

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES
SCHOOL OF BUSINESS/ INSTITUTE OF DISTANCE LEARNING

KNUST

TOPIC:

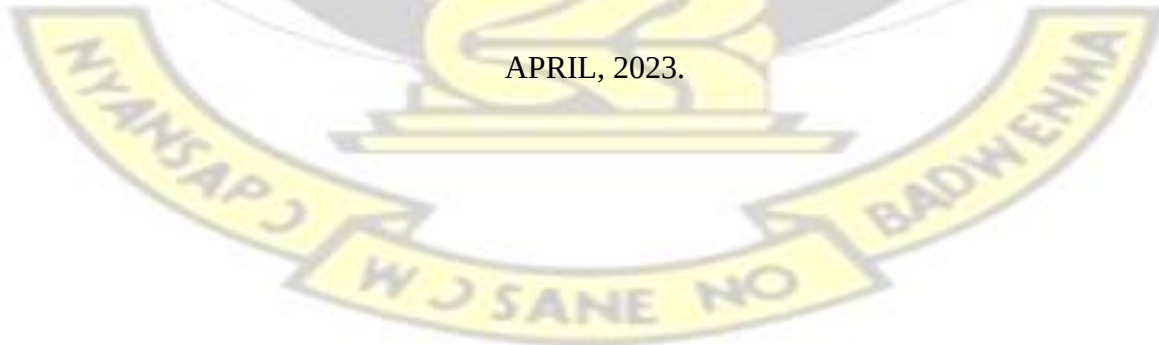
**THE EFFECT OF GREEN COMMITMENT ON GREEN PERFORMANCE THE
MEDIATING ROLE OF GREEN COMPETENCE**

BY

SYLVIA ADAMA ADAMU

A Thesis Submitted to the Department of Supply Chain and Information Systems of the Kwame Nkrumah University of Science and Technology School of Business, in Partial Fulfilment of The Requirements for The Award of The Degree of Master of Science in Logistics And Supply Chain Management

APRIL, 2023.



DECLARATION

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

Sylvia Adama Adamu.

Student's Name. Signature Date

(PG 9248121)

Certified By:

.....

(Dr. Benjamin Cosmos). Signature Date

Certified By:

.....

(Head of Department). Signature. Date

DEDICATION

The endeavour is devoted to the Almighty God and my family, who have provided me with countless benefits and instruction throughout this period.



ACKNOWLEDGEMENT

I would like to thank God for enabling me to complete this study. I'd like to express my deepest gratitude to Dr. Benjamin Cosmos, my supervisor, for all the help and direction he's given me throughout my graduate studies.



TABLE OF CONTENTS

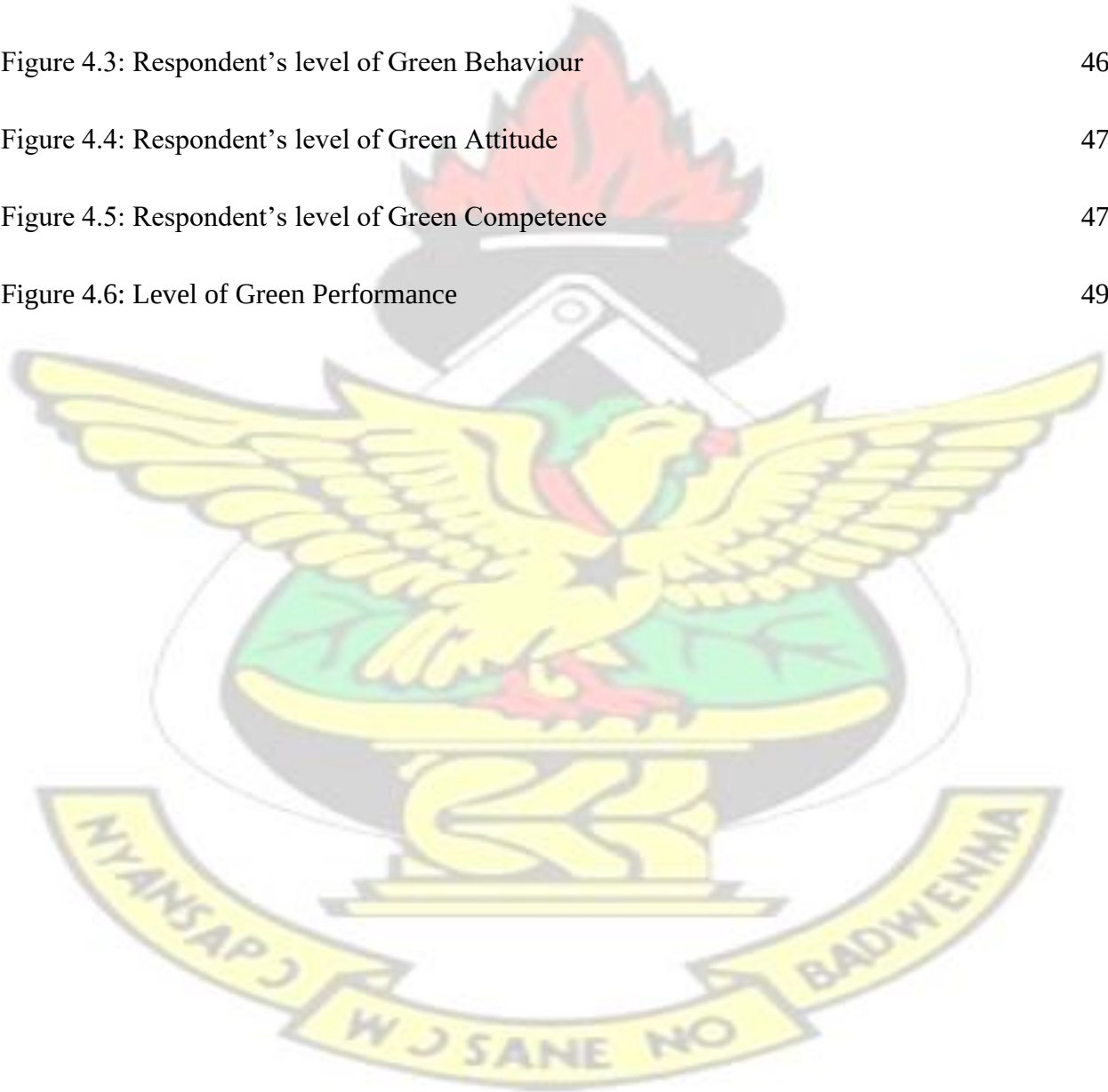
DECLARATION	i
DEDICATION	ii
ACKNOWLEDGEMENT	iii
LIST OF FIGURES	vi
LIST OF TABLES	vii
ABSTRACT	viii
CHAPTER ONE	1
1.1 Background of the Study	1
1.2 Problem Statement	5
1.3 Objectives	7
1.4 Research Question	7
1.5 Significance of the Study	7
1.6 Delimitations	9
1.7 Organisation of the Study	9
1.8 Definitions of Terms	10
2 CHAPTER TWO	12
2.1 Introduction	12
2.2 The Conceptualisation of Green Commitment	12
2.2.1 Lack of Commitment	17
2.2.2 Provisional Commitment	18
2.2.3 Restrained Commitment	18
2.2.4 Proven Commitment	19
2.2.5 Speculative Commitment	19
2.2.6 Observance Commitment	20
2.2.7 Relinquished Commitment	20
2.3 The Conceptualisation of Green Performance	21
2.4 The Conceptualisation of Green Competence	24
2.5 The Relationship between Green Commitment and Green Performance	28
2.6 The Moderating Role of Green Competence	31
2.7 Relevant Theory	32
2.8 Conceptual framework and hypotheses	32
	iv

