

Security Problems in Transportation Faced by Logistics Companies in The Capital Region of Ghana

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<p>This research aims to identify security problems in transportation faced by logistics companies in the capital region of Ghana. Transportation is a key player in logistics; It enhances movements of goods and services from the beginning of the supply chain to final consumption. However, there are specific challenges faced by transportation by logistics companies which become a threat to transportation security. These challenges that make transportation insecure lead to loss of resources, money and time. Ghana as a developing country exhibits a unique logistics environment as well as unique challenges in transportation, which is the backbone of logistics.</p> <p>Questionnaires and interviews are the approaches used to investigate the thesis question. Ninety-two (92) drivers from different logistics companies in the Accra region are contacted for their responses. Some of the respondents took some incentives to get their answer in time. The data used for the research was collected in Autumn 2018.</p> <p>The theory part of the research is into two sections. The first section focuses on logistics, transportation and transport insecurity in general theories while the second section looks at logistics in Ghana. To answer the research investigated questions accurately, mixed method data tools are employed thus quantitative and qualitative. Primary data which falls under quantitative and qualitative was obtained aside secondary data and analyzed from stakeholders in the logistics field specifically in transportation through questionnaires and interviews which falls under qualitative.</p> <p>In the final analyses, it shows that logistics road transportation in the Accra region is not very much secure because of the following: inadequate use of information technology, drivers' indiscipline, inadequate logistics infrastructure, and the occurrence of criminal incidents. On the scale of 1 to 10, it is established from the respondents that lack of or bad logistics infrastructure is the major contributing factor and criminal attacks been the least. Low application of information technology has medium factor that needs to be checked, Indiscipline on the part of drivers is a less contributing factor towards the insecurity of logistics road transportation in the Accra region.</p> <p>Keywords</p> <p>Logistics, transportation, transport infrastructure, insecurity in transportation, Modes of transportation.</p>	

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1 Introduction

Ghana is a sub-Saharan African country with peaceful democratic governance. It gained its independence from British rule on 6th March 1957. Ghana's Demographical, geographical and political conditions come together to make it unique. Base on a little research done by the researcher on logistics in Ghana, it tells the country has sole logistics environment subject to different challenges in terms of transportation. Each day reports come to the desk of logistics companies about the theft of tangible assets, altering of transport documents and late deliveries. (Burns 2015, 8; Africa.com 2019.)

The objective of the thesis is to give a description of the logistics environment in Ghana and further defines the challenges that logistics companies face. However, road transportation will be the focus since it is the dominant mode of transport in Ghana. Due to the size of the logistics industry in Ghana, the thesis did not look at security challenges in transportation at the international level.

1.1 Background

Logistics is a vital element in the business world which no country will be able to do without. Some companies are solely into transport business due to its importance. The establishments of Logistics companies have enhanced the movement of goods and services from the point of manufacturing to final consumption (Harrison, Hoek and Skipworth 2014, 9.) With all the benefits derived from the services of logistics firms, there are some challenges they face during the movement of goods and services.

Among the challenges are; driver's shortage and retention, government regulations, environmental issues, and security in transportation being the most significant obstacle. Daily, logistics companies' make complaints about the challenges they encounter during the domestic distribution of goods and services by road (Inbound logistics 2018.) According to Carter and Easton (2011), these issues have become more relevant to managers primarily because their stakeholders, including customers, regulatory bodies, non-governmental organizations, and their employees are increasingly demanding organizations to address and manage these environmental and social issues that are gradually affecting their operations.

From an international perspective, countries, as well as producers, are challenged to cultivate environmental and social hazards and its possible occurrence into their strategies, policies, culture and decision making (Blengini & Shields 2010). Irrespective of the

opportunities available, one expects countries and producers to benefit from these environmental and social innovations in the supply chain. The conditions of their transport infrastructure, however, challenge developing countries; especially security in the transportation of goods and services (Tetteh & Nguni 2009.)

The pursuit of achieving global trade objective, among which is transportation security continues to be a top priority for developing countries such as Ghana. This evident from the establishment of the Ghana Chartered Institute of Logistics and Transport (GCILT) to promote the course of supply chain activities. In the context of logistics, security in transportation is proving to be a key concern for all players in the supply chain. Thus, one cannot underestimate the contributions of safety in traffic to national development as it is one of the primary logistical drivers in supply chain hence an inescapable priority for economic and social transformation in every country.

The foundation of transportation security includes several dimensions and possible measures. In size wise, its concerns with the ethics of the passengers or cargo, the route and the information systems (IT security) managing the transport chain. The potential measures look at the reduction in risk of disruption of transportation in response to security threats, improved protection against theft and diversion of cargo, halt indirect losses (freight and sometimes the vehicle) and indirect costs (e.g., higher insurance premiums), improved reliance of information system supporting the complex transactions generated by transport activities and improved screening process (cost and time) and simplified procedures (Rodrigue, Comtios and Slack 2009.)

Safety and security have been before transport planners and managers for many years, and it is only recently that transport security has become a severe issue (Rodrigue, Comtios & Slack 2009). One of the factors that seek to exploit the security weakness in logistics transportation is criminal activities. According to the Ghana Police, traffic is mostly a vector for illegal activities. Commercial trucks or cargos and private vehicles become vulnerable due to certain traffic conditions. Carjacking or armed robbery, theft from idling vehicles are some of the challenges faced (Ghana crime and safety report 2017, 2.)

Extant literature (Eddington 2006; Tiwari, 2002; Yu, De Jong, Storm & Mi, 2012) argue that, transport infrastructure and traffic management systems play vital roles in the effectiveness of security in logistics transportation, such that the availability of road network, traffic lights equipment is paramount in ensuring adequate transport security. Ofori-Dwumfour and Dankwah (2011) agreed by saying the inadequacy of transport infrastructure is a crucial contributor to logistics transport insecurity in Ghana. Other commentators have attributed

the insecurity of logistics transportation to indiscipline drivers who stop at undesignated stops to load and offload goods in the central business areas.

In Accra, drivers' indiscipline is one key factor of freight insecurity which is evident from rampant cargo vehicle accidents on some of the primary high ways in the capital. It is an indiscipline act on the part of drivers who are against the implementation of the Law on Axle Load Limit as stipulated in the Road Traffic Regulation LI 2180. In this, a light trucker is still using alternative routes to avoid the Permanent Weigh Stations leaving the fate of the transported goods to the mercies of the bad roads.

Also, some factors that according to stakeholders, undermine transport security is lousy road network and the low use of information technology by companies. Ghana's road network, in general, is woefully inadequate; especially those linking the Tema port are congested and poorly maintained leaving the roads in deplorable states. The streets have developed large pot-holes, making it impossible for trucks to ply. The poor road conditions contribute not only to increase in the travel time on these roads but also increase transport costs and reduce reliability.

Argument emanating from the nature information system of companies' reveals that there are vulnerabilities (unauthorized access to cargo and facilities) in the information system of logistics companies in Ghana which most exploited by recalcitrant employees. Besides, there is the absence of scanners that can scan the entire cargo or trucks. Manual inspection is the norm, but it is a time-consuming and virtually impossible task for logistics companies considering large freight volumes and capital involved (Tetteh & Nguni, 2009; Urban Road, 2004).

Indeed, all these challenges threaten the sustainability of transport security in the logistics chain in Accra. Hence, an analysis of security issues in the transportation of the supply chain in the capital becomes more imperative. How do we ensure sustainable transport security for freight so that the status that the country has perspired to attain can still be maintained, knowing well that any negligence will not only affect freight earnings but economic development and the incomes of close to one million Ghanaians who depend on the logistics companies for their livelihood?

1.2 Research Aim and Questions

This thesis is a research base. A company does not commission it. This thesis aims to inform or identify security challenges in transportation facing logistics companies and

businesses in the capital of Accra, Ghana. Specifically, the thesis investigates areas that are of relevance in determining factors that have become impediments to domestic freight transport by logistics companies in Ghana.

The main research question used for the thesis is:

How can security problems faced by logistics companies in road transportation be improved in the capital of Ghana?

The question seeks answers to the four (4) main investigative questions.

Investigated question 1: What is the impact of information technology on the security of freight transportation?

Investigated question 2: What are the security problems that staff indiscipline pose on freight transportation?

Investigated question 3: What are the security problems posed by transportation infrastructure and traffic management technology on freight transportation in the capital of Ghana?

Investigated question 4: What are the criminal cases encountered on the road in freight transportation?

Table 1. Overlay matrix

Investigated questions	Research methods	Theoretical framework	Discussions and outcome
(IQ) 1: What is the impact of information technology on the security of freight transportation?	3 – 3.2 & 3 – 3.3	2 – 2.2.1	5 – 5.1
(IQ) 2: What are the security problems that staff indiscipline pose on freight transportation?	3 – 3.2 & 3 – 3.3	2 – 2.1.3	5 – 5.1
(IQ) 3: What are the security problems posed by transportation infrastructure and traffic management technology on freight transportation in the capital of Ghana?	3 – 3.2 & 3 – 3.3	2 – 2.2.1	5 – 5.1
(IQ) 4: What are the criminal cases encountered on the road in freight transportation?	3 – 3.2 & 3 – 3.3	2 – 2.2.1	5 – 5.1

1.3 Demarcation of Research

Insecurity or challenges in logistics is a broad scope to deal with or handle in terms of transportation. Considering the broadness in the modes of transportation, the focus of this work is on road transportation. This thesis focuses on one of this mode of transportation to achieve consistency. Ghana currently has sixteen (16) administrative regions. Accra the capital and the central focus of this thesis. Accra region is known to be a location where passengers and freight are assembled and dispersed (terminals). Accra is the geographical focus of the research due to the concentration of logistics activities. In the case of Ghana, most logistics companies find themselves in places that have major transport facilities. In this vein, the capital city is at the apex in terms of this ranking.

The research excluded, a detailed study on the other modes of transportation used by logistics companies within the capital of Ghana to identify security problems. Currently, logistics companies in Ghana do not have access to all the modes of Transportation since Ghana is now developing. However, Ghana government is embarking on a vigorous railway construction across the whole country to aid the movement of people, goods and logistics. This effort by the government has been well received and praised by players in the logistics

industry. Furthermore, the research adopted questionnaires as a tool for data collection, hence susceptible to misinterpretations of questions due to changes in emotions and behavior which can affect the validity of the findings. However, the generalization of the results of this study from the sample of the research to other groupings with similar characteristics is made with caution.

1.4 International Aspect

The research fulfilled the international requirement of HAAGA-HELIA UAS GLOBBA thesis. The Data used is much diverse. Ghana being a developing country lacks a lot of things used to ensure safety in logistics. Comparison between Ghana security in road transportation and that of developed countries, for example, Finland are made. The paper briefly looks at some of the measures logistics companies in Finland have put in place to minimize security problems in transportation via road. After which the author made the necessary recommendations.

1.5 Research Beneficiaries

The primary beneficiaries of this research are logistics companies that are mainly into movements of goods and services within the capital of Ghana. The result of the study will contribute to knowledge by showing the state of affairs in the security apparatus in the freight industry. In Ghana, most logistics companies are facing security problems in road transportation but have not been able to figure out the main or the most worrying ones among them. The findings of the study will help stakeholders (government, Producers, Suppliers, and Customers) to realize related problems associated with the transportation of freight in the supply chain industry for necessary remedies to be adopted. The result of the research will be a reference document for producers, suppliers and logistics companies to select the appropriate security precaution that best ensures freight safety in transportation.

1.6 Key Concepts Definition

Logistics – Logistics as many writers say is an aspect of supply chain that sees to the coordinating of material and information flow (after production goods are transported to customers and making sure it arrives in good condition, quality and quantity), storage of products that have moved from point of origin to final consumption point to meet customers satisfaction. (Harrison, Hoek & Skipwort 2014, 9.) Logistics has come to stay with us; it is in our everyday lives and business activities. It is therefore considered as an essential element for the growth of a country's economy and has an impact on individual

consumption. For example, goods such as electronic gadgets produced in other countries are brought to us in our homes through logistics activities for our satisfaction (Grant 2012, 1.)

