

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
TECHNOLOGY, KUMASI, GHANA**

**Military Sourcing and Logistics Support for Operations:
A Case Study of the Ghana Armed Forces**

by

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**A Thesis Submitted to the Department of Building Technology, College of Art and Built
Environment in partial fulfilment of the requirements for the
degree of**

MASTER OF SCIENCE

OCTOBER, 2016

DECLARATION

I hereby declare that, this submission is my own work. towards the MSc Procurement Management and that to the best of my knowledge it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University except where due acknowledgement has been made in the text.

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ABSTRACT

Military operations primarily aim to create security and peaceful environment and in some cases, offer humanitarian assistance. It is for this and many other reasons why sourcing for the right logistics requirements are critical for the success or otherwise of a military operation. The study primarily examined the effect of military sourcing and logistics support for operations on the performance of military organizations using the Ghana Armed Forces (GAF) as a case study. Specifically, this study identified the logistics needs of the Ghana Armed Forces and examined the process involved in sourcing decisions by the Ghana Armed Forces (GAF). Lastly, the study identified measures to improve logistics support for military operations. In order to achieve the objectives, the study employed descriptive statistics, tables and charts as tools of analysis. The survey method of data collection using standardised open and closed ended questionnaires was employed in this research. The study will make use of both open-ended and close-ended survey questions in order to gain a better understanding of the situation. The study sampled 40 military officers from the Logistics and Procurement Directorate of the Ghana Armed Forces. However, the response rate was 75%, which means that 30 military officers fully responded to the questionnaire. The result of the analysis indicates that sourcing logistics has not improved the performance of the GAF due to delay in the process. In terms of identifying the logistics needs for military operations, the study identifies military hardware such as ammunition and carrier vehicles as the major logistic needs of the Ghana Armed Forces (GAF). Lastly, the study finds that although respondents are aware of the existence of the process of sourcing, they cannot state emphatically what the process involved, which implies that knowledge on the sourcing process is limited.

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ACKNOWLEDGEMENT

I wish to acknowledge the Lord Almighty for His grace, peace, and abundant favour. I also acknowledge that it would have been difficult or almost impossible to successfully complete this thesis without the good counsel and guidance from my supervisor, Prof. Bernard Kofi Baiden.

I owe a great depth of gratitude to Brian Selorm Larvie, the staff of the Directorates of Logistics and Procurement of Ghana Armed forces for their inputs. I also wish to acknowledge all respondents to my questionnaires. I say God richly bless you all.

DEDICATION

This thesis is dedicated to God Almighty who has enabled me to get this far and also to my dear partner and brothers who supported me with their prayers and understanding. I also want to dedicate this thesis to my bosses and colleagues at my work place for their assistance throughout my course of study.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Since the establishment of Ghana Armed Forces (GAF) in the 1950s till date it has been engaged in numerous military operations ranging from combat operations to Humanitarian Assistance/Disaster Relief (HADR) and Peacekeeping/support Operations (PKOs).

However in recent times Peace Support Operations (PSO) mainly termed Peacekeeping have been a primary preoccupation of the Ghana Armed Forces. For the past three decades or more it has been operating in Lebanon and Congo DRC and recently Liberia, Chad, and South Sudan which happens to be Africa's newest nation. Ghana Armed forces have deployed officers and men in this military operating theatres with the mission of creating an environment of security, stability and peaceful atmosphere in the respective nations. Operations by the military involve a high degree of careful and detailed logistics planning so as to surmount or minimize the associated dangers or complexities that may hinder the objectives of the military operation. Armed tasks involve a high grade of difficulty and insecurity, where actions, purposes and dangers vary over time and the logistics needs to reflect the operating circumstances (Ferris and Keithly, 2001).

Accomplishing these missions rests on the ability of the Armed Forces to be equipped and move its forces to the operational theatre and sustain them while they are engaged. Logistics provide the backbone for military operations. Without fuel, ammunition, rations, and other supplies, the Armed Forces would grind to a halt. The Ghana military must be prepared to be deployed anywhere on the globe especially in an era of coalition warfare, logistics remain a key factor.

Sourcing and Logistics deployment in modern operating theatres have shifted from the traditional supplies such as fuel and ration to the insertions of advanced technological equipment such as more rapid and silent jets, cutting-edge riot-control armaments, lighter infantry gear that do not overstretch troops, ultra-light automobiles and better frontline infrastructures. In the marine territory, Naval chiefs have for years been seeking for crafty mini-submarines that can be distantly activated, and fast toughened control boats for anti-piracy and coastline safety tasks.

Exact information on the adversary is continuously on the armed forces wish list, and achievement in impending clashes will have need of expertise that can execute tireless reconnaissance to help detect adversaries and approachable armies such as Unarmed Vehicles (UAVs/drones), robots that can operate autonomously to conduct mundane task.

This study therefore examines the sourcing and logistics support for operations in the Ghana Armed Forces.

1.2 Problem Statement

Military operations primarily aim to create security and peaceful environment and in some cases, offer humanitarian assistance. Conflicts, since the close of the World War II and particularly after end of cold war have altered thinking into improving and increasing the participation of military assistance in disaster operations (Barber, 2012). The threats associated with military operations are enormous. It is for this and many other reasons why sourcing for the right logistics requirements are critical for the success or otherwise of a military operation.

The military supply chain has at its disposal rapid movements of specialized aircraft such as cargo aircraft and the capacity of high volume and mass movements provided by its cargo shipping. Military ground-forces are able to provide secured warehousing and robust road transportation

capable of crossing harsh terrain. Further, it is important to add that since the 1990's, military procurements are focused to combat, ceasefire protection missions, catastrophe aid and public-spirited assistance (Barber, 2012).

The activities in military operations remain to a great degree about resources and one of its dire components is sourcing, which is, getting the exact gear, stores and amenities at the correct time and place when needed by the military.