3	CHAPTER THREE	34
3.1	Research Design	34
3.2	Scope of the Study	34
3.3	The Study Setting	34
3.4	Study Population	35
3.5	Sampling Techniques	35
3.6	Data Collection Method	35
3.7	Data Handling	36
4	CHAPTER FOUR	38
4.1	Introduction	38
4.2	Profile of Respondents and their Organisations	38
4.3	Green Commitment	41
4.4	Green competence	44
4.5	Green Performance	48
5	CHAPTER FIVE	52
5.1	Introduction	52
5.2	Summary of Findings	52
5.3	Conclusion	54
5.4	Recommendations for practice	56
5.5	Recommendations for practice further Studies	56
	REFERENCES	58



LIST OF FIGURES

Figure 2.1: Figure showing the seven levels of commitment.	17
Figure 2.2: Conceptual Framework	33
Figure 4.1: Organisation's level of commitment	43
Figure 4.2: Respondent's level of Green Knowledge	46
Figure 4.3: Respondent's level of Green Behaviour	46
Figure 4.4: Respondent's level of Green Attitude	47
Figure 4.5: Respondent's level of Green Competence	47
Figure 4.6: Level of Green Performance	49



LIST OF TABLES

Table 2.1: Factors influencing corporate environmental strategies	16
Table 4.1: Classification of business operations	39
Table 4.2: Number of Employees	39
Table 4.3: Category of work site	39
Table 4.4: Position of the respondent	40
Table 4.5: Years working in the organisation	40
Table 4.6: Years that the company has been in operations	40
Table 4.7: Green commitment	42
Table 4.8: Green Competence	44
Table 4.9: Green performance	48
Table 4.10: Mediation Estimates	51
Table 4.11: Path Estimates	51

ABSTRACT

The purpose of this research is to investigate the role that green competence plays as a mediator in the connection between green dedication and green performance in Ghanaian manufacturing businesses. The research involved interviewing 30 high-level executives in positions of decision-making to assess their level of dedication to sustainability, green proficiency, and green performance. According to the findings, the level of green performance within an organisation is favourably influenced by the level of green competence possessed by the leadership of that organisation. However, there was no evidence of a significant relationship between green commitment and green performance, nor was there any evidence of a moderating function of green competence on the relationship between green commitment and green performance. In addition, there was no evidence of a relationship between green commitment and green competence. According to the findings of the study, in order for businesses to improve their environmental performance, it is recommended that they establish a mindset of environmental responsibility and engage in training programmes. In upcoming studies, it will be important to investigate the potential mitigating influence of individual characteristics as well as the impact of societal and institutional variables on the relationships between green dedication, green competence, and green performance in a variety of countries and industries. When attempting to establish the causative relationships that exist between green dedication, green proficiency, and green performance, various research methods ought to be taken into consideration.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Supply chain management continues to be an important field in business and academia due to its relevance in the socio-economic landscape (Xu et al. 2020). It defines the process by which we obtain the goods and services we need to survive and thrive. Every product on the market went through a supply chain of some sort. Controlling the supply chain is important because of the potential impacts they may have. Supply chains have the potential to be rather expensive to run and maintain if they are not adequately controlled (Shojaei & Haeri, 2019). There have been many cases where companies have enjoyed significant cost savings after employing certain supply chain management strategies. Supply chains can also lead to dissatisfaction among customers due to errors that can easily occur within the chain (Mappesona et al, 2020). The fact is that getting goods and services to a customer is highly complex, especially for big multi-national corporations who produce and fulfil tens of thousands of orders per day. Once again supply chain management strategies have led to customer satisfaction and effective processes for many companies around the world. This leads into the goal of supply chain management; ensuring the effectiveness, efficiency and profitability of the flow of goods and services from raw materials to final products (Frederico et al., 2021).

In recent times another impact of the supply chain is gaining ground mostly due to the increasing nature of its occurrence. Supply chains have an impact on the natural environment (Koberg and Longoni, 2019). There are many facets to the impacts supply chains have. The vehicles employed in the transportations segment of supply chains contribute to air pollution. Producing and

transporting goods requires significant amounts of energy which translates to further burning of fossil fuels leading to the emission of greenhouse gases. Of all these facets however, manufacturing as part of the supply chain has a significantly disproportionate impact on the environment (Li & Mathiyazhagan, 2018; Ghadimi et al., 2019; Namagembe et al., 2019; Nayak et al., 2019).

Manufacturing is one of the key components of a supply chain. The purpose of which is to transform raw materials into desired products. The manufacturing industry can be considered a double edged sword when looking at the impact it has had globally and at a national level. The industrial revolution of the 1970s had a drastic positive influence on the economies of the European and Western nations (Liao et al., 2019). Innovations in the industry at that time allowed the countries to convert abundant raw materials into highly valuable products, most of which were literally the building blocks of the infrastructure in their countries and beyond. The industrial revolution also allowed them to produce these products on a significantly larger scale and distribute them. Over time these three impacts of the industrial revolution improved and with these improvements came significant economic growth for the countries. Later facets of the industrial revolution emerged in the 20th and 21st centuries where innovations continued to crop up and industrialisation as a practice for economic growth began to cross borders to other countries and other economies (Sterns, 2020). Countries who were successful in their attempts to industrialise saw significant growth in their economies. However, as much as industrialisation emerged from debatably good intent and had an undeniable positive impact on society as a whole it resulted in one of the most important problems the world faces even today: pollution.

