EFFECTS OF MATERIALS MANAGEMENT ON SERVICE DELIVERY WITHIN BRITISH ARMY TRAINING UNIT, NANYUKI, KENYA

BY

ROBINSON ATEYA

This Dissertation Submitted in Partial Fulfillment of the Requirements for the Award of the Degree of a Master of Development Studies (MDS) from St. Paul's University

September, 2019

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MDS/NKR/2024/18

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STUDENT'S DECLARATION

Declaration

This dissertation is my own original work and to the best of my knowledge, has never been presented for a degree at any other university for examination.

Signature …… Date……..

Robinson Ateya

MDS/NKR/2024/18

Word Count _____

Approval

This dissertation has been submitted for examination with our approval as the University supervisors.

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Dr. David Gichuhi,

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DEDICATION

I dedicate this dissertation to my lovely wife Hellen, my children Kaylah and Kayshon and to my colleagues who have encouraged and supported me through the process of writing this project.

ACKNOWLEDGEMENT

I give God all glory and honor for giving me life and good health enabling me to realize my long desired dream. My special gratitude goes to all my lecturers and in Particular My lead supervisor Dr. Paul Gesimba and his Co-Supervisor Dr. David Gichuhi by not only guiding and supporting me through this process, but influenced my thinking through their demonstrated passion in spirit of professionalism and excellence. To all my peers in the Masters in Development Studies Class of 2018, thank you for your constructive criticism which helped improve this document, it was worthwhile to have those research process discussions. I cannot end this without a special recognition and my cordial appreciation to the BATUK Commander Col. Paul Gilby for allowing me carry out this research in NYATI Barracks. Thank you Sir!

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LIST OF ABBREVIATIONS

BATUK	British Army Training Unit Kenya
JIC	Just-in-Case
JIT	Just-in-Time
MRP	Materials Requirements Planning
NACOSTI	National Commission of Science, Technology, and Innovation
SPSS	Statistical Package for Social Scientists
UK MOD	United Kingdom's Ministry of Defense

ABSTRACT

Effective materials management is potential to achieving organizational development and is at the nucleus of operations in organizations. This study aimed to establish the effects of materials management on service delivery at the British Army Training Unit in Kenya (BATUK). The study specifically sought to assess material requirements planning, inventory control and physical material distribution and how these factors affect service delivery at BATUK. This study was pegged on the human systems dynamics and the institutional theory. A descriptive research design was adopted to analyze the effect of materials management on service delivery. The target population was 535 from which a sample of 229 respondents was used to obtain information. A stratified random sampling technique was used to ensure that there are no biases in the selection of the respondents. The respondents were divided in to two strata; the industrial and non-industrial employees. Data was collected through the use of a questionnaire which contained open and closed ended questions. The validity and reliability of the questionnaire was tested through the use of content validity and Cronbach's Alpha respectively. A pilot study was undertaken at the Kahawa Barracks. The data collected was analyzed through the use of SPSS software. Descriptive statistics enabled the researcher to present data in a meaningful way while inferential statistics helped to deduce meaning to the findings. A regression analysis was conducted to test the hypotheses presented by the study. Presentation of the findings was done through the use of tables and graphs. On the effect of Materials requirement planning, the study found out that even with set procedures for planning, the process for planning materials in the organization is not sufficient since there were experiences of delays which affect the delivery of materials. On the effect of Inventory control, the study found out that forecasting does not help in controlling inventory and therefore the cost of inventory cannot be reduced only through inventory control. On the effect of physical material distribution, the study found out that there is a strong transportation system in the organization however; no regulations had been put in place to select the transportation modes also the study uncovered that the organization has made sufficient investments for warehousing infrastructure. On Service Delivery, the study found out that automation of materials management systems improves the levels of service delivery. Significance of the study variables was determined if the P-Value was < 0.05. The study found out that inventory control has a positive correlation with service delivery ($r= 0.270$; $p= 0.000$). Also, physical material distribution was found to have a positive correlation with service delivery ($r= 0.319$; $p= 0.000$). There was demonstration that a statistically significant relationship exists between physical material distribution and service delivery at BATUK. The study recommended that a similar study should be conducted in other organizations in the public and private sectors in Kenya.

CHAPTER ONE
INTRODUCTION

1.1 Background of Study

British Army Training Unit Kenya (BATUK), is a permanent military training support unit based mainly in Nanyuki – Laikipia County Kenya which is approximately 200 km north of Nairobi and with a small element in Kahawa Barracks. The mission of the organization is to deliver training combined arms light roles and forces in order to support the preparation for readiness and commitment (Ministry of Defence UK, 2015). It consists of 100 permanent staff and another 280 reinforcing short tour personnel. The Kenya-Britain relations dates back to the British –colonial control 1876 during the scramble for Africa. Under the current Defence Cooperation Agreement signed by the two countries in 2017, the Kenyan Government has permitted the British Army to use its land for training. Up to six infantry battalions per year carry out exercises in Kenya. (Ministry of Defence UK 2015)

There are also other units which carryout civil engineering projects and medical deployments which provide primary health care assistance to the civilian community. Lakipia and Samburu Counties are the ideal places where the British Military conduct their trainings as these locations offer the suitable climate conditions and the terrain best for military exercises. The cooperation has necessitated the British Army to offer Kenyan soldiers more training opportunities, both in Britain and with UK forces stationed in BATUK Nanyuki. They also take part in joint exercises with the British Army, who provide support for the country's fight against Al Shabaab, including the deployment of British personnel to Somalia, and are involved in anti-terrorism training for Kenyan police and border guards. British Army troops also help prevent poaching of endangered species such as rhinos and elephants, and are said to contribute £58 million to the Kenyan economy each year more so through employment of locals in both short and long term contracts (Ministry of Defense UK, 2015).

According to Todaro & Smith (2012) development is improving quality of human lives in all aspects affecting individuals, organizations, communities and societies as a whole. Organizational development, as presented by Odor (2018), is a planned process which focuses on improving and maintaining the health of an organization as a total system

through activities performed by managers, employees and helpers of the organization. These activities include materials management among others. Jeruto & Richu (2014) assert that all organizations require materials in order to operate. Veritably, they point out that materials are the heart and lifeblood of any system in an organization which ensures that the organization operates well in delivering its services. This is because materials are among the four basic resources of any business or industrial activity. The other three resources are manpower, equipment and capital.

Sustainable Development Goal 12 focuses on sustained production and consumption which emphasizes on minimized wastage in industries and organizations. When the right proportions of materials and manpower are available in the organization, then the production activity of goods and services becomes efficient. Meeting the needs of the customer while at the same time achieving the organization's objectives requires a continuous production schedule; which is made possible through having the correct material and human resource inventory (Ibegbulem & Okorie, 2015).

During the industrial revolution period, there was an increase of industries being set up which led to the increase of demand for raw materials. This demand eventually led to the scarcity of the raw materials thereby leading to complexities in the production process. There was need to provide raw materials so as to meet the customers' preferences yet the raw materials were scarce. This led to alternative sources being used so as to improve and develop products. This problem led to the introduction of the materials management concept (Mishra, 2009). During this era, the concept was nothing more than a routine to ensure that there was flow of materials in the organization and within the supply chain.

Accelerations in the economic, societal and technological spheres led to evolutions that made materials management become a function that was held as important in organizations around the world. Mishra (2009) states that materials management has evolved from a rule of thumb approach to one that has organized principles, techniques, models and methodologies that are used extensively not only in industries but also in businesses. These global accelerations however have not been the same for all countries therefore, development has also differed.

In Japan, the Just-in-Time (JIT) system is extensively utilized (Vrat, 2014). This system helps in planning of materials being used thereby making materials management easier for organizations in any given industry. Japan's economic, political, and social environments are viewed as relatively stable (OECD, 2012); which makes it easier to predict the demand and supply of goods and services. Japan is driven to improve its materials management as it has a desire to become less reliant on imports. The materials management methodologies and practices used in Japan ensure that there are no wastages and that goods and services are available when they are needed.

Vrat (2014) claims that in India, the importance of materials management is acknowledged in virtually all organizations and businesses but it is not given the importance it deserves. The effectiveness of materials management is in a bad state due to global competitiveness which makes it hard for the Indian organizations to keep up. Competition comes from countries such as Japan and Germany. This difference is practically due to the materials management methodologies that are used. In India, there are uncertainties that are involved in the demand and supply process due to the political, economic and social environments. This leads to the Just-in-Case (JIC) system being used. This system often leads to either excessive inventories or shortages which has a strong impact on the service delivery and overall performance of organizations.

Mishra (2009) suggests that when organizations cannot forecast the demand and supply, then the process of planning the materials that are required for smooth service delivery becomes an uphill task. A JIC system can lead to inventory being held for extended periods in storage areas whereby they can be stolen or even expire depending on the nature of the organization. This wastage has an effect in the running of the departments and the entire organization.

In Nigeria, a study by Ibegbulem & Okorie (2015) showed that organizations fail as a result of failure to understand the role of materials management in enhancing performance of the organization. In Kenya, the concept of materials management, while applied in some organizations, is not a well-established and applied concept in most organizations. Jeruto & Richu (2014) in their study concluded that there is need to

emphasize on the importance of materials management in Kenya as organizations can achieve wastage reductions, cost savings, and improvements in service deliveries.

Materials management, according to Nkechi (2014), is a scientific technique which deals with the flow of materials from the initial purchase point to their destination. This is very useful in management as it helps to get the right supply quality and quantity at the right time and at the right cost. This ensures that the organizations achieve and improve efficiency. In this manner, organizational development is achieved. Vrat (2014) insists that materials management is an encompassing philosophy which maximizes the material productivity that is used in a system so as to ensure that goods and services are delivered as they should.

Materials management integrates the flow of supplies in to and out of any given organization so as to achieve the required and desired service level so as to ensure that materials that are needed are at the right department, at the right time and in the right quantity. This, according to Nkechi (2014), is the primary objective of materials management. Nkechi also adds that materials management has secondary objectives which include product improvement, standardization, forecasting and interdepartmental harmony. Characteristically, materials management involves reciprocal relationships that run throughout the organization.

Materials management provides managers with opportunities to gain support which is achieved through organizational strategies, customer service and organizational development (Arnold et al., 2011). Organizational development is contingent on management and supervision that takes place in the organization (Nkechi, 2014). Managers therefore have to carry out their functions of planning, organization, leading, coordinating, budgeting and controlling in an efficient manner.

Materials management involves the planning, organization and control of material flow from their initial purchase to the point of service through distribution (Arnold et al., 2011). According to Vrat (2014), materials constitute of a high proportion of the total goods and services which can be more than half of the cost of conducting business. This is as a result of its scope which includes purchasing of materials, bought-out components, indirect materials, work in progress and the finished services and goods.

Mishra (2009) suggests that materials management can be viewed from a stand point of material requirement planning, purchasing, and logistics which affect the manner in which services are delivered within the organization and to the customers. Material requirement planning focuses on the materials that are needed, how and when to buy them. Purchasing is the actual process of buying the needed materials while logistics refers to the process of receiving, storing, issuing and transportation of the materials.

Materials management is a function that is found in different organizations. At the British Army Training Unit in Kenya (BATUK), materials management is a function that is found in the organization's system.

1.2 Problem Statement

Materials management in any organization should be of utmost importance in the service or production system. Materials should therefore be made available in the right quality and quantity at the right time and place. When there are shortages in materials, catastrophe ensues in the organization. The process of materials management is interdepartmental in many organizations and hence, material flow should be coordinated and managed in an efficient and effective way into the system, through the system, and out of the system.

Jeruto & Richu (2014) point out that there is a gap in knowledge in organizations and in academics regarding the concept of materials management as exhibited in the limited literature and studies that exist on the concept. This contributes to the lack of proactive engagement in terms of management of materials. Instead, materials management, especially in developing countries has continued to be a reactive function in the organization which has affected the manner in which services are delivered by the organization.