Military logistics is the forecasting and transport out and upkeep of forces. In its utmost complete intelligence, the aspect of armed actions which deal with procurement or outfitting of administrations, movement of troops, design and development, procurement, storage, acquisition or development ,transport, distribution, repairs, evaluation, disposal of stores, maintenance, operation and nature of facilities and medicinal and wellbeing administration bolster. (NATO, 2007)

Ghana Armed Forces' (GAF) experience with Economic Community of West Africa (ECOMOG) task force in Liberia in the early stages was thought of as "botched" because the GAF failed to recognize and accurately define the logistic requirements for the mission as against the operating environment, which led to a "mismatch" between forces capabilities and logistics or combat service support. The logistic support for the GAF troops was so inadequate to the extent that it is believed that some soldiers were inserted without maps and combat supplies.

These difficulties, though not surprising, given the state of many of the armed forces in the sub region due to perceived belief of financial constraints, the researcher is of the opinion that major logistic challenges experienced by GAF personnel deployed in operational theatres can be a thing of the past if measures are put in place by the GAF hierarchy.

Empirical literature on sourcing military logistics is rarely available in educational papers or peer-reviewed records. It has been controlled by two viewpoints; defence finances and supply chain viewpoint aimed at galvanizing the long-term efficiency and effectiveness. The effect of sourcing for logistics on operations has rarely been studied. Thus, this study fills the gap in the literature. Furthermore, this study is essential for the complete concept structure for GAF in the improvement of sourcing logistics for future deployments. Lastly, the study tries to examine sourcing to armed operations logistics viewpoint and also seeks to understand the linkage amongst sourcing resources in the value chain and the performance of the logistics and the fulfillment of the GAF purposes.

1.3 Research Objectives

The research examines the effect of sourcing logistics on the performance of the Ghana Armed Forces.

Specific Objectives:

1. To identify the logistics needs of the Ghana Armed Forces.
2. To identify the process involved in sourcing decisions by the Ghana Armed Forces.
3. To identify measures to improve logistics support for military operations.

1.4 Research Questions

The research will seek to respond to the resulting questions:

1. What are the logistic needs of the Ghana Armed Forces?
2. How are sourcing decisions made by the Ghana Armed Forces?
3. What measures must be adopted to improve logistics support for operations by the Ghana Armed Forces?

1.5 Relevance of the study

The result of the research will complement previous researches related to sourcing or procurement for military operations. It is also to analyse how the sourcing choices impact the military operational coordination's of GAF in achieving its operational goals, again results of the current study are anticipated to be used by the Ghana Armed Forces in their policies on sourcing for logistics for future operations.

1.6 Scope of the study

The study primarily examined sourcing as a component of military operational logistics perspective in terms of core defence equipment which may sometime border on national security to assess the linkage concerning procuring resources in the value chain and the yield of coordination's and the release of the GAF purposes. The respondents in the study was the Logistics and Procurement Directorate of the Ghana Armed Forces. Descriptive statistics design was used to collect information regarding the existing status and to define "current practice" with respect to the effect of sourcing logistics on the performance of the Ghana Armed Forces and the challenges facing it.

1.7 Organization of the study

The research is composed inside five sections. The general presentation, the foundation to the study, the goals of the study and the problem statement are sorted out inside Chapter one. The questions on research, degree and limitations of the study are covered here.

Theory will be concentrated on as indicated by the research questions utilized as a part of the study as a major aspect of Chapter two. The insights about the populace, test and testing systems utilized as a part of the study are covered in Chapter three. It will clarify the exploration instruments,

methods for information gathering and information analysis plan. Section four comprises of the information presentation, investigation and examination. Section five shows the synopsis, conclusion and proposals for the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This sections evaluates academic and empirical writings that relates to the research. Areas reviewed include the definition and general understanding of sourcing, logistics and military operations with perspectives on the Ghana Armed Forces (GAF). The evaluation is to aid as a guide in the examination of the research objectives.

2.2 Theoretical Review

The theoretical viewpoints are on proposals and philosophies of some earlier scholars, academics and professors.

2.2.1 Overview of the public sourcing / procurement

The Public Financial Management Reform Program (PUFMARP) was propelled by the Government of Ghana in 1996 to provide economy, efficiency and effectiveness in the sourcing of logistics. The goal of the program was to improve public financial management practices in the sourcing for logistics in the country. Weakness were identified in the procurement system by PUFMARP. Amongst these weaknesses included the absence of a complete policy on Public Procurement, the absence of a vital body with know-how to coordinate sourcing, lack of clearly defined roles for sourcing entities, the absence of regulations governing sourcing etc. The program findings were later drafted into a complete procurement transformation program leading to the promulgation of Public Procurement Act, 2003 (Act 663). However due to second generation models of procurement and to streamline bottlenecks in the existing procurement approaches there has been the Public Procurement Amendment Act, 2016 (Act 914).

Hutchful (2002) the existing procurement arrangement comprises several commissions at many stages within the Ministry of Defence and the GAF. Firstly is the Procurement Planning Commission, which is managed by the appointee and has a normal composition of around 12 (despite the fact that others might be brought on board), including the civil Chief Director, the Chief of Defence Staff (CDS), the Ghana Headquarters, Chief of Staff and delegates of the administrations. This working gathering begins its work, which in principle incorporates characterizing need acquisitions in the light of the financial plan accessible, after Parliament acknowledges the military money related arrangement. The commendations of the Procurement Planning Team are sent to the Defence Contracts Team, which is led by the minister with the Chief Director as secretary. This board supports acquisitions and gives the endorsement to tender. Procurement resolutions in the interest of individual administrations are really started by Service Technical Boards, which are specially appointed councils set up together by the separate administration at whatever point key acquisitions are being considered. Their suggestions are sent to the CDS and after that on to the Ministry of Defence and the Defence Contracts Board. The Ministry of Defence is probably going to be represented on these administration boards however the critical staffing condition in the service implies this does not frequently happen. Tendering is carried out by the Ministry of Defence's Tender Board, led by the minister. There are likewise tender boards which complete restricted acquisition for particular units: these are the Ordnance and Stores Procurement Board (led by the Director of Ordnance), the Defence Engineering Services Procurement Board (led by the Director of Engineering Services) and the Food Tender Board (led by the Director of Supply and Transport). This is the Ministry of Defence acquisitions standard operating manual. In any case, the genuine procedure seems, by all accounts, to be highly disordered, as a few charges of abuses. The acquisition procedure is professedly frequently short-

circuited by the military under cases of 'earnestness', referring to the need to fill moment working necessities. The military have their own particular perfect unit sorts and perceived contacts to dealers. It is not obscure for the military to place requests, and accordingly submit the Ministry of Defence to a buy, before requesting endorsement from the service. "Security" is additionally utilized as a reason for limiting straightforwardness. The official procurement preparations has been a zone of extensive friction and rivalry at the most abnormal amounts of the Ministry of Defence. Most key gear acquisitions are finished by discrete administrations with no dialog with sister Services. This circumstance has not changed significantly. Whether the 2003 Public Procurement Act, which looks to manage acquisition rehearses over all open endeavors, has any kind of effect stays to be caught on.