Any manufacturing process produces large amounts of waste and by-products. Unfortunately history has shown that for a long time the world was not equipped to properly manage these types

of wastes (Rodgers et al., 2020). In addition to this, manufacturing firms required the exploitation of large amounts of raw materials. They required so much of these natural resources that the rate of exploitation was higher than the rate at which these resources were regenerated (Wieland, 2021). Due to this the world is currently plagued with a myriad of environmental issues. Global warming, which has been linked to a depleting ozone layer, has been found to be a direct result of the emission of fossil fuels as part of the manufacturing process (Sazvar et al., 2021). Factories have also been found to pollute the air, water, and soil with substances that take a long time to dissipate (Fung et al., 2021). These substances are then ingested, inhaled and absorbed by humans and other living organisms gradually poisoning them. Ironically the consequences of this are drastic on the same economy that these factories help grow. The situation requires quick and effective steps to be taken in order to mitigate the profound effects of pollution on our environment.

Due to the prevalence of these issues and the pressure from societal groups and governments the concept of considering environmental impacts when conducting business has developed and spread (Bui et al., 2021). Companies are now Sustainable supply chain management emerged as one of the major umbrella of green activities. This concept is spreading quickly among corporations of the world. As much as this is due to the need to save the environment, many companies engage in green activities because it is an indicator of their performance and has potential benefits to the firm's image and financial performance.

One of the important concepts under the “umbrella” of the green concept is green commitment. The green commitment of companies helps us understand the willingness of companies to pursue green activities (Ye et al., 2022). This is a highly relevant concept because not all companies are equally committed to pursuing green activities or achieving a high level of green performance. The concept of protecting the environment is simply not relevant to them and this reflects in their

approach to conducting business within their supply chain. The result of these approaches to business is in fact a measured as green performance. A company's green performance has become increasingly relevant in these modern times (Liu et al., 2022). This has been exacerbated by the increasing access to information which is a characteristic of the current information age. The basic premise of the relevance of green performance is that customers and stakeholders have increasing access to information and are becoming aware of the inefficiencies of companies at managing waste and harmful by products and managing raw material exploitation and its general impact on the natural, economic, and social environment (Gelderman et al., 2021). Many customers have stopped patronising products solely based on their awareness of the company's impact on the environment. Customers are increasingly becoming more likely to purchase products that were manufactured through green activities. A "green" label which usually indicates that the product was manufactured in a manner that has little impact on the environment is becoming increasingly more attractive to customers (Karpf and Mandel, 2018). Customers are becoming more likely to buy products from companies they know are committed to the green cause (Tarabieh, 2021). Investors are also following similar patterns when selecting businesses they wish to put money into. The concept of impact investment is becoming increasingly popular. Impact investing refers to the efforts of investors to put financial resources into companies and causes they believe have a strong social or environmental impact (Berk and van Binsbergen, 2021). This is in addition to strong financial performance potential. These current trends imply that a high level of green performance is and should be important to firms. High levels of green performance allows an institution to obtain a competitive edge in the marketplace.

Pursuing green activity focused at a high level of green performance, particularly in supply chain management is a worthy cause for businesses. In view of this, the idea of green competence has

attained relevance in academia. Green competence is another important aspect under the umbrella of the green concept. It assists in understanding the capacity of companies to perform green activities (Lin et al., 2021).

Green activities in this context are the various measures companies put in place to contribute to the conservation of the environment (Kucęba, 2019). As the threats to a sustainable earth are becoming more and more prominent these measures are becoming more and more necessary. In a paradoxical nature supply chains with adverse impact on the environment will most likely collapse themselves in the end. The essential nature of supply chains makes this prospect equally alarming.

1.2 Problem Statement

Supply chains are having significant impacts on the environment. Many of the threats to sustainability on our planets are results of industrial activity. This is the case in all countries all over the world. If steps are not taken to mitigate the impact of our activities we may have no planet to live on in years to come.

Ghana is a developing country with goals to boost its economy. One of the strategies it has put forward is the expansion of the industrial landscape within the country by focusing on the processing of raw materials into finished products in an attempt to cut down on imports and increase finished goods exportation while ensuring the retention of economic value within the country (Okyere & Jilu, 2020). This implies a generation of new supply chains as new industries will spring up and expansion and improvement of existing supply chains for companies that will grow as a result of this strategy. Although this is a promising strategy it is important to look at the effect it is likely to have on our environment. Ghana's seas and rivers are already suffering from the impacts of both legal and illegal mining (Werner, et al., 2019). Deforestation is becoming

rampant as the government, companies and individuals are clearing more vegetation to build homes, factories and roads (Anarfi et al., 2020). All these occurrences pose a threat to the sustainability within the country. If the situation is this bad already it is frightening to consider what would happen if the industrialisation strategy of the country is fulfilled.

The prospect of increasing damage to the environment as part of Ghana's plan to further industrialise is inevitable unless existing and emerging public and private companies are aware of and willingly seeking to operate their supply chains in manners that ensure the protection of the environment. It is important therefore to understand how committed current companies are to ensuring that they operate their supply chains in environmentally friendly manners, their capacity for doing so and how well their commitment has translated to tangible and intangible results.

Many of the literature that measure green performance as a dependent variable rarely assess it as influenced by green commitment. Green commitment has typically been widely investigated as an independent variable in the context of green human resource management. Investigating how green commitment influences green performance is still to a significant extent an existing knowledge gap in the field of green supply chain management. The assessment of the mediating role of green competences adds some originality to the study. This speaks to the contribution of this study to the field. The present study seeks to contribute its findings to the filling this knowledge gap.

This work is intended to show the mechanism of the mediating role of green competence on the relationship between green commitment and green performance.

1.3 Objectives

The aim of this research is to investigate the mediating role of green competence on the relationship between green commitment and green performance. The specific objectives are listed below. This study seeks to:

1. Determine the levels of green commitment, green competence and green performance of manufacturing companies in Ghana.
2. Determine the effect of green commitment on green performance.
3. Determine the mediating effect of green competence on the effect of green commitment on green performance.

1.4 Research Question

The specific objectives discussed above are aimed at answering the following research questions.

1. What are the levels of green commitment, green competence and green performance that manufacturing companies in Ghana possess?
2. Does green commitment influence green performance among manufacturing companies in Ghana?
3. Does green competence influence the effect that green commitment has on green performance?

1.5 Significance of the Study

This study seeks to provide insight into the state, attitude and response of the manufacturing industry of Ghana to issues in the natural and socio-economic environment within the context of environmental conservation and protection. As the nation seeks to further industrialise it is important to understand where existing companies stand and how they act to help sustain the

environment. The findings of this study are essential to the fields of governance, business and academia.

In the context of governance, information from the study will serve as a reference material for the development of a framework or the improvement of existing frameworks upon which regulators and policy makers such as the Environmental Protection Agency and the Ministry of Environment, Science, Technology and Innovation can strategise to hold companies accountable for their impact on the environment. These frameworks will help ensure that companies operate their supply chains in a manner that mitigates the potentially harmful effects on the environment. This framework can then be developed to create a blueprint for emerging companies. This could be in the form of a list of requirements or a legally binding declaration that these companies have to abide by in order to operate.