Logistics infrastructure - Is defined as physical things such as vehicles, modes of transports (roads, air, rail, water and inland, and pipelines), roadway elements (Traffic cameras and sensors, real-time parking occupancy detectors, security monitoring devices, signal controllers, traffic lights, and fibre optic cable network), that work together to ensure smooth freight movement. (Skorobogatova & Kuzmina-Merlino 2017, 3 & Its infrastructure 2019.)

Transportation – Transportation is the means as to how goods are moved from one place to a specific location thus from the beginning of a logistics company's supply chain to final consumers. (James 2018, 6; Rodrigue, Comtois & Slack 2006, 2). Transportation as the backbone of logistics plays an important role by enhancing the inbound movement of materials from supply chain point to manufacturing facilities, and outbound movement of finished goods from a manufacturing site to final consumers (Grant 2012, 55-56.) According to Murphy & Knemeyer (2018, 35), 50% of a company's total logistics cost results from transportation.

Road transportation – Road transportation is the means through which goods such as cargo freight and people are moved from one place to the other on the road. (The economic times 2019). For road transportation to be complete, there must be a route existing between two destinations and this route can be paved or unpaved to make transport possible with the use of motorized or non-motorized carriage. Road transportation is believed to be a key player in the transportation of goods and services among the mode of transportation. It enables movements of freights from point A to Point B regardless of the routes (cities, towns, and villages) and it is the fastest mode of transportation especial in domestic freight movement. Road transportation is the only mode used in the door- to- door delivery of goods by logistics companies with the use of trucks, vehicles, and motorbikes (James 2018, 10.)

Transportation insecurity – "A condition in which one is unable to regularly move from place to place in a safe and timely manner because one lacks material, economic or social resources" (Werth, Murphy & Griffin 2017, 15). Many countries are facing insecurity issues in transportation, and it has become one of the biggest challenges facing logistics activities during cargo movement.

2 Logistics, transportation, and insecurity

For a better understanding of the aim of the research, this chapter seeks to put in perspective the major concepts, theories, and terms, and conceptualize them for a better understanding.

According to Ballou (2016), around the 1950s, Logistics was practiced in the military. During the 1950s, logistics activities involved conveying of soldiers and their belongings to war with flight forwarder. Logistics which is a military term changed from warfare to business with a reason of minimizing cost and maximizing value-added effort. Logistics gained grounds in the business world between year 1970s and 1980s. (Sarbah, Fokouh, Obeng & Quaye 2014, 3-4.) Logistics during 1970's and 1980's focused on outbound activities, which includes; physical distribution of goods and services after customers place an order and provision of storage, planning for production, warehousing and customer services. (HDC 2013.) Today, logistics has become part of our everyday lives and business activities. Example of goods such as electronic gadgets, which other countries manufacture, are brought to us in our home through logistics activities. Logistics activities help with the shipping of clothes from production points to sale points, books to the libraries, parcels, and letters to individual homes and seasonal foods from different parts of the world. (Grant 2012, 1.)

The term logistics have to do with transportation, storage of goods and services. Logistics goes beyond that. It comprises of activities such as transporting, purchasing, receiving, warehousing, planning, stock control and recycling (Stewart 2011, 6.)

Council of supply chain management professionals has come out with a definition of logistics as “part of supply chain management that plans, implements and controls the efficient, effective forward and reverse flow and storage of goods, services and related information between point of origin and point of consumption in order to meet customer’s requirements” (Murphy & Knemeyer 2015, 20).

2.1 Logistics Components

Logistics is classified into three components namely: Procurement logistics, Production logistics, and Distribution logistics. In logistics operations, certain activities are combined to attain success in the logistics process. Manufacturing companies, for example, need raw materials for production and after production, they keep the goods in a safe place before

transporting them to customers for consumption. These logistics management activities entail: Transportation, inventory, warehousing, material handling, order management, and production or operation management (Grant 2012, 2.)

Transportation management: Involves taking care of all transport activities such as choosing the best mode of transportation taking into consideration safety and security in the movement of goods (Murphy & Knemeyer 2018, 224). Transportation management is an essential element in logistics. It enhances the physical flow of goods and services within (inbound materials) and outside (outbound materials) of a company. Manufacturing transport products from one point to where production plant is and from there to final consumption point (Grant 2012, 55-56.) In a company's expenditure, "it accounts for 50% of logistics cost" (Murphy & Knemeyer 2018, 35). This cost is usually influenced by where a company's production plant is, warehouses, retails and where the end customers are (Murphy & Knemeyer 2018, 35). According to Murphy & Knemeyer (2015, 226), transportation has to do with the physical movement of goods (seasonal goods, equipment's, perishable goods, etc.) from one country to another. During the physical flow of goods from point A to B, there are several modes of transportation out of which a company chooses the best base on specific characteristics, i.e., air, rail, water, road, etc.

Inventory management: Inventory activities involve knowing volumes of goods ordered by customers and what the company plans to produce base on market demand. It also looks at purchasing and procurement to be able to get raw materials and goods for a company's stock (Grant 2012, 2.) Inventory management also focuses on making sure there is a stock of products to meet a specific aim, for example, reselling of goods to others, supporting production and assembling process. Inventory activities come with three main costs and which demand much concentration continuously in other not for the company to spend a considerable amount of money on inventory management. These costs include the cost of carrying goods, cost of placing orders of products and value of being out of stock. (Murphy & Knemeyer 2018, 34.)

Warehousing management: According to Murphy & Knemeyer (2018, 186-187), warehousing refers to a place where products (raw materials, parts, goods -in- process and finished goods), information and inventories are kept for a specific period. During production and transporting of products to consumers for consumption, there is the need for a storage facility. Warehousing activities work hand in hand with transportation. Companies established warehouses between manufacturing points and consumers points. The purpose of warehousing management is for a company to have space to store excess goods bought and produced, the disagreement situation between production and consumption

pattern, i.e., is canned fruits and vegetables. With these goods, production is in excess over a short time. Due to the existence of warehousing, such products are available for consumption throughout the year. Warehousing management does not only involve storing the company's surplus and raw materials purchased and finished goods. It also has to do with things such as receiving of products from the company's suppliers (Murphy & Knemeyer 2018, 186-187.)

In Warehousing management there are options available for companies to decide whether it would like to have their housing.

- Private warehousing – This type of storage belongs to a company for storing their goods. A company spends much on maintaining its warehouse. Keeping this type of warehouse is advisable for companies with a large volume of inventory (Murphy & Knemeyer 2018, 188-191).
- Public warehousing - This is used by anyone in need of space to store their goods through renting (Murphy & Knemeyer 2018, 188-191).
- Contract warehouse- "a long term, a mutually beneficial arrangement which provides unique and specially tailored warehousing and logistics services exclusively to one client, where the vendor and the client share risks associated with the operation" (Murphy & Knemeyer 2018, 188-191).
- Multiclient warehousing- This type of warehouse has both public and contract warehousing characteristics (Murphy & Knemeyer 2018, 188-191).

Production or operation management: Production management activities include; planning, ensuring effective and efficient flow of materials (semi-product, finished product), ensuring the flow of information in the production process to achieve what customers requested or market demand (Lenort & Feliks 2013, 2). Goods and services used are produced or manufactured. In production companies, there must be proper planning about production for the company not to run at a loss at the end of the day. Due to waste of resources in production and increased need of semi-finished and finished products, components and parts of certain goods, most companies have adopted integral concepts and systems to assist in manufacturing (Lenort & Feliks 2013, 2.) These fundamental concepts and system that most companies are using in their production activities in logistics are Production Planning and Control (PPC) systems, "JIT way" which started at Toyota Production System (TPS). The basic aim of the system is the maximal shortening of

production lead times and elimination of all losses in the production process and “MRP way” which also perform the purpose of developing the material requirements plan not disregarding master production plan and minimizing the emergence of inventories (Lenort & Feliks 2013, 2-3.)

Material handling: Material handling refers to short distance movement of good that usually happens within the confines of a company or plant (Murphy & Knemeyer 2018, 203-216). The endpoint of logistics is its effective and efficient flow of goods and services within short and long distances. Material handling in logistics focuses on both short and long-distance movement of products and services. Companies transport manufactured goods from the production end to the wholesaler's point. The handling of a good during transportation depends on its packaging. Transportation processes for packaged and unpackaged goods differ. Also, the physical features of products influence handling. For instance, bulky goods are handled with the use of pumps, or shovels while non-bulky involve the use of conveyance devices such as carts and cranes after packaging them in containers (Murphy & Knemeyer 2018, 203-216.)

Order management: This component in logistics sees to the time an interested customer places an order for goods and the time the customer receives it (Murphy & Knemeyer 2018, 34). Products and services produced are to be used by interested customers. Goods leave the production point after production upon placement of orders. Between the placing of orders to the time customers receives, there are some processes the goods go through, and these processes include:

- Order transmittal- the time customer places an order till he/she receives it (Murphy & Knemeyer 2018, 133-136).
- Order processing- tells about when the seller receives the order until the right person gives authorization for the filling of the order (Murphy & Knemeyer 2018, 133-136).
- Order picking and assembling- has to do with, activities from when the authorized person filled the order to when the goods are loaded (Murphy & Knemeyer 2018, 133-136).
- Order delivery- This is the last step in the order management process. Order delivery involves the period when a transportation carrier picks the goods until a customer receives it (Murphy & Knemeyer 2018, 133-136).

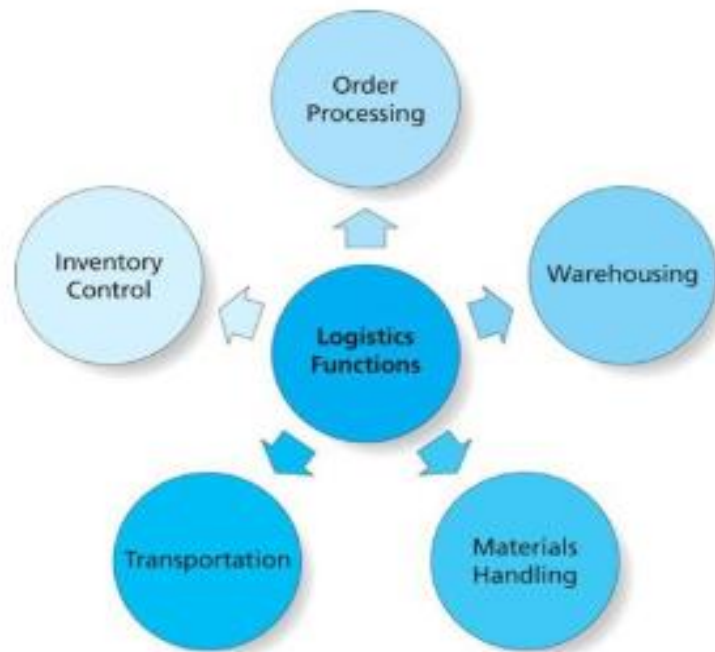


Figure 1: An Illustration of logistics components (Google 2018).

2.1.1 Purpose of Supply Chain Management in Logistics

Logistics as many writers say is an aspect of supply chain that sees to coordinating of materials and information flow (after production of goods are transported to customers and making sure it arrives in good condition, quality and quantity), storage of products that are moved from point of origin to final consumption point to meet customers satisfaction. (Harrison, Hoek & Skipwort 2014, 9.) Logistics is not able to look at all other aspects; that is why logistics is a subset of supply chain management

Supply chain management is a broader concept compared to logistics. Research suggests the introduction of supply chain dates to the 1980s. Supply chain management refers to overseeing of the relationship that exists between a firm and its material suppliers, and production facility and the flow of information, finances, materials and services from suppliers' producers, wholesalers, retailers and to final consumers. (Mangan & Lalwani 2016, 12).