At the British Army Training Unit in Kenya (BATUK), the materials management function is seen as a formality in the organizational system and cannot be compared to other functions such as the financial function which is applied strictly. The organization presupposes materials management to be a function of the purchasing department which is routine in nature. The materials management function is interconnected to the various departments of the organization which warrants smooth operations of the entire

organization. However, the materials management function is bottom-rung, which means that there are hurdles in achieving the service delivery function and ultimately, organizational development is altered. Also, the materials management process at BATUK is set by United Kingdom's Ministry of Defense (UK MOD). UK MOD is quite bureaucratic; making the nature of the materials management system to be inflexible with a red tape approach to the materials management process. This study, therefore, sought to fill in the identified existing knowledge gap through establishing the effects of materials management on service delivery at the British Army Training Unit in Kenya (BATUK).

1.3 Purpose of the Study

The main objective of this study was to determine the effect of materials management on service delivery at the British Army Training Unit in Kenya (BATUK).

1.4 Research Objectives

The specific objectives for the study were:

i. To evaluate the effect of Material Requirements Planning on service delivery at BATUK
ii. To assess the extent to which inventory control affects service delivery at BATUK
iii. To examine the influence of physical material distribution on service delivery at BATUK

1.5 Research Hypotheses

H_{01} There is no significant relationship between Material Requirements Planning and service delivery at BATUK

H_{02}There is no significant relationship between inventory control and service delivery at BATUK

H_{03}There is no significant relationship between physical material distribution and service delivery at BATUK

1.6 Significance of the Study

The study is of importance to the managers in different departments at BATUK who will get to understand the importance of materials management to all departments of the

organization. The study will also help in the formulation of policies in the organization which will ensure that proper materials management is adhered to; thus helping to reduce wastage of resources in the organization. The study hoped to provide recommendations on areas in which improvement can be done on materials management in the organization. Therefore, BATUK can adopt the findings of this research which can actually be implemented in the organization.

The findings of the study will help in increasing the knowledge base that exists on materials management and service delivery literature that is available in Kenya. The study will also serve as a point of reference for other studies that will be conducted in the future on materials management in Kenya.

1.7 Scope of the Study

The study was conducted at the British Army Training Unit headquarters in Kenya. BATUK is a permanent training support unit based in Nanyuki and in Kahawa Barracks Nairobi. The unit has for years been a support unit for training UK Armed forces who are trained among other military roles, to provide humanitarian assistance through projects, primary health care and other needed assistance to the civilian community. The study specifically focused on the departments concerned with the civilian population. The target population for the study was 535 employees. The study was carried out from September 2018 to June 2019.

1.8 Assumptions of the Study

This study assumed that the respondents were aware of materials management and how it functions in the organization so that they could provide the required information from a point of understanding and knowledge. This study also assumed that service delivery is affected by the management of materials in the organization. Finally, it was assumed that BATUK will allow the researcher permission to collect data regardless the fact of it being a restricted military institution.

1.9 Summary of the Chapter

This chapter has discussed the concept of materials management and service delivery through provision of a background focusing on these topical areas. The background of the study has taken shape from the inclusion of perspectives from international, regional and

national views. The problem statements, objectives, hypotheses, significance of the study, scope, and assumptions of the study have also been discussed.

1.10 Definition of operational Terms

Materials Management:	An encompassing philosophy which maximizes the material productivity that is used in a system so as to ensure that goods and services are delivered as they should (Vrat, 2014).
Inventory Control:	Inventory control involves the development of materials requirements plan which helps to plan for production and purchase of items used in the organization (Arnold, Chapman, & Clive, 2011).
Materials Purchasing:	This refers to the process of buying materials required to carry out activities in the organization. Purchases can be done from industries or manufacturing firms (Mishra, 2009).
Service Delivery:	This is the process of providing the required services to the right customer (Sampson, 2010).

CHAPTER TWO
LITERATURE REVIEW

2.1 Overview of the Chapter

This chapter discusses literature that is related to material management in organizations. The literature reviewed provides light in an organized manner on different aspects of materials management and service delivery with focus on books, journals and websites while keeping the focus central to the study variables. The literature that is presented shows the theories that guide the study so as to lay the foundation for the rest of the literature review. Under materials management, different constructs such as materials requirements planning, inventory control and physical material distribution are also discussed. Empirical review focuses on studies done in the past on materials management and service delivery. From the review, gaps are identified which show how the current study will fill in the gaps.

2.2 Theoretical Literature Review

A review of theories will help to clarify and bring to light the theories upon which this study was pegged upon. Vrat (2014) avers that an evaluation of frameworks and models on materials management show that a model that comprehensively concentrates on the area is yet to be attained. However, the whole concept of materials management is an integrated approach. As such, this study adopted the human systems dynamics theory by Eoyang (2010) which provides a framework for envisaging the internal and external environment of the organization as an integrated whole. The theory also indicates the integration of materials management in to a system which relates to organizational development.

This study employed the institutional theory as postulated by Scott (2008). The institutional theory was used because it provides a theoretical lens that assists the researcher to examine organizational procedures in terms of factors that involve management of materials in the provision of services to the end users. This study therefore extended the use of institutional theory to materials management and service delivery.

2.2.1 Human Systems Dynamics Theory

In the 1940s, there was a reaction against scientific approach to studying the natural process details in a separate and independent manner (Potocan, 2013). This led to the development of the systems theory. The theory is an interdisciplinary theory which focuses on every system in nature, society and other scientific domains. As an interdisciplinary theory, the theory is found in disciplines such as biology, physics, sociology, information technology and organizational development. This has therefore led to different systems perspectives such as technological systems, service systems, social systems, and institutional systems (Mele, Pels, & Polese, 2010).

The systems theory as is known today was formulated by Von Bertalanffy in 1968 which was a worldview based on wholeness in various disciplines (Potocan, 2013). Building on the systems theory, Peter Senge propagated the idea of systems dynamics which led to the systems thinking approach (Senge, Hamilton, & Kania, 2015). The systems thinking approach emphasizes on thinking on the organization as a whole and individual departments as active players in the system. They are able to influence complex systems as there is understanding of interconnections to the world. This awareness helps employees in an organization know that their activities and actions are able to create problems.

It is from these foundations of Von Bertalanffy and Peter Senge that advances in the systems theory birthed the human systems dynamics theory by Eoyang (2010). According to Eoyang, organizational development practices have to be embedded on new sciences that include non-linear dynamics and chaos as well as complexities that result in desired service delivery. For this to happen there has to be an intersection of complexity and social sciences in different systems. Vrat (2014) states that a system is an entity which is a whole that operates in a coherent fashion with perceived boundaries which help to distinguish internal and external factors and input and output related to the entity.

The human systems dynamics theory assumes that all human systems at all levels of an organization are complex as well as adaptive. Complexities are brought about by uncertainties in the environment that organizations operate in and to some extent, organizational dynamics affect individual and group behaviors. Departments depend on

one another to ensure that the organization's goals and objectives are met (Eoyang, 2010). From a theoretical perspective and as a subset of the system theory, the human systems dynamics analyze any given phenomenon not as a sum of its parts but as a whole. This enhances the comprehension on functions and outcomes of the entity. System elements are connected in a rational way so as to achieve a shared purpose (Mele et al., 2010). In order to understand the functioning of the entity, the interactions and relationships between parts is significant.

An organization is often described as a system which has interrelated parts such as objectives, elements, structures and environmental pressures (Beckman-Love & Nieger, 2012). When materials management is introduced in any organization, there are changes in that system which help to deal with complex materials flow. The systems theory is seen as an assembly of materials, machines, people and other resources that are necessary for the achievement of tasks in a series of interactions that are integrated. Other than the interrelation element, the systems theory also presents a distinction between closed, isolated and open systems (Mele et al., 2010). A closed system is not involved in any exchanges of information; just exchanges of energy. In an isolated system, elements are not involved in any kind of exchanges. In an open system, information, people, matter, and energy are exchanged with the external environment. The open system organizations reflect on their ability to adapt to changes in the environment. Information is processed and the organization adapts to the contextual conditions that are presented.

Many systems, especially the open systems tend to be complex; some complexities are dissolved through the application of a systems thinking. The application of human systems dynamics theory provides a systems approach which Potocan (2013) posits as a necessary precondition for sustainable development of the humankind. An organization has individuals, groups, teams, and departments that creatively interact so as to generate patterns that are illuminated in the organization's performance, culture and profitability (Eoyang, 2010). In the modern environment, organizations are focused on long term development where the needs and demands of the end customers are met. The organizations seek to achieve sustainable development.

Potocan (2013) insists that material management in the organization enables the improvement of work. Purchasing operations and physical material distribution have an important role to play in business. The holistic understanding of materials management relates to synergetic working and interdependence of how organizations work in reality and the practices that they undertake. There are different kinds of dynamics that come in to play in materials management. However, a lack of systems thinking in materials management can lead to functional managers seeing the same materials in different ways which reflect achievement of objectives that represent narrow subsystems.

This study perceives that different functional managers working in the same organization achieve cross purposes in terms of decisions made towards materials in the organization. For instance, the purchase department is interested in lowest possible prices while the quality control department is focused on good quality regardless of the price (Vrat, 2014). A systems approach however calls for coordinated action in view of planning and controlling materials as they flow into the systems of service or production. A systems approach also looks at the relevant costs in the total system; whether the costs are visible or hidden, and how these costs can be invested in parts, components and materials. All these dynamics come together so as to achieve value.

Furthermore, Vrat (2014) suggests that a systems approach to materials management should consider different dynamics and integrate aspects such as purchase systems, inventory control, physical material distribution and transportation. Which in the case for this study, the different dynamics would help to understand materials management. There is also need to consider the Just in Time (JIT) and Just in Case (JIC) models. The JIT model focuses on provision of services and products with reduced lead time and response time. The JIC model focuses on having inventory in bulk so that they do not go out of stock. These two models are opposites of each other and organizations should know how to strike a balance in the integrated system (Vrat, 2014).

2.2.2 Institutional Theory

The history of the institutional theory dates back to the mid-nineteenth Century and is a theory that amalgamates various ideologies from social science scholars such as Max Weber (Sarhan, Pasquire, King, & Manu, 2018). At first, institutionalization saw

individuals as rooted in habit and controlled by culture organized in customs and societies. Control over institutions led to a lack of clarity and hampered management. Developments in the theory led to the concentration to processes and structures (Scott, 2008).

In consensus, De Corte, Roose, Bradt, & Roets (2018) argue that the process of institutionalization can hamper service delivery for individuals. Traditionally, institutional theory was concerned with the means in which organizations and groups in those organizations secured their positions through conformity to rules such as laws, professions and governmental agencies, and norms of the institutional environment. Institutional theory proposes that actions undertaken by an organization are driven by organizational actors' desire to provide an account of their actions and how these actions satisfy the needs of the stakeholders.

The institutional theory asserts that external pressures that can be political, social, and economic influence the strategies adopted by an organization as well as the decisions made. Organizations seek to undertake practices that are legitimate in consideration of other stakeholders (Glover, Champion, Daniels, & Dainty, 2014). Legitimacy in this study refers to the undertaking of practices in materials management that deliver services that are satisfactory to the end users of the goods and services. Legitimacy is defined by specific organizations. So, the organization is able to identify issues and come up with solutions that are in line with the objectives of the organization. This dictates what acceptable behavior is as well as how decisions are made while considering the organizational stakeholders.

The institutional theory highlights that norms, values, and beliefs are important in explaining the behavior and choices undertaken by organizations and other related actors (Koech, 2016). This theory therefore helps to understand contextual and cultural meanings in institutions. A view is obtained on the position of multiple active constituents in the organization. The constituents interact regularly, exchange information and to some extent are dependent on each other. In order for an organization to survive in an institutional environment, it should deliver good services and products that appear to legitimately conform to the institutional environment. (De Corte et al., 2018). This is

mostly found in organizations that provide services that are considered as ‘soft’ such as education, health or welfare provision whereby measurement of the outcomes is relatively difficult.

Institutions provide a degree of stability and continuity in organizational processes; this explains why individuals have to be fitted in to programs and categories that are already entrenched in the organizations (De Corte et al., 2018). Glover et al. (2014) insist the institutional theory can be used to explain how different organizational strategies can lead to organizational performance and therefore achieving service delivery. For this study, the institutional theory pointed out as to whether materials management has an effect on service delivery.

Materials management involves systems and practices that are regarded as institutions that are created within the organization to establish what the rules of the ‘game’ are. This is mainly to regulate the interaction between the departments that are involved in the organization. Among the pillars of institutional theory is the routine work that is undertaken in the organization. This includes protocols and standard operating procedures which direct how jobs and roles are done (Sarhan et al., 2018). The function of institutions is emphasized though systems of rules and also the relationship with the society so as to produce the required services. The current study posited that service delivery in institutions is ensured through the management of materials in the organization.

