

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI
INSTITUTE OF DISTANCE LEARNING



Topic:

**EFFECT OF SUPPLY CHAIN FLEXIBILITY AND INTEGRATION ON THE
PERFORMANCE OF MOTORCYCLE BUSINESSES IN TAMALE METROPOLIS.**

By

YAHAYA HAKEEM

A Thesis submitted to the School of Graduate Studies and Institute of Distance Learning in
partial fulfilment of the requirement for the degree of

MASTER OF SCIENCE

IN

PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

NOVEMBER 2023

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DECLARATION

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

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ABSTRACT

The general objective of the study was to assess the effect of supply chain flexibility and integration on the performance of motorcycle businesses in Tamale Metropolis. Based on this, two (2) specific objectives were established which were to evaluate the relationship between supply chain integration and performance of organizations at Tamale metropolis and to ascertain the relationship between supply chain flexibility and performance of organizations at Tamale metropolis. The study adopted a quantitative research design hence, a structured questionnaire was developed as a survey instrument. Data was from 105 respondents who were associated with the supply chain of motorcycle businesses in Tamale metropolis. The data was analyzed using both descriptive and inferential tools. This includes mean scores, standard deviation, Pearson's correlation, and Ordinary Least Squares analysis. Based on the analysis, it was realized that, the implementation of supply chain integration is very low within the motorcycle supply chain in Tamale. However, the results showed that, there is a significant relationship between supply chain integration and organizational performance. Consequently, it was clear that, they had a low level of operational and financial performance. The study also showed that, the motorcycle supply chain is less flexible. However, the results showed that, there is a significant relationship between supply chain flexibility and organizational performance. Consequently, it was clear that, they had a low level of operational and financial performance. Based on these findings, the study recommended that, due to the low integration of the supply of the motorcycle industry, it is important to implement strategies to improve supply chain integration effectiveness. For instance, purchasers must constantly deal with approved and accepted suppliers for the motorcycle parts. Also, the operators of motorcycles must establish a trust of safety among customers by following established regulations for their operations.

DEDICATION

I dedicate this thesis to ALLAH (SWA) – Almighty God for His blessings and guidance and, my parents for their prayers and support.



ACKNOWLEDGEMENT

I surrender all thanks and praises to ALLAH (SWA) – Almighty God for His mercy, blessings and guidance during the programme period.

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Lastly, I hail the unity in purpose and solidarity exhibited by my study group membership, anchored by Dr. Alolo A. Abdul-Rashid during this striving period.

ALLAH (SWA) – Almighty God bless you all.

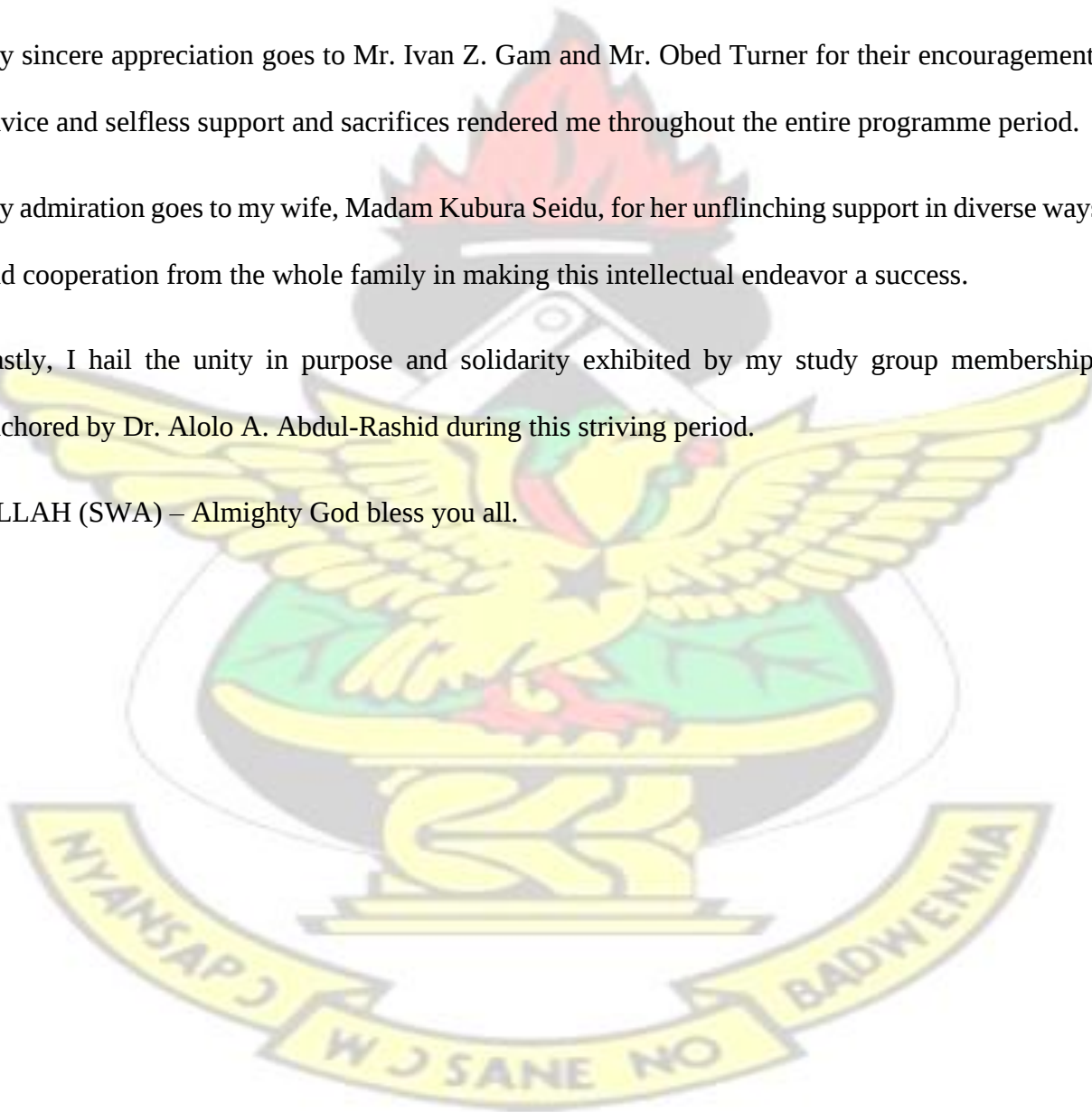


TABLE OF CONTENT

DECLARATION	III
ABSTRACT.....	IV
DEDICATION	V
ACKNOWLEDGEMENT	VI
LIST OF TABLES	XI
LIST OF FIGURES	XII
LIST OF ABBREVIATIONS.....	XIII
CHAPTER ONE	1
INTRODUCTION	1
1.1 BACKGROUND TO THE STUDY	1
1.2 PROBLEM STATEMENT	3
1.3.1 General Objective	5
1.4 RESEARCH QUESTIONS	5
1.5 SIGNIFICANCE OF THE STUDY.....	5
1.6 OVERVIEW OF THE RESEARCH METHODOLOGY	6
1.7 SCOPE OF THE STUDY	7
1.8 LIMITATIONS OF THE STUDY	7
1.9 ORGANIZATION OF THE STUDY	8
CHAPTER TWO	9

LITERATURE REVIEW	9
2.1 INTRODUCTION	9
2.2 THE CONCEPT OF SUPPLY CHAIN	9
2.2.1 Nature of supply chain practices.....	9
2.2.2 Supply Chain Integration	10
2.2.3 Supply chain flexibility.....	13
2.3 FIRM PERFORMANCE	14
2.3.1 Measuring Performance	14
2.3.2 Dimensions of Firm Performance.....	15
2.3.3 Factors Influencing Firm Performance	17
2.4 THEORETICAL BACKGROUND OF THE STUDY	19
2.4.1 Resource Based theory.....	19
2.4.2 Network Theory	20
2.5 EMPIRICAL REVIEW	21
2.6 CONCEPTUAL FRAMEWORK.....	23
2.6.1 Relationship between supply chain integration and firm performance	23
2.6.2 Relationship between supply chain flexibility and firm performance	24
CHAPTER THREE	25
RESEARCH METHODOLOGY.....	25
3.1 INTRODUCTION	25

3.2 RESEARCH DESIGN	26
3.3 RESEARCH METHOD.....	27
3.4 POPULATION OF THE STUDY	27
3.5 SAMPLING TECHNIQUES AND SAMPLE SIZE	27
3.6 DATA COLLECTION METHOD	28
3.6.1 Data Collection Instrument.....	28
3.7 DATA ANALYSIS.....	31
3.8 RELIABILITY AND VALIDITY ASSESSMENT	31
3.9 ETHICAL CONSIDERATIONS.....	32
3.10 OVERVIEW OF MOTOCYCLE BUSINESS IN GHANA.....	33
CHAPTER FOUR.....	34
DATA ANALYSIS AND DISCUSSIONS	34
4.1 INTRODUCTION.....	34
4.2 DEMOGRAPHICS	34
4.3 Descriptive statistics of the constructs.....	36
4.3.1 Supply chain integration	36
4.3.2 Supply chain flexibility.....	36
4.3.3 Organizational performance.....	38
4.4 TEST OF MODEL	38
4.4.1 Reliability test.....	39

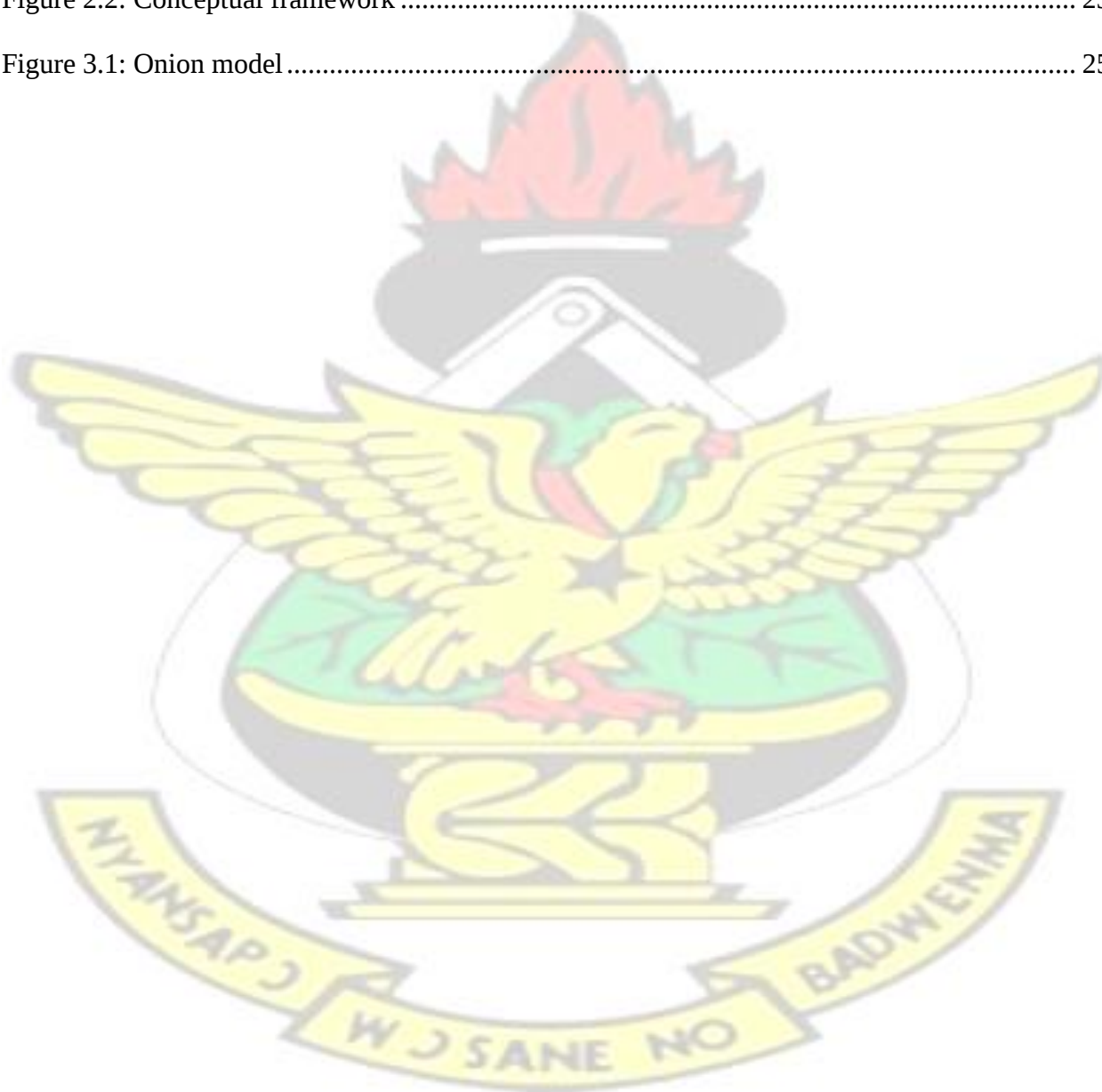
4.4.2 Test of hypothesis	39
4.4.3 Regression analysis	40
4.4.4 Hypothesis testing and findings	42
4.5 DISCUSSION OF THE RESULTS	43
CHAPTER FIVE	46
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS	46
5.1 INTRODUCTION	46
5.2. SUMMARY OF FINDINGS	46
5.2.1 Objective one: To evaluate the relationship between supply chain integration and performance of organizations at Tamale metropolis	46
5.2.2 Objective two: To ascertain the relationship between supply chain flexibility and performance of organizations at Tamale metropolis	47
5.3 CONCLUSION	47
5.4 RECOMMENDATIONS	48
5.5 RECOMMENDATIONS FOR FUTURE STUDIES	49
REFERENCES	50
APPENDIX	55
SURVEY INSTRUMENT	55