Some of the ways that one will be able to determine the well-organized level of supply chain management system include; seeing trust and working together spirit between suppliers, reduction in waste and volume of inventories and enough tracing of flows through the help of Enterprise Resource Planning (ERP) systems (Muhammed 2016, 4). Many companies

today have adopted the use of ERP to help achieve these goals since it helps in communicating with suppliers. Development of ERP system is to improve supply chain management in tracking orders, inventory optimization, cost reduction and decision making (LinkedIn 2016.) Supply chain management plays the role of ensuring a transparent and robust flow in the supply process.

Material flow – This has to do with physical movements of goods from suppliers to customers and from customers to suppliers, i.e., providing servicing, maintenance, etc. (LinkedIn 2016).

Information flow – This looks at information relating to delivery schedules of goods, feedback on customers services, order tracking, etc. (LinkedIn 2016).

Financial flow- This relates to payments made in the company, invoices, ownership of arrangements. The financial flow needs much collaboration between individuals involved in the supply chain (LinkedIn 2016).

2.1.2 Logistics Infrastructure

Logistics infrastructure is considered as vital in a country's economic development and therefore seen as the backbone to the logistics system. A developed and adequate infrastructure support a country's smooth freight movement. Currently, states have discovered that development of a country's economy partly depends on logistics and have channelled most of the country's resources in developing these logistics infrastructures since logistics activities give license to the development of a nation's economy. India is an excellent example of such states. For seven (7) years now, India invested \$10 billion in 2003 and \$ 30 billion in 2010 to develop the country's logistics infrastructure. Research suggests, a country with undeveloped infrastructure makes the running or utilization of mode of transport to face challenges (McKinsey & Company 2010.) Logistics infrastructure is facilities which are owned by state or individual and is jointly used to assist in completing logistics processes to ensure smooth flow of cargo in logistics (Skorobogatova & Kuzmina-Merlino 2017, 3). These facilities that work hand in hand for the completion of logistics processes comprises:

- Warehousing infrastructure, i.e., offices, storehouse, ware equipment.
- Handling infrastructure, which includes, domestic transport, goods handing equipment
- Transport infrastructure, i.e., port, air, rail, road, and waterway

- IT infrastructure which comprises of hard and software system, and other facilities that enhance communication (Skorobogatova & Kuzmina-Merlino 2017, 3.)

Since the thesis topic is about Freight movement, categories of logistics infrastructure focused on transport infrastructure. According to Skorobogatova & Kuzmina-Merlino (2017, 3), air transport, rail transport, road transport, water and inland transport, and pipelines are the modes of transport that come together to form transport infrastructure. The presence of quality and adequate transportation infrastructure reduces expenses incurred by companies through their logistics activities and process such as operations and buying behavior which leads to economic growth (Supply chain quarterly 2008.) Since goods or services need to get to clients on time and in good condition, there must be a connecting network for products to get to customers on time with no challenges.

Transportation infrastructure is defined as physical things such as vehicles, modes of transports, roadway elements (Traffic cameras and sensors, real-time parking occupancy detectors, security monitoring devices, signal controllers, traffic lights, and fibre optic cable network) that work together to ensure smooth freight movement from production site to markets and to final consumers in logistics (Skorobogatova & Kuzmina-Merlino 2017, 3 & Its infrastructure 2019).

2.2 Transportation

Transportation is how goods are moved from one place to a specific location thus from the beginning of a logistics company's supply chain to final consumers. The reason why transportation came to existence is to halt space distance when distributing goods and moving people. In the ancient days, bulky goods were conveyed using domestic animals or human ridding animals to meet the demand for products and services. Means of Transportation changed in the nineteenth century when companies saw inventions which changed the means of transport (James 2018, 6; Rodrigue, Comtois & Slack 2006, 2.)

2.3 Forms of Transportation

Modes through which goods and people physically move from one place to another can be grouped into five thus; land, rail, water, air and pipeline (James 2018, 6; Transport, 107.)

Road transportation

Road transportation is believed to be a key player in the transportation of goods and services among the mode of transportation. It enables movements of freights from point A to Point B regardless of the routes (cities, towns, and villages) and it is the most used mode of transportation especial in domestic freight movement. Road transportation is the only mode used in the door- to- door delivery of goods by logistics companies with the use of trucks, vehicles, and motorbikes (James 2018, 10.) According to Logistiikan Maailma (2018), research suggests, about 90% of the country's freight is with the road. Road transportation classification includes; pick-up and delivery transport, line haul and transfer transport, collection and delivery or distribution transport.

Pipeline transport

Pipeline transportation is the mode of transport used in the movement of oil and gas. It is considered as the safest and fastest compared to railway (Fraser institute 2019.) The reason for using pipeline in liquid transportation is due to its continuous flow of goods, not needing more labor and its environmental friendliness (KenyaPlex 2019).

Air transport

Air transportation is the mode of transport used in moving goods for which demand is very high and needs to be available in store shelves daily. Air transportation is the mode mostly used by companies to fulfill JIT stock replenishment. Goods transported using air transport include perishable products and pharmaceuticals. Aside from all these unique attributes to air transportation, it also has its challenges such as massive cost involvement and restrictions on certain goods, etc. (Freight hub 2019.)

Rail transport

Rail transportation among the other modes of transportation is the cheapest and environmentally friendly due to less fuel it burns. Rail transportation is known as the efficient form of land transportation since it works through connections of over three hundred (300) haul trucks. In domestic transport of goods over a short and long distance on land, it is fast and cost-effective (Freight hub 2019.)

Water transport

Water or ocean transport is mostly used mode used in carrying bulky goods such as agricultural products, coal, crude oil, petroleum, metals, etc. with long time lead. Water transport is quite cheap when transporting bulky goods compared to air transport over a long distance. In water transportation, there is no limitation to the sizes of products as it is with air. Research suggests, among all the other modes, sea transport accounts for 90% of world trade (Freight hub 2019.)

2.4 Traffic and Transportation Management

Traffic and transportation management refers to measures such as traffic calming, traffic bans, cleaner fuel cars put in place to achieve security in transportation, reduction in traffic emissions and enhance the smooth flow of freight movement. Transportation services is a crucial player in logistics activities and therefore needs the necessary attention. Some countries involved in logistics activities turn not to obey traffic rules and regulation during transportation. These measures such as traffic calming, make use of speed ramps in countries with a low level of technology to control speed (Mayor 2005, 156.)

2.5 Transportation Security

Transportation activities account for 50 percent of a company's expenses especially in logistics industries (Murphy & Knemeyer 2018, 35). Quality transportation is a vital element in cargo freight. Because individuals have come to realize logistics play a more prominent role in the development of a country economy, attention has been shifted to attacking cargo freights (Eu science hub 2017). A break in a country's transportation activities causes a more significant effect on the economy. Currently, nations and individuals have given more considerable attention to transportation security since it is an essential element to safeguard modes of transportation for economic development and delivery of goods. Poor transportation security causes a significant loss to a country. The Example United States of America once declared a loss of \$15 billion resulting from cargo theft (Transport Security, Inc. 2018)

2.5.1 Transport Insecurity

Many countries are facing insecurity issues in transportation, and it has become one of the biggest challenges facing logistics activities during cargo movement. During movements of goods, truck drivers face unpleasant circumstances such as robbery attacks mostly on the highways (Mexicom logistics 2018.) Example, Mexico is known to be one of the countries facing the biggest challenge in cargo insecurity. According to research by mexicom logistics

(2018), Mexico records over 2240% of cargo theft, especially on the high way. This theft takes place during transportation. Although theft has the most top record as insecurity in road transportation, there are other threats that logistics companies encounter in international level.

2.5.2 Terrorism

Terrorism against the transportation sector was not of significant concern in the past because it was minimal, but today this same topic has come to need all the attention it deserves. A single attack carried out successfully has a significant damaging effect on people and goods and services. Among all the factors that render transportation insecure, terrorism is the most significant factor due to the loss it costs a company when it occurs. Research suggests terrorist attackers are now directing their activities towards logistics companies whose focus are on maritime operations (Universal cargo 2013.) For example, the attack on the World Trade Center (2001) – the USA and a suicide bombing of a French tanker full of oil in (2002) caused a significant loss to the respective states and the world in general (Mangan & Lalwani 2016, 117-118.)

2.5.3 Piracy

Piracy is a security challenge in transportation. It is an insecurity problem mostly encountered by logistics companies that are involved in the movement of goods from point A to B with the use of seaborne as a transportation mode. In sea transportation, there are specific areas that are known as targets for piracy. These areas include: The Gulf of Guinea and the Indian ocean but South East Asia is believed to have recorded the highest rate of theft (JLT 2017).

2.5.4 Criminal incidents

Criminal incidents which include cargo theft is an unlawful activity which involves taking valuable goods, documents, money, and luggage from a cargo, i.e., loaded vehicle mostly via road transportation (Lmp Insider 2018). Cargo theft is an already existing problem in logistics. Everyday countries record cargo theft. Example, United State of America (USA) and Canada as of 2017, faced a challenge of two hundred (200) cargo thefts causing the country a considerable loss. Cargo theft is a more significant challenge in transportation insecurity in freight movement (Old Republic of Canada 2017.)

2.5.5 Employees Indiscipline

Employees indiscipline means not adhering to the roles and regulations set by a company. According to the Security Solution (2015), employees not following policies, rules, and regulations contributes to security problems in freight transportation. Most truck drivers in logistics companies that oversee freight deliver are most people with no higher school certificates. Most of them turn an ear to speed limits, road signs, and not taking rest during a long journey.

2.5.6 Information Technology

Information technology is the use of electronic devices to process data, distribute, and send information to individuals through the use of digitalization. The use of information technology seems to have a challenge in certain parts of the world, especially in developing countries. There is a challenge with unskilled staff who are not able to effectively make use of IT. (Emmanson'blog 2012.)

2.6 Overview of Ghana Logistics

Ghana is a country, found in the western part of Africa. It has Burkina Faso, Togo and Ivory Coast as its neighboring countries to the north, east and west respectively and the Gold of Guinea to the south. Ghana is a country with green land for business for many reasons. Among them are the peaceful political environment and Ghana as a promising developing economy. The country has a land size of (238,535 km²), with a population of (28.83 million) as at (2017). English is its official language and Ghanaian Cedi being the currency (Ghana 2018.) The Ghanaian economy is a combination of both private and state own. Ghana depends mostly on agricultural product. Ghanaian means of transportation include vehicles, railways, and aircraft. For logistics activities, the modes of transport used are road and railway for domestic's movement of goods and services (Ghana 2018.)

Logistics is a contributor to the development of a country's economy and Ghana as a country is not an exception. Countries including Ghana are now spending a lot on keeping logistics activities running since they import most of their consumable goods. According to Oxford Business Group (2016), Ghana has spent over (\$2bn) on developing the country's two main ports, i.e., Tema and Takoradi. According to the trading economy (2018), the state depends on raw materials (cocoa beans, gold, and Timber) as their main export which relies heavily on logistics activities for transportation from various parts of the country to the points of exports.



Figure 2: Map of Ghana indicating regions and routes (google 2018)

Figure 2 shows the ten (10) administrative parts of Ghana and transportation routes. The greater Accra region, the capital region of Ghana is the region with most logistics activities taking place. Accra being Ghana capital is the area where almost all facilities needed to operate a company is. Logistics companies in Ghana are mostly in Accra and road is the mode of transport in domestic freight movement. When goods get to Ghana by air, the destination is Accra while goods that come by sea land in Tema since that is where the country's international harbor is. Most logistics companies are in Accra. Good roads and road network and short travel distances from both air and sea ports are some of the reasons these companies target Accra for their offices and terminals. Ghana has a tropical climate thus dry season and rainy season. During the rainy season, the road situation outside the

cities is terrible due to poor maintenance of road infrastructure in other regions in Ghana. Also, travel distance within the towns are not quite far as to outside cities (climate to travel 2018.)