2.3 Materials Management

It is difficult for organizations to operate without any material input. To a great extent, the efficiency of any production and service activity depends on the materials and manpower that is available for the activities. Ibegbulem & Okorie (2015) state that materials management is a business activity aspect concerned with planning for purchasing, receiving, handling, storing and releasing materials to be used in production. This shows that purchasing, inventory management and understanding logistics are the main constituents of materials management. In order to achieve effective materials management, Arnold et al. (2011) aver that there have to be tradeoffs between the level of customer service and cost of service provision. As costs rise, service levels also rise

and materials management must play a balancing act so as to minimize costs and maximize service.

Vrat (2014) insists that materials management is a corporate responsibility which is equally shared by interrelated functional departments such as production, sales, accounts, logistics, quality control, purchase and stores. As many organizations lack a specific materials department, integration of department activities in terms of materials management becomes even more important to ensure smooth operation of the organization. Materials management is important for organizational development as it takes on a systems approach whereby all departments are involved in the materials management process. For instance, the finance department is concerned with purchases, the manufacturing department is concerned with production, and the stores department is concerned with inventory control.

Kuloba (2016) suggests that materials management takes up a total systems approach from managing flow of information in its entirety, materials and services through to factories and warehouses to the end users and customers. Effective management of materials determines the type of service delivered which in the end is reflected on the success or failure of the organization. Materials management leads to the maximization of the use of the resources in the organization through ensuring that materials for production are adequately supplied and minimizing costs. Optimal performance is also achieved through materials management which meets the requirements of customers as well as increases the output levels.

Material management ensures that there is coordination between different departments in the organization such as purchase, marketing and finance departments which increase the efficiency of the entire organization (Emeka, 2014). There are immense benefits of material management and its objective is mainly to ensure that there is uninterrupted supply of raw materials which is regular so as to maintain a high inventory turnover (Jeruto & Richu, 2014). Effective materials management also provides economy in purchasing and minimizing waste and costs of acquisition. This ensures that excessive investment in stocks is avoided. Work cannot be stopped because of lack of materials and productivity is immeasurably improved.

Mishra (2009) notes that for coordination to be effective between departments there is need for critical decisions to be made at different stages of materials management. In this respect, communication becomes essential among all employees in different teams which help to avoid conflicts and uphold good decisions for materials flow. Conflicts emerge from conflicting objectives for different teams and departments. For instance, the purchase department has the duty of constantly and regularly supplying materials and this can conflict with the inventory department which has the duty of minimizing inventory levels.

The lack of adequate planning for material resources leads to failed or crippled organizations as there is lack of coordination of how materials move from one department to another which enhances use of resources in an ideal way and minimizes costs. Mishra (2009) insists that organizations should always remember that there is an interrelation between activities such as planning, ordering, checking deliveries, purchasing, controlling use of materials, and warehousing. When this interrelation is ignored, then the organization cannot be successful in delivering goods and services.

2.3.1 Materials Requirements Planning

Material Requirements Planning (MRP) is a process that ensures that in all operations, materials are available whenever they are needed (Simon, Gwaya, & Diang'a, 2017). There are four main resources that are needed for the operation of organizations and they include manpower, equipment, capital and materials. This study focuses on material resources and how these resources can be planned to ensure smooth operations between departments in the organization. Material requirements planning can be used to procure the needed materials so as to ensure that they are available even in the future. This means that services are provided on time especially when proper planning is in place. Kim (2014) cites that MRP helps in predictability so that the organization purchases only what it needs so as to meet the expectations the customers or users. MRP helps to meet delivering deadlines through coordination of inventories, procurement and production decisions.

The process of MRP enables materials to be tracked throughout the entire organization which helps in purchasing and controlling the materials of the right quality, quantity to be

delivered at the right time. The concept of material purchasing is the least understood in many business processes (Kuloba, 2016). Purchasing deals with material acquisition to be utilized in the operations of the organization. In other words, it is the process of buying which is not limited only to the purchasing department but all departments in the organization. The aim is to acquire the materials at the lowest possible costs while still considering the quality requirements. The process of purchasing materials if not carefully considered can affect the quality of products produced which devastates the service delivery process.

In any organization, the planning process is central to the service delivery system and endorses objectives that are deemed to be secondary to the achievement of primary objectives of the organization (Arnold et al., 2011). In the material planning process, three broad categories are considered and they are quantity, price and function. The demand by end users determines the quantity that is needed. It factors in the product design and specifications. The more the demand the higher the production of items; which takes advantage of economies of scale. An economic value has to be placed on the product or service that is delivered. Functional aspects focus on the end use of the item and the expectations of the item use. Arnold et al. (2011) contend that in the service industry, the functional category focuses on the quality of the service. Quality is achieved when the end users' needs are met and satisfied.

Negotiations are also significant in the purchasing process. Organizations have to negotiate for the right terms of purchase such as right product at the right time. Along with purchasing, activities such as inventory control and physical material distribution which includes warehousing and transportation are important for service delivery of organizations (Mishra, 2009).

Effective material requirements planning processes ensure that there is transparent and corruption free process that uses good practices. Acquisition of products and services require the right management, in the right amount at the right form at the right time and from the right source with the right price. The planning process is important as the organization's output may be limited by the quality of materials that are purchased (Arnold et al., 2011).

Ngunyi (2014) observed that when organizations have good and efficient purchasing processes, there is a decrease in material inventories, better customer service, diminished costs and an increased level of output. MRP should therefore be done carefully. This, in a long term perspective means that the service delivery is high and customer satisfaction is achieved. In order to achieve organizational development, the material requirement planning process can be divided in to the strategic and operational processes. Further, Ngunyi notes that many organizations continue to ensure effective procurement processes since they assist in shorter product development cycle which in itself satisfies end customers.

The Material Requirements Planning involves a strategy that helps the organization understand and actually achieve requirements necessary for smooth operations to take place (Dede, 2018). This provides a map for developing short term as well as long term objectives for purchasing materials. A clearly defined strategy helps to significantly ensure that quality and quantity of materials procured achieve objectives of the organization.

2.3.2 Inventory Control

Inventory, according to Orumie (2015) is a physical stock of goods required by organizations to ensure smooth running of the business. It refers to quantity of goods and other resources that are important in the organization and are idle at any given time. To ensure that organizational development is achieved, inventory control should be a primary focus in the organization (Orumie, 2015). Without proper inventory control measures, there is wastage of time and resources. Inventory control involves planning, ordering and tracking.

According to Tundura & Wanyoike (2016), the concept of inventory control is not new and can be traced to the 19th Century when manufacturing firms produced bulk inventory items so as to provide a compromise between materials requirements and inventory costs. This brings about two main schools of thought on inventory. There is the school of thought that believes that inventory is inevitable since customers have to get the inventory when they need it and the benefits outweigh costs incurred in carrying them.

The second school of thought insists that production evils come from inventory as the inventory levels hide certain inefficiencies in production.

Controlling inventory formulates the business' future in terms of success and failure which fosters inventory management performance (Mahyadin, Mahidin, Asaad, & Zien, 2013). Proper inventory control leads to avoidance of wastages in the organization. This brings about cost efficiency in the organization and helps the organization to arrange item availability. Orders are fulfilled through good inventory control. Material managers should focus on areas of purchasing and inventory control. A good inventory control process also ensures that customer demands are met through lowest possible costs at a minimum investment.

According to Prempeh (2015), inventory control is among the most important assets possessed by any given organization since inventory turnover is a representation of primary sources of revenue generation and earnings that are subsequent in the organization. For instance, nearly 60% to 70% of total funds in manufacturing companies are tied up in current assets which also include inventory. Inventory has an economic value which should be well managed through availing the tight inventories at the right time in the right quantity. Also, Tundura & Wanyoike (2016) Service Corps of Retired Executives note that inventory management accounts for 45% to 90% of organizations' total expenses.

There are different types of organizational inventories which range from raw materials, assemblies, semi processed materials, finished products and other consumables. Each inventory undertaken depends on the nature of organization (Christopher, 2016). In service organizations, a high percentage of inventories consist of consumables, raw and semi processed inputs. The inventories ensure organizational processes continue to achieve organizational development. Inventory control leads to a sustained performance of the organization which helps to meet the demands of the customers.

Inventory control involves the development of materials requirements plan which helps to plan for production and purchase of items used in the organization (Arnold et al., 2011). In controlling inventory, the materials requirement planning helps to establish when items are needed and by which department and how they can be made available at

the right time. Detailed decisions have to be made so as to keep the flow of materials moving in and out of the organization.

To ensure inventory control, different measures can be introduced to prevent organizations from experiencing losses that are unnecessarily made by different departments (Orumie, 2015). These measures can include stock planning and inventory turnover which helps to keep account of stock in the organization. Proper supervision should be undertaken not only to avoid wastage but also to avoid theft of materials by employees.

2.3.3 Physical Material Distribution

Physical material distribution refers to the management of the factors that affect how materials flow from the perspective of customers so as to achieve high delivery reliability, completeness and short delivery time (Vrat, 2014). This includes movement that surrounds the planning, implementation, and controlling the flow and storage of goods as finished goods so as to meet the requirements of customers (Zaha, 2017).

Under physical distribution, there is need to understand the channels of distribution. Arnold et al. (2011) contend that the transaction and distribution channels are the two main related channels in physical distribution. Transaction channel involves negotiation, selling and contracting which mainly occurs in offices such as the sales offices or with the retailers. The distribution channel involves delivering services and goods to the end users which includes warehousing and local deliveries. Mukolwe & Wanyoike (2015) opine that physical material distribution is a whole process that is concerned with materials management through an intense process until goods and services are delivered to the ultimate consumer. The goals of physical material distribution include customer satisfaction, ensuring cost efficiency and enhanced output levels. The goals lead to improved service delivery.

System dynamics are often applied to physical material distribution which supports management throughout the life of a system so as to ensure efficient utilization of resources. Physical material distribution ensures that materials are planned for, implemented and controlled so as to achieve efficient material flow so as to meet required service delivery (Tshamaano, 2012). In the distribution of materials, transportation is

important so as to ensure goods move from one origin to the desired destination. The system in the physical material distribution is made possible when goods are transported creating time and place utilities (Arnold et al., 2011).

Flow of materials involves transportation whereby goods are moved from one place to another. Inventory has to be stored which mostly happens in warehouses. Warehouse management decides on how materials will be received, stored and retrieved. Warehouses help to improve service delivery as they provide place utility which places goods close to end users (Arnold et al., 2011). In the warehouses, the organization has to decide how materials will be handled in their movement. Materials should be handled with care so as to ensure that they preserve the quantity that should be delivered to the end users.

2.3.4 Service Delivery

The main aim of service delivery is to meet the expectations of customers. A company will therefore endeavor to satisfy customers with the goods and services it provides. Services to organization should be delivered at the required speed which determines if service delivery is good or bad (PWC, 2011). When delivery is delayed, the service delivery is also poor; and when the delivery of services is fast, then service delivery is satisfactory.

Effective delivery focuses on control and management of uncertainty that may occur in the flow of materials. It is therefore necessary for managers to develop the best strategy to ensure that services are delivered in a manner that results in customer satisfaction. Customer satisfaction measures the extent to which customer expectations have been met in terms of goods and service provision (Ghoumrassi & Țigu, 2017). As an abstract concept, customer satisfaction centers on the quality and price of goods and services which leads to desired service delivery.

In order to improve service delivery, it is important for the service providers to ensure that they have capacity, skills and knowledge to achieve set objectives (Tshamaano, 2012). This is supported by Ghoumrassi & Țigu (2017) who cite that skills and knowledge are probably the most important aspects in ensuring that efficient and effective service delivery.

2.4 Empirical Review

In Nigeria, a study by Emeka (2014) examined the impact of material management at Nigeria Brewaries and Guiness Nigeria PLCs. Effective materials management was found to be requisite to the firms. Mahyadin et al. (2013) conducted a study on inventory management on the healthcare system in Malaysia. The correlational study sought to understand the relationship between inventory management practices which lead to organizational performance and development. Also, Akindipe (2014) conducted an experiment on inventory management and its effect on production operations. The findings showed that efficient inventory management is achieved though inventory level determination, commitment of store personnel who are skilled, and used of automated inventory control.