LIST OF TABLES

Table 2.1: Categories of the Poter’s model.....	12
Table 3.2 Measurement Instrument	29
Table 4.1: Demographics	35
Table 4.2: Descriptive statistics	37
Table 4.3: Internal Consistency of Construct	39
Table 4.4: Correlations.....	40
Table 4.5: Model summary	40
Table 4.6: ANOVA.....	41
Table 4.7: Coefficients.....	41
Table 4.8: Model summary	42
Table 4.9: ANOVA.....	42
Table 4.10: Coefficients.....	42
Table 4.8: Hypothesis Table	43

LIST OF FIGURES

Figure 2.1: Supply Chain Management	11
Figure 2.2: Conceptual framework	23
Figure 3.1: Onion model	25



LIST OF ABBREVIATIONS

UNDP - United Nations Development Programme

STC – State Transport Corporation

GPRTU – Ghana Private Road Transport Union

MMT – Metro Mass Transit

SCI – Supply Chain Integration

SCM – Supply Chain Management

IRR – Internal Rate of Return

CFRI – Cash Flow Return on Investment

DCF – Discounted Cash Flow

ROA – Return on Assets

ROS – Return on Sales

MBV – Market-Based View

RBV – Resource-Based View

GSE – Ghana Stock Exchange

KNUST



CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

There is an increased awareness of innovation among consumers in the manner of conducting business by organizations that desire to be relevant in this evolving business climate. In fact, globalization has caught up with businesses, with those that are conscious of their supply chain designs making huge economic impact, both on the lives of owners and the workforce. Supply chain issues are not mere, but as critical role for such institutions. Just as in other sectors, businesses in the transportation sector are categorized based on capital size, direct customers, and the type of product. This is considered as a key factor in the socio-economic growth and development of any country and forms a significant proportion of state' development plans, according to the United Nations' Development Programme (UNDP, 2017). While many countries have achieved high standards in operating quality of transportation machines, many others have yet to reach these heights. For instance, in the developed countries, commuters have several choices such as road vehicles, railways, cable cars, ship and airlines, to choose according to their travel needs (Quelin, 2011). Yet in other countries, smooth and efficient road transport alone remains a serious constrain, despite it being the most basic transportation system globally. One of the most common transport features of such countries is the operation of motorcycles, as supplement to inadequacy of public bus transport systems (Stanley et al., 2011). This makes a flexible and integrated supply chain of motorcycle businesses crucial in these parts of the world.

In African countries, motorcycle businesses date back to the 1960s, notably in Nigeria, along with others such as Uganda and Kenya in the 1970s. After decades of existence of motorcycle businesses along the rapid growth of Africa's population and cities in general, the demand for the

motorcycles is not only enhanced in those countries, but increasingly being adopted and operated in other parts of the continent as well (Yeboah, 2015). In fact, the motorcycle businesses has grown in popularity across Africa, especially in the low and lower middle-income countries, and has been known in popular names as 'okada' and 'keke' in Nigeria and parts of the continent. Its increase has significantly narrowed the demand gap in the public transportation services (Levy & Wong, 2010).

Government of Ghana (GoG) on its part, has continuously enacted and repealed regulations towards economic and effective functioning of public transport (Agyemang and Panford 2006; Rodrigue et al., 2017). For instance, according to the Road Fund Act 1997 (Act 536), any reliable and affordable road transport system is a good initiative that has been recognized by the (GoG). In fact, the transportation sector in Ghana has evolved over time since independence, characterized by state and joint interventions such as the operations of the State Transport Corporation (STC), Ghana Private Road Transport Union (GPRTU) buses and the Metro Mass Transit (MMT). All these interventions have not solved the comprehensive transportation challenges, as they do not operate within the cities and the remote rural and urban communities. Rather, the commercial motorcycle transport initiatives by the Accra Zongo youth from the early 2000 and the government's facilitation of the motorcycle businesses in 2014 has more than doubly exceeded the transportation gap narrowing anticipation, according to Yeboah (2015). A number of initiatives such as relatively reduced taxes on the supply chain for business importers.

In Ghana, there are two main types of motorcycle demanded and sold by the businesses, which are the passenger and freight motorcycles (Njoh, 2007). Some of the motorcycles are vehicles with powerful diesel engines, and fuel tank capacity of 10.5 litres. As at 2019, motorcycles were the most common, economic and convenient means of transport in Ghana, with so many distribution

firms in existence. They supply both the passenger and freight motorcycles, known respectively as ‘yello-yello’ and ‘motorking’. The northern part of Ghana, particularly the Northern Region is one such geographic segment with the largest motorcycle distribution firms, notable among which areas is the Tamale Metropolis. The sustained level of their supplies so far is largely attributed to availability of ready customers, uninterrupted supplies from wholesale and assembling outlets, as well as sufficient availability of human capital needed for technical services. In particular, the motorcycle distribution businesses in the Tamale Metropolis far outweigh that of those in other parts of Ghana and are subjected to applicable business and road safety regulations. Also, to enhance the general good for all stakeholders, checks continue to be made as to the flexibility and integration of their supply in the Tamale Metropolis and other parts of the country.

1.2 PROBLEM STATEMENT

Indeed, most economic activities are associated with sustainable means of transport. Effective stakeholder attention and efforts from governments, public-private partnerships and private investors in the developed countries have made the transportation sector more efficient and effective. Whether as a policy of convenience or resulting from economic resource deprivations, it is earlier indicated that many geographic segments of the world’s population are still ran on motorcycles, justifying the need for flexible and integrated supply chain in those areas. Even though motorcycles are operated in many advanced countries such as China with sustained economy and effectiveness, it is not clear if same is the case in some countries, particularly where motorcycle operation is propelled by resource limitations. Continuous checks on the flexibility and integration of the supply chain of motorcycle businesses is therefore crucial.

Since the introduction of the motorcycle for commercial cargo and passenger service in Ghana, and the comprehensive policy support for motorcycle businesses, there have been different shades

of opinion both at the national and individual levels regarding a flexibility and integration of the supply chain, so as to enhance the profitability of these firms while offering affordable prices to the Ghanaian citizens. Some have argued the motorcycle businesses as the best thing that has happened to the transport and industrial sectors, as well as the youth employment drive in Ghana, although others from different angles consider the operations of these businesses as unfortunate (Yeboah, 2015).

Another point on motorcycle distributions in Ghana worthy of clarification is the sustainability in terms of cost and benefit, as well as the challenges associated with its operations (Ghana Statistical Service, 2019). It has been noticed that only empirical findings is available on the operation of motorcycles in the country, largely due to the infant nature of their operation. Not only this, but few available studies were also conducted in some areas other than the Tamale Metropolis where motorcycle operation is most intense. Again, it is observed that these were rather more of socioeconomic aspect of the individual tricycle operators than measures of its extent of impact on transport service accessibility. In fact, it is inappropriate to merely suggest or guess, on the out glance, that motorcycle businesses in areas such as the Tamale Metropolis has improved or otherwise. Periodic research studies on the subject are necessary towards informing policy makers on the economy and efficiency, with which motorcycles are distributed with the flexible and integrated supply approach, as well as the associated performance results of the motorcycle businesses. It is for which reason that this study on supply chain flexibility and integration and their effects on firms' performance was conducted with motorcycle businesses in the Tamale Metropolis in focus.

1.3 GENERAL AND SPECIFIC OBJECTIVES

This section states the general and specific objectives for the study.

1.3.1 General Objective

The underlying objective of the study is to assess the effect of supply chain flexibility and integration on the performance of motorcycle businesses in Tamale Metropolis.

1.3.2 Specific Objectives

Based on the general objective, the following specific objectives were established.

1. To evaluate the relationship between supply chain integration and performance of organizations at Tamale metropolis
2. To ascertain the relationship between supply chain flexibility and performance of organizations at Tamale metropolis

1.4 RESEARCH QUESTIONS

The study seeks to answer the following questions.

1. What is the relationship between supply chain flexibility and performance of organizations at Tamale metropolis?
2. What is the relationship between supply chain integration and performance of organizations at Tamale metropolis?

1.5 SIGNIFICANCE OF THE STUDY

There is the need to regulate the operations of motorcycle users in the country, and possible solution to challenges associated with motorcycle distribution operations among the SMEs if it is considered effective in the transport service improvement agenda. Studies such as this will provide nothing short of that.

Despite the importance of motorcycle businesses observed elsewhere and the increasing number of firms in Ghana, the local government has yet to ascertain fully the wider economic impact of motorcycle businesses in the Tamale Metropolis. This is aimed at not only enhancing understanding of this impact as a tool for improving access to transport services and employment, but to ascertain challenges that must be addressed by the Tamale Metropolitan authorities and other local assembly areas as well.

As part of the challenges, the study revealed any possible fears associated with motorcycle business operation in the Tamale Metropolis as well as made some recommendations to transport and labour authorities and such as Ghana Highways Authority, Ghana Road Safety Commission, the Motto Transport Traffic Unit of the Ghana Police Service and the agencies and ministry for labour and employment.

To the academia, this study is intended to offer relevant material on motorcycle distributions businesses, as one of the few studies on the subject so far. Further study recommendations is therefore included in the study.

1.6 OVERVIEW OF THE RESEARCH METHODOLOGY

The research design followed the case study nature. This was because, the study aimed at assessing effect of supply chain flexibility and integration on the performance of motorcycle businesses in Tamale Metropolis. In addition, the study followed the explanatory research strategy. Hence the study was quantitative involving the use of questionnaires in collecting numerical data. The study only employed primary data which was collated by the researcher. The questionnaire was developed based on the outcome of the literature review. The developed questionnaire was distributed to supply chain professionals in the motorcycle transportation sector. The collated data was organized using SPSS. The data analysis comprised of the use of descriptive and inferential

analysis. The descriptive included the use of mean and standard deviations while the inferential statistics used were Pearson's correlation and Ordinary Least Squares (OLS).