2.3 Definition of key variables and concepts

2.3.1 Definition of public Sourcing

Open Sourcing is the buy of merchandise, works and administrations at the best economy, efficiency and effectiveness, for the advantage or utilization of Governments, companies or people for the most part in the right amount and quality, at the opportune time in the correct place through a strategy record or a marked contract (Public Procurement Board, 2007). Public Sourcing is guided mostly by laws and regulations.

2.3.2 Military sourcing

Sourcing logistics for military operations take account of the treatment of the connection in a value chain of both tangible items and non-tangible items (Cousins, et al., 2008). Sourcing are based on several different strategies, in military operations many different supply strategies are used in

obtaining products as well as technological support of combatant aircrafts. Many researchers observe sourcing plan as ranges of diverse possible tactics to stay economical, resourceful and operational. It includes a variety of sourcing linked options made to make a procedure of activities for the sourcing to finish the strategic objectives. Sourcing plans have become more essential over the time, The viewpoints are many and most researchers have at least two or more conclusions in common when building a sourcing plan (Monczka et al., 2010) that is, make or buy strategy, geographical market strategy, channel strategy, supplier relationship strategy etc.

Sourcing for military is to a colossal degree open procurement aside from that the military operations has very often a less regulated situation but however mindful of the law governing activities of sourcing in the country. The resolve to get necessary stores in during operations exposes the code of practice to some abuses.

2.3.3 Military Sourcing explained

Military Sourcing is the process whereby the authorities in the field of defence acquire various goods, works and services they need to perform their tasks and missions. In military sourcing, the tasks may involve huge financial commitments from the taxpayer in sourcing military equipment, ration and other logistical support including intelligence gathering and analysis. For example, these bodies procure stationery and computer equipment to exercise their administrative functions; they buy food for their soldiers; they provide cleaning services of their locations; they acquire submarines, combat aircraft, armoured vehicles, ammunition, missiles and other defence equipment to protect national security, territorial integrity or meet other international commitments such as peace support operations abroad.

According to Fuior and Born (2006), although the military sourcing might vary from region to region, it often follow these phases:

- threat and operational requirements assessment;
- technical requirements specification;
- consideration of opportunities and / or solicitation of offers vendors;
- evaluation negotiation, and selection;
- manage deliverables,
- examination.

The purpose of this process is to make sure prompt supply of official requests of the military in terms of know-hows sought and the period recommended by the optimal use of apportioned economic wealth. Performing the unchanged, it will establish the utmost grade of transparency and public responsibility, probity in operations, encourage cooperation and fairness.

2.3.4 Military operations

An armed action is the harmonised armed actions of a government, or a non-government player, in reaction to an emerging situation. These engagements are aimed as an armed strategy to decide the circumstances in the country's favour. Operations may be of a conflict or non-conflict form and are mostly referred to by a code name for the purpose of national intelligence and security. Armed tasks are often known by their largely accepted joint coded names than their real operative intents.

2.3.5 Concept of armed logistics

In armed literature there are a variety of varied references to logistics, it is either military logistics, defense logistics, operational logistics or (Skoglund and Dorn, 2008). The most widely used description of logistics is the North Atlantic Treaty Organization (NATO) description which states that coordinations is the craft of arranging and doing the development and upkeep of forces or in its most total sense, the parts of combat operations which manage plan and advancement, procurement, stockpiling, transport, conveyance, support, clearing and transfer of material, transport of work force, securing or development, upkeep, operation and air of offices, obtaining or outfitting of administrations, therapeutic and wellbeing administration bolster (NATO, 2007).

2.3.6 Logistics strategy in military operations

The change of the logistics structure is regularly an inter connection between combat strategy and logistics way outs. The logistics structure depends regularly on two military system conclusions (Berg, 2006):

1. What type of status ought to the equipped units have? (Whole of days required for sorting out the unit)

2. What must be least accessible support to the conveyed unit?

The principal methodology depicts the necessities on the logistics bolster amid the training stage. It portrays the amount of stores and unit must be prepared for conceivable future activities and how they must be protected. The greatest immediacy level is that everything is put away prepared to be sent on different methods of transportation to a combat zone.

The second system gives the reference point for the necessities for the coordinations bolster amid the training (Berg, 2006). These necessities will likewise influence the training stage. Unique arrangements may be required and value should be set up before time to meet battle prerequisites. To assess if the coordinations bolster meets a technique the outcomes additionally should be observed and broke down as military coordinations methodology is such a troublesome battle, to the point that requires ceaseless checking, assessment and observing.

2.3.7 Logistics supply options in military operations

The complexity and uncertainty of an operation makes it imperative that a logistic system is friendly yet toughened to meet combat needs are put in place or adopted. The basic logistic supply options are the lean and agile. The principles of lean and agile options have been discussed by several authors. Research of incline and dynamic ideas in military value chain have demonstrated to diminish costs and abbreviate conveyance times (Mathaisel, 2008). Phenomenal desires of the military who can act in fluctuated operational assignments the coordinations must be light-footed and a great part of the sourcing must be deferred facilitate upstream in the value chain (Christopher, 2000; Christopher and Towill, 2001; Towill and Christopher, 2002). An incline situating requires stable operational arrangements with a limited number of choices (Goldsby, et al. 2006). Numerous have contended the harmony amongst incline and dexterous. Some have advanced a "leagile" approach that is to consolidate the two choices of incline and coordinated, others have

contended that incline and lithe arrangements can't be joined (Hines, Holweg, and Rich, 2004; Stratton and Warburton, 2003). Tatham (2005) discusses that the coordinations must be incline in peace yet dexterous in battle. He proposes that minimizing costs in truce is of indispensable significance while in fighting the coordinations ought to have the flexibility to take care of sudden changes in demand. This however does not stop the utilization of an incline approach likewise in war, yet the reason must be more set out toward dexterous thinking in war times (Tatham and Worrell, 2010).