In her study, Orumie (2015) sought to understand the effect of inventory control on a business organization in Nigeria. The research instrument used was a questionnaire which was used to gather data from 80 respondents. The study revealed that inventory control has a statistically significant effect on organizations. Similarly, in Ghana, a cross sectional study by Prempeh (2015) collected data from 2004 to 2014 from different firms listed in stock exchange. A multiple regressions model using ordinary least squares showed that there were positive impacts on inventory control and the level of output of organizations.

A study by Ghoumrassi & Țigu (2017) was conducted on industrial companies in Algeria so as to understand logistics management and customer satisfaction. The study showed that distribution activities should be considered so as to achieve the required output level and customer satisfaction. Skills and knowledge of employees is also seen as important in ensuring that management of materials leads to improved service delivery.

In Kenya, Jeruto & Richu (2014) sought to understand the role of material management on the performance of the New Kenya Cooperative Creameries Limited. Through descriptive statistics, the study results revealed that the involvement of inventory control systems increased the performance of the organization. Similarly, Ngunyi (2014) conducted a study on procurement practices in parastatals in Kenya. The study found out that a purchasing process that is effective improves firm-customer relationship as the

services provided are of superior quality. Therefore, the procurement process should be carefully undertaken so as to achieve customer satisfaction.

Procurement practices should lead to good relationships with customers. Delivering of services is dependent on material procurement process which accrues direct benefits to the bottom line of organizations. At Cadburys Kenya, Kilonzo (2014) conducted a study to determine the extent to which purchasing processes affect organizational performance. The study found out that purchasing decisions should be done with a view of ensuring that organizational development is achieved.

A study by Dede (2018) set out to determine the effect of sourcing practices in state corporations in Kenya focusing on the Kenya Bureau of Standards. An inverse relationship was found to exist between sourcing and performance of the procurement department. Proper material management left many grey areas between theory and practice which ultimately affects the service delivery of different levels of the organization, user departments and the whole organization. Additionally, a study on inventory control strategies in Kenya Power company limited by Tundura & Wanyoike (2016) conducted a census on all the employees. The descriptive survey study concluded that inventory control practices have significant positive influence on the organization.

Similarly, Kirui (2017) conducted a study on sixteen shipping firms that operate in Mombasa County with the aim of understanding how warehousing, transportation and inventory management affect organizational performance. The study established that the effective use of warehousing, transportation and inventory management had a positive impact on the performance of the organizations. At the Mumias Sugar Company Limited in Kenya, Mukolwe & Wanyoike (2015) conducted a study to assess the effect of warehousing and transport management on the efficiency of operations in the organization. The study showed that physical material distribution practices allow flow of goods and raw materials that is fast and cost effective thereby affecting positively the service delivery and operational efficiency of the organization. The study insisted that employee training to provide skills and knowledge is important to ensure that proper services are provided to the end users. Effective flow of information was also found to improve the internal and external processes of the organization.

2.5 Conceptual Framework

A conceptual framework is provided in this study to provide contextual distinctions, ideas and overall picture of the study. The aim of this study was to understand the effects of materials management on service delivery at BATUK.As indicated in Figure 2.1, the study had materials management as the independent variable and service delivery as the dependent variable. There were also intervening variables which moderate the relationship between the independent and dependent variables.

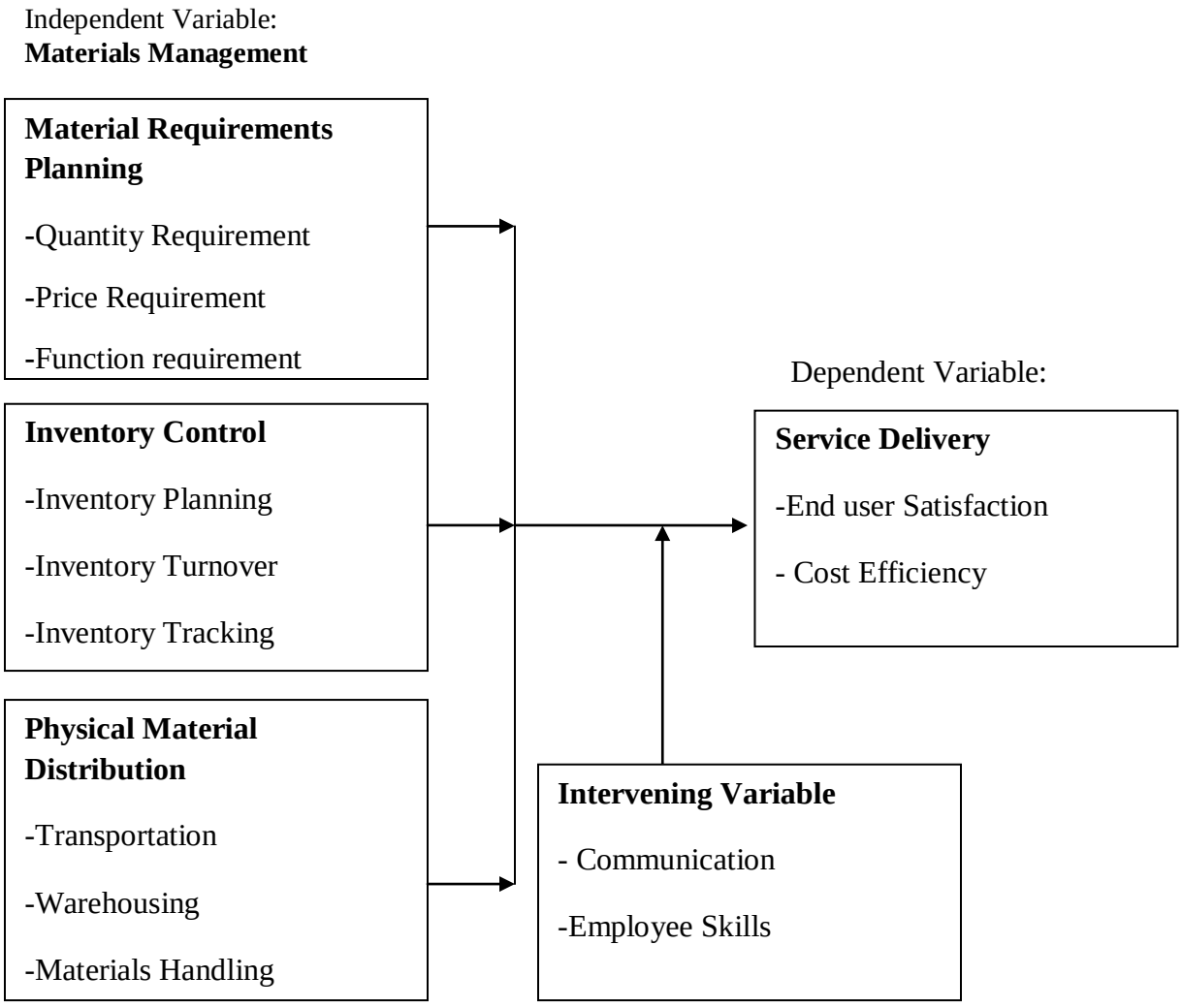


Figure 2.1: Effects of Materials Management on Service Delivery

(Source: Researcher)

Materials management which was the independent variable is comprised of Materials Requirement Planning, inventory control, and physical material distribution. The MRP was comprised of quantity, price, and function; inventory control was comprised of inventory planning, turnover and tracking; and finally the physical material distribution was comprised of transportation, warehousing and materials handling. On the other hand, service delivery as the dependent variable was comprised of end user satisfaction and cost efficiency. The intervening variables were communication and employee skill.

2.6 Gaps in Literature Review

The literature that has been reviewed for this study has shown that over the years, the concept of materials management has not received much attention in academia. The studies that have been conducted have presented different gaps. Mahyadin et al. (2013) studied inventory management practices on the healthcare system. The major gap in this study is that it focused on a wide range of inventory management practices additionally; there was a contextual gap as the study focused on Malaysia.

In Algeria, Ghoumrassi & Țigu (2017) conducted a study on logistics management and customer satisfaction. The study used qualitative data only which did not provide numerical evidence and facts to support relationship between study variables. The focus on Algeria also provides a contextual gap. Similarly, the study by Orumie (2015) focused on inventory control on business organizations. Attention was paid on organizations in Nigeria which also presented contextual gaps.

Emeka (2014) conducted a study on the impact of material management at Nigeria Brewaries and Guiness Nigeria PLCs. The study sought to understanding the profitability of the organizations which is very limiting in understanding the concept of material management especially as pertains to service delivery.

In Kenya, Jeruto & Richu (2014) studied the role of material management on the performance of the New Kenya Cooperative Creameries Limited. The limitation was the focus on a dairy company. A study on the effect of sourcing practices at the Kenya Bureau of Standards by Dede (2018) focused on a state corporation and on sourcing practices and procurement performance. Also, Ngunyi (2014) studied procurement in parastatals in Kenya the study however concentrated on the early stages of procurement

implementations and this is limiting in understanding material management until the time services are delivered to the customers. Finally, Tundura & Wanyoike (2016) studied inventory control strategies at Kenya Power Company limited. The study did not explore the implementation of inventory control practices in enhancing operational performance and service delivery of organizations.

These gaps on the reviewed literature majorly exhibit that there is a limitation on the studies done as none of the studies focused on security related firms such as BATUK. Therefore, the gaps identified in the literature review are mainly contextual. This study therefore sought to fill these gaps so as to establish the effects of materials management on service delivery at the British Army Training Unit in Kenya (BATUK).

2.7 Summary of Chapter

The literature concerning materials management and service delivery has been meticulously discussed in this chapter. The evaluation of the literature has revealed that there is a myriad of literature on materials management which has helped to steer the direction for this study in the direction of organizational development. A number of gaps have been identified mainly because there are limited studies focusing on the convergence of materials management and service delivery. From this point, the literature review has also revealed that contextual gaps exist in terms of previous studies that have been conducted.

CHAPTER THREE
RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes the procedure used to conduct the research. This includes how the data will be collected, the sample to be used and how the information is interpreted using the research design, target population, sampling, data collection instruments and procedures, data analysis and presentation.

3.1 Research Design

This study adopted a descriptive research design so as to examine the effects of material management on service delivery at the British Army Training Unit in Kenya. This research design helped to establish things just as they are and also to determine the current nature of the phenomenon that is being studied (Blumberg, Cooper, & Schindler, 2011). Descriptive research design was also chosen as it is a design that asks questions about the nature, incidence, or distribution of variables. It involved describing the situation without manipulating the variables. Research design is a framework of specifying the relationship among the study variables and it starts with a plan for selecting the sources and type of information used to answer the research questions (Blumberg, Cooper,& Schindler, 2011).

3.2 Target Population

The target population for this study was all the 535 employees working in the twenty departments at BATUK headquarters which are concerned with the civilian population as demonstrated in Appendix A. This population was chosen as it is vital in understanding material management and service delivery at BATUK. The target population had an understanding on service delivery as well as how materials in the organization are managed.

3.3 Sample Size and Sampling Procedure

3.3.1 Sample Size Determination

A sample is derived from the target population which in turn also derives inferences on a population (Creswell & Clark, 2011). A sample includes the unit number of observation

from where information is to be collected from. In this study, the unit of analysis was the employees of BATUK concerned with the civilian population.

A number of formulas have been proposed to determine the sample size, but this study uses Yamane (1967) formula.

$n = N/1+Ne^2$

Where, n = Sample size

N = Size of population

E = Marginal error of 5%

$535/1+535(0.05^2) = 229$

Through the use of Yamane's formula sample size, which includes a 5% sample size error and a 95% confidence coefficient, the sample size was 229 employees.

3.3.2 Sampling Procedure

A stratified random sampling was then chosen to sample members who formed the sampling frame. To achieve this, the sample members were divided in to two main strata that are industrial and non-industrial; in which each stratum consisted of a homogenous population. The two strata were chosen for this study due to the structure of BATUK operations in the civilian departments which have been divided in to either industrial or non-industrial operations. A simple random sample was then taken from each of the stratums. A proportionate stratification was utilized to ensure that the sample size achieved for each stratum was proportionate to the stratum's population size. The formula used to achieve this was: Sample size/population size*stratum size. The proportionate distribution of the respondents according to the two main strata is presented in Table 3.1 below. The Table indicates that the sample size for the industrial stratum was 203 while that of the non-industrial stratum was 26.