1.7 SCOPE OF THE STUDY

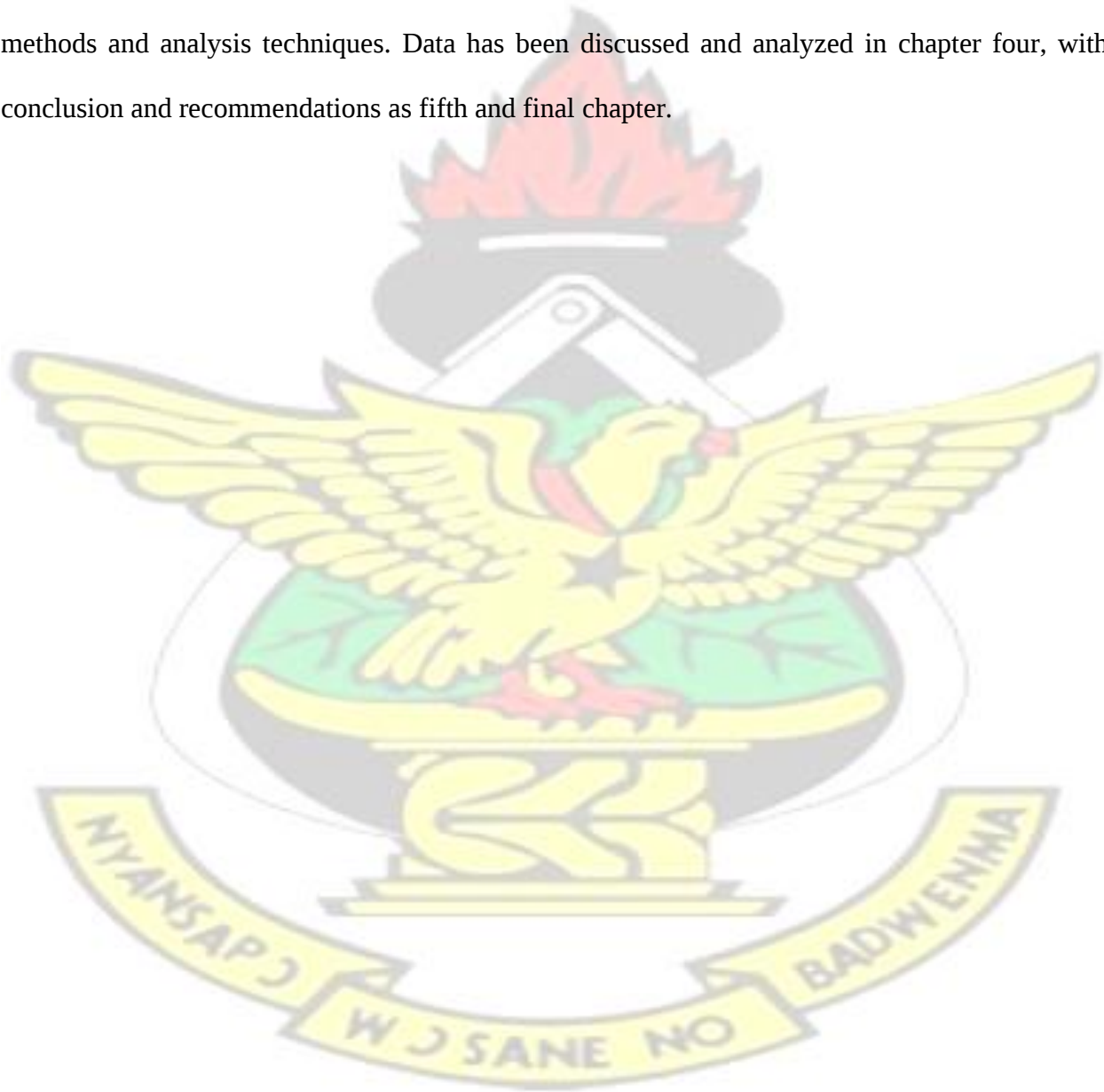
The study sought to explore on the accessibility of transport services with the advent of tricycle operation within the Tamale Metropolis. As such, it focused on variables such as flexibility, integration, as well as business performance. All motorcycle businesses in the Metropolis were considered; hence, a good number of distributors of motorcycles were captured as sample size in order to have a true and generalized reflection on their operations. However, this was not without limitations, among which were time and funding constraints, human error, and unwillingness of some respondents in disclosing information. However, the effect of these limitations on the objectivity of the study was nullified with effort.

1.8 LIMITATIONS OF THE STUDY

The typical bureaucracy seen in organizations was a major limiting factor that extended the time it took to complete this investigation. Before the data could be gathered, the researcher had to go through a number of time-consuming procedures, including arranging and rescheduling of visits. Any researcher looking to conduct a thorough investigation has never had time as their best ally. It came as no surprise, then, that this task was severely constrained by time. Since the researcher was responsible for covering all costs associated with the study, enough resources were always going to be a problem. Despite all of the aforementioned issues, sufficient data was gathered, sorted through, and evaluated to serve as the foundation for the study's conclusions, suggestions, and results.

1.9 ORGANIZATION OF THE STUDY

The study consisted of into five chapters. Having gone through this first chapter already, the second chapter is on literature review. It also includes discussions on relevant theories, concepts, and studies. The Third chapter presents the methodology of the research, comprising research design, study profile, population, sample size and sampling techniques and procedures, data collection methods and analysis techniques. Data has been discussed and analyzed in chapter four, with conclusion and recommendations as fifth and final chapter.



CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter focus on the literature review for the study. This provides information for the development of an appropriate instrument for the study. The review begun with a conceptual review on the nature of supply chain practices, supply chain integration and supply chain flexibility. The conceptual review proceeded to the review on firm performance, the measurement of firm performance, dimensions for measuring firm performance and factors that influence firm performance. This was followed by a theoretical review and an empirical review which led to the development of a conceptual framework.

2.2 THE CONCEPT OF SUPPLY CHAIN

This section comprises relevant concepts of the study, such as supply chain, supply chain flexibility, and supply chain integration.

2.2.1 Nature of supply chain practices

Supply chain comprise of processes like procurement, transportation, warehousing among others. The aim of supply chain practices is to provide goods and services to consumers. Supply chain management is the process of coordinating the flow of goods and services among the processes of procurement, transportation, warehousing etc. The purpose of supply chain management is to provide goods and services at agreed time, quality and prices for consumers in other to achieve overall organizational performance (Leuschner et al., 2013).

Over the years, the concept of supply chain has realized some evolution. According to Chopra and Meindal (2007), a supply chain comprises of all the parties that are directly or indirectly involved

in the meeting of consumer demands. These parties may include manufacturers, suppliers, warehouses, transporters, and retailers. The ultimate goal of a supply chain process is to maximize the overall value created (Chopra and Meindal, 2007). According to Wheelen and Hunger (2012), supply chain management involves the formulation of networks for sourcing materials, manufacturing products/services, storing and distribution of goods/services for the final consumer. Another definition of supply chain provided by Krajewski et al. (2013) showed that, supply chain comprises of an interrelated processes within and across firms that produce products and services for consumer satisfaction. This implies that, supply chain management include all activities that are executed by a firm while collaborating with suppliers and consumers.

2.2.2 Supply Chain Integration

There are numerous definitions existing for supply chain management (SCM) and supply chain integration (SCI) in extant literature. Existing definitions on supply chain management and supply chain integration are closely related (Mentzer et al., 2001). Hence, Pagell (2004) indicated that, the entire SCM concept is predicated on integration. According to Lambert et al. (1998), supply chain management is defined as the integration of business processes. Supply chain integration comprise of all internal linkages, external linkages, and consumers (Rosenweig et al., 2003). Internal linkages comprise of networks among various departments in an organization while external linkages comprise of networks outside the organization. In order to achieve high levels of organizational performance, Swink et al. (2007), postulated that, it is crucial to share information and integrate processes within and across organizations. Extant literature on supply chain has indicated that, the more the integration, the better the performance. A well performing supply chain aids in cost reduction as well as generating other incentives for the organization and its stakeholders.

Hammer (2001), indicated that, every member of an organization must focus on activities and procedures that they can perform best and leave the rest for others. Thus, the whole activities across the supply chain must be outlined and performed as a unit.

Figure 2.1 shows a framework for supply chain management. Also Table 2.1 provides a summary on the supply chain integration practices

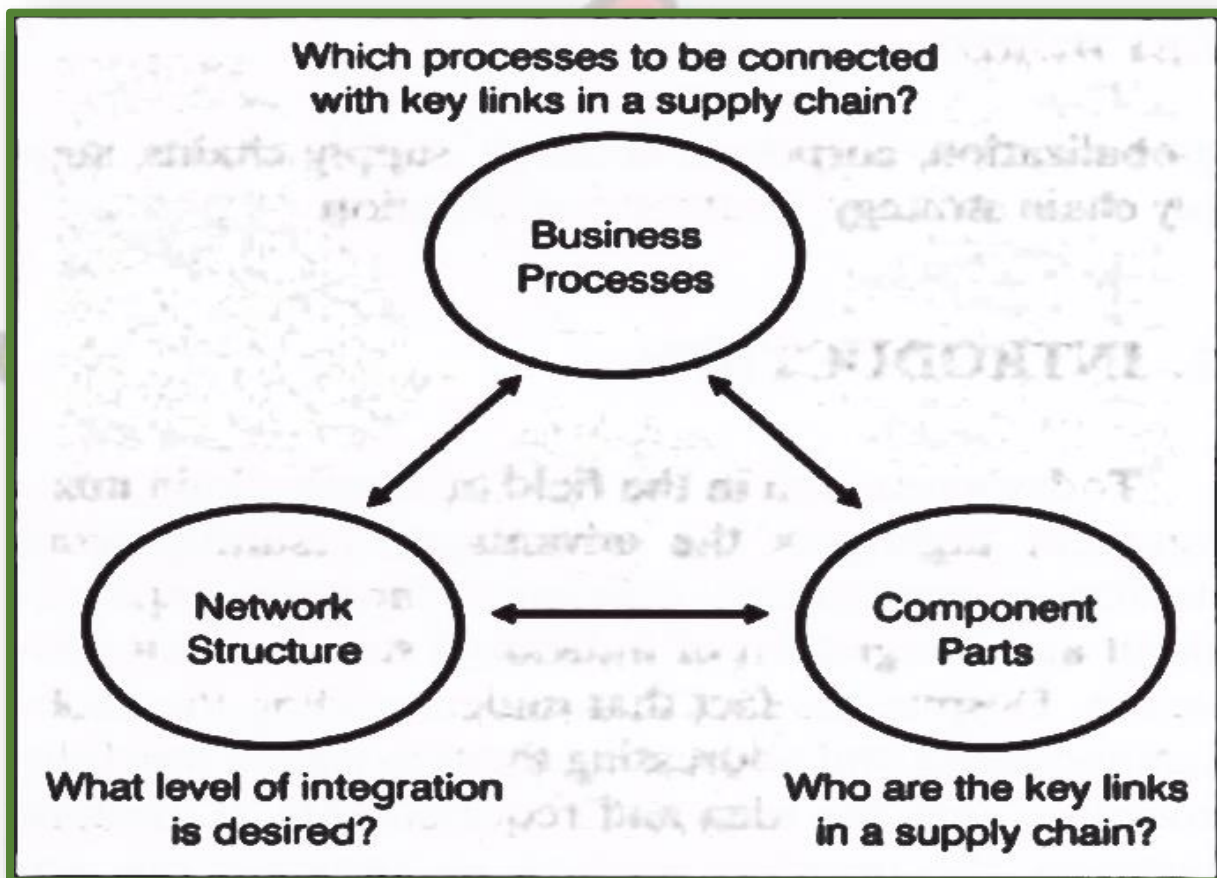


Figure 2.1: Supply Chain Management

Source: Adopted from Veselko and Jakomin (2008).

Table 2.1: Categories of the Poter's model

SCM processes	Definitions	Sources
Strategic supplier partnership	Long-term relationship between the organization and its suppliers to improve operational and financial capabilities of the organization	Voisin (1996);, Sheridan, (1998).
Customer relationship	A set of processes that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction	Claycomb et al., (1999); ,Wines (1996)
Level of information sharing	the extent to which critical information is communicated to supply chain partners	Mentzer et al., (2001)
Quality of information sharing	The accuracy, timeliness, adequacy, and credibility of information exchanged	Monczka et al., (1998); Berry et al., (1994)
Postponement	The process of moving forward one or more operations to a later point within the supply chain	Beamon (1998).