Information from this study will also serve as reference material for existing and emerging companies as well. This study contributes to the existing literature of the strategies for improving green commitment. This is important because many companies are currently seeking out ways to improve their environmental performance to stay competitive. This kind of knowledge can help companies increase their market share by adding to their competitive advantage in both national and international markets for their respective goods and services. In this regard the study will help them understand the concepts of green commitment and green competence and how they can better grasp, apply and implement these concepts in their supply chain management.

Lastly this study will serve as reference material for future studies exploring the same or similar topic. The finding of this study will provide a basis for further discussion on the topic upon which further research can be made in different contexts. The findings and accompanying theories of the

study will also serve as theories for trends that occur in future relevant studies. This study also provides recommendations for new topic ideas and new ways of measuring the variables discussed. The recommendation will contribute to the expansion of literature addressing the topic and filling the knowledge gap.

In all, this study contributes mainly to the supply chain management field within the context of the green concept.

1.6 Delimitations

In order to achieve the aims and answer the research questions, this topic assesses the variables green commitment, green competence and green performance of manufacturing companies in Ghana. The study measures these variables based on their operationalised definitions in the literature review. These variables are measured from scales adapted from literature. The study investigates these variables within the field of sustainable supply chain management, implying limitations in technical measurement of green performance. The study will only investigate manufacturing companies due to their relevance in pollution along the supply chain. These delimitation to the study must guide the reading and reference of this work.

1.7 Organisation of the Study

This study is divided into five (5) chapters and a reference section. The first three chapters present a framework for the study while the subsequent two chapters discuss the outcomes of the study. Chapter one (1) which is the present chapter details an introduction into the field of supply chain management, sustainable supply chain management and a brief introduction to the concepts in the research topic. This is all geared toward facilitating the understanding of the research problem

stated in the following sub-section. The chapter then looks at the aims of this study and the research questions the study seeks to address before detailing the potential benefits the study provides.

Chapter two presents a literature review. Firstly, the concepts are described according to other articles and the relevant operational definitions are then detailed. Following this, the findings of the studies that look at the relationship between the variables of interest are then discussed to establish the various theories other authors have posited for the relationships found.

Chapter three presents a detailed documentation of all the methods used to conduct the research. The study setting, population, and sampling methods are all declared. The tools for measurement of the variables are adequately discussed here and subsequent analysis described.

Chapter four presents the findings of the methods implemented in the data analysis of chapter three. Theories for explaining the trends discovered are posited here. Following this, chapter five provides a conclusion to the study by summarising key points and findings. In addition, recommendations for policy, practice and further studies are presented here. A list of all reference material used in the study follows chapter five.

1.8 Definitions of Terms

For the purpose of this study the following relevant definitions are defined as follows. The literature review expands on this author's selection of these definitions.

Green Activity is a measure companies put in place to contribute to the conservation of the environment

Green Competence is defined as the various knowledge, skills, behaviours and attitudes of an individual that allow them to successfully perform tasks, make business decisions and champion the cause of sustainability and environmental conservation.

Green Performance is defined as the extent to which companies perform activities aimed at environmental conservation and protection based on the outcomes of their activities.

Green Commitment is the willingness of an organisation to take the necessary steps to champion environmental conservation.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The natural resource based view states that a company's competitive advantage can be defined by its relationship with the environment (Hart, 1999). This theory holds true more than ever in our current era with the consequences of past activities on the environment rearing their heads in the form of climate change, natural disasters and the degradation of natural resources. Stakeholders who have noticed how firms are contributing to these situations put pressure on these firms to act in ways to mitigate their impact in the environment (Mensah, 2014). Firms are actively pursuing environmentally friendly actions by changing processes and/or producing environmentally friendly products. The following sections look into concepts relevant to the study which have risen as a result of firm's pursuit of green.

2.2 The Conceptualisation of Green Commitment

Commitment as a concept is described as the willingness and devotion of an individual to an activity, a cause or a belief such that the individual behaves in a manner that represents this willingness. This concept transcends individuals and describes the activities of businesses or organisations as well. Organisational commitment describes the commitment that either top management or staff have to a cause that is directly related or directly impacts the organisation (Hirunyawipada and Xiong, 2018). The term is usually framed to include the cause for which the organisation is committed to. This is not to be confused with employees' commitment to their organisation which is described with the same phrase (Arasanmi and Krishna, 2019). Many of these causes stem from external trends in the marketplace or occurrences of global and/or national

scale. Companies have expressed commitment to ensuring safe working environments, mitigating gender and race problems, and recently to the necessities of the COVID-19 pandemic among many other important causes (Filimonau et al., 2020). As the knowledge of the negative consequences of business operations on the environment continues to spread, the concept of green commitment has gradually emerged. This concept has become popular and even exists as a requirement for many organisations.

Green commitment can be described as the devotion and willingness of an organisation's top management to the conservation of the environment and the mitigation of the effects of climate change, global warming and other environmental issues. According to Haldorai et al. (2022) "top management's green commitment refers to the degree to which an organisation's senior members are regarded as stewards of the natural environment." This definition tends to focus more on the perception or image of an organisation's senior members rather than their actual willingness. It is important to note that in order to be regarded as stewards of the natural environment as the definition states a company must proclaim, act or do both to reflect the character of stewardship for environmental causes. Therefore a highly committed top management is one regarded as an excellent steward of environmental causes based on its behaviour or the image it presents. The decision to label the construct as top management's green commitment implies a dichotomy between top management's commitment and employee commitment. Studies have even analysed green commitment from the point of view of the customer (Haanpää, 2007). For the purpose of this study green commitment is used to represent the top management part of the concept. Top management is responsible for transmitting and ensuring that a cause, activity or a goal is achieved or upheld throughout the organisation. Therefore for large scale concepts relating to the organisation as a whole it is best to take top management's point of view into consideration.

Green commitment at the top management level influences decision making and policy formulation so that they are geared toward ensuring a sustainable environment. Usually top management set goals, show compliance to environmental regulations, make modifications to their production processes, develop and sell environmentally friendly products, provide environmentally friendly services, make donations, perform sponsorships or make strategic investments towards programmes and organisations actively participating to ensure a sustainable environment (McPeak et al., 2010). Falling back on Haldori et al. (2022) 's definition, the desire for a company to be regarded as a good steward of the natural environment can be considered motivation to become committed to conserving the environment. However, this also calls into question a possibility that companies may likely manipulate their image in order to appear committed to be regarded as such. Hence it is not far fetched to theorise that there are differences in how committed an organisation is to the green concept.