2.4 Empirical Literature

The empirical literature covers the research questions

2.4.1 How sourcing decisions affect military operations

The options of market in combat operations is not only about value for money; it is also about motherland defence and peace improvement.

In the combat operations essential parts exist for the decision of market flow.. Therefore, the emphasis below is on contractor locations.

Supplier location

On setting out on operations the area of a contractor can have its favorable position and weakness. Obliging a contractor's location is frequently about tolerating the conveyance time and the capacity to give after deals arrangements. The nearness of the contractual worker can be with respect to the transportation, shipment of the cargo can be deferred or in the most pessimistic scenario stuck. The higher the hesitation the nearer ought to the contractor be to the procurer. Short remoteness amongst contractors and reacting customers are gainful both for conveyance time and administration (Kalfakakou and Tsouros, 2001). Important for the area is the accessibility of

transportation foundation and the conveyance times associated with that framework (Klier, 2005). In battle operation the level of implausibility is high, dangers included regularly require quick crisis reaction. The further the contractor is the more imperative is the movement structure keeping in mind the end goal to meet the time requests.

To bolster military operations, the logistics structure needs to coordinate more than 2000 basic items and more than 100 varied spares, also all different sorts of different administrations required (Skoglund and Hertz, 2007). The arrangements contain an immense combination, from water to uncommonly complex fight apparatus, and organizations, including specific remedial or particular support or vital upkeep of the camp range starting now indicated, fight operations change in an extensive variety of edges. There is a need supplies that can meet operationally orchestrated conditions or that can be fit in with the necessities for a specific operation or operational zone. The adaptability of the essential rigging is crucial for a nations' military ability to perform required assignments. For organizations this need relates to the ability to give the organization under all conditions in any possible operational region. For arrangements it concerns the ability to meet assorted common conditions, for instance, tidy tempest, high moisture, high or low temperatures, away in the midst of transportation and in operation. This can put requirements that enable alterations of the things and to change as per new packaging necessities, before sending the arrangements to the region of operation.

To orchestrate, empower and support a military operation, the arrangements must be dealt with into social affairs to lessen the multifaceted design of the examination and organizing. In business environment supplies can be parceled into rough materials, fragments, working supplies, upkeep,

repair and organizations (Van Weele, 2005). In military operations another strategy for dividing the arrangements into different social events is in like manner typical. Other than the need to diminish versatile quality for orchestrating and examination of necessities, the social affair of the arrangements into particular classes in like manner have distinctive coordination's reasons, for example custom controls, fire and creation headings, and therapeutic controls. These grouping frameworks have their own favorable circumstances and drawback.

Perceived Gains in sourcing

As indicated above corruption has been one of the guideline focuses of research on open acquisition. Foreseeing corruption is mainly about neutralizing irregularities. Tabish and Jha (2011) abnormalities may incorporate nonappearance of straightforwardness, sensibility, procedural, contract watching and course, and master rules. Partners contend that straightforwardness is the most critical component in the battle against corruption in sourcing, similarly proficient benchmarks among the procuring authorities is likewise vital. Be that as it may, however these two components are viewed as the most imperative the others are applicable in accomplishing genuine change in the sourcing business. Defilement is regularly characterized as: manhandle of agreement granting power for private pick up (Pashev, 2011). As indicated by Pashev (2011) there is an example that corruption goes upward in the decision pecking orders, while the control work goes the other way while executing procuring headings. He recommends that issues of ethics and morals must be raised. Despite the way that total straightforwardness is highlighted in sourcing by most accomplices total straightforwardness will be incomprehensible in some resistance related domains as a result of necessities of the military structure. The use of an effective audit and control capacity in blend with described and agreed levels of ethics might be extensively more sensible.

Another key stream of research looks at capability and feasibility. Burger and Hawkesworth (2011) portray regard for money as intensification of results concerning yield suitability and capability for the recipient and citizen. As per Erridge (2007) the definition and estimation could benefit much by using an open source instead of focusing on the individual. These essentials open up the acquirement to cost, and also it does critical change to the methodology and to open up the arm's-length association with the providers anyway it makes the acquisitions system more personality bogging.

Relations in public procurement

The essentials of the directions of open acquisition go for arm's-length relations, to maintain a strategic distance from corruption and get productivity in view of neo traditional accepts on the business sectors effectiveness. Be that as it may, a few studies have reprimanded this viewpoint and activities that exist to other sourcing strategies that meet the fairly necessities and in the meantime have a productive discourse with the providers. In the military range the necessity on viability assumes a critical part, which requires an exchange with the providers.

Various military apparatus have a long physical life cycle requiring support for quite a while or more, which also requires a whole deal association. So as such there will exist numerous ex present contract contemplations to do (Waara, 2008). Both the long physical life length of military kit and changes of acquisition controls have had comes about for the change of the association amongst GAF and its vendors.

2.4.2 Logistics needs for military operations

In the defense territory, contingent upon the level of the supply sort, there regularly exist two sorts of business sectors. For the arrangements, which have both normal and military use, there exist a forceful market with various suppliers and various buyers both on the private and worldwide field. Regardless, for arrangements that have recently military use, especially complex kit, the all inclusive market is typically a two-sided oligopoly (Markowski, et al., 2010). On the suppliers' side depicted by heterogeneous oligopoly and on the buyers' side oligopsony. Heterogeneous oligopoly exists when there are couple of suppliers with isolated things and oligopsony exists when there are couple of buyers which think about each other and all in all get control towards the supplier (van Weele, 2005). On a household level in a little nation, most military supplies exist on an imposing business model market with one supplier and one buyer (Markowski, et al., 2010). The area showcase in the scope of operation is routinely a rising oligopoly publicize, where the procurer conventionally has a significant power advantage due to the qualification in size (Skoglund and Hertz, 2011).