Table 3.1: Distribution of Respondents According to Strata

Employee category	Industrial	Non-industrial	Total
Number of people in Stratum	475	60	**535**
Strata Sample Size	229/535*475 =203	229/535*60 =26	**229**

3.4 Data Collection Instruments and Procedure

This study used a questionnaire as the tool of data collection. The questionnaire contained open and closed ended questions. When constructed in a manner that is clear and concise, then the questionnaire is the most effective instrument to use (Blumberg et al., 2011). To ensure that the questionnaire was fit to be used in this study, in that, it would measure what it was intended to measure, validity and reliability were tested.

3.4.1 Validity of the Research Instrument

Content validity was used where experts studied and analyzed the instrument. The experts in this study were the researcher's university supervisors. Based on the suggestions of the experts, the questionnaire was revised accordingly to ensure that they would meet the objectives of the study. Blumberg et al. (2011) note that validity is the degree to which an instrument measures what it is meant to.

3.4.2 Reliability of the Research Instrument

In this study, the questionnaire's reliability was measured though the use of Cronbach's Alpha coefficient. In order to conduct this test, pretesting was conducted on employees who did not take place in the final study.. This study used the employees Kahawa Barracks so as not to contaminate the data. The respondents in the pretesting were selected randomly from the civilian population representing different departments Items on the questionnaire with similar attributes were entered in to the Statistical Package for Social Scientists (SPSS) software and the coefficient value was then computed and found to be 0.842. Consistency was determined through the coefficient value that was attained and the questionnaire was found to be reliable. When the value is more than 0.9 or less than 0.7, then the consistency is not accepted. Reliability of an instrument reflects its

stability and consistency within a given context. It is the consistency of measurement over time, whether it provides the same results on repeated trials (Creswell & Clark, 2011).

3.4.3 Data Collection Procedure

Data collection began after an introduction letter from St. Paul's University was presented for gaining a permit from NACOSTI. After the permit was provided by NACOSTI it was presented to the BATUK administration. After a go ahead was given, the researcher presented the objectives of the study and the process of data collection. The respondents were asked if they would be willing to participate in the study. When they agreed, the researcher then provided the questionnaires to the selected respondents. A drop and pick method was used whereby the researcher gave the respondents the questionnaire so that they could answer the questions and given an ample time of one week. This also ensured that the respondents reflected on the answers they provided. The researcher then picked the questionnaires and readied them for analysis.

3.5 Data Analysis and Presentation

Data used for this study was quantitative in nature. Questionnaires filled by the respondents were edited for completeness and consistency. The data was then checked for coding errors and omissions. The coded data was processed using Statistical Package for Social Science (SPSS Version 24.0) and analyzed using descriptive statistics such as frequencies and percentages. The results were presented in tables and charts. Inferential statistics was also conducted so as to establish the extent to which the study variables affect the dependent variable; here, a correlation analysis and regression model were used.

3.5.1 Regression Model

To capture the relationship between the study variables, a multiple linear model with the following requirement was used;

$Y= \beta_0 +\beta_1 x_1+ \beta_2 x_2 + \beta_3 x_3+ \varepsilon$

Where;

Y is the dependent variable which is service delivery

while the independent variables are;

X1= Material requirement planning,

X2= Inventory Control,

X3= Physical material distribution

E is an error term that is expected to have constant variance and a mean of zero, it is white noise.

In order to assess the statistical significance of the independent variables, the P-values was assessed in which significance was determined if the p-value was less than 0.05.

3.6 Ethical Considerations

The researcher obtained a permit letter from NACOSTI allowing the researcher to conduct the study at BATUK. This was essential in ensuring that the study was conducted in an ethical and transparent manner. Thereafter, the researcher ensured that consent to conduct the study was given by both the organization and the respondents. The consent was important especially when provided voluntarily to ensure that the respondents were not coerced in to participating in the study. With the consideration of the sensitive nature of the organization in terms of security, the researcher ensured that all information provided was handled with confidentiality as well as anonymity. The researcher assured the organization that the information provided was for academic purposes only and utmost discretion was upheld.

3.7 Summary of Chapter

This chapter has presented the methodology that will be used in order to conduct the study. A descriptive research design was chosen for the target population which was the civilian population working at BATUK. A sample size as well as sampling procedure is presented. The main data collection instrument was a questionnaire whose validity and reliability was determined to ensure that the study's objectives were met. Data analysis procedures are discussed in this chapter. Ethical considerations and how they were applied for this study are also discussed.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND INTERPRETATIONS

4.1 Introduction

This chapter presents the analysis of data, findings, and interpretation of results. The data was gathered entirely through a structured questionnaire which was given to the employees at the British Army Training Unit in Kenya (BATUK) concerned with the civilian population. The aim of this study was to understand the effects of materials management on service delivery at BATUK. The chapter details the background information of the respondents and the descriptive and inferential analysis of the data collected and analyzed.

4.2 Response Rate

The researcher gave out 229 questionnaires and 190 questionnaires were returned. However, during the cleaning and coding of data, it was discovered that three of the questionnaires were not duly completed.

Table 4.1: Response Rate

Category	Frequency	Per cent
Fully filled and returned	187	81.6
Incomplete or unreturned	42	18.4
Total	**229**	**100.0**

As indicated in Table 4.1, only 187 questionnaires were used for this study, contributing to 81.6% response rate. Mugenda & Mugenda (2012) asserts that a response rate of at least 50% is ideal to make generalizations for a study. With a response rate of 81.6%, this study was deemed to be ideal to make generalizations

4.3 Background Information of Respondents

The background information is illustrated in terms of gender, level of education, and years in the organization.

4.3.1 Distribution of Respondents by Gender

The results on the gender of respondents were analyzed and presented in Table 4.2.

Table 4.2: Distribution of Respondents by Gender

Gender	Frequency	Per cent
Male	122	65.2
Female	65	34.8
Total	**187**	**100.0**

As indicated in Table 4.2 shows that 65.2% of the respondents were male and 34.8% of the respondents were female. This is a show of the existence of gender disparity in the distribution of respondents. This is important for this study as it shows that the responses provided consider gender perspectives and do not lean towards any particular gender. This provides a different array of perspectives towards management of materials and service delivery at BATUK.

4.3.2 Distribution of Respondents by Academic Qualifications

The results on the highest level of education that the respondents had completed are indicated in Table 4.3.

Table 4.3: Distribution of Respondents by Academic Qualifications

Level of Education	Frequency	Per cent
College Certificate	64	34.2
Diploma	71	38.0
Undergraduate	52	27.8
Total	**187**	**100.0**

As recorded in Table 4.3, 34.2% of the respondents had attained college certificates, 38% had attained diplomas, and 27.8% had attained undergraduate degrees. This level of education is an indication that the respondents were literate to be able to understand and provide responses as required for the study.

4.3.3 Distribution of Respondents by Years worked in the Organization

The number of years that the respondents had worked in the organization is recorded in Table 4.4.

Table 4.4: Distribution of Respondents by Years worked in the Organization

Number of Years	Frequency	Per cent
1-6	151	80.7
7-12	32	17.1
13-18	2	1.1
>18	2	1.1
Total	**187**	**100.0**

The results on Table 4.4 show that 80.7% of the respondents had worked in the organization for 1-6 years, 17.1% for 7-12 years, 1.1% for 13-18 years, and 1.1% had worked in the organization for more than 18 years. These findings mean that majority of the respondents had worked in the organization for over five years and are conversant with the operations of the organization. Therefore, the respondents have a good understanding of materials management and service delivery in the organization.

4.4 Effect of Material Requirements Planning on Service Delivery at BATUK

Based on the first research objective, the study sought to assess the effect of Material Requirements Planning on service delivery at BATUK. Their responses are recorded in Table 4.5.

Table 4.5: Material Requirement Planning

Question	Yes	No	N
In your opinion, is the process for planning materials in the organization sufficient?	36.9%	63.1%	100%
Does the organization plan for the quantity of goods that it requires?	40.1%	59.9%	100%
Does the price of goods and services determine the quantity to be purchased?	38.5%	61.5%	100%
Does the price of goods and services determine the quality to be purchased?	34.2%	65.8%	100%
Does the demand by end users determine the quantity that is needed?	54.0%	46.0%	100%
Does the quality of materials purchased determine the output of the organization?	42.2%	57.8%	100%
In your opinion, is quality achieved when the end users' needs are met and satisfied?	42.8%	57.2%	100%

To begin with, respondents were asked whether the process for planning materials in the organization is sufficient, 36.9% of the respondents agree that the planning process for planning materials in the organization is sufficient. This was because there are set guidelines and procedures which guide the process of planning. On the other hand, 63.1% of the respondents did not agree that the planning process for planning materials in the organization is sufficient. One of the respondents indicated;

> *'At BATUK, the process for planning materials in good and it is indeed sufficient. There are set guidelines and procedures that guide the entire planning process. These procedures and guidelines are however not clear and I believe that they are not well communicated to all the employees. This explains why there are delays experienced in the delivery of materials so even with procedures to guide the planning process, delays make the process insufficient.'* (Research data, Respondent 15, 2019)

These findings are in line with Zaha (2017) who asserts that when materials are not properly planned for, then there are failures that are experienced in ordering them on time

which causes delays in execution of work. In the end, materials are delayed in getting to right department at the right time and in the right quantity. Additionally, Nkechi (2014) points out that when there are delays, the production process of the organization is slowed down which disrupts interdepartmental harmony. The lack of team work affects organizational development.

Asked on whether the organization plans for the quantity of goods that it requires, 59.9% of the respondents said that the organization does not plan for the quantity of goods that it requires while 40.1% were of the contrary opinion. The study also sought to understand whether the price of goods and services determine the quantity to be purchased, 61.5% of the respondents did not agree that the price of goods and services determines the quantity to be purchased while 38.5% of the respondents agreed that the price of goods and services determine the quantity of materials to be purchased.

Moreover, asked on whether the price of goods and services determines the quality of materials to be purchased, 65.8% of the respondents said no while 34.2% said yes. The study also wanted to find out whether the demand by end users determines the quantity of goods and services that are needed, 54.0% of the respondents agreed while 46.0% of the respondents disagreed that the demand by end users determines the quantity of good and services that are needed. Also, the study sought to know whether the quality of materials purchased determines the output of the organization, 42.2% of the respondents said that the quality of materials purchased determines the output of the organization and 57.8% disagreed. Opposing these findings, Ngunyi (2014) found out that the purchasing process should consider the price of goods and services which determines the quality and quantity of materials to be purchased. Similar to Ngunyi, findings by Kilonzo (2014) insist that the purchasing process involves understanding the pricing of what is to be purchased. Prices affect the size and quality of materials that are purchased. These purchasing processes involve purchasing decisions made to ensure that organizational development is achieved.

Asked on whether quality is achieved when the end users' needs are met and satisfied, 42.8% of the respondents said yes. This, they explained is because the products that are created are mainly for the satisfaction of the end user. On the other hand, 52.7% of the

respondents said that quality is not achieved when the end users' needs are met and satisfied. When asked to explain their answer, most of the respondents indicated that there is more that goes in to meeting and satisfying the needs of the end users and an example of their responses include;

> *'In my opinion, quality is achieved when the product is finished and is of the predetermined quality. It is important to understand what the needs of the end user are and what it is that they require in terms of the quality. In this, as an organization we have to ask ourselves, 'what does the end user want?' In many cases, the needs go beyond the quality. Understanding this then would lead to the satisfaction of the end users.'* (Research data, Respondent 125, 2019)

This study found out that the quality of materials purchased does not determine the output of the organization. This finding does not agree with the findings by Prempeh (2015) who found out that there are positive impacts between inventory in the organization and the level of output of the organization. Quality of inventory determines the type of products that are to be achieved. The quality is not achieved when the end users' needs are met and satisfied but when the finished product is of predetermined quality. This would then lead to satisfaction of the end users.

