ISSN No:-2456-2165

Ghana Institute of Management and Public Administration (Gimpa) and the
Chartered Institute of Logistics and Transport (Cilt-Ghana)

The Prospects of Transport Management at the Defence Mechanical Transport Battalion of the Ghana Armed Forces

Submitted By

Mohammed Sulemana

221051058

A Project Work Submitted to the Ghana Institute of Management and Public Administration (Gimpa) in Partial Fulfillment of the Requirements for the Award of Advanced Diploma in Logistics and Transport (Adilt)

DECLARATION

Candidate's Declaration

I hereby declare that this long essay is the result of my own original work and that no part of it has been presented for another degree in this University or elsewhere

NAME: MOHAMMED SULEMANA

Index Number:221051058

Signature……..

Date:

Supervisor's Declaration

I hereby declare that the preparation and presentation of the long essay were supervised in accordance with the guidelines on supervision of long essay laid down by the Ghana Institute of Management and Public Administration.

Name: Samuel Awuah

Signature……..

Date: ……..

ISSN No:-2456-2165

DEDICATION

I dedicate this thesis first of all to Almighty ALLAH, from the beginning and the end for the gift of life, wisdom and strength throughout my journey in school. I also devote this work to my Father and Mother, Alhaji Mammah Tanko and Hajia Fati Mammah for their enormous support and encouragement for my education, also dedicate this work to my former Commanding Officer Col. A.A BABA for his wonderful support both academics and enlightenment of military operations in terms of logistics and transport management.

I also dedicate to my sweetheart Hajia Lantana Munkaila and my lovely Son Farakhan Kpanteng Sulemana for supporting me throughout my life even through difficult moments. I appreciate all that you did for me. Finally, I devote this work to my indefectible Supervisor Mr. Samuel Ofosu Awuah. I appreciate your encouragement, generosity and good counsel. May Almighty ALLAH richly bless you.

ISSN No:-2456-2165

ACKNOWLEDGEMENT

If not Almighty ALLAH who was on my side, I wouldn't be able to complete this thesis, it is He that made me not myself, may his name be glorified.

I own a debt of gratitude to my supervisor Mr. Samuel Ofosu Awuah whose useful comments, suggestions love and encouragement propelled me to the end of this thesis.

I would be very ungrateful if I forget my parents, Alhaji Mammah Tanko and Fati Mammah, my sweetheart Hajia Lantana Munkaila and my Lovely Son Farakhan Kpanteng Sulemana and my best friend Mr. Ofosu Nkrumah Ebenezer for their advice, support, encouragement and love.

ISSN No:-2456-2165

ABSTRACT

The Transportation Management System (TMS) is considered a pivotal segment in the realm of supply chain management, often likened to the emerging sun in this domain. Given the dynamic nature of Ghana's logistics market and the active involvement of foreign logistics enterprises, local players in Ghana frequently grapple with the challenge of delivering effective Third-Party Logistics services. Notably, substantial gaps persist between the capabilities of domestic entities and those of their foreign counterparts. This paper focuses on exploring the application of TMS in Ghana's logistics market, with a primary emphasis on comparing TMS implementation between a multinational corporation and a local Ghanaian company. The central contribution of this study lies in evaluating how TMS is utilized and comparing its efficacy between UPS, a multinational company, and the Defence Mechanical Transport Battalion of the Ghana Armed Forces, a local entity. The study's unit of analysis comprises key staff members employed by the two selected companies (UPS and the Defence Mechanical Transport Battalion) and individuals possessing pertinent knowledge related to the research. The study's population consists of 50 key staff members from both UPS and the Defence Mechanical Transport Battalion.

In selecting the institutions for analysis, the criteria considered include the extent of disparity between the Defence Mechanical Transport Battalion of the Ghana Armed Forces and UPS, along with their representativeness of local small and medium-sized enterprises (SMEs) and foreign industry giants, respectively. The comparative analysis clearly indicates that UPS excels in managing transportation issues compared to the Defence Mechanical Transport Battalion of the Ghana Armed Forces. Furthermore, the findings suggest that the Defence Mechanical Transport Battalion needs to make significant adjustments to its current methods of management and monitoring.

TABLE OF CONTENTS

ISSN No:-2456-2165

CHAPTER ONE
INTRODUCTION

A. Background to the Study

In 2003, a study conducted by Deloitte &Touche indicated that only seven percent of global manufacturers surveyed believed that they were effectively managing their supply chains (Deloitte &Touche, 2003). Viewing their supply chain performance as “average” or “poor” was the perception of the vast majority (83 percent). These lower performing firms suffered the financial symptoms of an ailing supply chain, including failure to achieve goals for return on capital and return on assets, operating margins of less than 5 percent, and falling short of revenue goals and profitability targets. The study results pointed to the critical need to manage ever-increasing complexity through a holistic approach to the supply chain.Key factors that separated global manufacturers with successful supply chains from others included the way these companies: 1) collaborated with customers, 2) effectively managed the product life cycle for their goods, and 3) implemented technology throughout their supply chain operations. Interestingly, the study indicated that while long-term planning tools like enterprise resource planning (ERP) can prove valuable in managing supply chain complexity, so too do the tactical technologies like the advanced planning and scheduling (APS) system, warehouse management system (WMS), and transportation management system (TMS).

Given the dynamic nature of Ghana's logistics sector and the active involvement of international logistics enterprises, local players in Ghana often face challenges in their Third-Party Logistics (3PL) service capabilities. Significant disparities exist between domestic logistics firms and their foreign counterparts. This thesis seeks to analyze the application of Transportation Management System (TMS) at the Defence Mechanical Transport Battalion of the Ghana Armed Forces and compare it with a large multinational company. The primary focus is on understanding how TMS is utilized in Ghana's logistics market and making a comprehensive comparison between a multinational corporation and a local Ghanaian company.