In the military division, the suppliers on the private market can be viewed as a part of the national security system (Markowski, et al., 2010). They fight that if so a segment of the sourcing will be composed towards that industry. Their argumentation has the result that the fundamental administration should begin with a decision concerning whether the family unit should be used, due to national security reasons. The nearby market can be viewed as an exceptional example of the overall market in military sourcing. The neighborhood market is basically reduced transportation cost and to condense lead-times. The significance of the national business for the national security is a psyche boggling matter, requiring an inconceivable study. The same is

generous for the legitimate necessities. These two perspectives won't be discussed in any detail in this hypothesis, however is a subject for future research.

2.4.3 Measures to improve logistics support for military operations

Another key stream of research discusses capability and amplex. Burger and Hawkesworth (2011) portray value for cash as development of results concerning yield sufficiency and viability for the recipient and native. With various destinations, for instance, sensible society or a redistribution of the welfare, the allot swings to be altogether more trapped. As per Erridge (2007) the definition and estimation could benefit much by using an open regard rather than focusing on the individual. Key segments to consider is e.g. green or normal execution which has been a part of the all inclusive customs for quite a while (Palmujoki, Parikka-Alhola and Ekroos 2010). These necessities open up the acquisition to consider cost, and in addition other correspondingly key parts. Regardless of the way that there are no broad change to the method of the arm's-length association with the suppliers, it makes the procurements more mind boggling.

Justifying investment made out of public procurement is essential. Deploying public scare resources without necessary return on investment deprive other sectors of the economy of not functioning. Value proposition only based on cost and quality based purchases, but maximum, effective and efficiency throughout the public procurement process. Promoting accountability and transparency are hallmarks of ensuring defence procurement value for the state and public confidence in activities. Ensuring fairness and competition not only add value but promote efficient supplies (World Bank, 2003) There are generally held convictions that legislature and open part procurement basic leadership is based upon "most minimal cost". This is not now the case. Buying choices must be made on the premise of best esteem for cash criteria. This requires a thought of numerous components including; costs over the lifetime of resistance products or

potentially benefits; status and remaining of providers; correct subtle elements of guard hardware, merchandise or administrations offered; money related perspectives including instalment terms, premise of legally binding value, transport, and so forth; degree of support through existence of acquire thing of upkeep through to transfer (Peter Baily et al, 2008).

Furthermore, impressive totals of cash are spent yearly in the public defence procurement which affects taxpayers. Public accountability principles are essential. Telgen and Sitar (2001) has called attention to that substance can include value by ensuring that element acquirement improves contract, enhanced buying productivity; consumer loyalty (enhanced quality and administration); closer and more co-agent connections and providers; decreased cost, enhanced quality and lead time. Be that as it may, with a specific end goal to enhance guard procurement standards and include value for cash to be specific: resistance acquisition have an acquirement technique; arrange early and concur prerequisites, effectively oversee contracts; consider inventory network; look for constant change and checking execution are vital in enhancing esteem out in the open segment procurement.

According to Sanjeev, (2000); and World Bank (2003), considerable amount of government budget goes into defence procurement in acquiring varying degrees of military equipment, helicopters, and other non-core products. Further, the defence procurement processes are complex involving technicality especially when it comes to specifications and kind of contract documentations. Also, the issues of protecting state information from external and internal actors, unnecessary aggression and national security policy create heaven for perceived ineffectiveness of defence procurement system. Moreover, the parliaments have been seen to play pivotal role in ensuring that defence procurement and budget are subjected to scrutiny. However, in many

developing country like Ghana, parliament are marginalized, scrutinizing defence expenditure are compromised as there perceived possible collusion. The principle of effective and efficient utilization of public funds with the objective of ensuring value prepositioning with adherence to the Act 663 by defence procurement authorities through civil society support are necessary in ensuring better but effective defence procurement.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The section dives into procedure that was utilized as a part of analysing the information that was gathered. The part clarifies the exploration plan, segments of the survey, populace and testing system, and the technique for information investigation.

3.2 Research Design

A research design alludes to the general technique a researcher picks with a specific end goal to incorporate the changed parts of the study in a sound and intelligent route, to guarantee that the examination issue is effectively tended to and destinations of the study acknowledged; it constitutes the diagram for the accumulation, estimation, and investigation of information

This study examined the effect of sourcing logistics on the performance of the Ghana Armed Forces. Due to the nature of research, the study employs a descriptive research design. An enlightening research design is one used to get data in regards to the present status of a situation and to depict "what exists" as for factors or conditions in a circumstance. This research seeks to explain the current situation regarding the effect of sourcing logistics on the performance of the Ghana Armed Forces and the challenges facing it.

Qualitative aim at understanding the rationale behind some concept. Such studies are conducted in social science research which aim at having an in-depth idea of concepts while qualitative aim at quantifying opinions. Comparative analysis between the two indicates that qualitative is subjective while quantitative is objective. In order to have a complete study devoid of any limitation based on the research method adapted for the study, one mixed method (qualitative or quantitative).

The survey method of data collection using questionnaires is employed in this research. The data collection method made use of survey instrument comprising of standardized open-ended and close-ended questionnaires (Newman, 2007).

The study made utilization of both open-end and close-end survey addresses in other to pick up a superior comprehension of the circumstance. The information investigation took two structures: firstly, the study utilized substance examination and after that, so as to increase more prominent comprehension of the recurrence and quality of reactions and mentalities, the information was coded and evaluated to take into consideration measurable investigation

3.3 Population and Sampling Technique of the study

The targeted population for this study were mostly the officers of Logistics and Procurement Directorate of the Ghana Armed Forces. The study made use of convenience sampling. Convenience sampling is where elements are selected for the sample, for the comfort of the respondents. The researcher picked respondents that were promptly accessible, adjacent and additionally eager to take an interest. This testing technique is chosen because in the view of the researcher it is the most convenient. Due to the difficulty nature of getting information on sourcing logistics, the study sampled 40 military officers from the Logistics and Procurement Directorate of the Ghana Armed Forces. However, the response rate was 75%, which means that 30 military officers fully responded to the questionnaire.