Lee and Ball (2003) summarise Ghobadian et al.'s (1997) categorisation of green commitment as the theoretical framework for their study. The article focuses on three categories. The authors use three levels; restrained commitment, speculative commitment and conditional commitment, to group companies according to the steps they have taken to express their green commitment. Companies that fall under the restrained commitment category tend to only display symbols reflecting green commitment without actually changing their underlying practices and values. Speculative commitment refers to the group of opportunity seeking companies who have taken up the mantle of green commitment both symbolically and practically for the purpose of increasing profitability. Their interest lies in the future financial and operational benefits of practising environmentally friendly guidelines that they have identified. Companies that fall under conditional commitment are those that take either proactive or reactive stances to environmental

issues when either one of them serves their interest in the marketplace. This categorisation implies that companies are committed to environmentally friendly causes only when it benefits them. This is an alarming idea since it suggests that companies do not pursue green causes for the sake of the environment itself.

Despite Lee and Ball's (2003) focus on these three levels, a review of Ghobadian et al.'s (1997) work reveals that there is more to the concept of green commitment categorisation. This concept of three levels of commitment was previously explained in a broader sense in the literature of Ghobadian et al. (1997). Ghobadian et al. (1997) posited seven levels of corporation's commitment or as the articles puts it the emotional and intellectual attitude toward the pursuit of environmental causes that companies express. These levels were expressed in a spatial model of corporate environmental behaviour. Ghobadian et al. (1997) developed these categorisations as part of a model focused on the spatial approach to mapping corporate behaviour. At the time the notion of corporate environmental behaviour was sequential in nature. Authors such as Roome (1992;) Sandgrove (1993) and Grant and Campbell (1994) theorised corporate behaviour in a sequential manner with an ascending order of corporate behaviour. The idea was that companies would either automatically or could move from the lowest levels of environmental behaviour up to the highest level.

According to the findings of Ghobadian et al. (1997) a company's green behaviour or in effect its stance on implementing environmental policy is influenced by an interplay between the external factors and mediating or moderating factors. This explains the labelling of groups based on commitment rather than solely on behaviour. Table 2.1 summarises these factors according to Ghobadian et al. (1997) .

Ghobadaian et al. (1997) state that there is a main relationship between external pressures and a company's environmental strategy. However other factors are at play. Moderating factors are those factors that may limit the development and implementation of environmental strategy. Mediating factors are those relating to leadership and culture that influence the extent to which companies respond to external pressures hence takes up a level of commitment. This is shown in table 2.1.

Table 2.1: Factors influencing corporate environmental strategies

External Factors	Moderating Factors	Mediating Factors
Market behaviour Legal-Regulatory influences	Reward Expectation Desired Public Image Technology Opportunity Cost Assessment Human Resource Availability Capital Availability Organisational Adaptability	Leadership - Style Commitment Concern Corporate Ethics Corporate Culture Corporate Tradition

The result of the interaction between external pressures and moderating and mediating effects are various points representing the classifications of corporate environmental behaviour. Ghobadian et al (1997) stated; “These stances are effectively syntheses of activities and motivations, identified from analysis of the research survey.” Based on the activities and motivations of the companies in the research survey Ghobadian et al. (1997) created groups that depicted how “committed” these companies were. In other words, in trying to map corporate environmental behaviour in a realistic manner by expanding older models based on the interplay of factors, Ghobadian et al. (1997) developed categories that represent the level of commitment of the company’s surveyed. While previous authors grouped corporate environmental behaviour according to what companies do Ghobadian et al. (1997) went further into classifying them based on their willingness to do what they do. This can be easily supported by the notion that the environmental behaviour of companies

reflects their level of green commitment as can be derived from cognitive theory; that there will always be a strife to behave in a manner consistent with beliefs (Baca-Motes et al., 2013). The seven levels of commitment are discussed below.

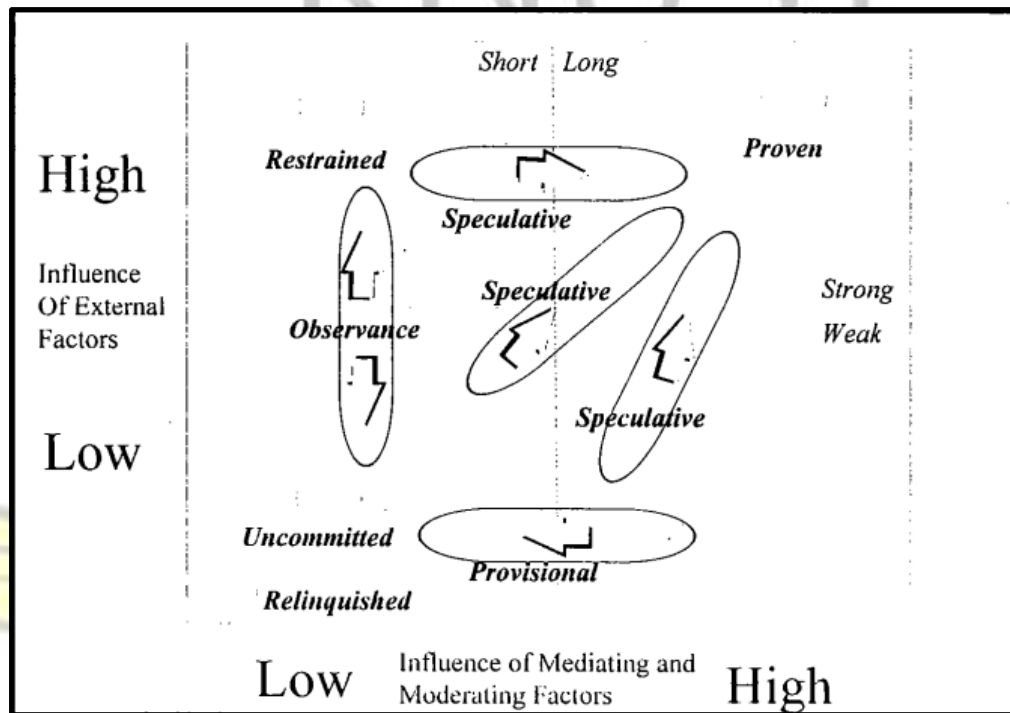


Figure 2.1: Figure showing the seven levels of commitment.

2.2.1 Lack of Commitment

Lack of commitment describes the stance which company's take where they fail to acknowledge the importance of environmental issues despite external pressures mounting. They usually do not have an environmental policy, they act in a reactive, passive manner towards attempting to solve environmental issues. The company does not recognize its responsibility in protecting the environment and any efforts made may probably be due to the company's attempts at compliance to legal and regulatory requirements. This can be considered a low level of green commitment.

These companies are most likely experiencing low external pressures while being incapable of

implementing environmental conservation strategies. They most likely operate under leadership or a culture that does not prioritise environmental issues.