To achieve this objective, a case study and interviews were conducted with the United Parcel Service, a foreign multinational logistics enterprise, and the Defence Mechanical Transport Battalion of the Ghana Armed Forces. This approach enhances the reliability and validity of the paper. The theoretical framework incorporates relevant knowledge of TMS, modes and carriers, and Third-Party Logistics (3PL). The comparison in the body of the thesis is structured around three logistical levels: strategic, tactical, and operational. The goal is to identify significant differences across nine selected parts from the TMS reference functional model and domains.

Considering the unique characteristics and future challenges of the Ghanaian logistics market, the thesis aims to assess whether the Defence Mechanical Transport Battalion of the Ghana Armed Forces should adopt TMS either in its entirety or in part. The intention is to provide applicable solutions based on the findings.

B. Problem Statement

Selecting the appropriate topic is a crucial initial step in crafting a thesis. In this context, the term "right" implies that the chosen topic should be pertinent to the field of study, allowing for meaningful theoretical contributions. The author was drawn to the subject of transportation management systems (TMS) while examining pressing issues in logistics. Sustaining this interest, the author contemplated potential areas of study within TMS. For instance, the focus could be on exploring how TMS adds value to organizations with intricate transport requirements. The author conducted thorough research and data collection on all conceivable points of contention.

As highlighted in the paper's introduction, Ghana emerges as a rapidly growing market in the logistics sector, attracting numerous foreign logistics companies. One factor influencing the choice of Ghana's logistics market is the author's familiarity with the language and culture, facilitating the collection of primary research data. Consequently, the author identified TMS in Ghana as the focal point of the essay. Additionally, the author recognized that a comparative analysis, particularly between a foreign logistics giant and a smaller local company, could provide valuable insights. Ultimately, the author refined the topic to center on the comparison and enhancement of TMS within Ghana's logistics market.

C. Research Objectives

This paper seeks to access the prospects of transportation management at the defence mechanical transport battalion of the Ghana Armed Forces. To achieve this, the following are listed as the specific objectives of the research:

- To investigate how TMS is applied in Ghana’s logistics market.
- To make comparison of TMS between the Defence Mechanical Transport Battalion of the Ghana Armed Forces and the United Parcel Services.
- To determine if the Defence Mechanical Transport Battalion of the Ghana Armed Forces is to adapt TMS either in entirety or in part and to provide solutions where applicable.

D. Research Questions

To find answers to the research objectives, the below research questions have been posed to aid in the process.

- How has TMS been applied in Ghana's logistics market?
- What is the comparison of TMS between the Defence Mechanical Transport Battalion of the Ghana Armed Forces and the United Parcel Services?
- Should the Defence Mechanical Transport Battalion of the Ghana Armed Forces adapt TMS either in entirety or in part and solutions can be provided if any?

E. Significance of the Study

The study will contribute to the limited knowledge on Transport Management System in Ghana. This paper seeks to investigating how TMS is applied in Ghana's logistics market and making comparison of TMS between a multinational company and a Ghanaian local company. This will also provide valuable data in advising local logistics companies on whether to adapt TMS either in entirety or in part.

F. Organization of the Study

The study will be organized as follows: **Chapter one**, will introduce the subject matter, giving an overview of the project, problem statement, objectives and significance of the study. **Chapter two** will focus on the literature review of the Transport Management System and make comparison of a large multinational company and a local logistics company**. Chapter three** will provide details of the Methodology used for the study. **Chapter Four**, will focus on data analysis and discussion of findings. Finally, **Chapter five**, will comprise summary, Conclusions and Recommendations for the study.

ISSN No:-2456-2165

CHAPTER TWO
LITERATURE REVIEW

A. *Introduction*

Reviewing the literature is a research activity all in itself and a contribution can be made to knowledge on a particular subject through the literature review Easterby-Smit 2008.The chapter discusses the definitions of Transport Management system (TMS), Benefits of TMS, Functions of a TMS and Transport Management System delivery models.

B. *Definitions of Transport Management System (TMS)*

The Transport Management System has been viewed as the rising sun segment of the supply chain management. This was noted in the latter part of the 20th century but only since the beginning of the 21st century has it been identified as a mature system Federal Highway Administration, 2005. TMS has been a critical focusing area for manufacturers, distributors and third party logistics providers in their pursuit of developing a lean agile and efficient customer-oriented supply chain Congnizant, 2010.

Transport Management systems are information technologies used to plan optimize and execute transportation operations. A TMS can facilitate transportation management activities that take place before during and after the transportation movement by optimizing freight flows among multiple facilities tracking freight in transit, and managing the freight payment process Coyle, Bardi and Langley 2003.

A Transport Management System (TMS) is a software platform designed to give shippers tools for control and visibility over their supply chains. A TMS provides a single platform to manage all logistics events in the life cycle of an order both inbound and outbound with functionality and resources for all supply chain stakeholders: transportation warehousing carriers, vendors/suppliers purchasing customer service sales finance and the executive leadership team.

C. *Benefits of Transport Management System (TMS)*

- *TMS Provides Greater Actionable Intelligence.*

An organization can use TMS to manage its overall supply chain and leverage the transportation ecosystem in which it participates. This will allow the shipper to work smarter using actionable intelligence and better process management. This will also provide the opportunity to realize continuous improvements based on the data and information provided by the TMS ecosystem. The intelligence from the TMS ecosystem can used for benchmarking, performance evaluations, allowing companies to operate more efficiently in a cyclical market where capacity fuel and volume issues can impart day to day operations and also allow shippers to benchmark against their peers and industry standards.