3.4 Data Collection

This study used the primary data collection with much emphasis on the use of questionnaires for data collection. Questionnaires are sets of inquiries and scale intended to produce enough crude information for finishing the data prerequisites between the real inspected comes about and the assessed genuine populace comes about (Saunders, 2007)

This research is mainly a qualitative work, but the information provided was be coded and analyse to give it a quantitative texture.

This study used primary method of data collection with much emphasis on the use of questionnaires for data collection. Both closed-end and open-end questions are employed in collecting the raw data.

3.4.1 Components of the Questionnaire

The survey questions were divided into three parts, each part is explained below:

3.4.2 Profile of the Respondents

The first section of the survey questionnaire captured the profile of the respondents, which includes the age, marital status, level of education, rank in the military and gender. Gender is included to find out whether men or women participate more in the sourcing decisions although the literature for developing economies show less female participation in key decisions. Previous studies have showed that the younger the officer the higher the level of adaptability to new technology and so can better understand the current issues on military logistics. The Human capital theory postulates that the higher your education and experience, the more efficient you are in the labour market, justifying the inclusion of education and experience in the respondents file.

3.4.3 Logistics needs and support for military operations

The second section of the survey questionnaire examined the scope of knowledge or information of officers on the recent procuring choices of the Ghana Armed Forces on military operations. In terms of the knowledge of officers, three main questions are asked: firstly, do you think that currently the Ghana Armed Forces have logistic needs for their operations, secondly, do you think the Ghana Armed Forces have made effort to satisfy the logistic needs and thirdly, what measures do you think if taken improved logistic support for military operations by the Ghana Armed Forces. In order to evaluate the knowledge of officers, a five point likert scale ranging from 1 to 5 with 1

denoting very inadequate to 5 denoting very adequate were used in addition to open ended questionnaires.

3.5 Data Processing Method

This study makes use of both qualitative and quantitative research method which were analysed by recording the responses of the respondents and analysing using tables, charts, and frequency distribution for interpretations. Measures of central tendency and dispersion such as the mean and standard deviation are also employed to analyse the data.

CHAPTER FOUR

DATA PRESENTATION ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

This part essentially exhibits the exact results of the study and the analyses of the outcomes. Part 4.2 presents the demographic information of the respondents. Descriptive statistics such as the mean is employed in section 4.3 to examine the efficiency of sourcing logistics and its effect on the performance of the Ghana Armed Forces (GAF) during their operations. In section 4.4, the study presents a graphical analysis of the logistic needs of the GAF. Section 4.5 examines the process of sourcing logistics by the GAF whilst section 4.6 presents the measures to improve logistic sourcing for military operations. The section concludes with a summary in section 4.7

4.2 Demographic Information of Respondents

Table 4.1 contains the demographic information of all respondents sampled from the Logistics and Procurement Directorate of the Ghana Armed Forces. From the table, 6.67% (i.e. n=2) of the respondents are less than 30 years whilst 30% (i.e. n=9) are in the age category, 40 to 49 years. However, majority of the respondents (63.33%) are in the age category, 30 to 39 years. This therefore implies that all the respondents are in their prime age. In terms of the marital status of respondents, 86.67% (i.e. n= 26) of the respondents are married whilst the remaining 13.33% (i.e. n=4) are single. Table 4.1 further indicates that majority of the respondents (i.e. 86.67%, n=26) have tertiary education whilst the minority (i.e. 13.33%, n=4) have secondary education. This implies that all the respondents have educational enlightenment. In terms of rank, majority of the respondents (i.e. 63.33%, n=19) are senior officers whilst the minority (i.e. 36.67%, n=11) are junior officers. Lastly, in terms of gender, 30% (i.e. n=9) of the respondents are females whilst the remaining 70% (i.e. n=21) are males.

Table 4.1: Demographic Information of Respondents

Demographic Variable	Frequency	Percent (%)
Age (in years): less than 30	2	6.67
30 to 39	19	63.33
40 to 49	9	30.00
Marital Status: Married	26	86.67
Single	4	13.33
Educational Attainment:		
Secondary	4	13.33
Tertiary	26	86.67
Rank in the military:		
Junior officer	11	36.67
Senior officer	19	63.33
Gender: Males	21	70.00
Females	9	30.00

Source: Author's construction from data set

4.3 Effect of Sourcing Logistics on the Performance of the Ghana Armed Forces (GAF)

The primary objective of this study is to examine the effect of sourcing logistics on the performance of the GAF. In order to achieve this objective, the study first ascertains the efficiency of the process of sourcing logistics by asking respondents to rank the length of time (i.e. on a scale of 1 to 5, with 1 being very short and 5 being very long) it takes for the logistics to get to the GAF when the sourcing is made.

Table 4.2: Rank of the length of time it takes for the logistics to reach the GAF when the sourcing is made.

Rank	Frequency	Percent (%)
Very Short	0	0.00
Short	4	14.29
Don't know	1	3.57
Long	14	50.00
Very Long	9	32.14
	28	100

Source: Author's construction from data set

The table indicates that majority of the respondents (50%) ranked the length of time it takes for the logistics to reach the GAF as long. This means that it takes a long time for the logistics to reach

Table 4.3: Average ranking of the length of time it takes for the logistics to reach the office of the GAF

Variable	Mean Rank	Standard Dev.	Minimum	Maximum	No. of observations
Length of time it takes for the logistics to reach the GAF	4	0.98	2	5	28

Source: Author's construction from data set

Furthermore, table 4.3 indicates that the average rank by the respondents is 4, which confirms the result in table 4.2 that it takes a long time for the logistics to get to the office of the Logistics and Procurement Directorate of the Ghana Armed Forces when the sourcing is made. This suggests that the efficiency of sourcing logistics is poor. Consequently, this is expected to lead to poor performance of the GAF. In order to ascertain this effect, respondents were asked to rank how the current nature of sourcing logistics has affected the performance of the GAF on a scale of 1 to 5 (with 1 being poor and 5 being excellent). Table 4.4 indicates the effect of the current nature of sourcing logistics on the performance of the GAF.