2.2.2 Provisional Commitment

A company that takes on the provisional commitment stance likely implements many of the environmental strategies however it does so only to the extent that the moderating factors are favourable. The stance in itself can be considered temporary as companies usually take this stance in order to determine if green commitment is beneficial enough. This means that unless the company is capable to the degree that it does not stress its coffers and increase the complexity of its operations and the reward for developing and implementing the environmental conservation strategy is significant enough, it will not develop and implement an environmental conservation strategy. This limits the extent to which the company is committed to the cause of environmental conservation however unlike a lack of commitment the company recognizes its responsibility in environmental conservation. Companies who take this stance are likely facing low external pressure while being led and operating in an environment that does not fully recognize environmental issues moderately capable of developing and implementing environmental conservation policies.

2.2.3 Restrained Commitment

A company whose commitment is restrained, has leaders who recognize the importance of the preservation of the environment; however, they view the appearance of being green as even more important. To such companies, putting out statements and developing policies are top priority, however they tend to do little in the implementation of these policies. They are also reactive and stick to legal and regulatory requirements similar to the company's with a lack of commitment.

The only difference between the two being that companies with the restrained commitment stance strive to appear green while companies with a lack of commitment can not be bothered to do so. Interestingly, companies with this stance face a lot of pressure but their environmental sustainability culture and capabilities are low.

2.2.4 Proven Commitment

A company with a proven commitment stance toward environmental issues behaves in a proactive manner towards contributing to solving environmental issues. The leaders of the company feel and strive to enforce corporate social responsibility in the context of environmental issues. Companies such as these strictly comply with legal and regulatory requirements while also spearheading new and innovative methods or modifications to their existing processes whether the reward is clear and significant or not. There is an associated risk for companies who take this stance however the societal benefits most likely surpass the risk. Appearing to be concerned about environmental issues is not a priority for these companies although their efforts involuntarily communicate to the world that they have a high level of green commitment. Another important consideration is that these companies are both capable and exist in a culture that prioritises the pursuit of environmental conservation strategies while facing a considerable amount of pressure from external factors. Typically companies like this face or recognize strong external pressures while being adequately equipped and exist in a culture that allows them to champion the green cause.

2.2.5 Speculative Commitment

This stance can be considered a transient stance in that the efforts made by companies within this group are based on an expected future reward. The company essentially wants to adopt the proven

commitment stance however the motivation is based on achieving competitive advantage. External pressures, culture and capability are all moderate.

2.2.6 Observance Commitment

This stance is a less risky version of the proven commitment stance. Companies who take this stance are proactive in their development and implementation of environmental conservation policies however this proactivity depends on the market behaviour and significance of the reward expected. They assume corporate social responsibility however their attention is toward the environmental strategies that benefit the company. Any market changes are met with amendments in the policy. By doing so, companies here mitigate their risk in ensuring that they are always in the position to benefit from their efforts. They perceive and face moderate external pressures while they have little willingness and capability to pursue environmental strategies.

2.2.7 Relinquished Commitment

Similar to the lack of commitment stance. This stance is held by companies who simply do not care to contribute to environmental conservation. However, they do not even heed to legal and regulatory requirements. This is perhaps the lowest level of commitment. They seem to lack the awareness of the existing external pressure and are not willing to take on this responsibility.

According to Ghobadian et al. (1997) a company can switch between stances as a result of changes in the external, mediating and moderating factors. These changes can take the form of as when a new CEO takes up the mantle or when the countries in which the companies operate strengthen up their regulations or develop new requirements. In 1998 Ghobadian et al (1998) adapted these levels of commitment to Roome's (1992) linear model. Roome based the model on the proactivity of organisations in complying to legal and social pressures to champion the green cause. Ghobadian

et al. (1998) added three out of the seven levels to demonstrate that progression was not from non-compliance to excellence as Roome postulated, but movement among the corporate behaviour symptom cannot be recognised as linear and can only be predicted by the increasing operational business complexity and the evidence garnered from a survey of business.

Based on these studies, green commitment can be conceptualised as the willingness of an organisation to take the necessary steps to champion environmental conservation. Green commitment in organisations is inspired by either a true concern for the environment, a perceived future business benefit or some combination of both. Either way it is evident that companies want to be regarded as environmentally friendly especially in markets where that regard translates to a potential increase in market share. This leads us into the second concept of interest to this study; Green performance.

2.3 The Conceptualisation of Green Performance

In this day and age having an environmentally friendly brand has a lot of financial and social benefits for many organisations (Xie et al., 2019). This is why institutions invest heavily in green initiatives and innovations as well as marketing their environmentally friendly products and efforts. Based on this notion the concept of a company's green performance or environmental performance has developed.

Zsidosin and Sifred's (2001) defined green performance as positive consequences of green initiatives on the natural environment inside and outside the firm. Based on this, green performance can be viewed as an outcome for a company taking action to conserve the environment. This reward comes in many forms and affects the environment and the firm directly and indirectly. Thus green performance could mean an improvement of the company's direct environment, for instance

protection of water bodies surrounding a factory or it could mean reduced contributions to greenhouse gas emissions. It could also mean an increase in revenue for the organisation. The idea of green performance being a consequence can be similarly viewed in Mazzi et al.'s (2012) definition. According to Mazzi et al. (2012), environmental performance is the result of an organisation's management of the environmental aspects of its activities, products or services. Thus the outcomes of a company's efforts to champion the cause of the environment can be considered its green performance. In a similar vein, Maksum et al. (2018) defined environmental performance as the company's achievement in conducting its environmental operational activities. And so did Judge and Douglas (1998) by saying "environmental performance is a firm's effectiveness in meeting and exceeding society's expectations with respect to concerns for the natural environment." The similarity between these four definitions highlight an important core of the concept of green performance; that the green performance is an outcome influenced by a firm's actions.

According to Sharma et al., (2021), Green performance is defined as the measurement of the interaction between the business and the environment. This definition appears to characterise green performance as a metric. Implying low and high green performance. Interaction here refers to the activities that represent the reciprocal influence between a business and its environment. The environment impacts a business as it not only provides location for the business but provides much of the raw materials needed by businesses. While a business also impacts an environment through the magnitude of exploitation of resources and its emissions among others. While Zsidisin and Sifred's (2001) and Mazzi (2012) defined green performance as an outcome, Sharma et al. (2021) look at performance as a metric.

Awaliyah et al. (2022) provide an interesting and in the author's opinion a more relevant definition of green performance that supports the characteristic of green performance being an outcome while briefing us on how it can be measured. They explained that environmental performance alludes to the environmental damage caused by an organisation's activities, where a low level of environmental damage refers to high and better environmental performance. This definition is very similar to Lankoski's (2000) who states that "Environmental performance refers to the level of harmful environmental impact caused by a firm so that the smaller the harmful environmental impact the better the environmental performance and vice versa". This inverse relationship of sorts combines the ideas of environmental performance being an outcome and a metric.