4.5 Effect of inventory control on service delivery at BATUK

The second research objective sought to assess the extent to which inventory control affects service delivery at BATUK. Three dimensions of inventory control which are inventory planning, turnover and tracking were assessed. The findings were presented in Table 4.6

Table 4.6: Inventory Control

Question	Yes	No	N
Does forecasting help in controlling inventory?	39.0%	61.0%	100%
Does inventory control reduce costs for inventories?	42.0%	58.0%	100%

Does inventory control reduce theft of inventory in the organization	59.0%	41.0%	100%
Does reducing inventory cost help the organization to be responsive to the users' needs?	39.0%	61.0%	100%

As indicated in Table 4.6, 61.0% of the respondents indicated that forecasting does not help in controlling inventory while 39% of the respondents agreed that forecasting does help to control inventory. Challenging these findings, an assertion by Mishra (2009) indicates that when an organization is not engaged in forecasting of aspects such as demands, then it is difficult to control the inventory. There cannot be smooth delivery of services which affects organizational performance and development.

Moreover, on inventory turnover, 42% of the respondents said that inventory control helps to reduce the cost for inventories while 58% of the respondents did not agree that inventory costs can be reduced through inventory control. When asked whether inventory control reduces theft of inventory in the organization, 59% of the respondents said yes while 41% said no. As alluded by Akindipe (2014), inventory control helps to deal with inefficiencies in handling of materials which can lead to theft of materials. The loss of materials impedes smooth operations in the organization which affects team work in the organization. The ultimate result here is that organizational development cannot be achieved.

Further, the study sought to understand whether reducing inventory cost helps the organization to be responsive to the users' needs. As recorded, 61% of the respondents said that reducing inventory cost does not help the organization to be responsive to the needs of the users. This is contrary to the study by Mahyadin et al. (2013) who directed that the cost of inventory helps to attest to the needs of the users. Practices focused on effective inventory costs management also determine organizational performance and development.

Finally, the respondents were asked to explain how the movement of inventory is tracked throughout the organization. One of the respondents indicated that;

'There is a computer system that is put in place to check the movement of the inventory. While I may not be sure of the exact steps taken, the organization ensures that the computer system is always in check and it is regularly updated to avoid any inconveniences.' (Research data, Respondent 56, 2019)

Interestingly, the study observed that the respondents were aware that there is a computer system that monitors the movement of inventory. By their own admission, most of the respondents indicated that they do not know the stages of inventory tracking as all they cared about is that inventory moves from one place to another as required. This finding agrees with Ibegbulem & Okorie (2015) who suggested that many employees do not understand the concept of material flow in organizations and this potentially leads to failure of the organization rather than development of the organization. Similarly, Nkechi (2014) emphasizes that employees have to understand the flow of materials from the initial purchase point to their destination if organizations are to grow and develop. Therefore, management should seek to provide skills on tracking of inventory.

4.6 Effect of physical material distribution on service delivery at BATUK

As indicated by the third research objective, this study sought to examine the influence of physical material distribution on service delivery at BATUK. Physical material distribution was assessed in terms of transportations, warehousing and material handling. The responses were recorded as shown in Table 4.7

Table 4.7: Physical Material Distribution

Question	Yes	No	N
In your opinion, is the material transportation system in the organization strong?	58.8%	41.2%	100%
Are there regulations put in place to select the transportation modes?	47.1%	52.9%	100%
Have sufficient investments been made for warehousing infrastructure in the organization?	53.5%	46.5%	100%
Does effective logistics management reduce the cost of material handling?	43.9%	56.1%	100%
Are storage areas far from working area?	32.1%	67.9%	100%

The results indicate that the respondents were asked whether the material transportation system in the organization is strong, 58.8% of the respondents said yes while 41.2% said no. On whether there are regulations that have been put in place to select the transportation modes, 52.9% of the respondents said no while 47.1% of the respondents said yes. As opined by Arnold et al. (2011), there has to be clear channels of transportation which ensure that goods and services are delivered just in time as and when they are needed.

Also, the respondents were asked if there have been sufficient investments made for warehousing infrastructure in the organization, 53.5% of the respondents agreed that the investments on warehousing infrastructure are sufficient while 46.5% did not agree. As implied by Mukolwe & Wanyoike (2015), warehousing and transport management improve the efficiency of operations which also improves the organization's service delivery.

On whether effective logistics management reduces the cost of material handling, 56.1% of the respondents disagreed. There was a feeling that there was ineffectiveness in the way materials are handled. As indicated by a respondent;

> *'The logistics management process at BATUK is not as effective as I would like it to be and this leads to losses of materials and generally, poor performance in some sectors of the organization. This ineffectiveness in logistics management does not reduce the cost of handling materials; in fact, it increases the costs due to the losses experienced.'* (Research data, Respondent 9, 2019)

Backing this finding is the study by Zaha (2017) which found out that theft of materials occurs during the process of delivery to production and this can affect the delivery of services. The loss of materials can be due to reasons such as poor supervision.

On the other hand, 43.9% of the respondents agreed that effective logistics management reduces the cost of material handling since a few people are used for deliveries and this helps to increase organizational performance and furthers the development of the organization. Finally, the respondents were asked whether the storage areas are far from working area and 32.1% said yes while 67.9% said no.

4.7 Service Delivery

For this study, the dependent variable was service delivery and the respondents were presented with questions on the same. The responses are recorded in Table 4.8.

Table 4.8: Service Delivery

Question	Yes	No	N
Does loss of materials affect service delivery?	82.4%	17.6%	100%
Does automation of materials management systems improve the levels of service delivery?	90.9%	9.1%	100%
Do materials delivered as per schedule affect service delivery?	40.1%	59.9%	100%
Does clear communication help to achieve proper service delivery?	93.6%	6.4%	100%
Do skills in material management help to enhance service delivery?	90.9%	9.1%	100%

The results show that when the respondents were asked whether the loss of materials affects service delivery, 82.4% said yes and the reason for this was because the respondents believed that when there are no materials, then service delivery is poor. The output of the organization is affected and this affects the overall functioning of the organization. On the other hand, 17.6% of the respondents said that loss of materials does not affect service delivery.

The study also sought to find out if automation of materials management systems improves the levels of service delivery and majority of the respondents with 90.9% said that it did since automation makes work faster, more accurate and reduces material loss. Additionally, the respondents indicated that automation helped to reduce paper work which also saves resources for the organization; as indicated by one of the respondent;

> *'The use of technology and automation of services helps in service delivery since the delivery is faster, more accurate and also reduces paper work. In my thinking, is quite important for the organization as time and cost resources are saved making work more effective and efficient.'* (Research data, Respondent 86, 2019)

For those who disagreed that automation of materials management systems improves the levels of service delivery (9.1%) said that their disagreement was from a skeptic point as the organization had tried the automation process before and it failed so they did not see the need of automation which also in the end renders some employees redundant and they eventually get fired; thereby increasing the pool of unemployment in the country. According to PWC (2011) automation of operations in the organization affects the performance as it enhances the service delivery levels while at the same time reducing operational costs. There also minimizes inventory wastage.

Asked whether the materials delivered as per schedule affect service delivery, 40.1% of the respondents said yes and 59.9% of the respondents said no. According to Ibegbulem & Okorie (2015), organizations can meet the needs of the customers and improve service delivery when there is a continuous production schedule. This schedule has to be followed and material delivery should continuously follow the delivery plan. The respondents were also asked whether clear communication help to achieve proper service delivery and 93.6% said that it did while 6.4% said that communication did not help to achieve proper service delivery. Finally, the respondents were asked whether skills in material management help to enhance service delivery, 90.9% of the respondents indicated yes while 9.1% indicated no. Similar findings are presented by Ghoumrassi & Țigu (2017), who found out that skills are knowledge of employees is important in ensuring management of materials which leads to better and improved service delivery.

4.8 Diagnostic Tests for Regression Model

The assumptions tests for models of multiple regression which include normality and multicollinearity tests were conducted and presented as following;

4.8.1 Normality Test

The normality test was conducted so as to ensure normal distribution of service delivery (dependent variable) in the population of study and also to ensure that the mean scores of the independent variables are normally distributed (Yockey, 2017). Figure 4.1 shows the fitting of a histogram and normal curve therein. A normally distributed data has a mean and standard deviation of 0 and 1 respectively (Fox, 2015). Based on this, then the data for this study is normally distributed.

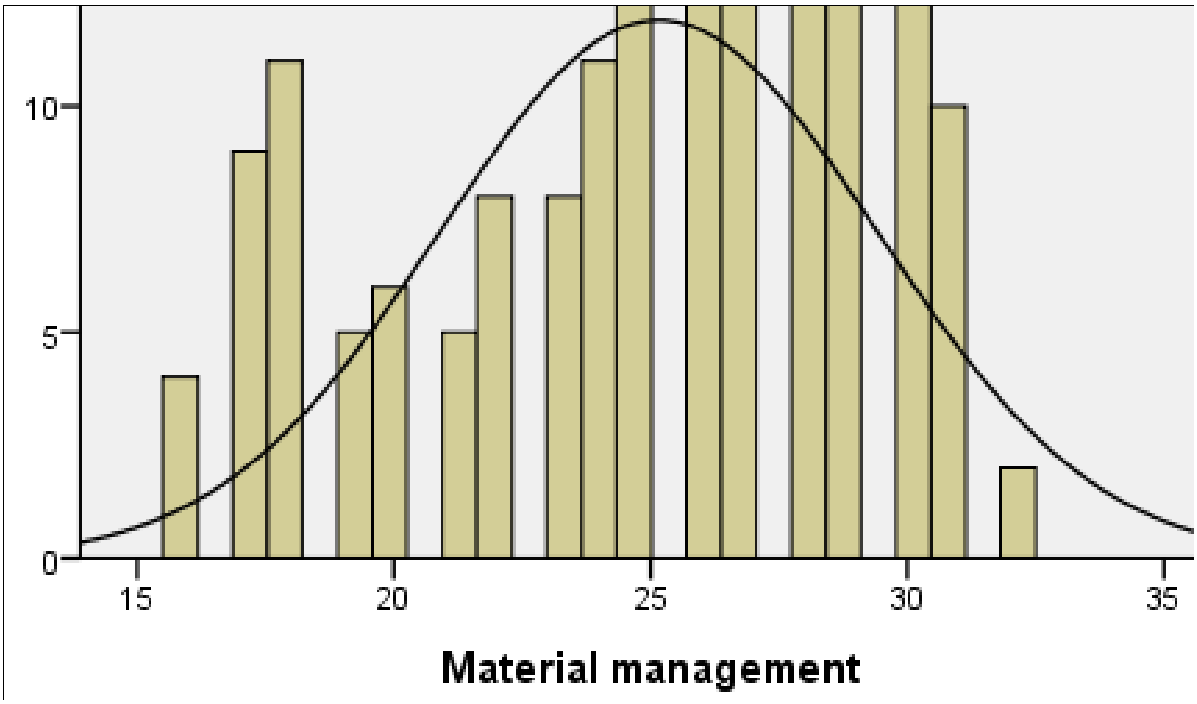


Figure 4.1: Normality Distribution Histogram

4.8.2 Multicollinearity Test

After the data normality in the regression model was met, the study sought to determine if a similarity exists between the study's independent variable which can result in a very strong correlation which can affect the decision making process on the effects of material management on service delivery. The results of the multicollinearity test are shown in Table 4.9.

Table 4.9: Multicollinearity Test

Model		Collinearity Statistics	
		Tolerance	VIF
1	Material Requirement Planning	.732	1.367
	Inventory Control	.518	1.929
	Physical Material Distribution	.622	1.607

a. Dependent Variable: Service Delivery

Table 4.9 shows that the multicollinearity test was conducted using the tolerance and Variance Inflation Factor (VIF). As indicated, the tolerance values range from between 0.6 to 0.7 while the VIF values range from between 1.3 and 1.9. According to Fox (2015), a model shows absence of multicollinearity when the tolerance value is less than 1 and the VIF value is between 1-10. In that case, then the linear model for this study does not have multicollinearity; therefore, the independent variables are not highly correlated.

4.9 Correlation Analysis

The inferential analysis that was conducted for this study focused on correlation analysis so as to establish the relationship between materials management and service delivery. The correlation results are indicated in Table 4.10.