Source: Li et al., (2006)

2.2.3 Supply chain flexibility

According to George (2007), been flexible focus on the ability to vary based on the need's requirements. Liu et al. (2005), defined supply chain flexibility as the ability of suppliers to quickly respond to changes in downstream demand with a smaller increase in time and cost. It may also refer to as the robustness of the buyer supplier relationship under changing supply conditions. Das and Abdel-Malek (2003), opined that, a highly flexible relationship is one in which there is little deterioration the procurement price under different supply conditions. Numerous studies have sought to provide a general definition for flexibility, however, there is no accepted definition. Early definitions of flexibility focused on the capabilities of a firm to deliver products or services without any significant form of interference (Buzacott, 1982). More recent definitions of flexibility have focused on the responsive capacity of firms to manage uncertainties facing organizations overlooking factors like cost, time and quality. Upton (1994), indicated that, flexibility includes all outcomes of various elements that emerges in various time interims. Reviewing this postulation by Upton (1994) led to the inclusion of other elements of performance to the definition of flexibility. Hence, flexibility was seen as the ability to react to environmental uncertainties with little penalty to time and cost performance. Thus, Riley and Lockwood (1997) described flexibility as the ability to react to environmental uncertainties. With the current market conditions, supply chain flexibility is crucial for the management of information uncertainty and unexpected changes in demand causing changes in lead times, product quality and quantity (Giannoccaro et al., 2003). Flexibility in supply chain gives organizations the capacity to effectively react to organizational changes in the short term at an optimal cost while improving on quality (Viswanadham and Raghavan, 1997). There are three major component features of supply chain flexibility (Lee, 2004). These are strategy adaptability, technology, and product offering. It also includes alignment

which involves the creation of incentives for participants on the supply chain so as to keep up with the evolution of the business and agility that allows organizations to quickly react to demand and supply changes.

Swafford et al. (2006), indicated that, supply chain flexibility comprise of the main categories of supply chain including product development, procurement, production and logistics. Procurement flexibility describes the ability of the purchasing process to respond to the dynamic requirements of the supply of purchased components. Supply flexibility denotes the supplier's ability to be more reactive which includes the modification of delivery time, requested quantity and use of technology (Tachizawa and Thomsen, 2007). Production flexibility affects various components of the SCM. This includes the capacity of the system to simultaneously provide several different products in response to demand. It also includes the system's capacity to change the level of production in the short-term. Finally, it comprises of enriching the offering by combining new products in a short development cycle (Flint et al., 2005).

2.3 FIRM PERFORMANCE

An organization's performance assessment continues to evolve, and it now incorporates both qualitative and quantitative methods. Firm performance outcomes are derived from the firm's management activities result as a benchmark for evaluating management effectiveness (Wheelen and Hunger, 2012). This section discusses the process of measuring performance, the dimensions associated with the measurement of firm's performance and the factors that influence the measurement of firm's performance.

2.3.1 Measuring Performance

The process of activities within the organization over particular times concerning predetermined requirements generates company results. Companies use regular, weekly, monthly, quarterly and

annual accomplishment cycles to monitor organizational efficiency in general. This operation is monitored regularly to determine how the company's operating results are progressing. Operational efficiency is focused on the company to maximize production output by minimizing the use of internal company resources (Krajewski, et. al, 2013).

Bititei et al. (1997) described performance management as a process wherein the organization manages its performance to match its corporate and financial strategies and objectives. The firm's value can be described as the benefits stemming from the firm's shares by the shareholders (Rouf and Abdur, 2011). The company's performance can be viewed from the financial statement reported by the company. Consequently, a good performing company will reinforce management for quality disclosure (Herly and Sisnuhadi, 2011). Performance management is critical for effective management of any firm. According to Hagel, Brown and Davison et al. (2010), most wall street analyst and investors tend to focus on Return on equity (ROE) as their primary measure of company performance, even though more sophisticated valuation techniques like internal rate of return (IRR), cash flow return on investments (CFRI), Discounted cash flow analysis (DCF) have come along. They also stated the return on assets (ROA) a better metric of financial performance, than income statement profitability measures like return on sales (ROS). No single metric is perfect and different metrics are appropriate depending upon the circumstances. Almatari, et al. (2014), categorized measurements of performance into two: Accounting based measurement and marketing-based measurement.

2.3.2 Dimensions of Firm Performance

This study adopted two dimensions in the assessment of organizational performance. These are operational performance and financial performance.

2.3.2.1 Operational performance

Operational performance can be described as the components of organizational business process that can be measured like reliability, production cycle time and inventory turns. Operational performance is a section of business performance that measures market shares and customer satisfaction. The ability to satisfy customers with regards to time, rapid delivery, operational flexibility and waste elimination refers to operational performance (Green et al., 2012). According to Green et al., (2012), high levels of operational performance leads to cost savings wholes satisfying the dynamic needs of the customer. Hence, quality, flexibility and delivery reliability are primary factors for customer satisfaction and long-term financial gains.

2.3.2.2 Financial performance

The financial performance of an organization is a very significant determinant for organizational performance for both investors and owners of a company. Financial performance is the indicator of an organization's financial health and reflects the performance of a company's executive management (Matar and Eneizan, 2018). According to Almajali et al. (2012), the greater the organization's financial performance, the more profitable and effective the corporation is in using capital and contributing to the macro level of the country's economy. According to Xie et al. (2016), the effective use of resources aids in the achievement of financial performance. Financial performance was calculated based on revenue growth, profit growth, return on assets, return on investment, growth of market share, overall operating efficiency, and return on sales in a study conducted by Jiang et al. (2018).

2.3.3 Factors Influencing Firm Performance

An organization's performance is driven by several factors to which editorial and research attentions have been paid over the years. These factors have generally been observed from both the Resource-Based View (RBV) and Market-Based View (MBV) perspectives.

2.3.3.1 Competence

Barney (1991), a leading resource-based view (RBV) advocate, notes that resource-based view (RBV) of a company is centered on the resources and competencies of the firm's to illuminate firm performance. From this view, firms with competitive advantage are unique and possess valuable firm-specific resources that competitors are incapable of replicating. The resource-based view (RBV) is categorized under three main groups: physical, human, and organizational capital resources. These assets are utilized by the firms to increase performance.

2.3.3.2 Market Position

With regards to the external angle of Market-Based View (MBV), Tallman (1991), indicated the focus to be on the finished product on the market and the guarantee for higher profit levels in the future that boost organizational performance. Competitive advantage based on this view focus on restrictions to competition ascending from the market formulation. Hence, a firm's market power depicts its performance. Grant (1991) indicated that, market power is achieved through monopoly, entry barriers and bargaining power. This implies that, firms with high market power experience high levels of firm performance (Mkhija, 2003). Nevertheless, this study focus on the resource-based view of management.

2.3.3.3 Firm Size

According to studies conducted by Goddard et al. (2005), even though the market share and liquidity positively affects liquidity, the firm size adversely affects profitability. However, in

another study conducted by Pratheepan (2014), it was realized that, liquidity negatively affected the performance of the firm while firm size had a statistically positive impact on firm performance. These views split matters for distribution firms within a typical motorcycle chain network. Yet it is still not clear as to the direction of impact of firm size on the performance of motorcycle business in Tamale metropolis.

2.3.3.4 Research and Development

Research and development (R&D) have been seen to have a positive impact on the performance of an organization. Chen and Ibhagui (2019), adopted the OLS approach on 476 firms to evaluate the impact of R & D on firm performance. The results showed a positive relationship. Thus, R & D is becoming attractive to firms and it appears to be critical to many firms in the achievement of performance.

2.3.3.5 Debt

Prempeh et al. (2016), conducted a study where they explored the influence of debt on firms' performance on five (5) manufacturing firms that are listed on the Ghana Stock Exchange (GSE) between 2005 and 2015. A negative relationship was realized between debt and firm performance. However, this did not conform to the studies conducted by Obeng-Krampah (2018) when they employed random and fixed effect method on 30 firms listed on GSE between 2007 to 2015. The study realized that, debts have a positive effect on the performance of a firm. This finding was iterated by Boadi et al. (2013) when they showed that debt positively affects firm performance using Ordinary least square regression on 16 insurance companies.

sample of 16 insurance firms. Perhaps, debt could have a serious effect on a firm's supply chain practices, limiting its performance.

2.4 THEORETICAL BACKGROUND OF THE STUDY

This section focuses on reviewing the theoretical underpinnings for this study. The theories used for this study included the resource-based theory and the network theory. They are discussed as follows.

2.4.1 Resource Based theory

According to the Resource Based theory, firms that possess strategic resources have significant competitive advantage over their competitors which aids in the achievement of higher levels of performance (Barney et al., 2012). Thus, the strategic resources possessed by a firm is the source for gaining competitive advantage. Positional resources are crucial and scarce and very expensive to replicate. According to Barney et al. (2012) resources can be defined as tangible and intangible assets that are used by firms to develop and implement strategies. However, the tangibility of a firm's resource is a matter of degree. Tangible resources include financial capital and physical capital while intangible resources include human capital and organizational capital.

In recent times, studies have shown the significance of information as a resource which can be regulated to develop into another theory referred to as Knowledge based theory (Grant 1996; Spender, 1996). Based on the formulation of the knowledge-based theory, this study seeks to examine the importance of supply chain integration and supply chain flexibility to the achievement of organizational performance. This is because, knowledge is a resource that initiates innovative supply chain integration and flexibility to the achievement of superior firm performance. Thus, with the knowledge view of RBV, it can be indicated that, supply chain integration and supply chain flexibility have positive influences on organizational performance. Consequently, the knowledge aspect of RBV was deemed appropriate for this study.

2.4.2 Network Theory

The network theory is a popular supply chain management theory, and it is used to describe the relationship that exist between supply chain participants. The network theory was mentioned in the 1970s as a way of showing the relationship between two firms towards an approach which focus on multiple relationships (Harland, 1996). Chang et al. (2014), indicated that, supply chain network is a complex model which depends on the relationships that exist among the members. Thorelli (1986), indicated that, the network theory focuses on two or more organizations that are in a long-term relationship. The development of networks is very important for every firm through the investments of other firms that are associated with a similar process (Hakansson and Ford, 2002).

The underlying assumptions of the network theory assumes the fact that, the focal position in the network could offer a competitive advantage. In addition, organizations may share their knowledge and other information with their counterparts. With reference to purchasing, the network theory applies to most decision points within organizations. The network theory is crucial for planning for demand, and it simplifies the allocation of resource process in long-term partnership. Firms that are associated with a network have the opportunity of selecting from a set of suppliers which ensure the supply of critical commodities. Furthermore, the network theory assumes that there is trust among the established relationships hence there is a contribution to the addition of value on both sides to simplify the decision with regards to the selection of a strategy for supply. The network theory is crucial for long-term negotiations within which strong partnerships are formed. Hence, it is rational to assume that good network of organizations can affect supply chain integration and its impact on organizational performance.

2.5 EMPIRICAL REVIEW

Supply chain flexibility is regarded as crucial for organizational performance (Van der Vorst et al., 2002; Persson and Olhager, 2002). According to Liu et al. (2005), supply chain flexibility denotes the ability of suppliers to quickly respond to changes in downstream demand with a smaller increase in time and cost. Gligor and Holcomb (2012), opined that, supply chain flexibility aims at devising strategies to adopt alternative configurations so as to sustain supply chain operations when faced with a disruption. Supply chain flexibility aids an organization in gaining a competitive edge by switching to one of the alternate configurations and thereby aiding the firm to sustain its performance. According to Vickery et al. (1999), supply chain flexibility positively affects the performance of a firm. In a study conducted by Sanchez and Perez (2005), they explored the relationships between dimensions of supply chain flexibility and firm performance. The study showed a positive relationship between supply chain flexibility and organizational performance. In a framework proposed by Lummus et al. (2003), a flexible supply chain leads to customer satisfaction and inventory minimization. Fantazy et al. (2009) suggest that different dimensions of supply chain flexibility show different effects on supply chain performance including both financial and non-financial performance outcomes.