- *TMS Provides Shippers Access to Critical Behaviours.*

Shippers through TMS are able to determine the behaviours within their ecosystem that tells them whether they are performing well or if they need to do make some business process adjustments. Answers to critical questions like how carriers, physical location and customers are acting within the ecosystem in which traditional on-premise or manual transportation management system cannot answer easily or quickly. This brings to mind a multi-tenant, SaaS TMS which provides shippers greater visibility outside of their own day-to-day management of their own individual transportation networks.

- *TMS Provides Unsurpassed Connectivity Levels.*

The typical shipper operating in today's business environment has anywhere from 30 to 100 different core carriers within its network. Lean logistics ecosystem for example comprises of 18,000 carriers and that number is growing all the time. But whether they have access to 30 carriers or 18,000 shippers need to know which carrier is operating well, which is falling behind on performance requirements which is exceeding standards and so forth. According to Chris Trimmer chief commercial officer, Lean Logistics, Carriers are focused on optimizing their assets around the amount of freight that they move for different shippers. Trimmer further explained that if a shipper understands that mission and how the carrier needs to behave within its network, making the right choice becomes much easier.

- *TMS Provides Shippers the Opportunity to Leverage Access Capacity within their Own Transportation Network.*

A shipper will be able to take advantage of their operational capacity within their ecosystem, by integrating with a transport management system which will lead to cost reduction and expansion of their network capabilities.

D. Functions of a TMS.

➢ *TMS Enhances Visibility.*

The supply chain processes a vast volume of data, and the primary drivers of value in Transportation Management Systems (TMS) and the subsequent return on investment (ROI) are the visibility into this supply chain data and activity. This data is generated and stored in various sources, including internal systems, external carrier and vendor systems, and, in some cases, remains uncaptured. TMS plays a crucial role in enhancing visibility for both internal and external stakeholders. It allows stakeholders to gain a comprehensive view of these activities.

For instance, shippers can track shipment activities, enabling them to plan and schedule labor efficiently for varying dock volumes. Simultaneously, end customers benefit from tracking links that provide real-time updates on shipment locations. These updates may originate from carrier websites, Electronic Data Interchange (EDI) messages from carriers, or directly through application programming interfaces (APIs).

➢ *TMS Increases Reporting Activities*

Accessing Business Intelligence (BI) reports provides valuable insights into data and trends, enabling meaningful and actionable visibility. BI reporting plays a crucial role in driving cost savings and facilitating continuous improvement through KPI measurements. Various reports, including summary, exception, performance, activity, and advance reports, contribute to enhancing visibility into supply chain performance by shedding light on relevant data.

➢ *TMS Promotes Efficient Operations*

The Transportation Management System (TMS) empowers shippers to maintain strategic and day-to-day tactical control over their operations. Company employees navigate the logistics process using the TMS, beginning with planning and carrier selection and extending throughout the entire order life cycle to invoicing audit and payment. This capability enables shippers to achieve control and effectively manage all aspects of the shipment process.

➢ *TMS Promotes Optimization*

The Transportation Management System (TMS) empowers the shipper with the capability to evaluate a group of shipments using advanced parameters, enabling the identification of the most economically efficient route plan. TMS additionally offers the option to ascertain the most economical mode, analyze and strategize routes, and explore consolidation opportunities by combining shipments into a single load. The optimization feature of TMS supports dynamic, static, and closed-loop routing.

➢ *TMS Promotes Automation.*

Keying errors in order entries are significantly minimized, resulting in substantial time savings as the system seamlessly extracts data from their platform into the TMS, thereby enhancing overall accuracy. Automation eliminates manual processes, empowering users to effortlessly execute various tasks with a simple button press:

- Rating:Input shipment details and retrieve carrier rates.
- Booking: Explore carrier rates and book loads directly through the TMS.
- Tendering: Streamline tendering processes through emailed/EDI/API tenders, with customizable tender documents and hassle-free responses.
- Tracking: Keep track of load updates through carrier dashboards.
- Auditing: Automatically identify and reconcile invoice discrepancies, approving and processing matching invoices.
- Invoicing: Upon data entry, users can generate load invoices with a single click and extract approved AP information to streamline ERP payment processing.
- Reporting: Access a range of reports, including Summary Reports, Activity Reports, Performance Reports, and Advanced Reports.

E. Transport Management System Delivery Models

There two models under consideration for this paper. These are as follows:

- An On-premise TMS model
- On-demand TMS model.

- *An On-Premise TMS Model*

Acquiring the software license for an on-premise Transportation Management System (TMS) necessitates a substantial upfront capital investment from the purchaser. In this setup, the software is installed on each user's internal computer, with oversight and maintenance handled by the shipper's internal IT department. Internally managed updates are conducted, and periodic upgrades to the latest versions, typically required every few years, can be both resource-intensive and costly to uphold. The initial on-premise TMS solutions were known for their high implementation and support costs, unwieldiness, and often, they were not fully utilized, failing to deliver the expected value and return on investment (ROI). Although still carrying a significant cost, especially in the era of big data and analytics, justifying substantial expenses for technology has become comparatively more feasible today.

- *An On-Demand TMS Model*

The TMS model is available with two distinct pricing options. One is a Subscription-based structure, where clients make fixed weekly or monthly payments. The other is a Transaction-based model, wherein clients pay a modest per-load transaction fee for each order processed through TMS. The rise of cloud-based, multi-tenant TMS has significantly reduced entry barriers, enabling small to medium spend shippers to fully leverage TMS advantages, including automation, optimization, visibility, and reporting. TMS solutions are no longer exclusive tools for Fortune 500 companies; they are accessible to a broader range of businesses.