Town	Distance in km	Town	Distance in km
Aburi	38	Kpandu	206
Ada	114	Kintampo	478
Aflo	192	Kumasi	270
Akosombo	104	Lawra	977
Bamboi	474	Navrongo	845
Bawku	828	Nkawkaw	163
Bibiani	265	Nsawam	35
Bole	892	Obuasi	320
Bolgatanga	810	Oda	143
Cape Coast	114	Salaga	443
Damongo	782	Sekondi	218
Elmina	158	Sunyani	400
Ejura	336	Swedru	85
Gambaga	811	Tamale	640
Half-Asini	403	Takoradi	228
Ho	185	Tarkwa	317
Hohoe	221	Techiman	398
Keta	214	Wa	712

Figure 3: An illustration of road distances from Accra (Ghana breaking news 2015).

These names in Figure 3 are the sub-cities or places with traveling distances from the capital region of Accra.

2.7 Transportation Network in Ghana

Transportation is a vital element in life which one cannot do without it. It enhances the physical movement of goods and services. In the world of logistics, transportation helps in connecting companies and clients. (Sarbah, Fokouh, Obeng & Quaye 2014, 2). The transportation network of Ghana is mainly at the southern part of the country with a major road network to all other parts of the country. It is in the south sector that you see all the modes of transportation in operation. These are used for connecting the resource-rich areas to the capital region for easy transportation of goods and services during imports and exports. Due to the area size of Ghana, (238,540 sq. km), road, rail and air freight all form part of the transportation activities with road transportation regarded the most widely developed and used (Ghana- location, size and extent 2018.)

2.7.1 Railway

The railway is a transportation network used in domestic freight movement in the capital of Accra, Ghana. The Infrastructure size of Ghana railway is about (1300) kilometers with (94) routes (Ghana railway development authority 2018). With all these railway lengths and routes, it is only three (3) regions in Ghana that these routes are in service. Regarding the appendix (iv), the routes with green colors are the regions where domestic freight takes place in Ghana through railway. These routes are in Kumasi, Takoradi and Greater Accra region. The division of route comprises Takoradi to Kumasi with (373.8km), Accra to Kumasi (330km) and Huni valley to kotoku (239km). Aside from the main routes, there are some extensions to small towns within the regions. One can also see from the map that, routes which are not in service are the ones in red colors and it is more than the ones in service (Ghana railway development authority 2018). Government of Ghana has discovered that expanding railway infrastructure will lead to a significant increase in economic development and has, therefore, started investing heavily in railway construction.

2.7.2 Air Freight

Air freight is related to carrying volumes of goods from a point to a specific destination by air. Since logistics has become part of a country's economic development, Ghana is channeling its resources to extensively connecting the country to more international and domestic air routes. Ghana is considered as the first African country that carries a large volume of cargo freight (Ghana investment promotion center 2019). The number of propeller planes for domestic air freight in Ghana are limited (Easy track Ghana 2019). Research suggests, only two (2) airplanes are responsible for cargo transport domestically (Ghana investment promotion center 2019).

2.7.3 Roads

Road transportation is the dominant type of transportation mode in Ghana. Road transportation in Ghana is considered a monopoly over other modes. Research suggests road transportation play a more prominent role in the development of Ghanaian Economy since (98%) of the country's domestic freight is by road. Road transportation is the only mode used in the door- to- door delivery of goods by logistics companies with the use of trucks, vehicles, and motorbikes in Ghana (PWC 2018, 48.) Ghana road transport is categorized into three (3) main road networks: Trunk roads, urban roads, and feeder roads. Trunk roads are known as right roads which connect main cities in Ghana. The Ghana

government usually funds road construction and maintenance with some help from other developed states governments. Urban and feeder roads make up the rest of the road and link towns and villages in Ghana together (Ghana road network 2018.)

2.7.4 Road Network of Accra



Figure 4: Road network of Accra region (Capital of Ghana, Accra map.)

The road networks of the capital region of Ghana consist of three main categories of roads and are of different quality and capacity. The first and major routes are the national highways which are indicated by letter N. There are 18 of these highways across the country. N1 is the main highway that stretches from Elubo, a border town with Cote D'Ivoire to Aflao, another border town with Togo through the twin city of Sekondi-Takoradi, Cape Coast, Winneba, Accra and Tema. So, the N1 links the Accra region to other highways connecting the entire country and to international routes of neighboring countries. The famous Tema Motorway forms a portion of the N1 that links the harbor city of Tema to Accra, the capital of Ghana. Tema is the central harbor city of Ghana and doubles as the industrial area of Ghana. Most of the heavy industries are situated in the Tema area for proximity to both harbor and Kotoka International Airport – Accra.

The second category is the major regional routes that connect the provincial capitals of Ghana. The third category is the minor local routes that serve as feeder roads that connect smaller settlements to the major regional and national highways.

From figure(4), the major routes are in yellow. These comprise of highways and major regional routes. So, there is a major highway that passes through Accra and closes to lots of business locations.

There are also minor routes indicated as Other routes on the map. These are the many feeder roads connecting all parts of Accra to the national highways and major regional routes. Accra has a good connection of road network and has all the forms of roads namely national highway, major and minor local routes in the country. With the location of essential building facilities along the highways, logistics transportation within and to and from Accra is easy.

The railway lines have been dormant for some time now. They are under renovation, and only a few lines are in operation. There is a cargo train from the harbor city of Tema to the central business district of Accra. The 24 kilometers railway lines from Tema to Accra is also going through renovation. Accra is also connected to other minerals precious places like Kumasi in the Ashanti Region, Takoradi the oil city and parts of the Western Region. There has been the creation of the ministry of railways under the current Ghana government to help develop the railway sector to ease the transportation of humans and goods.

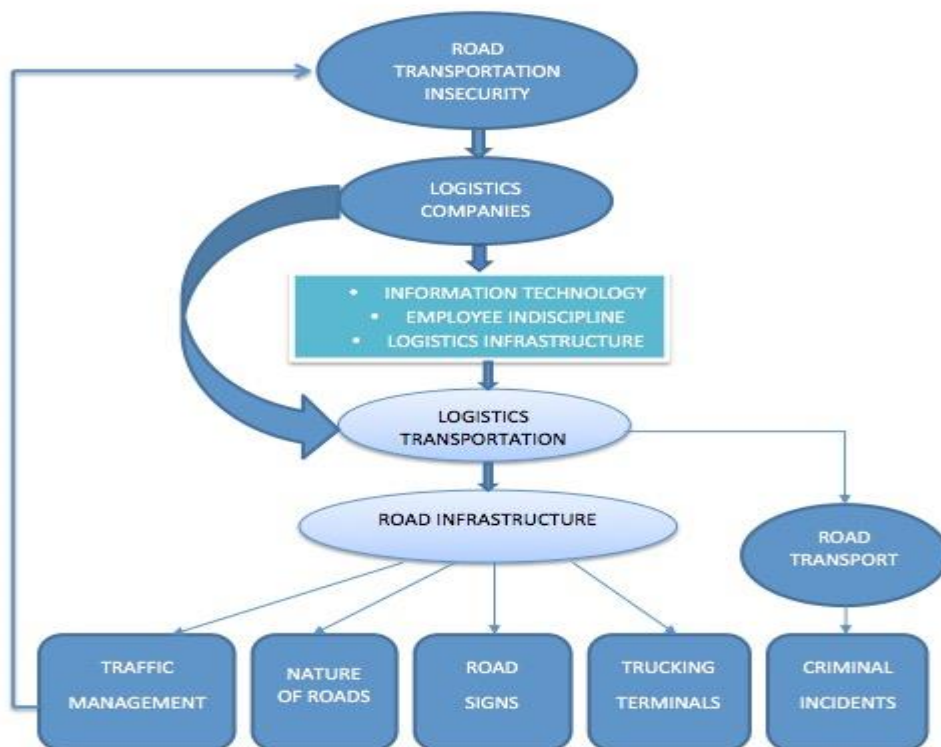


Figure 5: A pictorial representation of the Theoretical frame work

From figure (5), the research focused on road transportation insecurity. Some logistics companies in Ghana are earmarked for investigation. In the theory part, topics relating to logistics, transportation, road transportation, and factors contributing to insecurity in road and logistics activities are discussed. Road transportation insecurity which is the underlining challenge of logistics companies results from some unpleasant situations which include inappropriate use of information technology, employee's indiscipline, and logistics infrastructure.

Road infrastructure which serves as the pipeline for logistics transportation activities also contributes to road transportation insecurity when the necessary facilities such as good roads, roads signs, trucking terminals, and traffic management are not in existence. When all these elements do not get much attention, logistics transportation faces insecurity issues.

3 Research method

Chapter three of this thesis presents the methods for the study. The methods used include qualitative and quantitative (mixed method approach). Walliman (2011, 72-73) argued qualitative method is suitable for analyzing research topics which do not make use of figures instead expressed in words. Furthermore, the qualitative approach allows an individual to make use of assumptions, values, ideas which will lead to adding or throwing more light on already existing theories (Introduction to qualitative research methods 2017, 6-12). The author employs the qualitative approach in the thesis following the reason that specific salient security issues that cannot be measured quantitatively can be captured through the interview to cross-validate the quantitative responses of respondents (Creswell 2014).

Whereas, the quantitative method makes use of statistics that involve: averages, percentages, or quotas which is collected and studied to explain an event. The quantitative approach brings about generating or formation of a new set of theories (Statistics how to 2019).

3.1 Research design

A research design is known as the framework for a thesis. The idea underpinning the use of research design is the pragmatist approach which allows and guides a researcher to use variety approach to answer research questions that cannot be addressed using a single method. Also, research design helps a researcher to put ideas into a picture format for easy understanding as well as give the reader information on the written topic. According to Creswell (2014), A well-defined research design constitutes methods which include; population, sample and the sampling procedure, instruments, data collection procedure, data analysis, and ethical consideration.