Table 4.4: The effect of the current nature of sourcing logistics on the performance of the GAF

Rank	Frequency	Percent (%)
Poor	8	27.59
Average	9	31.03
Good	6	20.69
Very good	4	13.79
Excellent	2	6.90
	29	100

Source: Author's construction from data set

The results indicate that majority of the respondents (31.03%) stated that the current nature of sourcing logistics by the GAF has led to average performance of the GAF. Furthermore, the result in table 4.5 indicates that the average rank by the respondent is 2.4, which means that sourcing logistics has not led to significant improvement in the performance of the GAF. This may be attributed to the long distance between the producer unit and the consumer unit (i.e. the GAF).

According to Kalfakakou and Tsouros (2001), small distances between suppliers and responding customers are beneficial for service.

4.4 Identification of Logistic Needs for Military Operation

Analysis from the data indicates that the Ghana Armed Forces (GAF) currently have logistic needs. This is because majority (63.33%) of the respondents stated that the GAF have logistic needs whilst the minority (13.33%) are of the opposite view. In order to identify these logistic needs, respondents were asked to state them categorically. Figure 4.1 indicates the current logistic needs of the GAF.

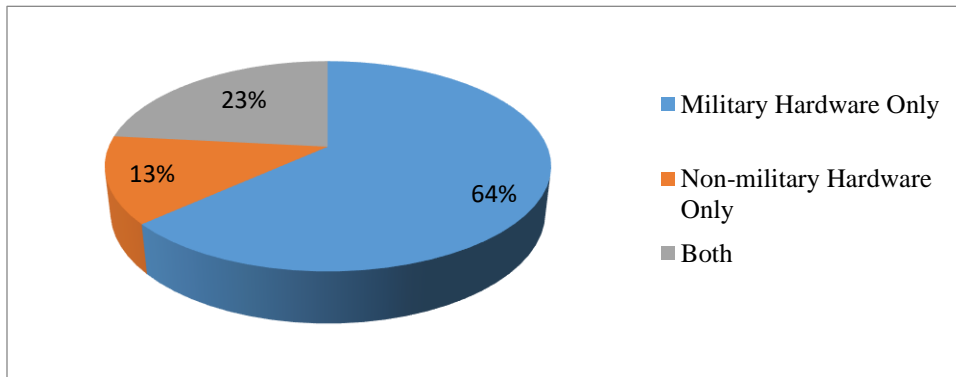


Figure 4.1: Logistic Needs of the Ghana Armed Forces

Source: Author's construction from data set

The current logistic needs of the GAF are classified under military and non-military hardware. The analysis indicates that 19 of the respondents, which represent 64%, stated that only military hardware such as ammunitions and carrier vehicles constitute the current logistic needs of the GAF (see figure 4.1). However, 23% of the respondents stated only non-military hardware such as accommodation, office stationery and equipment as the current logistic needs of the GAF whilst

the remaining 13% identified both military and non-military hardware as the current logistic needs of the GAF (see figure 4.1).

In order to ascertain the level of effort made by the GAF to satisfy the logistic needs, respondents were asked to rank the effort level on a scale of 1 to 5, with 1 being very inadequate and 5 being very adequate. The study finds the average rank of the level of effort to be 3.31, which means that adequate effort has been made to satisfy the logistic needs though not fulfilled.

4.5 Process of Sourcing Logistics by the Ghana Armed Forces (GAF)

According to Fuior and Born (2006), although the military sourcing may vary from nation to nation, it generally takes after these stages:

- assessment of the danger and operational necessities;
- specification of specialized necessities;
- exploration of alternatives and/or sales of offers sellers;
- negotiation, assessment and choice;
- manage deliverable and,
- examination.

The study examines the logistic sourcing process of the GAF in order to ascertain whether it conforms to the process suggested by Fuior and Born (2006). In order to achieve this objective, respondents were first asked to state whether the GAF has a well-defined process of sourcing logistics. Interestingly, the result indicates that the GAF has a well-defined process of sourcing logistics. However, they could not state emphatically what the process entails. This is an indication

that knowledge on the process of sourcing military logistics, which is stated in Act 663 of defence procurement, is limited.

4.6 Measures to Improve Logistic Support for Military Operations

This study also seeks to identify the measures to improve logistic support for operations by the GAF. Table 4.2 indicates the suggested measures by the respondents to improve logistic support for military operations by the GAF.

Table 4.5: Suggested Measures to Improve Logistic Support for Military Operations

Suggested Measures	Frequency	
	Frequency	Percent (%)
Commitment from high military command	1	4.76
Logistic planning	7	33.33
Proper care and maintenance of equipment	3	14.29
Purchasing of standardized equipment	1	4.76
competitive bidding	7	33.33
Financial support from government	1	4.76
More training and education	1	4.76

Source: Author's construction from data set

Table 4.5 indicates that majority of the respondents (33.33%) suggested logistic planning and competitive bidding as measures to improve logistic support for military operations by the GAF. This is in line with the finding by World Bank (2003) that ensuring competition not only add value

but promotes efficient supplies. Despite this, 4.76% of the respondents are of the view that commitment from high military command, purchasing of standardized equipment, financial support from the government and more training and education are the measures to improve logistic support for military operations (table 4.5). Lastly, 14.29% of the respondents stated that proper care and maintenance of equipment is a measure to improve logistic support for military operations (table 4.2).

4.6 Chapter Summary

This chapter basically achieves the objectives of the study (see section 1.3) by employing descriptive statistics, tables and chart. In terms of the effect of sourcing logistics on the performance of the GAF, the analysis indicates that sourcing logistics has not improved the performance of the GAF due to delay in the process. The chapter further identifies military hardware such as ammunition and carrier vehicles as the major logistic needs of the GAF. In terms of the process of sourcing logistics, the study finds that although the respondents are aware of the existence of the process of sourcing logistics, they cannot state emphatically what the process involved. This suggests that knowledge on the process of sourcing logistics, which is stated in Act 663 of defence procurement, is limited

CHAPTER FIVE

SUMMARY, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

This chapter outlines the summary of the findings of the study, draw conclusions and make recommendations based on the findings.