As indicated in Table 4.10, this study adopted the Pearson correlation coefficient analysis to establish the relationship between the independent and the dependent variables. According to Yockey (2017), the Pearson correlation measures the linear relationship between two or more study variables in terms of their degree of linear relationship. The established relationship degree can be positive or negative. From Table 4.10, inventory control has a positive correlation with service delivery (r= 0.270; p= 0.000). Supporting this finding is Tundura & Wanyoike (2016) who found out that inventory control has a positive correlation on organizations. This positively influences the service delivery process of the organizations.

Table 4.10: Correlation Table

	Material Requirement Planning	Inventory control	Physical material distribution	Service delivery

Material Requirement Planning	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	187			
Inventory control	Pearson Correlation	.517**	1		
	Sig. (2-tailed)	.000			
	N	187	187		
Physical material distribution	Pearson Correlation	.346**	.614**	1	
	Sig. (2-tailed)	.000	.000		
	N	187	187	187	
Service delivery	Pearson Correlation	.062	.270**	.319**	1
	Sig. (2-tailed)	.396	.000	.000	
	N	187	187	187	187

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

The study also found out that physical material distribution is positively correlated with service delivery (r= 0.319; p= 0.000). Potocan (2013) also asserts that there is a positive relationship that exists between physical material distribution and service delivery.

4.10 Regression analysis

This study also used inferential statistics for regression analysis so as to establish the effect of materials management on service delivery at BATUK. The results of the

regression analysis helped to make deductions on the model and the relationship between the study variables.

To understand, the effect of material management on service delivery, a regression model was fitted so as to make inferences. In this study, the model used was $Y= \beta_0 +\beta_1x_1+ \beta_2x_2 + \beta_3x_3+ \varepsilon$. The model summary results are shown in Table 4.11.

Table 4.11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.346[a]	.120	.106	.94817

a. Predictors: (Constant), Physical material distribution, Material Requirement Planning, Inventory control

The model summary shown in Table 4.11, shows that 12% of service delivery was predicted by material requirement planning, inventory control and physical material distribution. This did not in any way provide a formal test of hypothesis to understand the relationship between the independent and dependent variables of the study.

Therefore an Analysis of Variance (ANOVA) was tested and the results recorded in Table 4.12.

Table 4.12: Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.432	3	7.477	8.317	.000[b]
	Residual	164.520	183	.899		
	Total	186.952	186			

a. Dependent Variable: Service delivery

b. Predictors: (Constant), Physical material distribution, Material Requirement Planning, Inventory control

The ANOVA test was mainly conducted to establish the significance for the overall regression. In other words, the ANOVA tested whether the regression model, while including all predictors, significantly predicts service delivery. As shown in Table 4.12, the p-value was less than 0.05 which implies that with the inclusion of all predictors, the regression model significantly predicts service delivery. Therefore, the relationship between service delivery and materials management is significant.

Having established the significance of the regression model, the study sought to test the individual predictors for significance. The results were recorded in Table 4.13.

Table 4.13 shows that a unit change in material requirement planning decreases service delivery (β= -0.052, p =0.158) when all factors are held constant. The p value (p>0.05) indicates that that there is no statistically significant relationship between material requirement planning and service delivery at BATUK. Based on this study's hypothesis (H_{01}) that there is no significant relationship between material requirements planning and service delivery at BATUK, this study therefore accepts the null hypothesis. Divergent views are presented by Vrat (2014) who presents that a relationship exists between material requirement planning and service delivery. Proper planning of the material requirements of an organization in due course brings about good delivery of services and this is a fact that helps to develop the organization.

Table 4.13: Coefficients Table

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.583	.438		10.456	.000

Material Req. Planning	-.052	.037	-.115	-1.418	.158
Inventory control	.112	.062	.175	1.818	.071
Physical material distribution	.170	.059	.251	2.854	.005

Secondly, a unit change in inventory control increases service delivery (β=0.112, p=.071) when all factors are held constant. The P value (p>0.05) indicates that there is no statistically significant relationship between inventory control and service delivery at BATUK. Based on this study's hypothesis (H_{02}) that there is no significant relationship between inventory control and service delivery at BATUK, this study therefore accepts the null hypothesis.

Finally, a unit change in physical material distribution increases service delivery (β=0.170, p=0.005) when all factors are held constant. The P value (p<0.05) indicates that there is statistically significant relationship between physical material distribution and service delivery at BATUK. Based on this study's hypothesis (H_{03}) that there is no significant relationship between physical material distribution and service delivery at BATUK, this study therefore rejects the null hypothesis. This finding agrees with Tshamaano, (2012) who purports that physical material distribution ensures that materials are planned for, implemented and controlled so as to achieve efficient material flow so as to meet required service delivery. Therefore, there is a relationship between physical material distribution and service delivery.

4.11 Chapter Summary

This chapter has highlighted the data analysis and findings of this study providing the response rate, background information of respondents, as well as findings on materials planning requirements, inventory control, physical materials distribution and service delivery. Finally, the relationship between materials planning requirements, inventory control, physical materials distribution and service delivery is highlighted.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The summary of the findings established from the analysis of data is presented in this chapter. Then, the findings are discussed in line with relevant literature which supports or negates the results attained. This chapter therefore presents the summary of findings, conclusions and recommendations based on the conclusions.

5.2 Summary of Findings

This study sought to investigate the effects of material management on service delivery at BATUK which was to be attained through three established research objectives that sought to find; the effect of materials requirement planning on service delivery, the effect of inventory control on service delivery, and the effect of physical material distribution on service delivery.

The study adopted a descriptive research design. The target population was all the 535 employees working in the twenty departments at BATUK headquarters. Of these, 229 employees were sampled through stratified random sampling. A structured questionnaire was used for data collection. A pretest was done so as to ensure checks for validity and reliability. The study employed the use of the SPSS software to analyze the data collected.

Of the 229 questionnaires that were distributed, 187 were used for this study giving a provision of 81.6% response rate. The rest of the questionnaires were not utilized as some were not returned and others were not duly filled. The background information of the respondents shows that there was no gender parity as there were more male respondents than female respondents. The study also found out that the respondents had attained a level of education that was sufficient and an indication that the respondents were literate to be able to understand and provide responses as required for the study. Most of the respondents had worked in the organization for over five years and are conversant with the operations of the organization which implied that they had a good understanding of materials management and service delivery in the organization.

5.2.1 Effect of Materials Requirement Planning on Service Delivery

The study found out that even with set procedures for planning, the process for planning materials in the organization is not sufficient since there were experiences of delays which affect the delivery of materials. In the end, materials are delayed in getting to right department at the right time and in the right quantity. The lack of team work affects organizational development. The study found out that the price of goods and services did not determine the quantity or the quality of materials to be purchased. It was found out that different scholars hold the opinion that prices affect the size and quality of materials that are purchased. These purchasing processes involve purchasing decisions made to ensure that organizational development is achieved.

This study also found out that the quality of materials purchased does not determine the output of the organization. Quality of inventory determines the type of products that are to be achieved. The quality is not achieved when the end users' needs are met and satisfied but when the finished product is of predetermined quality. This would then lead to satisfaction of the end users. Moreover, the study found out that there is no statistically significant relationship between material requirement planning and service delivery at BATUK. Proper planning of the material requirements of an organization in due course brings about good delivery of services and this is a fact that helps to develop the organization.

5.2.2 Effect of inventory control on service delivery at BATUK

This study found out that forecasting does not help in controlling inventory and therefore the cost of inventory cannot be reduced only through inventory control. It was also found out that inventory control helps to reduce the theft of inventory. This study also found out that reducing the inventory cost does not help the organization to be responsive to the needs of the users. Practices focused on effective inventory costs management also determine organizational performance and development.

The employees at BATUK do not have a thorough understanding of how inventory movement is tracked throughout the organization. The employees do not therefore understand the steps undertaken for inventory to move from one department to the next and reliance is on the tracking software. This implies that the employees may also not

understand the concept of materials management. This study also found out that inventory control has a positive correlation with service delivery (r= 0.270; p= 0.000). However, this study found out that there is no statistically significant relationship between inventory control and service delivery at BATUK.

5.2.3 Effect of physical material distribution on service delivery at BATUK

The study found out that there is a strong transportation system in the organization however; no regulations had been put in place to select the transportation modes. This study also uncovered that organization has made sufficient investments for warehousing infrastructure. For sure having storage areas that are not far from the working areas help to ensure faster flow of goods and raw materials which improves cost efficiency of the organization.

This study established that logistics management does not reduce the cost of material handling since the management process is not effective and this leads to losses of materials. Loss of materials affects the service delivery and the output of the organization which also affects the overall functioning of the organization. The loss of materials can be due to reasons such as poor supervision.

This study found that physical material distribution has a positive correlation with service delivery (r= 0.319; p= 0.000). There was demonstration that a statistically significant relationship exists between physical material distribution and service delivery at BATUK.

5.2.4 Service Delivery

This study found out that automation of materials management systems improves the levels of service delivery. It also reduces paper work which in turn saves resources for the organization. This study also found out that materials are not delivered as per schedule and it affects service delivery. This schedule has to be followed and material delivery should continuously follow the delivery plan. This study demonstrated that communication and skills in in material management help to enhance service delivery.

5.3 Conclusions

From the data analysis, findings and the literature reviewed in this study, inferences are made regarding the effect of material requirement planning, inventory control, and physical distribution material distribution at BATUK.

From the findings of this study, materials requirement planning is found to be an important factor for service delivery which cannot be henceforth ignored. Poor material requirement planning can lead to delays in execution of work which means the materials are not delivered to the right department at the right time and in the right quantity. Delays affect interdepartmental harmony which distresses organizational development. Moreover, the purchasing process is important for materials requirement planning as the price of goods and services determines the quality and quantity of the materials to be purchased. This study realizes that purchasing decisions ensure that organizational development is achieved.

At BATUK, this study infers that quality and quantity of materials purchased does not determine the output of the organization. The inference here is that there are other factors which contribute to the output of the organization. This is opinion is directed by the regression model summary presented in the study. The quality of inventory determines the type of products to be achieved and it is ensuring that the finished product is of predetermined quality that leads to customer satisfaction and organizational performance and development.

From the findings, this study concludes that inventory control helps in attaining service delivery. Inventory control helps to reduce the theft of inventory ensuring that there is smooth operation of activities in the organization and reduces inventory costs. Remarkably, the study found out that inventory cost reduction does not help the organization to be responsive to the needs of the users. This can be deduced to point out to inefficiencies in the inventory cost management of the organization. The use of a inventory tracking system is important for the organization but it is also important for the employees to understand the stages the inventory goes through from one department in the organization to another. This study concludes that there is a positive correlation

between inventory control and service delivery; however, there is no statistically significant relationship between inventory control and service delivery.

Based on the findings of this study, conclusions are made that a strong transportation system exists in the organization which ensures that materials are effectively transported throughout the organization which leads to increased performance of the organization. Furthermore, BATUK has made sufficient investments for warehousing infrastructure. Having storage areas close to working areas helps ensure that there is fast flow of goods and raw materials which improves cost and operations efficiency of the organization. It is also construed that logistics management should be effective so as to reduce the loss materials which affect service delivery. Physical material distribution has a positive correlation with service delivery and based on the regression analysis findings; this study concludes that physical material distribution is the independent variable which has the most effect on service delivery.

5.4 Recommendations

Based on the conclusions made, on materials requirement planning, this study recommends that BATUK should ensure that the materials requirement planning is more effective. There is need to ensure that the planning process is sufficient in a manner that is more than just a formality with laid down procedures. This would help to reduce delays in delivery of goods and improve interdepartmental harmony thereby improving organizational development. The purchasing decisions made in the organization should focus on ensuring organizational development.

This study also recommends that forecasting in the organization should focus on inventory control so as to ensure that there is improvement of service delivery. The inventory cost management process should be streamlined so as to ensure cost efficiencies in the organization. The organization should provide training, skills and knowledge on materials management in the organization; specifically on material requirement planning, tracking inventory control, and logistics management.

On physical material distribution, this study also recommends that BATUK should consider ways of reducing loss of materials which affects service delivery. This calls for effective logistics management to be put in place.

5.5 Suggestions for Further Studies

This study makes the following suggestions based on the findings in this study:

i. This study focused on the British Army Training Unit in Kenya (BATUK). A similar study should be conducted in other organizations in the public and private sectors in Kenya.

ii. A similar study should be conducted to investigate other independent factors which influence service delivery.