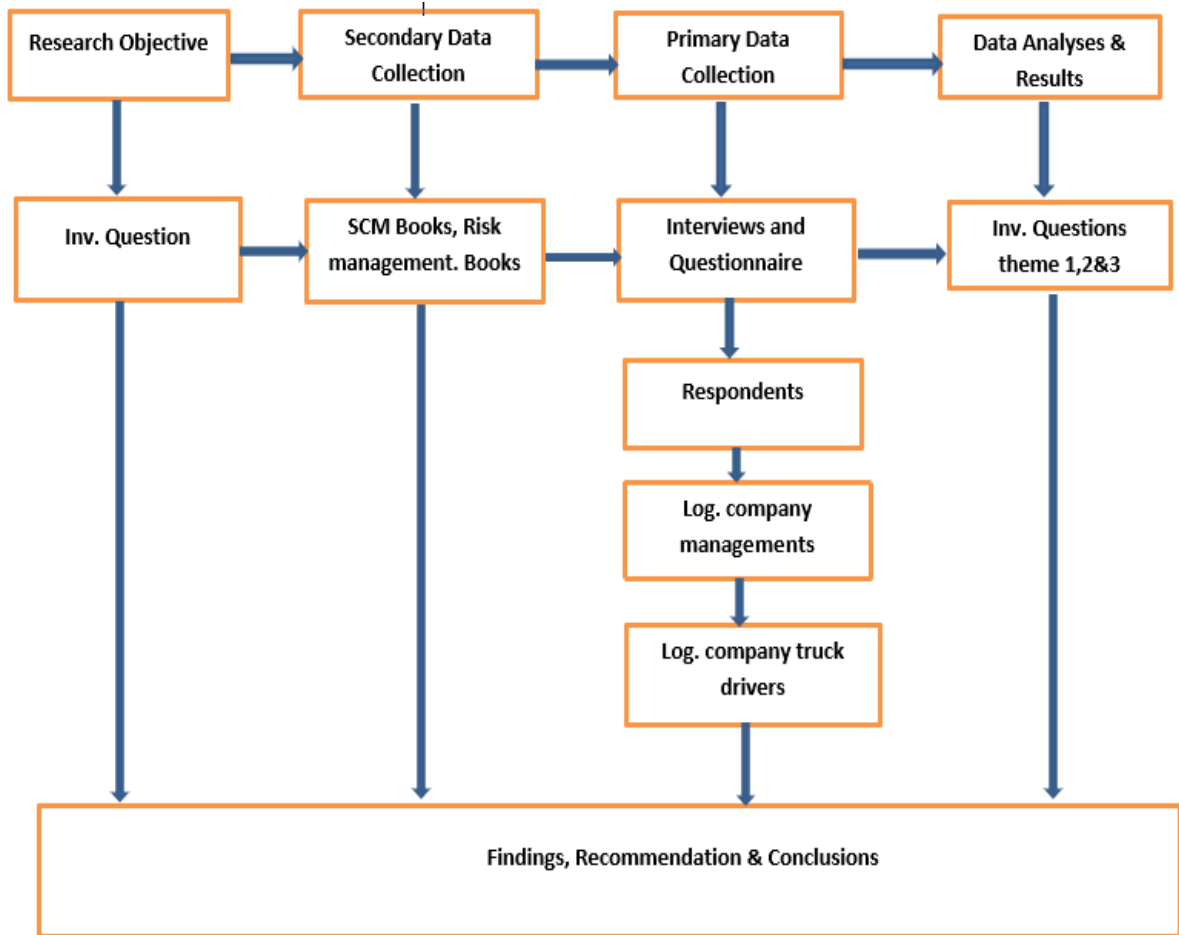


Figure 6: An Illustration of Research design

3.1.1 Population

According to Amedahe and Gyimah (2002), population refers to the group of identical entities that the researcher will ideally like to generalize. The people of the study comprised the logistics companies of the supply chain industry in the capital of Ghana. There are about three hundred and fifteen (315) logistic companies in the capital of Ghana. Out of this total, about fifteen of these companies are into the movement of goods and services domestically in the capital of Ghana (Informationcradle 2019). There are about thousand (1000) workers in these three hundred and fifteen (315) logistic companies in the capital of Ghana. Majority of these staff's population in the logistics companies are males while the female staff respondents formed the minority of the people population. The age range of the staff population is between thirty to forty years.

3.1.2 Sampling Procedure

Sampling in research refers to analyzing part of the people involved in the study. The aim for adopting sample procedure in research is because of how it helps a researcher to identify key participants of a thesis (Study.com 2019). Sampling as a research procedure involves the process of selecting a portion of the population to represent the entire population (Amedahe & Gyimah 2002). The research used purposive sampling technique to choose five logistics companies from Accra Metropolis. The logistics companies selected include FedEx, Skylink, UPS, DHL, and Mcdan logistics company.

Furthermore, this research used a simple sampling technique to select staff (Managers, Employees and truck drivers) respondents for the study. All employees from the selected logistic companies were qualified to take part in the data collection by way of answering the research questionnaire. According to Krejcie & Morgan (1970), table for determining the sample size for a given population is the sample size for a population of three hundred and fifteen (315) which will be ninety-two (92). Thus, ninety-two staffs from the selected logistic companies could answer the questionnaire for the quantitative data. Also, purposive sampling skills was used to select two staffs from the five selected companies to be mainly interviewed for the qualitative data. The researcher did the interview section; aided by a well-structured interview guide.

3.1.3 Research Instrument

In the research instrument aspect, questionnaire and interview methods were adopted as instruments to collect data for the study. One of the research instruments is an interview and it is a qualitative tool used to collect data in research topics that involve people's experience, perceptions, opinions, feelings, and knowledge in a situation. Interview as a research tool grants the opportunity to study and find meanings to a problem which helps to come out with new theories at the end of the research (Taylor 2010, 63; Silverman 2011, 8.) A questionnaire is the second method used, and it is a data collecting tool that make use of a set of scaling question type to gather information from targeted respondents for research (Abawi 2013, 2; QuestionPro 19). Although several instruments are available for data collection, a questionnaire and staff interview were deemed more appropriate for the study. Questionnaires were used to gather quantitative information from workers in five (5) logistics companies. According to Cohen, Manion, and Morrison (2005), these are widely used and is a useful instrument for collecting survey information by providing structured numerical data and can be administered without the presence of the researcher. The questionnaire has the advantages of allowing the researcher to collect data from a group of respondents at the same time and it is easy to score. Another advantage of questionnaires

to this study is that, it consists of questions that can be used to investigate an employee's conception of insecurity in the transportation of freight.

The questionnaires are in four main sections. The first part, which is part (A), consist of the background information of the respondents that will be relevant to the study. The second part (B), touches on criminal cases encountered on the road in freight transportation. The (C) part is focus on transport infrastructure and traffic management and the Last which is part (D) and (E) deal with the impact of information technology and staffs' indiscipline on the security of freight transportation respectively. All the items under each section were made up of closed-ended statements using the Likert Scale strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD) format to ensure smooth and quick response to the items.

The research also used an interview technique as a tool to help collect qualitative data. This tool helped look out for the various jigsaws of practices that makes security vulnerable in freight transport. This tool as compared to the questionnaires, allowed the respondent to share their experiences. By doing this, it allowed getting a full picture of what takes place in logistics transport rather than relying on second-hand accounts, as Robson (2002) says, what people do may differ from what they say and do. The author conducts the interviews with the help of a guide.

3.1.4 Validity and Reliability of the Instrument

The questionnaire developed was subjected to expert reviews to ensure accuracy. Validity and reliability are essential features of any research (Creswell, Plano Clark, Gutmann & Hanson, 2003; Robson, 2002). In addressing the authenticity of the instrument which is (SPSS), the questionnaire was pre-tested using similar companies in logistics in the Accra the capital of Ghana. The pre-test companies are different; however, the researcher used these companies for the pre-testing because they deal also in freight transport, and they share common characteristics with those of the study participants in terms of operations. The instrument after testing yielded a reliability coefficient of 0.89 which means the sub questions are relevant to the research questions. According to McLeod (2007), reliability refers to the consistency of a research study or measuring test. According to Ritter (2010), Cronbach alpha values ranging from the positive direction are trusted to indicate a high level of consistency and are practical and can make sense. In quantitative and qualitative research, validity rests on the foundation that a method, a test or a research tool is measuring what it supposed to measure (Bryman, Becker, & Sempik, 2008).

3.1.5 Data Processing and Analysis

The data obtained was analyzed quantitatively and supported qualitatively. After gathering the data, it was processed and managed by coding. The information was entered into the appropriate data software (Statistical Package for the Social Sciences) to generate results and clean the data finally to remove any forms of mistakes that went unnoticed. Patton (2002,371) noted that "the analysis of the empirical data aims to make sense of massive amounts of data, reduce the volume of information, identify significant patterns, and make a framework for communicating the essence of what the data reveals". The researcher collates the collected data to address questions that have been answered partially or not answered. For effective statistical presentation and analysis, the questionnaires were serially numbered to facilitate easy identification. It was necessary to observe this precaution to ensure quick detection of the tiny source of errors when they occur in the tabulation of the data.

Responses to the various items in the questionnaires were then tabulated and statistically analyzed. After editing and coding, the data was run using the Statistical Package for the Science solution (SPSS Version 22.0) software. The responses were quantified and analyzed based on the research questions. Research question one to three were analyzed using descriptive statistics that is the frequency with its percentages.

3.1.6 Ethical Consideration

The research addressed all ethical concerns which include informed consent, anonymity, and confidentiality. One of the issues involved in this research was informed consent. It allows prospective participants to accept or decline to engage in the study. It describes the need for participants to understand the aims, objectives and potential harm that such involvement may have on them (Seidman, 2006). It also spells out that they had the right to withdraw even after they consenting to respond. Seeking respondents' consent is in line with Mertens, (2010), who stated that informed consent arises from the participant's right to freedom. In this study, the purpose of the study was to carefully discuss with each participant before they were involved in the research. On anonymity of the survey, the author acts professionally, and responsibly. The names and information provided by the respondents are kept very confidential. As posited by Oliver (2010), anonymity is a vital issue in research ethics because it allows the respondents to have their identity concealed.

Necessary Codes were adopted to ensure the anonymity of information and harm. In order not to unnecessarily invade the privacy of respondents, a previous visit was made to the companies before the data collection commenced. The author did not take the names or any identifiable information from respondents as a way of ensuring the ethical principle of anonymity in social research. Anonymity is guaranteed to prevent possible victimization of respondents by stakeholders. On the issue of confidentiality, the researcher puts into maintaining the confidentiality of the reactions of the participants. The author keeps the information anonymous and privately from people who might recognize the respondents. Most importantly on the ethical issues of the survey, pieces of information that were cited from earlier studies on security problems in transportation to support the review of related literature were duly acknowledged through both citations and referencing to avoid academic dishonesty otherwise known as plagiarism.

3.2 Benchmarking

Benchmarking is used in the research to compare companies to find out what one company is doing to achieve high performance in operation. The process of comparing business processes and performance indicators of one company to another (usually one considered industry's best) or by analyzing a company's operations to the best practices in the industry is benchmarking. Benchmarking offers the less performing companies the opportunity to study, identify and implement the best performance metrics to achieve success. Benchmarking is a learning process and never a one-time activity. It always gives a clear picture of a firm's standing compared to its competitors and the areas to give much attention to provide the firm with a competitive advantage (Why benchmark 2019.)

The author collected information from some former and present workers of Posti Oy and Ghana Post Limited about their welfare. The workers were both full and part-time workers with working experience spanning from three (3) to five (5) years. The workers were nighttime newspaper delivers, daytime letters deliverers, and Sorters with regards to Posti Oy. With Ghana Post Limited employees thus, Adjei, Odoi, Tawiah, and Asantewaa, a face-to-face conversation took place about their working conditions during my work placement in Autumn 2018.

In the benchmarking, the author compares the road freight transportation of Ghana Post Company Limited- Ghana in the capital region of Ghana to that of Posti Oy- Finland in the Uusimaa region of Finland for their similarities and the dissimilarities. These are the factors for the comparison; human resource and wellbeing, logistics infrastructure, highway and urban transportation and information technology (Why benchmark 2019.)

3.2.1 Human Resource and Wellbeing

Posti Oy has a lot of permanent professional staff and does employ few temporary staff during peak holidays season in summer. These temporary staffs are also giving adequate training to be able to execute tasks assigned them correctly. The wellbeing of the human resource of every firm is paramount to the performance and growth of the firm. Any lackadaisical attitude toward the welfare of employees is a recipe for low performance and failure.

Posti Oy employees are well rewarded, payment of wages and salaries is on time. There are workshops designed to train their staff from time to time to enrich their knowledge in their field of work. There is also a right balance between ensuring smooth operations and workers holidays. Old staffs are required to give training to temporary summer workers before embarking on their summer holidays to ensure that there is no shortfall of workers and a decline in quality. The old workers resume work after their holidays with freshness and are well prepared for difficult winter seasons. So overall staff performance is always up throughout the whole year. The health of workers is also taken care of by the company. Each worker is assigned a specialist nurse and doctor. Health facilities are made easily accessible to workers.

Ghana post workers are also well paid. The company does not usually employ temporary workers. Training is done once a while when they employ permanent workers. Workers holidays is not an essential item on their contracts. Workers who stay at work throughout the whole year are considered hard workers. It is therefore not uncommon to see workers with fatigue expressed all over their bodies and decline of productivity. The health care of workers is not the responsibility of the company. Each worker is left to take care of him or herself.

3.2.2 Logistics Infrastructure (Road)

The road network in the Uusimaa region of Finland is well developed, tarred and maintained. Most of the major roads are at least two lanes and are very well marked. Road signs are also visible on the streets, by the roadside and above the road lanes. Most of the slightly busy roads have the Taxi/Bus lanes that are also used by cargo vans which helps logistics companies in saving time. Streets are all well illuminated to help prevent accidents, which is one critical incident all logistics companies want to avoid.

In the Capital of Accra Ghana, roads are not all tarred. The national highways and major routes are first class roads. These are well maintained. Majority of the minor streets are not well maintained. The rough nature of the small streets slows down transportation, and there is usually heavy vehicular traffic throughout the day. Some roads are not visibly marked, and road signs are few. Only a small portion of the road network are multiple lanes with the majority being single lanes.