ISSN No:-2456-2165

CHAPTER THREE
METHODOLOGY

A. Introduction

This chapter is made up of an introduction, unit of analysis and research approach, research strategies, sampling design, method of data collection, data collection and analysis, research limitation and conclusion. Kumekpor (2002) asserted that Research methodology includes the specific procedures, techniques, ideas and thought processes followed in getting specific things done or achieving particular ends or objectives. Yin (2003) also stated that research methodology defines the research activity, how to proceed with the research, how to measure progress and what makes up the success of the research.

B. Unit of Analysis

The unit of analysis for this study was key staff members who are working in the two candidate companies (UPS and the Defence Mechanical Transport Battalion of the Ghana Armed Forces) and people who have relevant knowledge of the study.

C. Research Approach

Distinguishing between qualitative and quantitative methodologies, Thomas (2003) succinctly clarifies that qualitative research involves describing events without relying on measurement, while quantitative methods revolve around measuring and quantifying characteristics displayed by subjects or events under investigation (Patton, 2002).

The aim of this study was to gather detailed and specific information related to a comparison, analysis, and optimization within the domain of transportation management systems in the Ghanaian market. The author chose the qualitative approach to achieve this objective. However, for increased objectivity, the study also integrated quantitative data sourced from previous reports by the Ghana Logistics Association. The author analyzed this quantitative data through the use of graphs and interpretations. In conclusion, while primarily utilizing the qualitative method, this thesis also incorporated a complementary but limited application of the quantitative method.

Typically, researchers can opt for three research designs: explanatory, exploratory, and descriptive. According to Saunders (2007), an exploratory study aims to uncover new insights, pose questions, and assess phenomena in novel ways. Exploratory research can be carried out through literature reviews, interviews with subject experts, and focus group discussions. Conversely, explanatory studies, as outlined by Saunders (2007), seek to address the question of why. They strive to build on theories, make predictions, and establish principles, relying on qualitative data. The purpose of this research compelled the author to investigate selected companies, compare them across different levels of TMS, and identify improvement potential for the local target company. A crucial role was played by the literature review, providing a deeper understanding of the research problem and guiding the author in the process of identification, comparison, and analysis.

The comparison between the two companies concerning TMS was conducted through three logistics perspectives: strategic, tactical, and operational. This comparison was based on qualitative data derived from interviews and observations during company visits. Consequently, both exploratory and explanatory methods were employed in the paper, with the exploratory research design being predominantly utilized.

D. Research Strategies

In order to acquire pertinent information aligned with the research problem, the interview focused on engaging with 50 key staff members from the candidate companies, namely UPS and the Defence Mechanical Transport Battalion of the Ghana Armed Forces. Additionally, individuals possessing relevant knowledge related to the study were included. The author's interview questions are provided in the paper's appendix.

Saunders (2007) distinguishes between two interview types: Standardized and non-standardized. Standardized interviews are employed for information access, typically for quantitative analysis, while non-standardized interviews are utilized for qualitative analysis. Given the exploratory nature of this thesis, the authors opted for a non-standardized approach. The research aimed to compare Transportation Management Systems (TMS) in Small and Medium Enterprises (SMEs) and global logistics leaders. Subsequently, contact was established with key individuals overseeing these areas. Interviews were conducted primarily through face-to-face interactions, as well as via email and phone.

Prior to the interviews, the author formulated basic questions to guide the discussion. These questions, categorized into four parts covering TMS (Strategic, Tactical, Operations, and General), were derived from a TMS functional reference model developed by Capgemini Consulting Company. The model details and questions are included in the appendix. The interview questions were meticulously prepared in advance, demonstrating a proactive effort to gather highly relevant information.

E. Sampling Design

Bryman and Bell (2007) asserted that the sample population is the universe of units from which the sample is to be selected. The population for this study was 50 key staff members who are working in the two candidate companies (UPS and the Defence Mechanical Transport Battalion of the Ghana Armed Forces).

F. Data Collection Instrument

In general, information can be classified into three categories: primary, secondary, and tertiary literature (Saunders 2007). This thesis primarily addresses primary and secondary information. Primary information is directly obtained from a company without analysis or evaluation and can be gathered through questioning or observation (Saunders, 2007). The author deems primary information collection suitable for research purposes, offering a realistic perspective on the research problem. The author has chosen a questioning approach due to its cost-effectiveness and time efficiency compared to observation. However, drawbacks such as challenges in locating relevant individuals and potential bias in answers must be taken into account. Questioning methods encompass surveys, interviews, and questionnaires. Surveys cover multiple issues and adopt various approaches, while questionnaires focus on a specific topic and involve paper-based responses.

After careful consideration, the thesis adopted personal, one-to-one, face-to-face, and phone interviews. Saunders (2007) distinguishes between standardized and non-standardized interviews, with the former typically used for quantitative analysis and the latter for qualitative analysis. Given the explorative nature of the study, the author deemed a non-standardized approach more suitable. The foundation of the research was to compare Transportation Management Systems (TMS) in Small and Medium Enterprises (SMEs) and global logistics leaders. To achieve this, the author contacted key persons responsible for these areas. Interviews were mainly conducted face-to-face, supplemented by email and phone communication. Before the interviews, the author prepared basic questions covering four aspects of TMS: Strategic, Tactical, Operations, and General Questions, referring to a TMS functional reference model developed by Capgemini Consulting Company.