Supply chain integration is measured using four dimensions. They include supplier integration, customer integration, internal integration and internal control. Supplier integration comprise of buyers and suppliers sharing operation, financial and strategic knowledge in order to apply and gain mutual benefits (Kim, 2013). Customer integration is crucial as customers have the purchasing power and from the marketing point of view, they are referred to as the decision makers. Internal integration focus on the merging of internal resources and information to create knowledge and aids in effective external integration (Kim, 2013). According to Lutz (2015), internal control is

affected by board of directors, management, and other personnel. Internal control systems are used for the purposes of risk management. For instance, financial institutions use internal control systems to provide assurance that the risks are managed efficiently. Recent studies have shown that, customer integration have a significant impact on the financial performance of an organization (Ataseven and Nair, 2017). Flynn et al. (2010), further indicated that, customer integration is strongly related to the improvement of organizational performance. They highlighted that; meeting customer need includes their environmental requirements. Hence, customer integrating significantly affects the ability of an organization to achieve environmental performance. Wu (2013) opined that; effective customer integration enhances the green innovation capabilities of organization. . Long-term supplier relationship leads to cost reductions as a result of development of trust and reputation (Olah et al., 2017). Hence, studies have shown the significance of supplier integration in the development of competitive advantage and overall improvement of the performance of the supply chain. (Flynn et al., 2010; Abdallah et al., 2014). Zhang et al. (2015), indicated that, organizations must invest in the development of trust with suppliers so as to achieve a higher organizational performance. Studies have shown the significance of supplier integration in ensuring the performance of an organization. Empirical studies conducted by Ataseven and Nair, (2017) has shown the significance of internal integration on the performance of an organization. Flynn et al. (2010), also showed that, internal integration has a strong influence in improving the performance of an organization. Hence, it crucial to ensure cooperation among all departments within an organization so as to improve on internal integration and firm's performance. According to Ndungu (2013), an effective regulatory framework which operates as internal control system is crucial for ensuring financial performance of an organization.

2.6 CONCEPTUAL FRAMEWORK

A conceptual framework represents the outcome of a few related concepts explaining or predicting a given event to get a clearer understanding of the phenomenon of interest (Kissi et al., 2016). The conceptual framework for this study is shown in Figure 2.1. The framework depicts the relationship between supply chain integration, supply chain flexibility and firm performance.

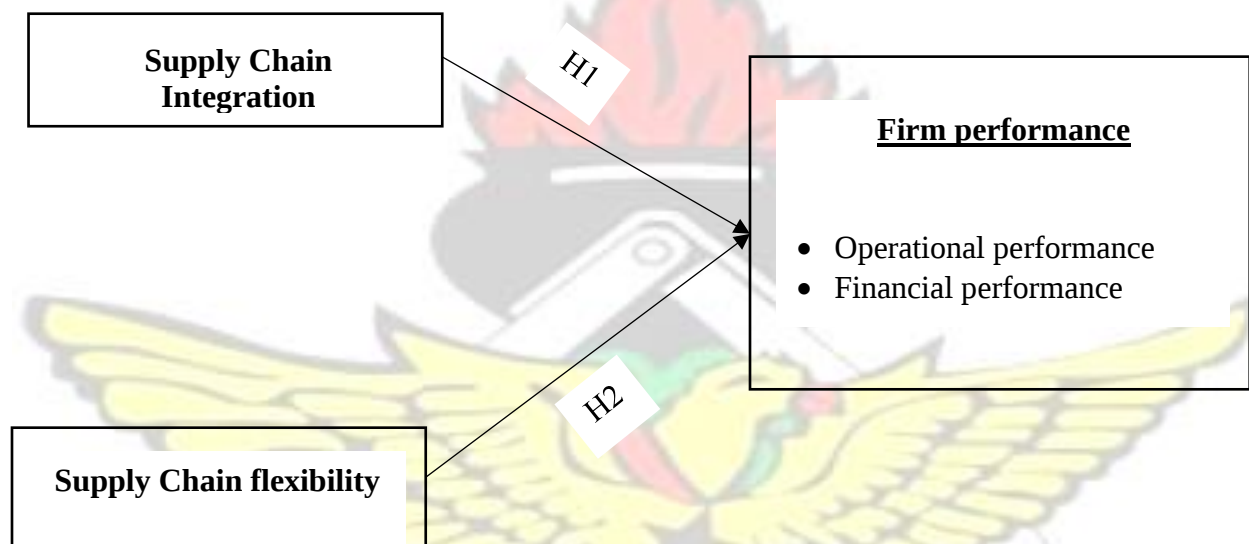


Figure 2.2: Conceptual framework

Source: Author's construct, (2022).

2.6.1 Relationship between supply chain integration and firm performance

With regards to the relationship between supply chain integration and firm performance, Wu (2013) opined that effective supply chain integration enhances the green innovation capabilities of organization which consequently affects their overall performance. Nair, (2017) shown the overall significance of internal integration in supply chain on the performance of an organization whiles Olah et al. (2017), Long-term supplier relationship leads to cost reductions as a result of

development of trust and reputation (Olah et al., 2017). Inferring from the resource based-view, competence in supply chain integration can be regarded as a knowledge resource which could impact the performance of an organization. Hence, studies have shown the significance of supplier integration in the development of competitive advantage and overall improvement of the performance of the supply chain. Based on this, it was hypothesized that;

H1: There is a significant positive relationship between supply chain integration and firm performance.

2.6.2 Relationship between supply chain flexibility and firm performance

Supply chain flexibility aims to devise and adopt alternative configurations so as to sustain supply chain operations when faced with disruption (Gligo and Holcomb, 2012). According to Vickery et al. (1999), supply chain flexibility positively affects the performance of a firm. In a study conducted by Sanchez and Perez (2005), they explored the relationships between dimensions of supply chain flexibility and firm performance. The study showed a positive relationship between supply chain flexibility and organizational performance. Based on this, it was hypothesized that;

H2: There is a significant positive relationship between supply chain flexibility and firm performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This section focuses on the methodological approaches adopted for the study. This discusses the various strategies employed in answering the research questions developed for the study. This chapter include a discussion on the research design adopted for the study followed by a description on the research population, sample size and sampling technique used for the study.

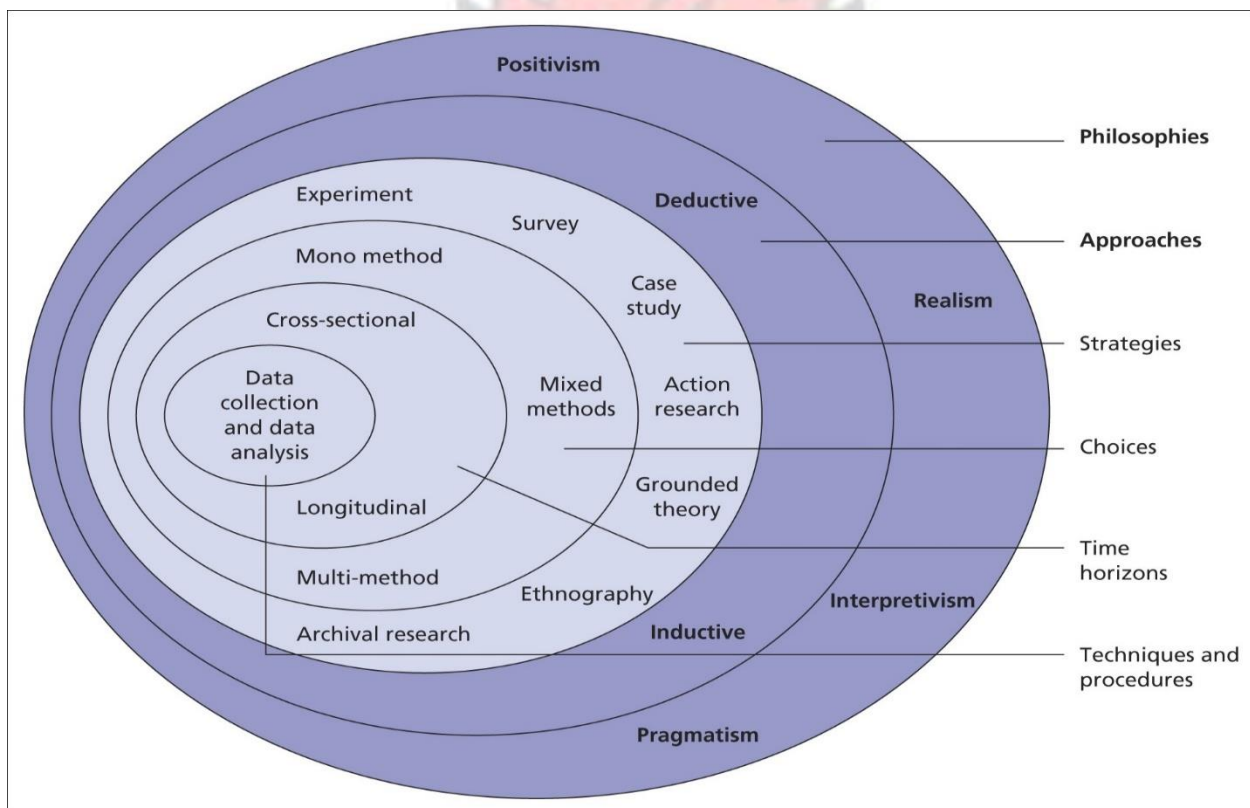


Figure 3.1: Onion model

Source: Saunders et al., (2006).

Then, there was a discussion on the data collection methods, data analysis and ethical considerations made for the study. The research methodology followed the framework of Saunders et al. (2006) as shown in Figure 3.1.

3.2 RESEARCH DESIGN

This section describes the research design, the research strategy and the research approach adopted for the study.

The research design describes the blueprint adopted for data collection and analysis for the study (Yin, 2003). The research design sets the approaches that the researcher intends to use to conduct the study. The research design depends on the philosophical stance of the study. The positivist philosophical position was adopted for this study. This position deals with the measurement and assessment of truth through quantification. Research designs can be explanatory or exploratory in nature. The exploratory research design provides an accurate account of the nature of what exists while the explanatory research design provides causal explanation which hinges on the fact that, one concept is affected by numerous other concepts (De-Vaus, 2001). For the study, the explanatory research design was deemed most appropriate as the study sort to explore the effect of supply chain flexibility and integration on the performance of motorcycle businesses in Tamale Metropolis. This required the assessment of the relationship between different concepts. The explanatory research design was used to measure associations and relationships. Survey was adopted for data collection (Mounton and Vinks, 1996; Polit and Hungler, 1993).

Also, the study adopted the case study research strategy. Thus, the study was limited to the case of Tamale metropolis. Hence, in exploring the effect of supply chain flexibility and integration on

the performance of motorcycle businesses, data was collected within the environs of Tamale metropolis.

3.3 RESEARCH METHOD

A research method can be either quantitative or qualitative or a mixed method. This study adopted the quantitative research method. According to Burns and Grove (1997), the quantitative research approach is employed for assessing a cause-and-effect relationship. They make use of numerical data for assessing relationships hence a self-administered structured questionnaire was used in the collection of data.

3.4 POPULATION OF THE STUDY

The population of a study depicts the universe from which a sample can be selected. According to Burns and Grove, (1997), population can be described to represent group of people or objects that can be considered in sample for a study. The selected population included participants of the supply chain associated with motorcycle businesses in Tamale metropolis.

3.5 SAMPLING TECHNIQUES AND SAMPLE SIZE

The study adopted a convenient sampling technique in reaching the respondents. Convenient sampling technique is a non-probability sampling technique that collects data from available pool of respondents. Due to the lack of an appropriate sample frame, the convenience sampling technique was deemed most appropriate. Using this technique, a tool of 170 questionnaires were distributed, however, 107 were retrieved for the analysis. This represents a response rate of 62.94%. This level of response rate was deemed satisfactory for the study.

3.6 DATA COLLECTION METHOD

There are two main sources of data: primary and secondary data. However, for this study, only primary data was utilized. The survey instrument used for this study comprised of a structured questionnaire. These questionnaires were self-administered to the respondents and lasted for a 2-week period.