Logistics companies struggle a bit in their transportation around the capital region. They waste a substantial amount of time on the roads due to congestion. Companies must spend a bit more on packaging in order to keep transported goods safe due to the rough nature of some of the roads. Some trucks occasionally get into road accidents due to the faint markings of the road and small road signs. Logistics companies lose both human and material resources yearly due to these factors.

3.2.3 Building Infrastructure

The location of different Offices for different purposes in both inner cities and outskirts of the cities is a perfect idea by Posti Oy. The firm has enough spacious warehouses, sorting centers and service points at strategic points all over the region. These are also reviewed from time to time to see if there is the need to close old offices and open new ones to meet the growing needs of high freight volumes. These buildings are put up to move services closer to customers and serve them better.

Ghana Post has few buildings serving as warehouses, sorting centers, and service points. The few they have are in the busy districts of the capital region, which makes transportation to and from those places challenging and time-consuming.

3.2.4 Cars, trucks, and others

Posti Oy owns an excellent fleet of cars, vans, and trucks for their transportation activities. It also has motorbikes, bicycles, and trolleys for the delivery of small packages. These are all well serviced from time to time. With these at the disposal of Posti Oy, they can serve all their customers at all locations to their satisfaction.

Ghana Post has few fleets of cars, vans, and trucks. They also have a hand full of motorbikes but no bicycles. These vehicles are not serviced regularly and hence keeps breaking down from time to time. With the concentration of service points at the busy

districts, most parcels from big to small are collected from these points. Door to door deliveries is very few.

3.2.5 Highway and Urban Transportation

Posti Oy transports most of their large parcels and cargo from terminals to sorting centers or service points in the night or at a time of the day when the roads are less busy. This 'night or free time' movement of goods saves the company a lot of time and fuel. There are rest points at reasonable intervals on all major highways in the Uusimaa region of Finland.

With Ghana Post, they do move most of their freight via road during the day for fear of attacks in the night. Freight vehicles are usually caught up in heavy traffic when freight transportation occurs during the day, and that cost Ghana Post a lot on fuel and time management. There are limited rest points on the highways in the capital region of Ghana and this is a significant security threat on the roads. Truck drivers must travel long distances where neighboring towns are wide apart. Some road accidents are as a result of driver fatigue from long driving hours (Inbound logistics 2019).

3.2.6 Information Technology

Street naming and property numbering with a sound GPS is perfect for the logistics activities of Posti Oy. It eases the delivery of goods to all corners of the region. It also helps in proper planning and time saving when it comes to the delivery of goods. Ordered goods can also be delivered conveniently to the doorsteps of customers at a lesser cost.

Tracking of goods is also a plus for the numerous customers of Posti Oy. Customers are relaxed when they can track their ordered products under transportation. They can then plan on the collection time and would not have to wait too long when the item is in for collection or would not have to rush to the collection points when the items are not ready for pick up.

Except for the highways and major roads, Accra roads are not well named, and properties in Accra are not well numbered. Goods delivery to familiar places is done with ease. For delivery to remote parts of Accra, delivery drivers would have to ask people for directions. Internet is expensive and not very strong to support the use of google maps and other location services. There has been the introduction of a digital addressing system to generate a unique address for all locations in the country by Ghana Post. It is going to aid delivery transportation around the capital region.

4 Discussions and results

This chapter presents data collected from the field analysis, presentations and interpretations of the findings of the study. The author collected the data from selected ninety-two (92) drivers from different logistics companies in Autumn 2018. This chapter is into two sections. The first section contains data collected on the respondents using a questionnaire which includes their biological data. The survey made use of Likert scale of strongly disagree (SD), disagree (D), agree (A), and strongly agree (SA). The researcher calculates the Mean (M) and the standard deviation (SD) from the figures of the Likert scale. The second section presents their responses to the questionnaire on the research under study as well as discussions of the results.

Data analysis and results

This section of the chapter tried to expose the background information of respondents. These include; sex, age, level of education, years of experience, as presented from Table 3. From Table 3, there were more male drivers (87%) than female drivers (13%) in the study sample. What this might mean is that most of the responses might turn to reflect the needs of the male drivers since they dominated in the study. For age groups, majority of the respondents were within 21-30 years (43.5%), followed by 31-40 years (40.2%), with those between 41-55 years having (14.1%) and below twenty 20 years (2.2%) forming the minority in the study sample. Regarding years of experience, Table 3 indicates the percentages of drivers that fell under these education groups. Out of these 92 drivers, polytechnic diploma holders formed the majority (32.6%) followed by senior high school certificate holders (26.1%), next is basic education or junior high school certificate holders having (17.4%), with drivers with a second degree and those with no formal education forming the minority with (2.2%) each. Still from table 3, the percentages of drivers that fell under years of experience shows that below 5 years (46.7%) formed the majority, followed by 6-10 years (45.7%), also 11-15 years of experience had (5.4%) and finally above 16 years formed the minority with (2.2%).

Table 3. Background information

Variables	Scale	Number	%
Gender	Male drivers	80	87
	Female drivers	12	13
Age	Below 20 years	2	2.2
	21- 30 years	40	43.5
	31- 40 years	37	40.2
	41-50 years	13	14.1
Level Education	None	2	2.2
	Basic education	16	17.4
	High school	24	26.1
	Polytechnic dip.	30	32.6
	University degree	18	19.6
	Master's degree	2	2.2
Experience level	Below 5 years	43	46.7
	6 – 10 years	42	45.7
	11- 15 years	5	5.4
			2.2
	Above 16 years	2	

Source: field survey (2019)

RQ 1. What is the impact of information technology on the security of freight transportation?

The main aim of this research question is to ascertain the impact of information technology on the security of freight transportation. To answer this research question, Items 5 to 10 under Section B on the questionnaire were used and coded respectively on a four Likert scale for the drivers to indicate whether they 'strongly agreed = 4', 'agree = 3', disagree = 2' and 'strongly disagree =1'. Their responses were analyzed and presented. Table 4 illustrates the responses of the respondents on information technology. While frequency and percentages were used to analyze drivers' perception of the impact of information technology on the security of freight transportation. Mean (M) and the standard deviation (SD) were calculated to determine whether drivers have agreed with an item on the questionnaire or not. This was done by summing coded Likert scale digits and dividing it by the number of coded digits, $1+2+3+4 =10$, hence $10/4 =2.5$. Therefore, any mean above 2.5 shows that the drivers have agreed with that item and vice versa.

Table 4. RQ 1, Responses on Impact of Information Technology on the Security of Freight Transportation. (Ninety-two (92) respondents on each item)

ITEMS	SD	D	A	SA	M	SD
I often receive security information on how to transport goods from top management via electronic media.	13(14.1%)	33(35.9%)	33(35.9%)	13(14.1%)	2.50	0.90
I often don't understand the meaning of security information I receive from top management via electron media.	12(13.0%)	38(41.3%)	38(41.3%)	4(4.3%)	2.36	0.76
Security information on transportation of goods passes through lots of channels before it gets to me.	5(5.4%)	31(33.7%)	44(47.8%)	12(13.0%)	2.68	0.76
I often send feedback on security problems I faced during goods transportation via media platform.	9(9.8%)	27(29.3%)	46(50.0%)	10(10.9%)	2.61	0.80
I often attend transport security committee meetings.	9(9.8%)	34(37.0%)	39(42.4%)	10(10.9%)	2.54	0.81
I often attend workshop on security issues in the transportation of goods organized by the company.	18(19.6%)	29(31.5%)	36(39.1%)	9(9.8%)	2.39	0.91

Table 4 present the results of drivers' responses on the impact of information technology on the security of freight transportation. As shown in Table 4, freight drivers in the study sample receive security information on how to transport goods from top management via electronic media as most of the respondents affirmed. Again, the results show most of the freight drivers in the study sample understand the meaning of security information they receive from top management via electron media.

Furthermore, the analysis indicates that the driver respondents did agree with the item that Security information on the transportation of goods passes through lots of channels before

it gets to them. Still, on the impact of information technology on the security of freight transportation, freight drivers averagely agreed that they often send feedback on security problems they faced during goods transportation via media platform to their superiors. Finally, it establishes that even though many freight drivers were in support of the statement but on the average, the respondents did not agree that they often attend the workshop on security issues in the transportation of goods organized by the company. These findings were compared to responses from the interview with some of the respondent.

According to interviewees in the qualitative part, they do receive security information, but the challenge here is that it is not always through electronic media since they are not used to the internet and online activities due to a reason that, computer and social media was not commonplace during their time of birth. Also, security information sent to them is understandable since the head of security takes time to explain every single information to them. Furthermore, feedback is always sent to the top management through the head of security only when there is an issue and meetings are organized for them twice yearly, and these meetings are usually not on security matters. Top management call for security meetings only under emergency situations.

RQ 2. What Are the Security Problems That Staff Indiscipline Pose on Freight Transportation?

The main aim of this research question was to ascertain the security problems that staff indiscipline pose on freight transportation. To answer this research question, Items 11 to 18 under Section C on the questionnaire were used and coded respectively on a four Likert scale for the drivers to indicate whether they 'strongly agreed = 4', 'agree = 3', 'disagree = 2' and 'strongly disagree = 1'. Their responses were analyzed and presented in Table 5. This table 5 illustrates the responses of the respondents on the information technology. While frequency and percentages were used to analyze drivers' perception of the security problems that staff indiscipline pose on freight transportation, mean and standard deviation were performed to determine whether drivers have agreed with the items on the questionnaire or not. This was done by summing coded Likert scale digits and divided by the number of coded digits, $1+2+3+4 = 10$, hence $10/4 = 2.5$. Therefore, any Mean above 2.5 shows that the drivers have agreed with that item and vice versa.

Table 5. Responses on Security Problems That Staff Indiscipline Posed on Freight Transportation. (Ninety-two (92) respondents on each item)

Items	SD	D	A	SA	M	SD
I come to work late sometimes so I set off late during goods delivery.	20(21.7%)	47(51.1%)	21(22.8%)	4(4.3%)	2.0	0.78
I seldom obey road signs and regulations when I am off for delivery	10(10.9%)	47(51.1%)	29(31.5%)	6(6.5%)	2.3	0.75
I sometimes check the state of the delivery vehicle before I setoff on the road.	12(13.0%)	22(23.9%)	46(50.0%)	12(13.0%)	2.6	0.87
I sometimes stop or park at unauthorized place to offload goods to customers.	17(18.5%)	54(58.7%)	19(20.7%)	2(2.2%)	2.0	0.69
I mostly carry goods that are beyond the weight of the truck.	19(20.7%)	50(54.3%)	19(20.7%)	4(4.3%)	2.0	0.76
I don't normally adhere to companies' policy on speed limits.	19(20.7%)	43(46.7%)	29(31.5%)	1(1.1%)	2.1	0.74
I don't normally check my health status before I embark on delivery	31(33.7%)	41(44.6%)	12(13.0%)	8(8.7%)	1.9	0.90
I supervise the inspection of goods before it is transported.	4(4.3%)	15(16.3%)	43(46.7%)	30(32.6%)	3.0	0.81

As shown in Table 5, the respondents on average have disagreed with this item. It means freight drivers go to work early so therefore they set off on time during delivery. Again, the respondents on average did not agree that they seldom obey road signs and regulations when they are off for delivery.

Moreover, the freight drivers agreed they sometimes check the state of the delivery vehicle before they set off on the road. Additionally, the results show a negative indication that freights drivers do not park at an unauthorized place to offload goods to customers. In

conclusion, drivers' respondents averagely disagreed that they do not carry products that are beyond the weight of the truck as most of the respondents in the study affirmed.

Similarly, respondents indicated that they adhere to company's policy on speed limits. Furthermore, most of the respondent disagreed with the item 'I do not normally check my health status before I embark on delivery.' The implication of this finding is that freights drivers in the capital of Ghana usually check health status before embarking on delivery. Lastly, the results show that freights drivers in the capital of Ghana supervise the inspection of goods before transportation takes place. These findings were compared to responses from the interview with some of the respondent.