5.2 Summary of findings

The study primarily examines the effect of sourcing logistics on the performance of military organizations using the Ghana Armed Forces (GAF) as a case study. Specifically, this study seeks to identify the logistics needs of the Ghana Armed Forces and examine the process involved in sourcing decisions by the Ghana Armed Forces (GAF). Lastly, the study seeks to identify measures to improve logistics support for military operations. In order to achieve these objectives, the study employs descriptive statistics, tables and charts as tools of analysis.

The result of the analysis indicates that sourcing logistics has not improved the performance of the GAF due to delay in the process.

The analysis of the under listed objectives were as follows:

1. To identify the logistics needs of the Ghana Armed Forces: In terms of identifying the logistics needs for military operations, the study identifies military hardware such as ammunition and carrier vehicles as the major logistic needs of the Ghana Armed Forces (GAF).
2. To identify the process involved in sourcing decisions by the Ghana Armed Forces: the study finds that although respondents are aware of the existence of the process of

sourcing, they cannot state emphatically what the process involved, which implies that knowledge on the sourcing process is limited.

3. To identify measures to improve logistics support for military operations: the study identifies commitment from the military high command, logistic planning, purchasing of standardized equipment and competitive bidding as measures to help address this objective.

5.3 Conclusion

This study contributes substantially to the literature on logistics sourcing with particular reference to a military institution such as the Ghana Armed Forces (GAF). Empirical studies on logistics sourcing in military institutions are limited. This study therefore fills the gap in the literature by examining the effect of effect of sourcing logistics on the performance of military organizations using the Ghana Armed Forces (GAF) as a case study. The result of the analysis indicates that sourcing logistics has not improved the performance of the GAF due to delay in the process.

5.4 Limitation of the Study and Future Research

The study is limited in terms of its sample size of 30 respondents from the Logistics and Procurement Directorate of the Ghana Armed Forces. The limited sample size is due to difficulty of getting personnel to respond fully to the questions on the questionnaire as some of the information needed may be confidential and sensitive. Future studies on this issue should therefore be conducted with a larger sample size since it increases the efficiency of the results.

5.5 Recommendations

Based on the findings in section 5.1, the study recommends that in order to ensure fairness, transparency and hence, eliminate corruption in the Logistics and Procurement Directorate of the

Ghana Armed Forces, adequate training and education should be given to all personnel of directorate. This will make them knowledgeable of the complexities of the entire sourcing process thereby reducing corrupt practices on the part of those who understand the complexities of the process. Lastly, in order to improve logistic support for military operations, the study recommends commitment from the military high command, logistic planning, proper care and maintenance of equipment, purchasing of standardized equipment, competitive bidding, financial support from government and more training and education to logistic and procurement staff.

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APPENDIX 1

A SPECIMEN OF THE QUESTIONNAIRE

My name is Larvie Carl Selasi. I am a Master of Science student of the Kwame Nkrumah University of Science and Technology (KNUST). As part of meeting the requirements for the award of master's degree in my field, I am carrying out this research to examine the effectiveness of sourcing logistics for military operations using the Ghana Armed Forces (GAF) as a case study. Your co-operation is therefore needed for the successful execution of this research. Any information provided shall be kept confidential and only be used for the purpose of this research. Thank you for your co-operation.

SECTION A: PERSONAL INFORMATION

1. Age (Please tick)

Below 30 years 30-39 years 40-49 years

59 years 60 years and above

2. Marital Status

Married Single Divorced Widowed

3. Level of Educational Attainment

No Education Basic Secondary Tertiary

4. Rank in the military

Junior officer senior officer

5. Gender

Male Female

SECTION B: LOGISTIC NEEDS AND SUPPORT FOR MILITARY OPERATIONS

6. Do you think that currently the GAF have logistic needs for their operations?

Yes No Don't know

*(Note: if your response to Q5 is **Yes**, please continue. If your response is either **No or Don't know**, please move to Q10)*

7. If yes to Q5, what do you think are these logistic needs? (Please state them below)

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8. Do you think the GAF have made effort to satisfy the logistic needs stated in Q5 above?

Yes No Don't know

9. If yes to Q7, rank on a scale of 1 to 5, the level of effort made by the GAF to satisfy the logistic needs. (1-very inadequate, 2- inadequate, 3-indifferent, 4-adequate, 5-veryadequate)

Please state the appropriate number.....

10. If No to Q7, why do you think the GAF has not made any effort to satisfy the logistic needs? (Please state)

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11. Does the GAF have a well-defined process of identifying its logistic needs?

Yes No Don't know

12. If yes to Q10, please state the process briefly.

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13. If No to Q10, please suggest the process that the GAF can follow to identify its logistic needs.

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14. What measures do you think if taken will improve logistic support for military operations by the GAF?

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SECTION C: SOURCING LOGISTICS FOR MILITARY OPERATIONS BY THE GAF

15. Does the GAF have a well-defined process of sourcing logistics for its operations?

Yes

No

Don't know

(Note: if your response to Q14 is Yes, please continue. If your response to Q14 is No, please move to Q19. If your response to Q14 is Don't know, please move to Q20)

16. If yes to Q14, please state the process briefly.

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17. On a scale of 1 to 5, rank the effectiveness of the sourcing process stated in Q15 above.
 (1-very ineffective, 2- effective, 3-Don't know, 4-effective, 5-very effective)

Please state the appropriate number.....

18. Do you think the process stated in Q15 is backed by a legal instrument (LI)?

Yes No Don't know

19. If yes to Q17, please state the legal instrument (LI).

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20. If No to Q14, please suggest a process that the GAF can follow to procure logistics.

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21. On a scale of 1 to 5, rank how long it takes for the logistics to get to the GAF when the sourcing is made. (1-very fast , 2-fast , 3-Don't know, 4-long, 5-very long)

Please state the appropriate
number.....

22. On a scale of 1 to 5, rank the extent to which sourcing logistics has affected the performance of the GAF in their operations.(1-poor , 2-average, 3-good, 4-very good, 5-Excellent)

Please state the appropriate

number.....

23. What measures do you think should be taken to improve the efficiency or effectiveness of sourcing logistics for the GAF?

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