G. Method of Data Collection

In order to acquire the most pertinent information related to the research problem, the interview prioritized key personnel from the two candidate companies (UPS and the Defence Mechanical Transport Battalion of the Ghana Armed Forces), as well as individuals possessing relevant knowledge for the study. The author's inquiries are provided in the paper's appendix.

H. Data Analysis

The Statistical Package for Social Scientist (SPSS 18.0) software was used for the analysis, in which data was presented in tables, graphs and narratives. Emery & Copper (2003) stated that raw data obtained from a research is not useful until it is transformed into information to enable decision making.

I. Research Limitation and Conclusion

The primary limitation stems from challenges in information gathering. Due to concerns surrounding business secrets, certain interview questions received incomplete responses. The contact person tended to provide vague directions, restricting the paper's ability to collect fully integrated information. Consequently, there is a minor threat to the reliability and validity of the study. Despite the author's earnest efforts to gather information comprehensively, it is believed that the findings encompassed all relevant factors.

J. Backgroung of the Defence Mechanical Transport Battalion of the Ghana Armed Forces

History of the Defence Mechanical Transport Battalion of the Ghana Armed Forces.

- No Supply and transport Organization had existed in peace time after the Yaa Asantewaa War in 1900 – 01. During World War 1 for instance, Units were responsible for their own transport. During these war times, Units were given four diesel trucks for their logistics. It was not until after a conference in Nairobi in December 1938 that a decision was taken to add a contingent of 100 MT drivers to the WA Expeditionary Force for East Africa besides the 200 to be provided by Nigeria. In October 1941, 2, 3 and 5 Groups, West African Army Service Corps and a reserve MT Coy were formed in Accra to support each of the two Gold Coast Bridges in Burma. In view of the limited mechanized transport, 3 and 6 Artillery Groups were formed. It was about the time first Mechanical Training Centre was established at Kibi to cater for the training of drivers in the Armed Forces.

- The Gold Coast Supply and Transport then consist of 89 Transport Coy of Rangoon Camp, Accra. It was first located at the Rangoon Camp which is now the CID Headquarters of the Police Service and 'B' Transport Platoon of Uaddara Barracks, Kumasi. 89 MT Coy, later known as 1 MT Coy moved from Ragoon Camp to Burma Camp in April 1964 but was re-designated 4MT GASTS at Dohazari Lines, Burma Camp to provide second line transport support. A Unit LAD was formed in November 1965.

- 2 MT Coy GASTS was formed at Accra on 1st February 1963 and moved to Kumasi on 7th April. A 2 MT Coy LAD was formed on 1st June 1963, $ MT Coy GASTS was disbanded on 20th May 1971 and the Unit re-designated 1 Mechanical Transport Battalion. The Unit name was changed to Defence Mechanical Transport Battaliion to reflect its tri-service nature.

ISSN No:-2456-2165

- Some white officers who first headed the Unit before indigenous personnel begun taking Command of the Unit at that time were Major Elliot and Major Wise. The first Ghanaian OC was T/Maj GK Yarboi, who assumed office in January 1961. The First Commanding Officer of 1 MT Battalion was then Maj. GK Amevor, who assumed office on 11th March 1971. And the first Commanding Officer of Defence Mechanical Transport Battalion was Col DA Boakye.

- The MT Battalion's primary duty is providing First and Second line transport service to the General Headquarters department and Third, Fourth transport to the three service of the Ghana Armed Forces.

ISSN No:-2456-2165

CHAPTER FOUR
ANALYSIS AND DISCUSSION

A. Introduction

This chapter presents the findings of the study. The findings have been presented in relation to all objectives of the study. The presentation of the analysis findings was on the specific description of TMS in two chosen institutions.

B. Specific Description of TMS in Two Chosen Institutions.

This section will look at the description of TMS through three levels, specifically describing both companies under the Strategic, Tactical and Operational levels.

➢ *Strategic*

- *Transport Sourcing*

As stated earlier the Defence Mechanical Transport Battalion of the Ghana Armed Forces is a small sized public institution. At the moment the only transportation means the Defence Mechanical Transport Battalion of the Ghana Armed Forces runs is road transport. The sourcing of transport involves the vehicle selection, carrier selection and driver selection. The institution has strategic or guiding rules for hiring drivers and also has specific norms that serve as a guide which will be presented in the operational level.

During an interview with Captain Freeman Anim, he stated that although the GAF has an established room named Opoku's Operations room; it relied on the basic principles of logistics which are vital to the execution of logistics tasks in the GAF to achieve an optimum strategy. These principles he noted included foresight, simplicity, economy, cooperation and agility. Major P.K. Abanah, also iterated that building a good relationship with automobile companies and other corporate bodies played a vital role in the execution of the logistics tasks. The author inquired the kind of delivery the GAF undertook. Lieutenant Colonel J. Frimpong stated that delivery tasks are very often and mostly highways are straight to the destinations as freights did not contain any dangerous or high technology materials. Lieutenant Colonel I Awunigaten did not comment on whether the GAF spent a lot of money on purchasing better foreign imported trucks and neither gave any comment on the brand of vehicles used by the GAF and if it considered the possibility of parallel sourcing. This was due to the fact that such information was considered classified and a threat to national security. He however stated that the GAF, had its own fleet of vehicles which was used to carry out any logistic work that was required and also the undisclosed supplier of the GAF was able to provide several types of carriers and the only concern for the GAF was mostly to ensure the reliability of their vehicle sourcing.

However, the scenario is distinct when it comes to UPS. UPS employs a single sourcing strategy, wherein only one supplier is selected for each inventory item. In an interview with Shaw David, the manager of the technology department at UPS, he revealed the company's ambition to invest in and sustain the growth of its core business in worldwide distribution and logistics.