3.6.1 Data Collection Instrument

To measure the constructs of interest, a survey instrument was developed with respect to the initially revised literature. The constructs were developed based on the review of published journals and articles in accordance with the objectives of the study. The researcher used a structured and closed questionnaire with a 5-point scales with **(1= Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree)** to collect primary data from the employees because they were the best people that could provide the researcher with the right data. Questionnaires were used because of their appropriateness for the study. Also, questionnaires gave the researcher the opportunity to administer the questions to the respondents and allow them to read through to understand and answer them at their own convenience. The questionnaires were designed in such a way that there was no ambiguity and could easily be answered by the employees. Table 3.1 shows the measurement constructs used for the study. Also, a sample of the questionnaire is shown appendix of study. The questionnaire comprised of four sections. The first section focused on the background of the respondents. The second section focused on supply chain integration while the third section focused on supply chain flexibility. The final section focused on organizational performance.

Table 3.2 Measurement Instrument

Construct/Variables		Items	Source
Supply chain integration	chain	Our organization shares strategic knowledge with suppliers	Kim, (2013); Flynn et al. (2010)
		Our organization focus on identifying the expectations of customers	Kim (2013); Lau et al, (2010).
		There is effective information sharing among the departments in our organization	Kim (2013); Lotfi et al., (2013)
		Our operations are directed in accordance with organizations mission statement	Pallant (2005); Haddad, (2016)
		Our organization incorporates customers opinion in the production process	Lau et al., (2010); Flynn et al., (2010)
		There is an efficient flow of materials and resources from suppliers to customers	Kim, (2013); Flynn et al. (2010)
		The organization focus on functional collaboration among departments	Kotcharin et al., (2012)
		There is an effective monitoring and evaluation of processes in the organization	Kim (2013); Lotfi et al., (2013)
		Our organization shares relevant information with customers	Kim (2013); Lotfi et al., (2013)
		Our organization focus on establishing trust among customers	Lau et al., (2010); Flynn et al., (2010)
Supply chain flexibility	chain	We can meet difficult non-standard orders to satisfy special customer specifications	Flint et al. 2005; Das and Malek, 2003
		We are able to adjust our production volume to meet customer demand	Flint et al. 2005; Das and Malek, 2003
		We are able to adapt lead times to meet customer requirements	Flint et al. 2005; Das and Malek, 2003
		We are able to reduce development cycle times to meet customer requires	Flint et al. 2005; Das and Malek, 2003

	We provide a widespread distribution coverage	Flint et al. 2005; Das and Malek, 2003
Organizational performance	Operational performance	
	Our organization quickly respond market demands	Green et al., 2012; Lai and Wong, 2012
	Our organization make rapid product/service mix changes	Green et al., 2012; Lai and Wong, 2012
	Our organization have good on-time goods/service delivery record	Green et al., 2012; Lai and Wong, 2012
	Financial performance	
	Our organization has a high average return over the past three years	Matar and Eneizan, 2018; Xie et al. (2016),
	Our organization has a high average profit over the past three years	Matar and Eneizan, 2018; Xie et al. (2016),
	Our organization's profit growth has increased over the past three years	Matar and Eneizan, 2018; Xie et al. (2016),
	Our organization has a high average sale over the past three years	Matar and Eneizan, 2018; Xie et al. (2016),

Source: Author's construct, (2021)

3.7 DATA ANALYSIS

The data types used for research can be categorized in primary and secondary data. For this study only primary data were used collected with the aid of a structured questionnaire. Data analysis is a crucial aspect for every study. For this study, numerical data was collected, hence statistical tools were employed for the analysis of the data. However, prior to the analysis, the data were screened and any mistakes and non-responsive questionnaires were discarded. The software employed for the analysis included the Statistical Package for Social Sciences (SPSS version 23 and MS Excel. Both descriptive and inferential analysis were used for the study.

For the descriptive analysis, frequencies, means and standard deviations were used while correlation and regression analysis was used for making inferences. The means and standard deviations aided in providing an indication of the nature of the variables within the various branches of Toyota Ghana. These values provide the central tendency and aids in measuring the level of agreement among the responses provided. The correlation analysis aided in ascertaining the level of association among the constructs used for the study while the regression analysis aided in measuring the relationship and the significance of the relationship among the constructs used for the study are the various branches of the study.

3.8 RELIABILITY AND VALIDITY ASSESSMENT

Data processing is analyzing, reorganizing, changing, and transforming data to abstract useful information from it (Chapman., 2018). Reliability and validity are concepts that are used to determine study efficiency. According to Pernecky (2016) reliability can be described as the degree to which a test consistently measures whatever it measures, and the precision of a measure is about validity. They can offer a particular case free of the same outcome. Two analysts using the same methodology would inevitably touch based on the same outcome at the stage where the reliability is high. Validity is the degree to which a test tests what it is intended to measure, according to Pernecky (2016). In this study, the researcher gave basic reliability

and validity considerations. The researcher conducted a pre-test on questionnaire to guarantee language ambiguity is removed and to ensure that the questionnaire is suitable to the respondents. A total of 10 questionnaire were administered and the findings enable the researcher to reconstruct the questionnaire before it was sent out to respondent. Furthermore, the Cronbach Alpha value was adopted to ascertain the validity of the responses.

3.9 ETHICAL CONSIDERATIONS

Permission and informed consent will be sought from the respondents before the questionnaire was administered. The respondents were duly informed that the study is purely for educational purposes and all results from this research and the information that will be obtained will be used. Additionally, all data would be viewed as private and confidential. In this analysis, no names of individual participants will be registered or recorded. The basis for this thesis would also be consistent with the Guidelines of the Kwame Nkrumah University of Science and Technology Research Ethics Committees.

The report would also be performed in respect of the research subjects' integrity, dignity, and well-being. In that respect, the analysis would guarantee that informed consent has been granted by all respondents. Accordingly, the respondents would be completely briefed about the nature of the study, the time commitments, the subjects to be discussed and the risk associated. The analysis will also ensure that all participants have the requisite analytical skills and psychological competence to understand their position in the analysis. The analysis shall therefore ensure that the intimates have taken an independent decision and that they are completely voluntary to be included in the analysis. The project would make sure participants are aware of their right to retire from the study and that there is no pressure on any respondent to undertake the study. This would be in line with Denzin and Lincoln (2000:139) four principles for the Code of Ethics Asset namely: informed consent, deception, privacy and confidentiality and accuracy.

3.10 OVERVIEW OF MOTOCYCLE BUSINESS IN GHANA

Motorcycles, commonly referred to as "okadas" in Ghana, are widely used for transportation, especially in urban areas where they serve as a popular means of commuting. The demand for motorcycles is influenced by factors such as traffic congestion, affordability, and the need for efficient transportation in densely populated areas. The motorcycle business contributes to job creation, providing employment opportunities for riders, mechanics, and other related services. It also plays a role in the informal economy, with many individuals operating as independent motorcycle taxi riders. There are opportunities for investors and entrepreneurs to engage in the motorcycle business, including sales, maintenance, and related services. As the urban population continues to grow, there is a potential for increased demand for affordable and efficient transportation solutions. There are safety concerns in the use of this mode of transportation. Accidents involving motorcycles are a significant concern, and efforts have been made to address safety issues through regulations and awareness campaigns. Additionally, the legal status of motorcycle taxis has been a topic of discussion, with ongoing efforts to regulate and formalize the sector. The motorcycle industry in Ghana may see changes in regulations and increased efforts to formalize the sector. The adoption of electric motorcycles and environmentally friendly technologies may gain traction in the future.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSIONS

4.1 INTRODUCTION

This chapter analyze and discuss the results of the analysis of the collected data. The data analysis and discussions aid in the provision of adequate and useful information on the nature of the collected data and the respondent's perception on the various themes of the study. The themes included the assessment of the relationship that exist between supply chain flexibility and performance, and the relationship that exist between the supply chain integration and supply chain performance of organizations at Tamale metropolis. The data was collected from 105 respondents who were associated with the supply chain of motorcycle businesses in Tamale metropolis. The analytical tools used for the study included mean scores, standard deviations, Cronbach Alpha, correlation and regression analysis. This aided in testing the hypothesis that was developed for the study. The data analysis started with the background of the respondents and continued to the descriptive statistics of the various latent variables. Subsequently, the model developed in the study was tested using OLS.

4.2 DEMOGRAPHICS

The respondents were asked on indicate their gender, role within the organization, years of experience and level of education. From the analysis of the data collected on the demographics, it was realized that majority of the respondents were males (82.9%) whiles the remaining 17.1% were females. With regards to their roles, majority had a procuring/purchasing role (54.3%). With regards to their years of experience, majority of the respondents (48.60%) had within 6-10 years of experience; (12.40%) had below 5 years; (21%) had 11-15 years; (8.60%) had 16-20 years and (9.5%) had above 20 years. Finally, with regards to educational level

(52.40%) had a bachelor's degree; (41.00%) had postgraduate degree; (6.70%) had Diploma degree. Table 4.1 shows a summary of the results on the respondent's demographics.

Table 4.1: Demographics

Demographics	Frequency	Percentage
Gender		
Male	87	82.90
Female	18	17.10
Role in organization		
Procurement office	57	54.30
Supply Manager	17	16.20
Administration	31	29.50
Years of experience		
Below 5 years	13	12.40
6 to 10	51	48.60
11 to 15	22	21.00
16 to 20	9	8.60
Above 20	10	9.50
Education		
Diploma	7	6.70
BSC	55	52.40
Postgraduate	43	41.00

Source: Field Survey, 2022

4.3 Descriptive statistics of the constructs

Mean scores and standard deviations was adopted in the provision of the descriptive for the variables used for the study. Since the five point Likert scale was used, it was expected that, all the mean values ranges from 1.00 to 5.00.

4.3.1 Supply chain integration

This section examines the respondent's level of agreement on supply chain integration within their organization. Based on the literature review, ten (10) measures were identified. From Table 4.2, it can be ascertained that, the overall mean was 2.51. This depicts that, majority of the respondents disagreed to a larger extent that, supply chain is effectively integrated within their organization. Specifically, it was realized that, for supply chain integration, most of the respondents disagreed that *"Our organization shares strategic knowledge with suppliers"* (Mean = 1.92; SD = 1.313). Also, the respondents disagreed that *"Our organization focus on identifying the expectations of customers"* (Mean = 2.93; SD = 1.857). Furthermore, the respondents disagreed that *"There is effective information sharing among the departments in our organization"* (Mean = 2.42; SD = 1.812). The general results on supply chain integration shows level of disagreement depicting the lack of integration of supply in their organizations.

4.3.2 Supply chain flexibility

This section examines the respondent's level of agreement on supply chain flexibility within their organization. Based on the literature review, five (5) measures were identified. From Table 4.2, it can be ascertained that, the overall mean was 2.08. This depicts that, majority of the respondents disagreed to a larger extent that, supply chain is flexible within their organization.

Table 4.2: Descriptive statistics

Statements	Min	Max	Mean	SD
Supply chain integration				
Our organization shares strategic knowledge with suppliers	1	5	1.92	1.313
Our organization focus on identifying the expectations of customers	1	5	2.93	1.857
There is effective information sharing among the departments in our organization	1	5	2.42	1.812
Our operations are directed in accordance with organizations mission statement	1	5	3.08	1.910
Our organization incorporates customers opinion in the production process	1	5	2.44	1.675
There is an efficient flow of materials and resources from suppliers to customers	1	5	2.47	1.647
The organization focus on functional collaboration among departments	1	5	2.29	1.674
There is an effective monitoring and evaluation of processes in the organization	1	5	2.75	1.870
Our organization shares relevant information with customers	1	5	2.31	1.546
Our organization focus on establishing trust among customers	1	5	2.46	1.647
Overall Mean	2.51			
Supplier chain flexibility				
We can meet difficult non-standard orders to satisfy special customer specifications	1	5	2.27	1.068
We are able to adjust our production volume to meet customer demand	1	5	1.87	1.217
We are able to adapt lead times to meet customer requirements	1	5	2.03	1.438
We are able to reduce development cycle times to meet customer requires	1	5	2.14	1.212
We provide a widespread distribution coverage	1	5	2.08	1.291
Overall Mean	2.08			
Organizational performance				
Operational performance				
Our organization quickly respond market demands	1	5	1.93	1.409
Our organization make rapid product/service mix changes	1	5	2.03	1.259
Our organization have good on-time goods/service delivery record	1	5	2.04	1.500
Overall Mean	2.00			
Financial performance				
Our organization has a high average return over the past three years	1	5	2.05	1.243
Our organization has a high average profit over the past three years	1	5	2.33	1.268
Our organization’s profit growth has increased over the past three years	1	5	2.37	1.389
Our organization has a high average sale over the past three years	1	5	2.39	1.464
Overall Mean	2.29			

Specifically, it was realized that, for supply chain flexibility, most of the respondents disagreed that “*We can meet difficult non-standard orders to satisfy special customer specifications*” (Mean = 2.27; SD = 1.068). Also, the respondents disagreed that “*We are able to adjust our production volume to meet customer demand*” (Mean = 1.87; SD = 1.217). Furthermore, the respondents disagreed that “*We are able to adapt lead times to meet customer requirements*” (Mean = 2.03; SD = 1.438). The general results on supply chain flexibility shows level of disagreement depicting the lack of flexibility of supply in their organizations.