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APPENDICES

Appendix I: Target Population

Department	Number of Employees	Percentage
Accommodation	20	3.74
Royal Military Police	12	2.24
Communication Information Systems	34	6.36
Training Wing	43	8.04
Cook house	24	4.49
Workshop	33	6.17
Caretakers Archers Post	44	8.22
Defense Infrastructure Organization	19	3.55
Motor Transport	65	12.15
Garrison Engineers	57	10.65
Logistics Support	16	2.99
Quarter Master	73	13.64
Cleaners	23	4.30
Civil Labor Office	5	0.93
Project Continuity Office	15	2.80
Head Quarters	11	2.06
Royal Engineers Support	18	3.36
Regimental Accounts Office	12	2.24
Royal Air Force	4	0.75
Medics Center	7	1.31
Total	**535**	**100**

Appendix II: Introductory Letter

Dear Respondent,

I am a Masters student at St. Paul's University undertaking a course in Development Studies. I am currently undertaking a study on 'The Effects of Materials Management on Service Delivery at BATUK". I would therefore, like to kindly request you to fill in the questionnaire. The responses you provide will be treated confidential and used purely for academic purposes. You need not include your name.

Thank you in advance.

Kind Regards,

Robinson Ateya.

Appendix III: Questionnaire

Please tick (√) the box that matches your answer to the questions and give the answers in the spaces provided as appropriate.

Section A: Background Information

1. Gender of respondent

   Male [ ] Female [ ]

2. Highest level of qualification

   College Certificate [ ] Diploma [ ] Undergraduate [ ] Postgraduate [ ]

3. Number of years worked in the organization ……

	SECTION B: MATERIALS REQUIREMENTS PLANNING	
	QUESTIONS	**OPTIONS/ANSWERS (Tick (√) where appropriate)**
1.	In your opinion, is the process for planning materials in the organization sufficient?	Yes…… 1 No…….. 2
2.	Please explain your answer in (1) above	
3.	Does the organization plan for the quantity of goods that it requires?	Yes…… 1 No…….. 2
4.	Does the price of goods and services determine the quantity to be purchased?	Yes…… 1 No…….. 2
5.	Does the price of goods and services determine the quality to be purchased?	Yes…… 1 No…….. 2
6.	Does the demand by end users determine	Yes…… 1

	the quantity that is needed?	No……..	2
7.	Does the quality of materials purchased determine the output of the organization?	Yes…… No……..	1 2
8.	In your opinion, is quality achieved when the end users' needs are met and satisfied?	Yes…… No……..	1 2
9.	Please explain your answer in (8) above		
	SECTION C: INVENTORY CONTROL		
	QUESTIONS	**OPTIONS/ANSWERS (Tick (√) where appropriate)**	
10.	Does forecasting help in controlling inventory?	Yes…… No……..	1 2
11.	Does inventory control reduce costs for inventories?	Yes…… No……..	1 2
12.	Does inventory control reduce theft of inventory in the organization	Yes…… No……..	1 2
13.	Does reducing inventory cost help the organization to be responsive to the users' needs?	Yes…… No……..	1 2
14.	Please explain how movement of inventory is tracked throughout the organization		

	SECTION D: PHYSICAL DISTRIBUTION		
	QUESTIONS	**OPTIONS/ANSWERS (Tick (√) where appropriate)**	
15.	In your opinion, is the material transportation system in the organization strong?	Yes…… No……..	1 2
16.	Are there regulations put in place to select the transportation modes?	Yes…… No……..	1 2
17.	Have sufficient investments been made for warehousing infrastructure in the organization?	Yes…… No……..	1 2
18.	Does effective logistics management reduce the cost of material handling?	Yes…… No……..	1 2
19.	Please explain your answer in (18) above		
20.	Are storage areas far from working area	Yes…… No……..	1 2
	SECTION E: SERVICE DELIVERY		
	QUESTIONS	**OPTIONS/ANSWERS (Tick (√) where appropriate)**	
21.	Does loss of materials affect service delivery?	Yes…… No……..	1 2
22.	Please explain your answer in (21) above		
23.	Does automation of materials management systems improve the levels of service	Yes…… No……..	1 2

	delivery		
24.	Please explain your answer in (23) above		
25.	Do materials delivered as per schedule affect service delivery?	Yes…… No……..	1 2
26.	Does clear communication help to achieve proper service delivery?	Yes…… No……..	1 2
27.	Do skills in material management help to enhance service delivery	Yes…… No……..	1 2

Thank you for participating

Appendix IV: Letter from St Paul's University

ST. PAUL'S UNIVERSITY

Private Bag 00217 LIMURU, KENYA
Email: postgraduatestudies@spu.ac.ke
Website: www.spu.ac.ke

Tel Office: +254 (0) 20-2020505/10
Mobile: +254 (0) 728-669000
(0) 728-062420
(0) 736-424440

BOARD OF POSTGRADUATE STUDIES

National Commission for Science, Technology and Innovation
Off Waiyaki Way, Upper Kabete
P.O Box 30623, 00100
Nairobi, KENYA.

Dear Sir/Madam,

RE: ATEYA ROBINSON ANYEGA- MDSNKR202418

This is to confirm that the above named is a final year student of St. Paul's University registered for Master of Arts degree in Development Studies.

The final year consists of a major research work leading to a dissertation comprising 20,000 words. The student's selected topic is:

Effects of Materials Management of service delivery in British Army Training Unit, Nanyuki Kenya

The research will take place in Laikipia County from March 2019 to May 2019.

Kindly grant the student the required permit.

Yours Faithfully,

Regina Ndinda

Dr. Sammy Githuku
Director, Postgraduate Studies

BOARD OF POSTGRADUATE STUDIES
ST. PAUL'S UNIVERSITY
25 FEB 2019
KENYA
TEL: 020 - 2020505 / 7008510
P.O PRIVATE BAG - 00217, LIMURU

Appendix V: NACOSTI Research Letter



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/19/45082/28803**

Date: **12th April, 2019**

Robinson Anyega Ateya
St. Pauls University
P.O. Private Bag - 00217
LIMURU.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Effects of materials management on service delivery in British Army Training Unit, Nanyuki Kenya"*** I am pleased to inform you that you have been authorized to undertake research in **Laikipia County** for the period ending **12th April, 2020.**

You are advised to report to **the County Commissioner and the County Director of Education, Laikipia County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Laikipia County.

The County Director of Education
Laikipia County.

National Commission for Science, Technology and Innovation is ISO9001:2008 Certified

Appendix VI: NACOSTI Permit

THIS IS TO CERTIFY THAT:
MR. ROBINSON ANYEGA ATEYA
of ST PAULS UNIVERSITY , 13214-20100 NAKURU,has been permitted to conduct research in *Laikipia County*

on the topic: *EFFECTS OF MATERIALS MANAGEMENT ON SERVICE DELIVERY IN BRITISH ARMY TRAINING UNIT, NANYUKI KENYA*

for the period ending:
12th April,2020

.....
Applicant's Signature

Permit No : NACOSTI/P/19/45082/28803
Date Of Issue : 12th April,2019
Fee Recieved :Ksh 1000



.....
Director General
National Commission for Science, Technology & Innovation

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS

1. The License is valid for the proposed research, location and specified period.
2. The License and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before commencement of the research.
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
5. The License does not give authority to transfer research materials.
6. NACOSTI may monitor and evaluate the licensed research project.
7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.

National Commission for Science, Technology and innovation
P.O. Box 30623 - 00100, Nairobi, Kenya
TEL: 020 400 7000, 0713 788787, 0735 404245
Email: dg@nacosti.go.ke, registry@nacosti.go.ke
Website: www.nacosti.go.ke

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH LICENSE

Serial No.A 24041

CONDITIONS: see back page

Appendix VII: Letter from Ministry of Education

MINISTRY OF EDUCATION
STATE DEPARTMENT OF EDUCATION
COUNTY DIRECTOR OF EDUCATION OFFICE - LAIKIPIA

Telegrams: "Education" LKP.
Telephone: 062-31518, 31519
Email:laikipiacountydirector@yahoo.com

When replying please quote:
Ref: LPA/C/A/94 VOL.I/ (38)

County Director of Education,
Laikipia County,
P.O. Box 253.
NANYUKI.

10th May, 2019

TO: WHOM IT MAY CONCERN

RE: RESEARCH AUTHORITY – ROBINSON ANYEGA ATEYA

The National Commission for Science, Technology and Innovation letter ref. No. **NACOSTI/P/19/45082/28803**dated **12th April, 2019** refers.

This is to inform you that the above named person has been authorized to carry out research on ***"Effects of materials management on service delivery in British Army Training Unit, Nanyuki Kenya (Laikipia county)".*** For a period ending ***12th April, 2020.***

After completion of your research findings please furnish this office with a copy of the research.

Kindly assist him where possible.

COUNTY DIRECTOR OF EDUCATION
LAIKIPIA

SUSAN MURERWA
COUNTY DIRECTOR OF EDUCATION
LAIKIPIA COUNTY

C.C.
National Commission for Science,
Technology and Innovation,
NAIROBI.

The County Commissioner,
LAIKIPIA

ISO 9001:2008 CERTIFIED

Appendix VIII: Letter from the County Commissioner

THE PRESIDENCY
MINISTRY OF INTERIOR & CO-ORDINATION OF NATIONAL GOVERNMENT

When replying please quote
Fax: 062-2031874
E-MAIL: *cclaikipiacounty@yahoo.com*

COUNTY COMMISSIONER
LAIKIPIA COUNTY
P.O. BOX 11-10400
NANYUKI

Ref . NO. CC.ED.12/14 VOL.1/(260)

3rd May 2019

Robinson Anyega Ateya,
St. Pauls University,
P.O. Private Bag – 00217,
LIMURU.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Effects of materials management on service delivery in British Army Training Unit, Nanyuki Kenya,"*** I am pleased to inform you that you have been authorized to carry out research in Laikipia County for the period ending 12th April 2019.

COUNTY COMMISSIONER
LAIKIPIA

O.M. KYATHA
COUNTY COMMISSIONER
LAIKIPIA COUNTY

Appendix IX: Authorization Letter from BATUK

HQ_CLO_PAYROLL_ASST

From: HQ_SO2_HRFin
Sent: 27 May 2019 10:12
To: HQ_CLO_PAYROLL_ASST
Subject: RE: Permission to collect data

Dear Robinson,

The QM gave a verbal go ahead for you to proceed with this questionnaire.

Regards

Linda

Miss Linda Hardiman
CLSO
0700 330 423

From: HQ_CLO_PAYROLL_ASST
Sent: 14 March 2019 15:47
To: HQ_SO2_HRFin
Subject: Permission to collect data

Dear Ma'am,
As you are aware, I have been undertaking some programs in the university since 2015. I thank you for the opportunity and support you have so far accorded me until I completed my 1st degree and now I am working towards the completion of my 2nd degree. In this regard, I am expected to meet some requirements by the university before graduation. One of this requirement is writing of a dissertation. I am currently writing a paper entitled : "EFFECTS OF MATERIALS MANAGEMENT ON SERVICE DELIVERY" and I have chosen BATUK as my case study.

Effective materials management is potential to achieving organizational development and is at the nucleus of operations in organizations. This study aims to establish the effects of materials management on service delivery at BATUK. The study will specifically seek to assess material requirements planning, inventory control and physical material distribution and how these factors affect service delivery.
My target population will be 535 from which I will take a sample of 229 respondents who will be used to obtain information. A stratified random sampling technique will be used to ensure that there are no biases in the selection of the respondents. The respondents will be divided in to two strata; the industrial and non-industrial employees.

I therefore humbly request for your permission to distribute questionnaires among my colleagues here in Nyati and Kahawa to collect data. This will be purely for academic purposes only. I have attached here with a sample of questionnaire I intend to give out to respondents.

Thanking you much for your continued support.

Regards

Robinson A. Ateya

1

E1 A A Robinson | Personnel Officer | Nyati Barracks | British Army Training Unit Kenya | BFPO 680 | Kenya Mobile: + 254(0)712 016 539 | E-mail: HQ_CLO_PAYROLL_ASST@HQBATUK.COM

BATUK Media: Moss Homepage | Facebook | Twitter | Jive

(Please note that BATUK is 2 hrs ahead of UK)