Other definitions of environmental performance tend to be confusing. This is likely due to the researchers' way of measuring the construct. For instance Olayeni et al. (2020) defines environmental performance as a commitment made by companies to protect the environment and to demonstrate measurable operational parameters that are within the prescribed limits of environmental care. Although environmental performance and environmental commitment cannot be measured by analysing the actions of companies, it is clear that the definition could potentially confound the concepts in this study.

The literature reviewed showed that environmental performance as a construct is multi-faceted in terms of its measurements. This is because of all the different activities a business conducts that harmful impacts the environment. This is also due to the numerous ways of measuring a businesses green initiatives to mitigate these harmful impacts. Lankoski (2000) lists reducing air emissions, reducing harmful wastewater and solid waste produced and decreasing consumption of hazardous materials as relevant measures of environmental performance all of which have slightly different scales. In addition to this situation, there are different ways of measuring environmental

performance of companies between and within countries of study. Maksum et al. (2018) in their investigation of the relationship between environmental performance, intellectual capital and financial performance applied a framework for measuring environmental performance that was peculiar to the country of study. The study used the company's rating in the PROPER program implemented by the Ministry of Environment in Indonesia. Li et al. (2017) studied the relationship between a company's actions aimed at minimising the negative impact of their processes on the environment and their green performance in the United States. In their conceptualisation of green performance they used some of American news magazine Newsweek's eight key performance indicators and other variables derived from Molina-Azorín et al. (2009) as the variables for measuring green performance. Research works conducted in Ghana also use different scales for measuring environmental performance, many of which are specific to fields such as mining and hospitality (Asamoah, 2017; Ahakwa et al., 2021). Daily et al. (2012) however state that due to the complexities of measuring environmental performance it is more prudent and expedient to stick to self report measures as many other studies have done. For the purpose of this study green performance is defined as the extent to which companies perform activities aimed at environmental conservation and protection based on the outcomes of their activities.

A high level of green performance is a worthy goal for companies to pursue, however in striving to achieve these high levels, companies must have a team capable enough to move it there. This leads us to the concept of green competence

2.4 The Conceptualisation of Green Competence

The synergy of a company's executive and workforce determine its success. Each and every employee or management personnel within a business entity is responsible in their own small part

or otherwise for the success of a business. That is why the area of human resource management has developed over the decades with numerous research topics dedicated to it. Knowing this it is clear that the ability of a single worker or an executive to complete a task successfully or efficiently is of utmost importance. This ability is a culmination of the personnel's character traits, knowledge and skills. These put together make up the competence of an employee or an executive.

Based on the above theory, green competence can be defined as the various knowledge, skills, behaviours and attitudes of an individual that allow them to successfully perform tasks, make business decisions and champion the cause of sustainability and environmental conservation.

Subramanian et al. (2016) stated that green competence is the requisite ecological knowledge, skill and other socioeconomic behaviour that an individual has to help him/her behave and act rightly and responsibly toward the overall well-being of his/her immediate environment. This definition backs the one stated in the previous paragraph. It adequately marries the concepts of green and competence. They go on to posit the types of green competencies making reference to Robert's (1997) dimensions on competence and Cousin's (2008) marrying of the green concept to Robert's (1997) dimension. Natural, acquired and adapting green competencies. Effective competence is another type that is a combination of natural and acquired green competence. These four types of competencies have been explored in many research works.

Natural green competencies are innate characteristics, skills and attitudes that compel an individual to act in an environmentally friendly manner. Mirčetić et al. (2022) attributed these traits to “the observation and mentoring received at formative stages, regarding dominant green behaviour of their immediate social groups”. As an individual grows the practices of the people in his closest environment defines much of his or her innate abilities. Thus a child who for instance grows up

in a family of environmentally conscious people will grow up having natural green competencies. Individuals with natural green competencies are naturally motivated and more likely to pursue sustainability, environmental conservation and environmental protection on their own accord without influence from external factors. Paillé (2019) added that natural green competencies represent the individual's norms and beliefs related to environmental conservation and sustainability.

Acquired green competencies are those traits that an individual obtains through training and education that compel the individual to act in a manner that pushes forward the cause of environmental sustainability and protection. Ivanović and Mirčetić (2020) define acquired green competencies as the “green knowledge and skills that an individual has accumulated through previous experiences on environmental issues that lead to individual’s strong conviction and feeling toward acting in an environmentally friendly manner. These past experiences include education, training and practice whether formal or informal implying that acquired green competencies can be instilled into an individual (Shoaib et al., 2021). The idea of instilling acquired green competencies is one of the foundations of Green Human Resource Management.

The field of Green Human Resource Management has been researched extensively over the years and more in recent times as the need for companies to go green also increases (Opatha and Arulrajah, 2014). Findings in these studies show interesting results. The research seems to value acquired green competencies over natural competencies as acquired competencies are more often related to an organisation's successful implementation of green policies and high levels of green performance. For instance after studying 1230 employees of companies in China, Subramanian et al. (2016) found that acquired green competencies are more positively associated with an individual's green competencies. The rationale behind this is that it is easier to determine an

individual's green competencies if in addition to practising green behaviour knows and understands why they perform that behaviour.

Kozar (2017) also provides a concise definition of green competence. He states that green competence is the outcome of the interaction between skills and knowledge on the application of environmental conservation in the business environment. Kozar (2017) details how important green competence is in a company's environmental strategy supporting Robert's (1997) notion on how individual competencies when combined determine success as achieving a goal. Kozar (2017) goes on to highlight the essence of top management's effort in instilling these principles into their staff. Either through training, assessment of attitudes and behaviours and engaging employees in initiatives of an environmental nature. This notion supports Subramanian et al. (2016)'s distinction of the three types of competence and the findings of that study.

Cabral and Dhar (2020) investigated 66 articles to inform their elaboration of the concept of green competencies. They found that green competence was in fact a multi-dimensional construct made up of green knowledge, green skills, green abilities, green attitudes, green behaviours, and green awareness. These dimensions also serve as the basis for assessing green competence in an individual. It is important to note that Cabral and Dhar (2020) do not explicitly make the distinction between natural and acquired green competencies in their exploration into the concept.