4.3.3 Organizational performance

This section examines the respondent’s level of agreement on their organizational performance. Based on the literature review, two sub-constructs were identified with a total of seven (7) measures identified. From Table 4.2, it can be ascertained that, the overall mean for operational performance was 2.00 while that of financial performance was 2.29. This depicts that, majority of the respondents disagreed to a larger extent that, their organization was having a good performance. Specifically, it was realized that, for operational performance, most of the respondents disagreed that “*Our organization quickly respond market demands*” (Mean = 1.93; SD = 1.409). Also, the respondents disagreed that “*Our organization make rapid product/service mix changes*” (Mean = 2.03; SD = 1.259). For financial performance, most of the respondents disagreed that “*Our organization has a high average return over the past three years*” (Mean = 2.05; SD = 1.243). Also, the respondents disagreed that “*Our organization has a high average profit over the past three years*” (Mean = 2.33; SD = 1.268). The general results on organizational performance shows level of disagreement depicting low levels of performance within their organizations.

4.4 TEST OF MODEL

The study evaluated the relationship between supply chain integration, and flexibility on organizational performance. Based on the above objectives, two (2) hypotheses were

established which led to the development of a research model to conceptualize the various relationships. In testing the model, two steps were taken:

1. The constructs were assessed for their reliability:
2. The hypotheses were tested by using correlation and regression analysis

4.4.1 Reliability test

The Cronbach's Alpha was used in the assessment of the reliability of the variables based on internal consistency. Based on the analysis, it was realized that, all the variables had an acceptable range of Cronbach Alpha value (>0.7). This indicated that, the variables had a satisfactory level of reliability. A summary of the results is shown in Table 4.3

Table 4.3: Internal Consistency of Construct

Construct	No. of variables	Cronbach Alpha
Supply chain integration	10	0.787
Supply chain flexibility	5	0.725
Organizational performance	7	0.765

Source: Field Data, 2021

4.4.2 Test of hypothesis

The Pearson's correlation and the Ordinary Least Squares was adopted as analytical tools for assessing the conceptual framework developed for the study.

4.4.2.1 Correlation Matrix

The result of the correlation is shown in Table 4.4 The results depict that, the relationship between supply chain integration and organizational performance is significant ($R = 0.402$; p -

value > 0.00). Similarly, the relationship between supply chain flexibility and organizational performance was deemed significant ($R = 0.612$; $p\text{-value} > 0.00$).

Table 4.4: Correlations

Constructs	SCI	SCF	OP
Supply chain integration	1	0.440	0.402**
Supply chain flexibility	0.440	1	0.612**
Organizational performance	0.402	0.612	1

Source: Field Data, 2021

4.4.3 Regression analysis

The results of regression analysis is shown and discussed in the subsequent sections. This was done using the ordinary least squares model.

4.4.3.1 Effect of supply chain integration on organizational performance

With an R square value of 0.162, the model had a low predictive power. Thus 16.2% variations in the dependent variable (organizational performance) are being predicted by the independent variable (Supply chain integration). The model showed a statistically significant positive relationship between supply chain integration and organizational performance ($\text{Beta} = 0.402$; $t\text{-value} = 4.457$; $\text{Sig} = 0.000$). A summary of the results is shown in Table 4.5, 4.6 and 4.7.

Table 4.5: Model summary

Model	R	R Square	Adjusted square	R	Std. Error pf the Estimate
1	0.402 ^a	0.162	0.154		.80928

Predictors: (Constant), Supply chain integration

Table 4.6: ANOVA

Model	Sum of squares	df	Mean square	F	Sig
Regression	13.008	1	13.008	19.861	0.000 ^b
Residual	67.459	103	0.655		
Total	80.466	104			

Dependent variable: Organizational performance

Predictors: (Constant), Supply chain integration

Table 4.7: Coefficients

Model				t	Sig
	B	Std. Error	Beta		
Model 1 (Constant)	1.274	0.215		5.938	0.001
Supply chain flexibility	0.355	0.080	0.402	4.457	0.000

Dependent variable: Organizational performance

4.4.3.1 Effect of supply chain flexibility on organizational performance

With an R square value of 0.375, the model had a low predictive power. Thus 36.9% variations in the dependent variable (organizational performance) are being predicted by the independent variable (Supply chain flexibility). The model showed a statistically significant positive relationship between supply chain flexibility and organizational performance (Beta = 0.612; t-value = 7.858; Sig = 0.000). A summary of the results is shown in Table 4.8, 4.9 and 4.10.

Table 4.8: Model summary

Model	R	R Square	Adjusted R square	Std. Error of the Estimate
1	0.612 ^a	0.375	0.369	.69886

Predictors: (Constant), Supply chain flexibility

Table 4.9: ANOVA

Model	Sum of squares	df	Mean square	F	Sig
Regression	30.160	1	30.160	61.752	0.000 ^b
Residual	50.306	103	0.488		
Total	80.466	104			

Dependent variable: Organizational performance

Predictors: (Constant), Supply chain flexibility

Table 4.10: Coefficients

Model			Beta	t	Sig
	B	Std. Error			
Model 1 (Constant)	0.688	0.200		3.442	0.001
Supply chain flexibility	0.711	0.090	0.612	7.858	0.000

Dependent variable: Organizational performance

4.4.4 Hypothesis testing and findings

The section presents the results on the hypothesis established for the study. Table 4.11 provides a summary of the results. There was a statistically significant positive relationship between supply chain integration and organizational performance. Also, there was a statistically

significant positive relationship between supply chain flexibility and organizational performance. Hence, supply chain integration and flexibility had a positive significant impact on organizational performance. Thus, hypothesis 1 and 2 were supported.

Table 4.8: Hypothesis Table

Hypothesis	Path Coefficient	T-Values	P-Values	Remarks
H1	0.402	4.457	0.000	Supported
H2	0.612	7.858	0.000	Supported

Source: Author's construct, (2020).

4.5 DISCUSSION OF THE RESULTS

The general objective of the study was to assess the effect of supply chain flexibility and integration on the performance of motorcycle businesses in Tamale Metropolis. Specific objectives were developed as follows; (1) To ascertain the relationship between supply chain flexibility and performance of organizations at Tamale metropolis (2) To evaluate the relationship between supply chain integration and performance of organizations at Tamale metropolis. A research model was developed in accordance with the objectives of the study and was supported by hypothesis. The data collected for the study were analysed using both descriptive and inferential statistics.

The first objective focused on establishing the relationship between supply chain integration and organizational performance. Based on the results, it was realized that supply chain integration has a significant positive relationship with organizational performance. Studies on supply chain integration and organizational performance largely tends to support the findings of this study. For instance, Olah et al., (2017), acknowledged that, supply integration enhances

the capabilities of the organization. Wu (2013), opined that, effective customer integration enhances the performance of the organization. Empirical studies conducted by Ataseven and Nair, (2017) has shown the significance of internal integration on the performance of an organization. Flynn et al. (2010), also showed that, internal integration has a strong influence in improving the performance of an organization. These existing literature supports the assertion that supply chain integration affects organizational performance. Hence, organizations that generally implements supply chain integration practices realizes high level of organizational performance. Nevertheless, the descriptive analysis showed that, there is a lack of integration of supply chain in the organizations used for the study resulting in low levels of organizational performance.

The second objective focused on the relationship between supply chain flexibility and organizational performance. Based on the results, it was realized that supply chain flexibility has a significant positive relationship with organizational performance. Studies on supply chain flexibility and organizational performance largely tends to support the findings of this study. For instance, Gligor and Holcomb (2012), opined that, supply chain flexibility aims at devising strategies to adopt alternative configurations so as to sustain supply chain operations when faced with a disruption. Supply chain flexibility aids an organization in gaining a competitive edge by switching to one of the alternate configurations and thereby aiding the firm to sustain its performance. In a framework proposed by Lummus et al. (2003), a flexible supply chain leads to customer satisfaction and inventory minimization. Fantazy et al. (2009) suggest that different dimensions of supply chain flexibility show different effects on supply chain performance including both financial and non-financial performance outcomes. These existing literature supports the assertion that supply chain flexibility affects organizational performance. Hence, organizations that generally possess flexible supply chain realizes high level of organizational performance. Nevertheless, the descriptive analysis showed that, there

is a lack of flexibility of supply chain in the organizations used for the study resulting in low levels of organizational performance.

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CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This summary of findings, conclusion and recommendations is the final chapter of this study which provides a brief write-up of the study. The study aimed assessing the effect of supply chain flexibility and integration on the performance of motorcycle businesses in Tamale Metropolis. The specific objectives that aided in the achievement of the aim were to evaluate the relationship between supply chain integration and performance of organizations at Tamale metropolis and to ascertain the relationship between supply chain flexibility and performance of organizations at Tamale metropolis.

5.2. SUMMARY OF FINDINGS

This section discusses the approach adopted in the achievement of each objective and the findings made. The study adopted a quantitative strategy where numerical data were collected with the aid of a structured questionnaire. A total of 107 questionnaires were analysed and a summary of the findings are presented as follows.

5.2.1 Objective one: To evaluate the relationship between supply chain integration and performance of organizations at Tamale metropolis

In achieving the first objective of the study, a literature review was conducted which aided in the development of a structured questionnaire. The questionnaire was distributed among participants of the supply chain associated with motorcycle businesses in Tamale metropolis. A total of 107 questionnaires were retrieved and analysed using both descriptive and inference statistics. The results of the analysis showed that, supply chain integration practices are not implemented within the motorcycle supply chain within an overall mean of 2.51. However, the results showed that, there is a significant relationship between supply chain integration and

organizational performance (Beta = 0.402; t-value = 4.457; Sig = 0.000). Consequently, it was clear that, they had a low level of operational and financial performance with overall mean of 2.00 and 2.29 respectively.

5.2.2 Objective two: To ascertain the relationship between supply chain flexibility and performance of organizations at Tamale metropolis

In achieving the second objective of the study, a literature review was conducted which aided in the development of a structured questionnaire. The questionnaire was distributed among participants of the supply chain associated with motorcycle businesses in Tamale metropolis. A total of 107 questionnaires were retrieved and analysed using both descriptive and inference statistics. The results of the analysis showed that, the motorcycle supply chain is less flexible with an overall mean of 2.08. However, the results showed that, there is a significant relationship between supply chain flexibility and organizational performance (Beta = 0.612; t-value = 7.858; Sig = 0.000). Consequently, it was clear that, they had a low level of operational and financial performance with overall mean of 2.00 and 2.29 respectively.