According to the interviewees, sometimes they report late at work because of family issues. Also, during goods transportation, they mostly do not adhere to speed limits, places where they are supposed to be driving within speed limits such as 30 or 50 kph road, they speed to 60 kph due to lateness and goods need to be delivered at a place within a specific time. The vehicle condition is always checked before they set off since their lives are at risk with faulty vehicles. In terms of stopping or parking, they adhere to parking rules, and they only stop when urinating or taking a rest, but they always park at the right places. Also, goods in the vehicle for transportation do not exceed the required limit. When the load is more than the weight limit of the truck, it affects the tires which can burst and lead to an accident. Finally, keeping records, sending a bill of laden and checking of goods is done by other personnel.

RQ 3. What Are the Security Problems Pose by Transportation Infrastructure and Traffic Management?

The main aim of this research question is to ascertain security problems posed by transportation infrastructure and traffic management. To answer this research question, Items 19 to 25 under Section D on the questionnaire were used and coded respectively on a four Likert scale for the drivers to indicate whether they 'strongly agreed = 4', 'agree = 3', disagree = 2' and 'strongly disagree =1'. Their responses were analyzed and presented. Table 6 illustrates the responses of the respondents on information technology. While frequency and percentages were used to analyze drivers' perception of the security problems that transportation infrastructure and traffic management pose on freight transportation, mean and standard deviation were performed to determine whether drivers have agreed with an item on the questionnaire or not. This was done by summing coded Likert scale digits and divided it by the number of coded digits, $1+2+3+4 = 10$, hence $10/4$

=2.5. Therefore, any mean above 2.5 shows that the drivers have agreed with that item and vice versa.

Table 6. Responses on the Security Problems Posed by Transportation Infrastructure and Traffic Management. (Ninety-two (92) respondents on each item)

Items	SD	D	A	SA	M	SD
The roads are not safe enough for the transportation of goods.	13(14.1%)	41(44.6%)	28(30.3%)	10(10.9%)	2.3	0.86
The roads are characterized by heavy traffic.	13(14.1%)	38(41.3%)	33(35.9%)	8(8.7%)	2.3	0.83
There is not enough traffic system to check traffic situations.	3(3.3%)	12(13.0%)	38(41.3%)	39(42.4%)	3.0	0.81
There are not enough roads signs along my route of passage to my delivery point.	5(5.4%)	46(50.0%)	33(35.9%)	8(8.7%)	2.4	0.73
There are not enough security check points on the roads leading to my delivery point.	14(15.2%)	31(33.7%)	35(38.0%)	12(13.0%)	2.4	0.90
There are no enough alternative routes from my company premises to my delivery point.	13(14.1%)	33(35.9%)	38(41.3%)	8(8.7%)	2.4	0.84
The roads are not sizeable for my trucks.	7(7.6%)	14(15.2%)	39(42.4%)	32(34%)	2.6	0.83

Table 6 offer results on security problems posed by transportation infrastructure and traffic management in the capital of Ghana. Here, most of the respondents agreed that the roads in the capital of Ghana are safe enough for the transportation of goods. Again, on average, the respondents disagreed that, there are no traffic jams on the roads.

Also, the responses show that there is no enough traffic system to check traffic situations in the capital of Ghana even though a considerable number of the respondent agreed. Moreover, it revealed from the response of the respondent that there are enough roads signs along the route of passage of freight drivers to their delivery point in the capital of Ghana. Furthermore, it is likely there are enough security checkpoints on the roads leading

to the delivery point in the capital of Ghana. The result also shows that there are enough alternative routes from their company premises to the delivery point. Finally, on this research question, it was found that the roads in the capital of Ghana are not sizeable for trucks, even though few of the driver's responses deviate from this. These findings were compared to responses from the interview with some of the respondent.

According to the interviewees, due to the road deficit, potholes, and the nature of one lane, there are a lot of traffic jams which leads to delay in delivery and late transportation which at the end of the day put their lives in danger. Also, the malfunctioning of traffic lights makes movement quite tricky. There have been several occasions where police officers must be directing traffic because of broken traffic lights. However, there are enough road signs. Most of them are not visible. In other, for them to move efficiently and effectively, there must be police guiding them. With regards to security checkpoints, one could say that there are adequate points, police officers are placed everywhere in the capital of Accra due to the absence of security cameras.

RQ 4. Criminal Cases Encountered on Road in Freight Transportation?

The main aim of this research question is to ascertain whether there are criminal cases encountered on roads in freight transportation. To answer this research question, Items 26 to 30 under Section E on the questionnaire were used and coded respectively on a four Likert scale for the drivers to indicate whether they 'strongly agreed = 4', 'agree = 3', 'disagree = 2' and 'strongly disagree = 1'. Their responses were analyzed and presented in Table 5, illustrate the responses of the respondents on the criminal cases on road. While frequency and percentages were used to analyze criminal cases encountered on road in freight transportation, mean and standard deviation were performed to determine whether drivers have agreed with an item on the questionnaire or not. This was done by summing coded Likert scale digits and divided it by the number of coded digits, $1+2+3+4 = 10$, hence $10/4 = 2.5$. Therefore, any mean above 2.5 shows that the drivers have agreed with that item and vice versa.

Table 7. Responses on Criminal Cases Encountered on Road in Freight Transportation. (Ninety-two (92) respondents on each item)

Items	SD	D	A	SA	M	SD
The delivery trucks are normally attacked by thieves on road.	21(22.8%)	37(40.2%)	26(28.3%)	8(8.7%)	2.2	0.90
The trucks are attacked normally for cash demands.	10(10.9%)	42(45.7%)	28(30.4%)	12(13.0%)	2.4	0.85
The trucks are attacked normally for the goods in it	15(16.3%)	41(44.6%)	20(21.7%)	16(17.4%)	2.4	0.96
The attacks occur irrespective of time and place.	7(7.6%)	25(27.2%)	38(41.3%)	22(23.9%)	2.8	0.88
Some staff usually gets injured or dies through attacks.	13(14.1%)	26(28.3%)	33(35.9%)	20(21.7%)	2.6	0.97

Table 7 presents results on the criminal cases encountered on the road in freight transportation.

From the respondents on average agreed that thieves generally attack the delivery trucks on the road. Again, on the criminal cases encountered on the road, respondents are of the view that delivery trucks usually are not attacked for cash demands.

From the data, freight trucks do not face attacks on the road for the demand of goods trucks have in transit. Also, on the average, the respondents did agree with the item attacks occur irrespective of time and place. To conclude, respondents averagely agreed that some staff usually get injured when there are robbery attacks. These findings were compared to responses from the interview with some of the respondent.

According to the interviewees, it ascertained that criminal cases such as robbery take places during transportation. Most of them have been victims; most of the attacks happen when transporting goods from Accra to Tema. Besides, during the attack, they demand cash because they don't have time to offload the good. The attacks happen mostly at dawn, usually, between 12:00 am, and 3:00 am but very rare in the day.

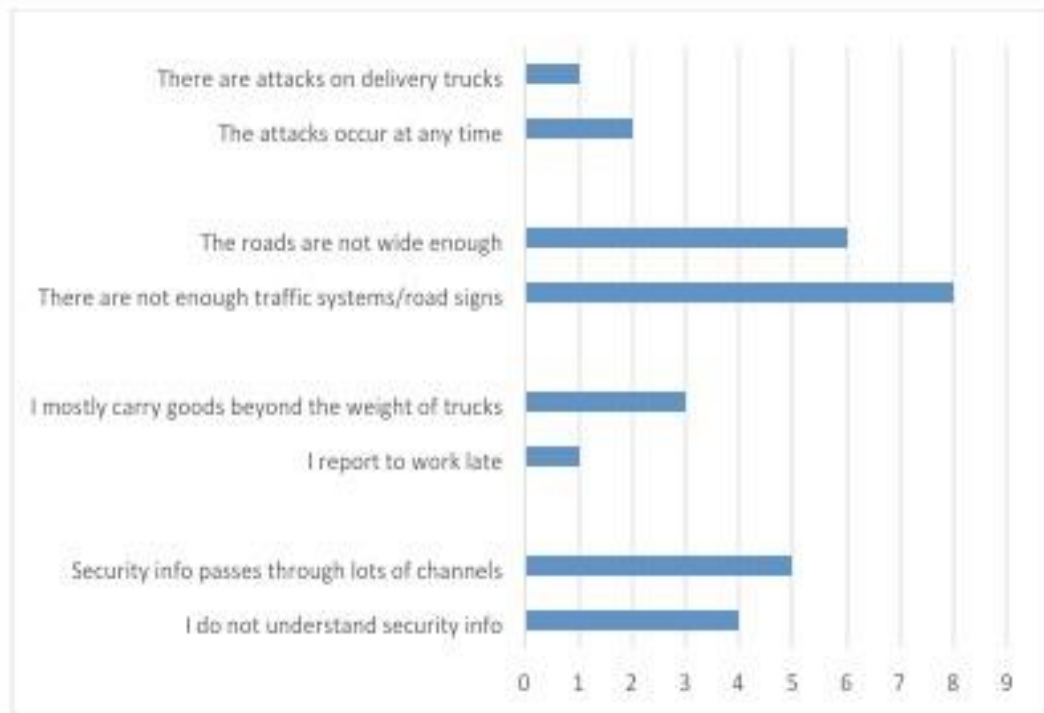


Figure 7: An illustration of major contributing factors to insecurity in road transport in logistics in the capital of Ghana, Accra.

From the diagram, on the scale of 1-10, the most contributing factors to road transportation insecurity in logistics are smaller road lanes and inadequate or not too visible road signs which fall under transportation infrastructure. So in brief, the bad nature of roads in the Accra region is the item with most impact on the insecurity of road transport of freight. Improper use of information technology is also a significant factor.

Criminal incidents (Attacks on delivery trucks) staff indiscipline (lateness to work and overloading) are not significant contributors to insecurity in road transportation of logistics in the Accra region.

5 Summary, Conclusions, and Recommendation

This chapter deals with the discussions, a summary of the findings and conclusions. This study assessed security problems in freight transportation by logistic companies in the capital of Ghana. The study employed a concurrent mixed method design, and the main instruments used were questionnaires and interviews. The author selects Ninety-two (92) freights drivers through simple random sampling method.

5.1 Key Findings

The main findings were summarized as follows:

The study reveals that information technology has contributed significantly to addressing security problems in freight transportation in the capital of Ghana. The only challenge associated with information technology is the slow pace of its integration into the logistics transportation activities of companies in the Accra region. From the survey, employees are comfortable with their old systems and therefore show some level of resistance towards technological changes. There was not much disparity between the views of freight drivers on the impact of information technology on the security of freight transportation.

The study also established that indiscipline on the part of freight transportation drivers is not a significant contributing factor to the security challenges facing the logistics industry with regards to their road transportation activities in the capital region. According to the drivers, almost all of them are very professional with their work. It is only a handful of them who act unprofessionally once a while when faced with challenges. For example, some drivers use unapproved routes to save time in heavy traffic situations. Most of the research items were disagreed upon by the respondents except for 'seldom obedience of road signs and regulations,' where a significant number of the drivers agreed. It also establishes that criminal attacks are not a significant security challenge. These attacks are rare. Out of the few attacks, most of them happen to vulnerable trucks that are broken and left idle on the roads.

Again, it ascertains that the major contributing factor to road transportation insecurity of logistics in the Accra region is road infrastructure. The lousy road infrastructure is also a direct or indirect contributing factor to criminal attacks and drivers' indiscipline. Due to the lazy maintenance culture of authorities, most of the roads have developed potholes and have become death traps. Accra records many road accidents as a result of drivers trying to swerve these potholes. The road marks are not very visible. Road signs are also not

adequate, and the few that are mounted are not visible due to the many advertisement boards erected on the roadsides. Furthermore, the study showed that security problems posed by transportation infrastructure and traffic management attracted positive responses from the respondents.

