
i)	Employees resistant to change					
j)	Risks associated with Logistics has increased					

k)	Loss of information privacy					
l)	Communication barrier between organization and logistics Service Providers					
m)	Delays in service provision by Logistics Service Providers					

10. Any other challenge? Please indicate

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Thank you for your time and corporation