Fig 1 Strategic Sourcing Approaches (UPS Supply Chain Solution White Paper, 2005)

- *Performance Management*

In his interview, Colonel A. A. Baba highlighted that crucial decisions within the GAF are primarily orchestrated by the managerial level. He emphasized the pivotal role of rules, regulations, the military hierarchy, and both internal and external auditors in evaluating GAF's performance. According to Colonel Baba, effective performance management serves as tangible evidence validating the correctness of major decisions. The information shaping these decisions is sourced from various units and divisions within the GAF.

In contrast, UPS adopts a well-rounded approach to performance management, detailed in their annual report across four key processes: finance, customers, internal business processes, and innovation and learning. The company places particular emphasis on finance, addressing concerns related to shareholder satisfaction and customer ratings.

- *Network Design*

The Ghana Armed Forces' Defence Mechanical Transport Battalion employs a simple network design for its delivery routes across different parts of the country. Utilizing transport work tickets, the GAF outlines the journey from commencement to the final destination. Colonel H Keelson, in an interview, highlighted the organization of their delivery and supply networks based on the locations of customers and suppliers.

Examining UPS's network design, Shaw observed that UPS follows a strategy focused on "creating new services and strengthening operations and networks." He emphasized that UPS's network design is primarily influenced by geographic locations, with a focus on developing new networks to support emerging services. For instance, UPS expanded its access to 27 new air freight shipment regions, including Argentina, Saudi Arabia, Slovakia, and South Africa. Consequently, this expansion requires the implementation of a new network design tailored to those specific areas.

➢ *Tactical*

The widely considered components of the Tactical level of TMS are the capacity management, asset management and tariffs and rates management.

- *Capacity/Asset Management*

The fleets of vehicles of the GAF are all managed by the Defence Mechanical Transport Battalion of the Ghana Armed Forces. They are responsible for releasing vehicles and assigning vehicle to drivers. This is done using software for which helps in recording incoming and outgoing vehicles of the GAF. Much information was not given on the type of software used for this process but data extracted at the end of the year was used to by management to determine the performance of the GAF in the given year. Due to GAF being a public institution emphasis is on vehicle management and fuel usage.

Examining UPS's Fixed Asset department reveals its responsibility for capitalizing, retiring, and maintaining accounting records for all general services. Renowned for its iconic "Brown truck" and its dedicated airline, the department meticulously records all activities in a Fixed Assets system—an online database containing comprehensive information about fixed assets. The gathered information serves various collaborative functions, including tax planning, capital project forecasting, and consolidation efforts. Additionally, the department manages processes such as fixed asset purchase applications, retirement procedures, and ongoing maintenance tasks.

- *Tariffs and Rates management*

GAF has its own laid down processes that help determine tariffs and rates. Request for vehicles are sent to the Defence Mechanical Transport Battalion of the Ghana Armed Forces for approval. After all require criteria is met, the vehicle is assigned a driver the freight is loaded and the route to be travelled is mapped out. This is to help determine the duration for the journey and arrival time in the event the freight is to delay appropriate protocols can be followed to ascertain the reason for the delays.

UPS possesses the capability to furnish clients with current information, particularly regarding regulatory alterations that could impact their business. Shaw explained that their tariff consulting service typically commences with tariff classification to determine whether the freight is categorized as an import or export. Following valuation, the process involves tariff engineering and duty minimization, encompassing a sequence of measures aimed at mitigating anti-dumping and countervailing duties. Subsequently, appeals, petitions, and protests are submitted.

➢ *Operational*

- *Planning*

Activities carried out at this level are more intentional and involves three aspects namely: route planning, labor planning and mode selection.

- *Route planning*

The main aim of institution is to bring down cost of transportation and enhance fuel usage. Captain F.Y. Kansuk stated in his interview that planning would be most effective if the three aspects are effectively coordinated. He also stated that GAF always makes arrangement for routes to use based on the demand made at the time.

Shaw stated that UPS had an automated system with the help of their TM software where operators need to only enter the destinations into the system and with the guidance of detailed satellite maps and traffic conditions; TMS will map out the route to use for each destination enquiry.

- *Labour Planning*

Given that the GAF mainly transport items by road with a few occasion going by flight, all the planning is done by the Defence Mechanical Transport Battalion of the Ghana Armed Forces. Major P.K. Abanah stated that drivers are given specific route instructions to take but are given the opportunity to decide in the event of a situation to use a different route but might have to inform his or her immediate superiors for approval.

UPS on the other hand has a systematic way of allocating time and labour. This is achieved with the use of a special work code and managers take several elements into consideration before making arrangements. These include:

✓ Individual productivity report (Plan vs Actual)
✓ Individual hours tracking (in internal language: OU 40 Reports)
✓ Hourly Count
✓ The working hour breakdown is achieved by combining the time and labour allocation.

- *Model Selection*

GAF mode selection primarily revolves around carrier choice, with road transport being the primary delivery method. The selection process considers both the quantity and type of freights, with transportation costs varying depending on the nature of the items transported.

UPS utilizes a diverse approach for freight transport, employing road, air, and rail shipping. UPS offers a comprehensive network management solution that enables customers to manage various aspects, including multi-modal transportation and dedicated contract carriage. This includes the planning, oversight, and execution of transportation, with a specialized network management system catering to large and complex transportation systems.

➢ *Execution*

- *Order Management*

GAF has a system for recording orders and helps keep track of orders made to delivery ends. These orders are saved in their database for future reference in the event of a problem arising.

UPS uses a WorldShip system where it uses client's institution existing customer data to generate shipping labels and sends out email notifications using Quantum View Notify. This helps capture billing information and accounts for example to compare multiple services delivery dates, delivery times and service costs to help make transportation decisions.