5.2 Conclusion

Generally, the thesis succeeded in meeting the target of ascertaining security problem in road transportation. Security problems in road transportation faced by logistics companies not only Ghana is a general issue. Ghana being a developing country and exhibiting a unique logistics environment needs to give much attention to these issues in order to make logistics activities such as logistics road transportation more attractive to stakeholders.

Theoretically, criminal attacks (terrorist acts) on transportation are on the ascendency. It is now the number one and most dangerous challenge facing the transportation industry globally. Logistics freight transportation is not exempted from this challenge. A single successful attack causes very damning and irreversible or irreparable damage. According to this research and theories, this global challenge is not yet a major concern to logistics companies in Accra. Criminal attacks are almost non-existence. Very few cases of robbery attacks are recorded on the roads of Accra every year, but these attacks are not terrorist related.

Also, the use of information technology has impacted positively on the transportation industry. Practically, information technology has been integrated into the logistics of freight transportation at a crawling pace to the detriment of the industry. Ghana is not known as an IT country. Many people are not familiar with the use of IT. Furthermore, Road transportation infrastructure which is the backbone of logistics is a significant challenge for Ghana. Countries succeeding in logistics activities are those with well-developed road transportation infrastructure, but Ghana as a nation although they have them, it is not adequate and well-organized.

In all, the Ghana government needs to play a role in terms of providing or re-enforcing the country's security, maintaining, and renovation of logistics infrastructure to motivate more stakeholders to go into logistics activities since it is a significant factor to economic development.

5.3 Recommendations

From the above discussion, the author recommends that to ensure improved security transportation via road; stakeholders should strive to engage freight drivers in many transport security workshops to equip them with the necessary information that could reduce security vulnerabilities in logistic transportation in the capital region. There should be vigorous education and sensitization programs for drivers and other road users in addressing these challenges. The author also recommends that there should be the provision of adequate road signs to all motorable roads. Information Technology is very vital in addressing the challenges faced by the logistics industry. Hence much effort should be directed towards its development, implementation and speedy integration into the road transportation sector of the logistics industry in the Accra region. Finally, new roads under construction should be widened up to multiple lanes dual carriageways to ease freight drivers from unsafe situations that narrow roads pose.

5.4 Suggestion for Further Studies

Further research is needed to attempt to account for job satisfaction among staffs in logistics companies in Ghana. Finally, the study suggests for further studies to be carried out by increasing the sample size and the consideration of institution, culture and career specific factors to identify other stimuli.

5.5 My Learning

I have always had interest in finding out why stakeholders of logistics companies are not too happy at the end of their transportation of goods from point A to B. I have also had the interest of being entrepreneur by owning my own logistics company in the future before I chose supply chain management as my major in academic specialization. This research has been exceptional for me since it offered me the opportunity to connect my carrier field of supply chain management to the central theme of the research topic, i.e., security problems in transportation faced by logistics companies in the capital region of Ghana. The research allowed me to review books related to logistics, transportation, and security and had the opportunity to interview and carry out questionnaires on people who are already into the logistics field.

Although the experience and knowledge gotten from the research have not made me an expert on how to overcome security problems in logistics road transportation. It has been an eye opener since it is the first primary academic research I have undertaken on the topic.

The research and reviewing of various kinds of literature has helped in widening my basic knowledge and view about logistics, transportations, and some challenges facing logistics road transportation industry. The important thing I learned from this research is that, although security in transportation is one big obstacle to logistics companies, a little effort can help minimize its negative impact.

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Appendices

Appendix I: Interview Questions administered on Staffs in logistics company in Accra the capital of Ghana.

Security problems in road transportation in Accra, Ghana: Improving road transportation problems in Accra, Ghana.

The purpose of this interview is to gather information with the purpose of looking into Security problems in transportation faced by logistics companies in the capital region of Ghana. The interview was administered to logistics companies' stakeholders.

1. General Introductory questions

- a. What is your position in the company?
- b. What is your level of education?
- c. How long have you been working with the company?
- d. What is the level of your education?

2. Impact of Information Technology on The Security of Freight Transportation

- a. How often do you receive security information's on how to transport goods from top management via electronic media?
- b. Do you understand the meaning of security information received from top management via electron media?
- c. Does security information on transportation of goods passes through lots of channels before it gets to you?
- d. Do you often send feedback on security problems faced during goods transportation via media platform?
- e. How often does the company organize workshop on security issues in the transportation of goods by road?

3. Security Problems That Staff Indiscipline Pose on Freight Transportation

- a. What time do you report at work and at what time is delivery supposed to start?
- b. Do you obey road signs and regulations during goods delivery?
- c. Do you sometimes check the state of the delivery vehicle before setoff on the road?
- d. Do you park or stop at unauthorized place to offload goods to customers?
- e. Do you carry goods that are mostly beyond the wait of the truck?
- f. How often do you adhere to companies' policy on speed limits?

4. Security Problems Pose by Transportation Infrastructure and Traffic Management

- a. Are the roads safe enough for the transportation of goods?
- b. Are the roads characterized by heavy traffic during delivery?
- c. Are there enough traffic systems to check traffic situations?
- d. Are there enough roads signs along route of passage to your delivery point?
- e. Are there enough security check points on the roads leading to your delivery point?
- f. Are there enough alternative routes from the company premises to your delivery point?
- g. Are the roads sizeable for the trucks during delivery?

5. Criminal Cases Encountered on Road in Freight Transportation

- a. Has your truck ever gotten attacked by thieves on road during delivery?
- b. What do they demand when the truck is attacked?

- c. What time does the attack occurs?

- d. Has any staff gotten injured or died through the attack?

Appendix II: Questionnaire Administered on Staffs in logistics companies in Accra Capital of Ghana

The purpose of the study is to investigate security problems in the transportation of freights in the logistics companies in the Accra Metropolis. All information will be treated in strictest confidence with all participants remaining anonymous. I would like to assure you that all data will be kept by the researcher and thus will not be given to another researcher or agency.

Instruction:

Kindly answer the questions that are in this questionnaire. Using the scales assigned to each statement, indicate by ticking the appropriate bracket that answers the questions. Please tick the correct response from the options given.

SECTION A: BIOGRAPHIC DATA

1. Gender: Male Female

2. Age: Below 20 years , 21- 30 , 31-40 , 41- 50 , 51- 60

3. Education Level: None , Bece , Wassce , Diploma , Degree
Master's Degree .

4. Years of Experience on The Job: Below 5 years , 6-10 , 11-15 , Above 16

5. Responsibility: Security , Driver , Delivery Personnel , Administrator , Manager .

SECTION B: IMPACT OF INFORMATION TECHNOLOGY ON THE SECURITY OF FREIGHT TRANSPORTATION

Please indicate the extent of your agreement or disagreement with each statement by ticking [] **Strongly Agree, Agree, Disagree, And Strongly Disagree**. Please select only one response choice to reflect your opinion.

Statement	SD	D	A	SA
I often receive security information on how to transport goods from top management via electronic media.				
I often don't understand the meaning of security information I receive from top management via electronic media.				
Security information on transportation of goods passes through lots of channels before it gets to me.				
I often send feedback on security problems I faced during goods transportation via media platform.				
I often attend transport security committee meetings.				
I often attend workshop on security issues in the transportation of goods organized by the company				

SECTION C: SECURITY PROBLEMS THAT STAFF INDISCIPLINE POSE ON FREIGHT TRANSPORTATION.

Please indicate the extent of your agreement or disagreement with each statement by ticking [] **Strongly Agree, Agree, Disagree, And Strongly Disagree**. Please select only one response choice to reflect your opinion.

Statement	SD	D	A	SA
I come to work late sometimes so I set off late during goods delivery.				
I seldom obey road signs and regulations when I am off for delivery.				
I sometimes check the state of the delivery vehicle before I set off on the road.				
I sometimes stop or park at unauthorized place to offload goods to customers.				
I mostly carry goods that are beyond the wait of the truck.				
I don't normally adhere to companies' policy on speed limits				
I don't normally check my health status before I embark on delivery				

SECTION D: SECURITY PROBLEMS POSE BY TRANSPORTATION INFRASTRUCTURE AND TRAFFIC MANAGEMENT.

Please indicate the extent of your agreement or disagreement with each statement by ticking [] **Strongly Agree, Agree, Disagree, And Strongly Disagree**. Please select only one response choice to reflect your opinion.

Statement	SD	D	A	SA
The roads are not safe enough for the transportation of goods.				
The roads are characterized by heavy traffic.				
There are no enough traffic systems to check traffic situations				
There are not enough roads signs along my route of passage to my delivery point.				
There are not enough security check points on the roads leading to my delivery point.				
There are no enough alternative routes from my company premises to my delivery point.				
The roads are not sizeable for my trucks.				

SECTION E: CRIMINAL CASES ENCOUNTERED ON ROAD IN FRIEGHT TRANSPORTATION.

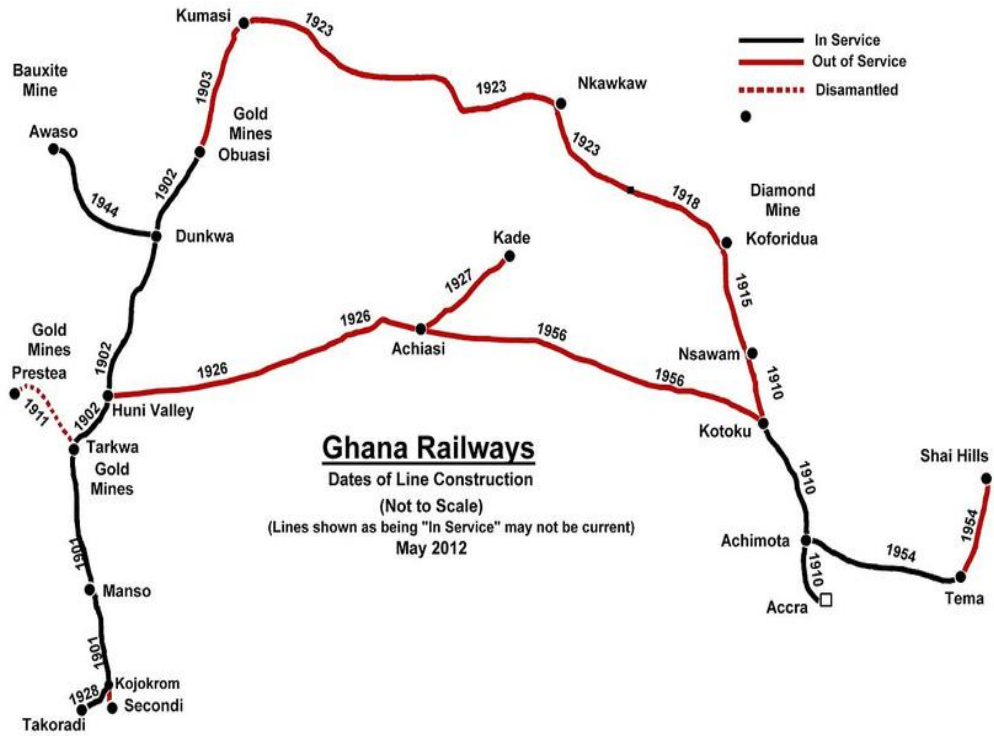
Please indicate the extent of your agreement or disagreement with each statement by ticking [] **Strongly Agree, Agree, Disagree, And Strongly Disagree**. Please select only one response choice to reflect your opinion.

Statement	SD	D	A	SA
The delivery trucks a normally attacked by thieves on road.				
The trucks are attacked normally for cash demands				
The trucks are attacked normally for the goods in it				
The attacks occur irrespective of time and place				
Some staff usually get injured or die through attacks.				

Appendix III: List of abbreviations

BECE	Basic education certificate examination
WASSCE	West African senior school certificate examination
SA	Strongly agree
A	Agree
SD	Strongly disagree
D	Disagree
S.D	Standard deviation

Appendix IV:



Railways network in Accra, Ghana



Air freight networks in Accra, Ghana