5.3 CONCLUSION

Studies on supply chain integration and flexibility has concluded on its significance to organizational performance. However, such feat may not be generalizable to all sectors. There is a lack of empirical findings on the operation of motorcycles in the country, largely due to the infant nature of their operation. Hence, this study sought to assess the effect of supply chain flexibility and integration on the performance of motorcycle businesses in Tamale Metropolis. Based on findings from the study, it was noticed that the implementation of supply chain integration is very low within the motorcycle supply chain in Tamale. However, the results showed that, there is a significant relationship between supply chain integration and organizational performance. Consequently, it was clear that, they had a low level of operational and financial performance. With the achievement of the second objective, the findings showed

that, the motorcycle supply chain is less flexible. However, the results showed that, there is a significant relationship between supply chain flexibility and organizational performance. Consequently, it was clear that, they had a low level of operational and financial performance. Despite the, Government of Ghana (GoG) on its part, continuously enacting regulations towards economic and effective functioning of public transport, they are still experiencing high levels of low performance. Hence, the improvement of the effectiveness of the motorcycle industry through the supply chain integration and flexibility is much more needed.

5.4 RECOMMENDATIONS

This section discusses the recommendations made from this study.

The study showed that, there is a significant relationship between supply chain integration and organizational performance. Due to the low integration of the supply of the motorcycle industry, it is important to implement strategies to improve supply chain integration effectiveness. For instance, purchasers must constantly deal with approved and accepted suppliers for the motorcycle parts. Also, the operators of motorcycles must establish a trust of safety among customers by following established regulations for their operations.

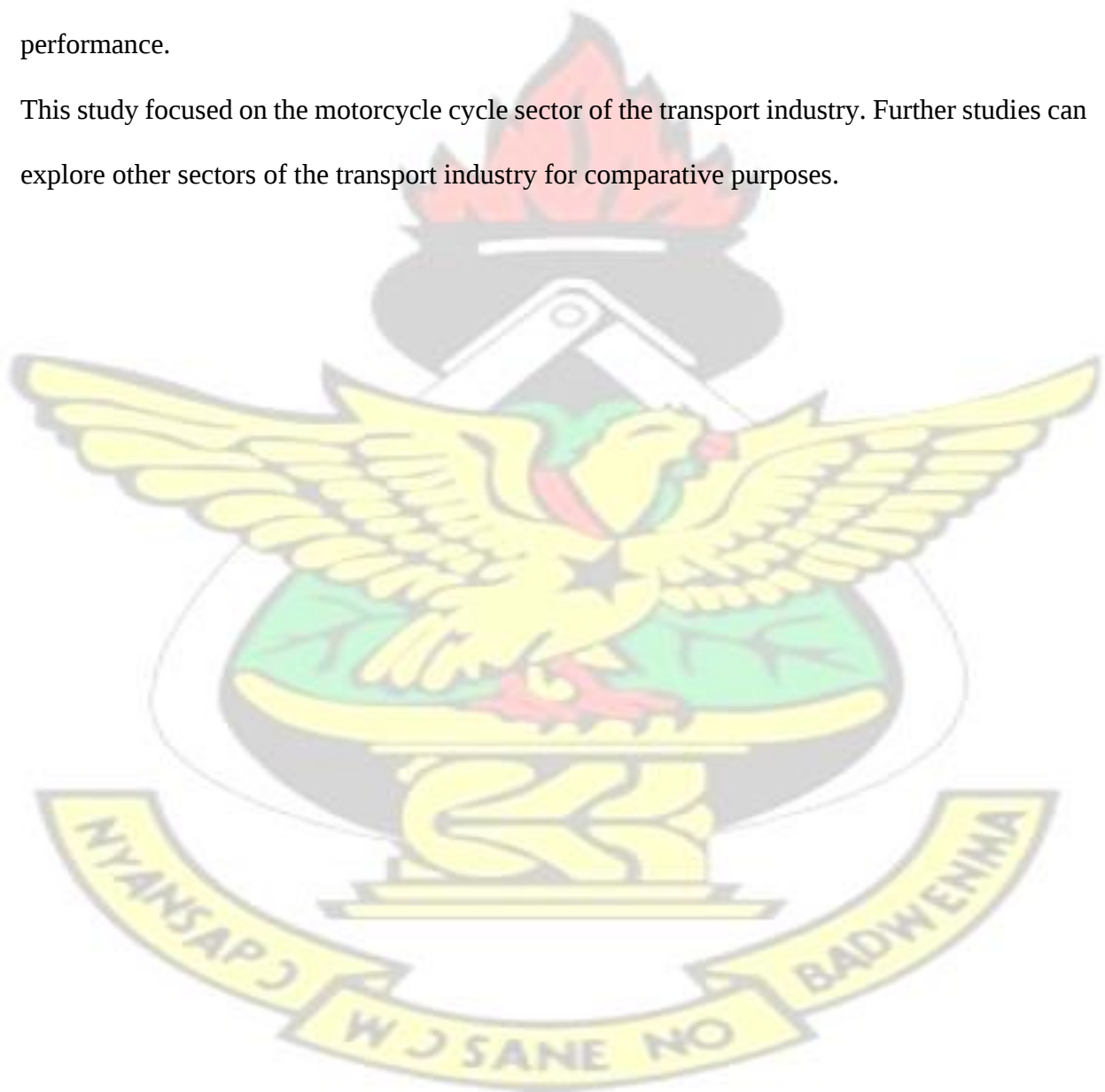
The study further showed that, there is a significant relationship between supply chain flexibility and organizational performance. However, the level of flexibility of the motorcycle supply chain is low. It is important to implement strategies to improve the flexibility of the supply chain. For instance, the motorcycle operators must develop the ability to meet special requirements of customers including long distance transportations. Furthermore, their response time to customer demands must be drastically improves

5.5 RECOMMENDATIONS FOR FUTURE STUDIES

There are avenues for future studies to be conducted based on the outcome of this study. They are enumerated as follows;

This study has explored the relationship between supply chain integration and flexibility on organizational performance. Further studies can explore the moderating and mediating role of supply chain flexibility in the relationship between supply chain integration and organizational performance.

This study focused on the motorcycle cycle sector of the transport industry. Further studies can explore other sectors of the transport industry for comparative purposes.



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APPENDIX

SURVEY INSTRUMENT

EFFECT OF SUPPLY CHAIN FLEXIBILITY AND INTEGRATION ON THE PERFORMANCE OF MOTORCYCLE BUSINESSES IN TAMALE METROPOLIS.

SECTION A

RESPONDENT'S PROFILE

1. Please indicate your gender

- ☐ Male
- ☐ Female

2. Please indicate your role in the organization.

- ☐ Procurement
 - ☐ Supply Manager
 - ☐ Logistics
 - ☐ Administration
-

3. Please indicate your years of experience in your profession?

- ☐ Below 5 years
- ☐ 6-10 years
- ☐ 11-15 years
- ☐ 16-20 years
- ☐ Above 20 years

4. What is your highest level of education?

- ☐ Diploma
- ☐ BSc
- ☐ Post Graduate
- Others (specify).....

SECTION B

5. Please indicate your level of agreement with the following statements. Please use the response scale below:

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree

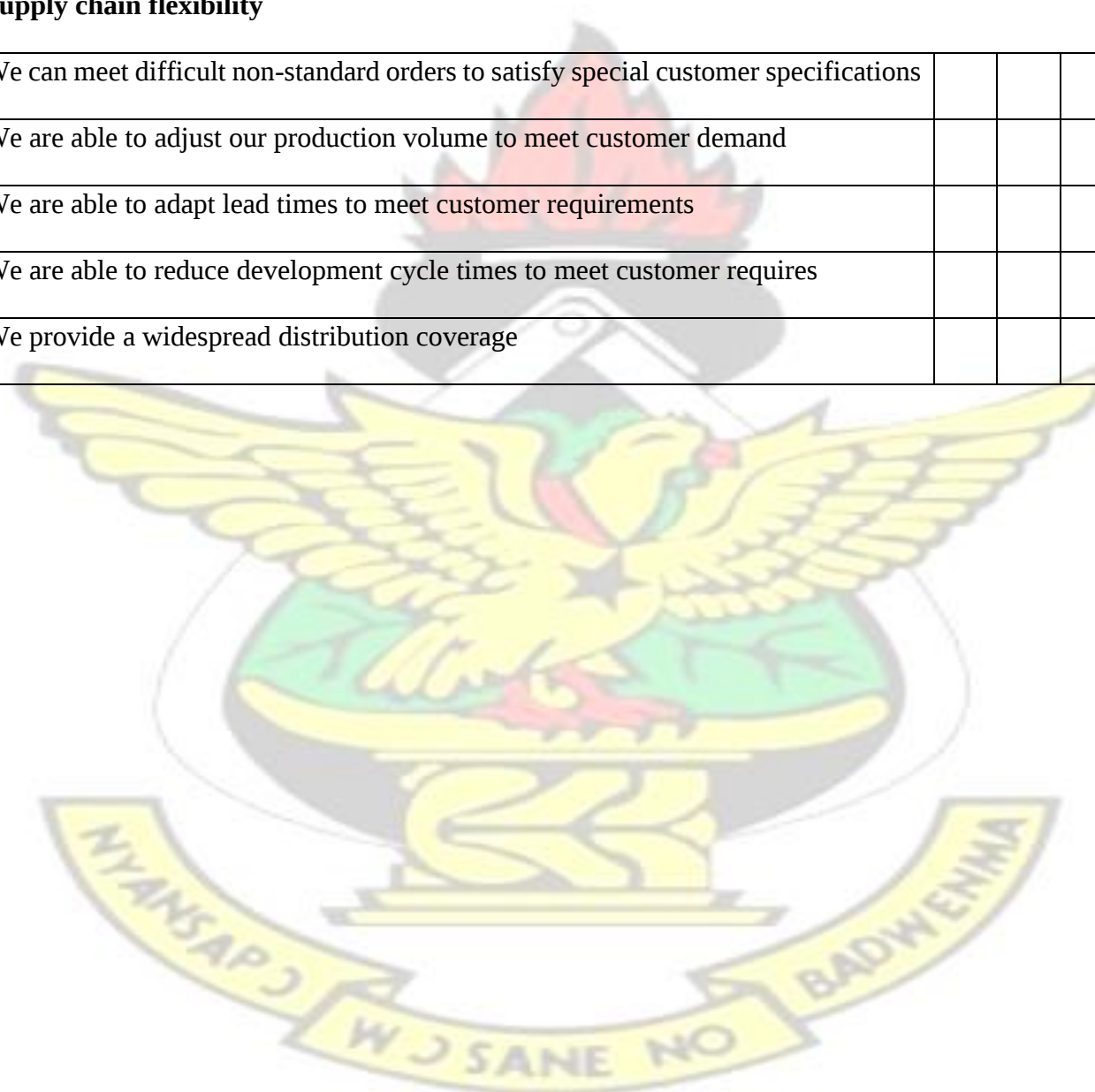
No.	Measures	1	2	3	4	5
SCI	Supply chain integration					
1	Our organization shares strategic knowledge with suppliers					
2	Our organization focus on identifying the expectations of customers					
3	There is effective information sharing among the departments in our organization					
4	Our operations are directed in accordance with organizations mission statement					
5	Our organization incorporates customers opinion in the production process					
6	There is an efficient flow of materials and resources from suppliers to customers					
7	The organization focus on functional collaboration among departments					
8	There is an effective monitoring and evaluation of processes in the organization					
9	Our organization shares relevant information with customers					
10	Our organization focus on establishing trust among customers					

SECTION C

6. Please indicate your level of agreement with the following statements. Please use the response scale below:

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree

No.	Measures	1	2	3	4	5
SCI	Supply chain flexibility					
1	We can meet difficult non-standard orders to satisfy special customer specifications					
2	We are able to adjust our production volume to meet customer demand					
3	We are able to adapt lead times to meet customer requirements					
4	We are able to reduce development cycle times to meet customer requires					
5	We provide a widespread distribution coverage					



SECTION D

7. Please indicate your level of agreement with the following statements. Please use the response scale below:

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree

No.	Measures	1	2	3	4	5
OP	Organizational performance					
OOP	Operational performance					
1	Our organization quickly respond market demands					
2	Our organization make rapid product/service mix changes					
3	Our organization have good on-time goods/service delivery record					
OFP	Financial performance					
1	Our organization has a high average return over the past three years					
2	Our organization has a high average profit over the past three years					
3	Our organization's profit growth has increased over the past three years					
4	Our organization has a high average sale over the past three years					