- *Delivery Monitor*

GAF through the Defence Mechanical Transport Battalion of the Ghana Armed Forces monitors all vehicles on freight assignment through telephones with the drivers. Most delivery trucks are not equipped with GPS systems so telephones helps keep both parties informed about the delivery progress.

UPS uses an execution monitoring system called UPS CampusShip. This is a secure Web-based shipping system that monitors the shipment that employees are responsible for spread across multiple campuses. This allows employees in multiple locations to prepare shipping labels easily from their own computers while institution decision-makers keep tabs on the entire process with the help of a centralized control and visibility system.

- *IT System Installed*

GPS system is currently the most sorts after way of tracking automobiles now. As stated earlier GAF does not currently have GPS installed on most of its fleet of vehicles and relies on telephone communication in tracking the progress of its shipment. It will be one of the recommendations of this study to encourage GAF to get GPS installed on all its fleet of vehicle.

UPS has equipped its drivers with electronic delivery information acquisition device (DIAD).This comes with a built-in GRPS or CDMA radio an acoustical modem to facilitate dial-up access and 802.11b wireless local area network connectivity to enable transmission capabilities in a UPS centre.

- *Chapter Conclusion*

This chapter presents the results of the research findings in line with the objectives as well as research questions as discussed in chapter one. Appropriate wordings and graphical presentation have been used to interpret the findings of the study to give graphical clarification. The aim of this thesis was to compare the TMS of a local logistics institution (i.e. of the Defence Mechanical Transport Battalion of the Ghana Armed Forces) and a large multinational institution. To achieve this purpose, the author searched for all relevant theories about the topic of the paper through the resources of literature and the internet. The criteria for selecting the institutions included how big the difference was between the two institutions (i.e. of the Defence Mechanical Transport Battalion of the Ghana Armed Forces and UPS) and the ability to typically represent both local SMEs and foreign giants respectively. The comparison clearly showed that UPS is much better in terms of managing transportation issues than of the Defence Mechanical Transport Battalion of the Ghana Armed Forces. Also of the Defence Mechanical Transport Battalion of the Ghana Armed Forces will have to make adjustments to their current way of managing and monitoring. This will help in managing its supplier and customer network and increase efficiency of capacity.

ISSN No:-2456-2165

CHAPTER FIVE
SUMMARY, COMCLUSION AND RECOMMENDATIONS

A. Introduction

The previous chapter presented empirical test and results from the study. This concluding chapter presents a summary of the research, outlines the major findings of the research, provides a conclusion and makes a number of recommendations for future studies and also for managerial decision making.

B. Summary of the Study

The thesis aimed to compare the TMS of a local logistics company and a large multinational company. In pursuit of this objective, the researcher initially conducted a comprehensive exploration of pertinent theories related to the paper's topic, utilizing literature and internet resources. The selection of companies was guided by predetermined criteria set by the researcher, taking into account factors such as the magnitude of differences between the chosen companies and their representativeness as either local SMEs or foreign giants.

C. Major Findings

The comparison clearly indicates that UPS excels in managing transportation issues compared to the Defence Mechanical Transport Battalion of the Ghana Armed Forces. The latter must make adjustments to their current management and monitoring practices to enhance their supplier and customer network, thereby increasing capacity efficiency.

The Ghana Armed Forces (GAF) relies on Opoku's Coference room for logistics principles crucial to their tasks. Delivery tasks, often frequent, primarily involve highways leading directly to destinations without dangerous or high-tech materials. Specifics about the budget for purchasing foreign trucks and GAF's brand preferences are undisclosed due to national security concerns. GAF possesses its fleet for logistics and relies on an undisclosed supplier offering various carriers, prioritizing vehicle reliability.

In contrast, UPS employs a single-sourcing strategy, utilizing only one supplier for each inventory item. GAF utilizes a straightforward network design, with delivery routes covering the entire country. GAF employs transport work tickets to document routes, aiming to reduce transportation costs and optimize fuel usage by arranging routes based on real-time demand.

UPS, in contrast, employs an automated system with their Transportation Management (TM) software. Operators simply enter destinations into the system, and with the aid of detailed satellite maps and traffic conditions, the TM software maps out optimal routes for each destination.

D. Recommendations of the Study

In summary, this study proposes two key strategies to enhance 3PL performance and boost profitability: the implementation of Transportation Management System solutions and the adoption of cost-saving methods. The paper also provides practical recommendations for the Defence Mechanical Transport Battalion of the Ghana Armed Forces:

- Utilize the Transportation Management System for network design and capacity management. This approach ensures more efficient and economical management of these aspects, significantly impacting the overall performance.

- Install GPS devices on trucks in addition to phone communication during deliveries. Currently relying solely on mobile phones for communication lacks visibility into the delivery progress. Integrating GPS alongside phone communication offers a cost-effective solution for obtaining accurate and reliable information during deliveries.

- Establish a systematic maintenance schedule for both IT systems and vehicles. To uphold safety and delivery quality standards, implementing a robust maintenance schedule is crucial. This aids in the optimal selection of vehicles for specific delivery trips.

- Learn from competitors and innovate to create new business opportunities. To foster growth and operational improvement, it is imperative for the GAF to adopt strategies that outperform competitors. Identifying potential competitors and implementing measures for prompt and high-quality delivery services to clients will contribute to the overall success.

The competitive advantage of the Defence Mechanical Transport Battalion of the Ghana Armed Forces will only be realized through comprehensive adaptations addressing strategic, tactical, and operational perspectives.

REFERENCES

[1]. Bryman, A., & Bell, E. (2007). *Business research methods*. Oxford University Press, USA.
[2]. Capgemini Consulting (2011), *Transportation Management Report 2011*, Capgemini Group
[3]. Coyle, John J.; Edward J. Bardi and John C. Langley, Jr. (2003), *The Management of Business Logistics: A Supply Chain Perspective*, 7th edition, Mason, OH: South-Western College Publishing
[4]. Deloitte & Touche (2003), "Mastering Complexityin Global Manufacturing: Powering Profits and Growth through Value Chain Synchronization," [On-line]. Available:http://www.deloitte.com/dtt/research/0,2310,sid%253D1011%2526cid%253D30239,00.html. Accessed 10/21/06.
[5]. Easterby-Smit, M., Thorpe, R., Jackson, P.R., (2008) *Management research, 3ed*, Sage Publication Ltd.
[6]. Emery, C.W. & Cooper, D.R. (2003). *Business Research Methods.* Illinois: Richard D. Irwin Inc.
[7]. Federal Highway Administration, 2005, *Developing and Using a Concept of Operations in Transportation Management System,* U.S. Department of Transportation, Washington, DC. Freight Consolidation and Remote Storage (2008), British Council of Shopping Centers, Published by WSP Development and Transport, 17/12/2008
[8]. Kumekpor, K.B. (2002). *Research Methods & Techniques of Social Research.* Accra: Son Life Press & Services, 117-132
[9]. Official website of Trinity Logistics, Guide To: Transportation Management Systems (TMS), http://www.Trinitylogistics.com access date 20/12/2022.
[10]. Official website of LeanLogistics, Making the case for Transportation Management Systems (TMS), http://www.LeanLogistics.com access date 20/12/2022.
[11]. Patton Michael Q.(2002) *Qualitative Research and Evaluation Methods, 3ed.*, Sage Publication Inc.
[12]. Saunders, M., & Lewis, P., & Thornhill, A. (2007). *Research Methods for Business Students, 4ed*., Harlow: Pearson Education Limited
[13]. UPS supply chain solution white paper, 2005, *Strategic Sourcing: Building a foundation for success*, United Parcel Service of America, Inc.
[14]. Yin, R.K. (2003). *Case study research: Design and methods* (Vol.5). Sage Publications.

➢ *Internet Resources*

[15]. Official website of UPS, UPS fact sheet, http://www.logisticsmgmt.com/article/supply-_chain_logistics_technology_5_trends_driving_tms_growth_access date 01/02/2023
[16]. Official website of UPS, http://www.ups-scs.com/consulting/demand.html, access date 06/02/2023
[17]. UPS annual report, 2010, ppl, http://pressroom.ups.com/Fact+sheets/2011+UPS+Report access date 01/02/2023

➢ *Interviews*

[18]. Colonel A. A. Baba of the Defence Mechanical Transport Battalion of the Ghana Armed Forces, interviewed 01-02-2023 during 30 minutes
[19]. Colonel H. Keelson, Army Special Forces in-charge of Logistics interviewed 01-02-2023 during 25 minutes
[20]. Lieutenant Colonel J. Frimpong, Deputy Director Admin interviewed 06-02-2023 during 15 minutes
[21]. Lieutenant Colonel I. Awunigaten, Deputy Director Supplies and Transport Directorate interviewed 07-02-2023 during 20 minutes
[22]. Major P.K. Abanah, Second in Command Defence Mechanical Transport Battalion interviewed 07-02-2023 during 25 minutes
[23]. Captain A. Freeman of the Defence Mechanical Transport Battalion of the Ghana Armed Forces interviewed 09-02-2023 during 20 minutes
[24]. Captain F.Y. Kansuk of the Defence Mechanical Transport Battalion of the Ghana Armed Forces interviewed 09-02-2023 during 20 minutes

INTERVIEW QUESTIONS

The interview will be conducted on three (3) logistical levels as follows:

A. Strategic

- What is the strategy of transport or how do you select your suppliers?
- Is it compulsory to assess the company's performance from previous years in your organization? Please describe the strategy of performance management.
- Do you have a strategy for network design? What is that?

B. Tactical

- Have you conducted capacity management? Describe how it works if you have.
- UPS is known for owning trucks and operates its own airlines. Do you have a management system to deal with these assets and fleets?
- Do you provide customs clearance of freight importing and exporting service? Please describe the rate and tariffs management system and how do you integrate that management into other works?

C. *Operations:*

This section comprises of four parts namely: Planning, Execution, Vehicle and Finance.

➢ *Planning:*

- Which method do you use to plan the route?
- How do you make fleet & driver planning?
- Do you have particular requirements when selecting carrier and load?

➢ *Execution*

- Tell me something about the order entry and consolidation
- Please describe the delivery process (dispatch and parcel)
- Do you have the execution monitoring system?
- Please provide some information about the global logistics execution customs and transport documents?

➢ *Vehicle*

- How do process the vehicle management?
- Any transport communication method? (Such as GPS)

➢ *Finance*

- How do you manage customer billing?
- How make freight bill auditing?
- How do you allocate transport cost?
- How do you allocate time and labor?

D. General Questions

- UPS must make some adjustments to fit into the Ghanaian market. What are they?
- What is UPS's future in Ghana under your estimation? (5-10 years, goals, gaps between goals and reality)
- Please make some proposal about the transportation management system for UPS.(Your personal opinion)
- Has the Defence Mechanical Transport Battalion of the Ghana Armed Forces generated the motivation to apply TMS partly in the near future?
- What is your expectation and forecast on the Defence Mechanical Transport Battalion of the Ghana Armed Forces situation in the anticipated future?