Green knowledge refers to the information an individual possesses about the environment, the ecosystem and its conservation (Subramanaian et al. 2016; Cabral and Dhar, 2020). Green skills and abilities are specific actions that reflect a practical application of theoretical knowledge one has related to ensuring environmental sustainability and conservation (Sem et al., 2018). Green attitude is defined as appropriate beliefs (cognitive), feelings (affective) and intention to behave

(behavioural intentions) towards environmental conservation (Opatha and Arulajah, 2014). Green behaviour is the manner in which it expresses a desire or willingness to champion the green cause (Alvarez-Garcia et al., 2018). Green awareness is the consciousness an individual has on environmental issues (Alamsyah and Othman, 2021). Green skills and green abilities which were separate dimensions in Cabral and Dhar's (2021) work had rather similar meanings and were combined in this study to reduce the complexity associated with explaining their separation. All these concepts make up the green competence construct and provide a basis on how the construct can be measured. This study focuses on green competence as a multi-dimensional construct and thus the individual levels of green competence will be pushed aside.

The following subsections review empirical literature on the relationships between the concepts discussed which will then lead into the formation of the hypotheses.

2.5 The Relationship between Green Commitment and Green Performance

A company that is committed to a cause is more likely to act in a manner that supports the cause. With this idea in mind it is possible to see how commitment to environmental conservation can cause organisations to perform well according to sustainability metrics. What does literature say about this? Bawua and Owusu (2018) investigated the impact that the Akoben programme had on environmental performance of mining companies in Ghana. They used Akoben's rating framework to rate a mining company over a three year period. They found that performance based on the Akoben programme was poor over the three years however, results of a supporting enquiry stated that after the introduction of the Akoben programme there has been some improvement made in the areas of green performance. They theorised that the programme served as motivation for companies to strive for good ratings. This theory alludes to that of speculative or conditional green

commitment where companies pursue green causes when they have identified a specific benefit for doing so. Akoben rating is a symbol that businesses can use to garner support from investors or market to a consumer-base who more and more support green brands. Companies aware of these benefits seek to attain good ratings likely leading to speculative or conditional commitment which is then highly correlated with improvements in environmental performance.

El-Kassar and Singh (2019) looked into the moderating role of management commitment in the relationship between green innovation and environmental performance among many other variables by analysing data from 215 employees and managers in firms that had taken on green innovations. The results showed that top management commitment was a good moderator in the relationship, as the authors put it; “These results suggest that under pressure from stakeholders, green innovation practices are achieved whenever top management is more committed to green practices.” They also relied on the resource based view to explain these results. This finding is supported by Kitsis and Chen (2021) in their study of the mediating role of top management commitment on the relationship between stakeholder pressures and green operations. They found that top management commitment adequately mediates the relationship between stakeholder pressure and green operations and relied on stakeholder theory as the theoretical basis for these findings.

Mushtap et al. (2019) explored how environmental commitment mediated the relationship between green organisational identity and green innovation performance using data from seven manufacturing firms in Lahore, Pakistan. The findings show that environmental commitment successfully mediates the relationship between green organisational identity and green innovation performance. The constructs of green organisational identity and environmental commitment are similar in the sense that they both represent stances that a company takes towards sustainability

where the difference is that green organisational identity is an image while environmental commitment is the willingness. As such this mediation was explained using institutional theory and resource based view. Mushtap et al. (2019) theorised that environmental commitment can be considered an intangible resource in achieving sustainable competitive advantage. Green innovation performance can be considered an important aspect of sustainable competitive advantage as well.

Haldorai et al. (2022) investigated top management green commitment and green intellectual capital as enablers of hotel environmental performance and the mediating role of green human resource management. They found that top management green commitment and green intellectual capital had a direct impact on environmental performance. The resource based view was the theory they relied on to explain this relationship. Pham et al. (2020) investigate the mediating role of employee environmental commitment and cultural perspective on the relationship between environmental training and employee in-role green performance in the hospitality sector. They found commitment to be a successful predictor here as well.

Many of the works reviewed seem to treat green commitment as a mediating or moderating variable rather than an independent one. Although this does not take away from the identified relationships with green performance it shows that environmental commitment may have been given less priority as a determinant of green performance. This is even more evident based on the inconsistent definitions of green commitment as a construct and the stray from the “willingness” definition.

2.6 The Moderating Role of Green Competence

An organisation can only champion a cause to the extent that all employees and executives are capable of acting in a manner that pushes the cause. Daily and Bishop (2012) conducted a study that looked into the influence training and empowerment had on environmental performance. The authors analysed responses from 220 managers of manufacturing organisations in Mexico using structural equation modelling. They found that environmental training had a strong relationship with environmental performance. These training efforts were geared toward instilling green competencies in employees although not stated explicitly in the work.

In a similar vein, Gull and Idrees (2021) explored the mediating role of green competencies in green training and organisational efficiency. Organisational efficiency is more or less a subset of green performance as it defines the concept of reduced waste in business operations. Gull and Idrees surveyed 350 managerial-level employees in ISO-14001 certified textile manufacturing organisations. Apart from finding a significant relationship between green training on green competencies, the study also found that green competencies in turn had a positive influence on organisational efficiency. This finding can help explain the findings of Daily and Bishop (2012). Through green training, green competencies were instilled in employees resulting in high levels of environmental performance. The authors used the Ability, Motivation, and Opportunity Theory to explain this relationship stating that; “From AMO theory perspective, competent employees feel able and motivated to proactively participate in environmental initiatives such as efficient consumption of natural resources and waste management.”

Boso et al. (2022) conducted a study to answer the question; how does green intellectual capital affect environmental performance? According to Boso et al. (2022) Green intellectual capital

encompasses employees' competencies and skills, innovative environmental technology and stakeholders' environmental concern, when strategically managed in the firm's business model, they surveyed 254 manufacturing companies in Ghana and subjected the data to structural equation modelling. The results showed that green intellectual capital positively influences environmental performance based on the resource based view.

2.7 Relevant Theory

This study is driven by the resource based view. The resource-based view (RBV) is a theoretical framework in strategic management that emphasizes the importance of firm-specific resources and capabilities in achieving competitive advantage (Collins, 2021). According to RBV, firms gain a sustainable competitive advantage by acquiring, developing, and leveraging valuable, rare, inimitable, and non-substitutable resources. Based on the RBV perspective, the current study investigates the likelihood of green commitment and green competence being valuable resources to a firm that contribute to its competitive advantage and hence its performance. More explicitly that green competence plays a crucial mediating role. An organization's commitment to environmentally friendly practices (green commitment) may drive the development and acquisition of green competence. This green competence, in turn, enables the organization to implement effective environmental initiatives and practices, leading to improved green performance.

2.8 Conceptual framework and hypotheses

Drawing on the above theoretical premises, this study sets out to explore the impact of green commitment on green performance and the mediating role of green competence. The authors seek to do so by testing the following hypothesis.

H1: Green commitment has a significant and positive impact on green performance.

H2: Green commitment has a significant and positive impact on green competence.

H3: Green commitment significantly and positively mediates the relationship between green commitment and green performance.

Figure 2.2 represents the conceptual framework underlying the study.

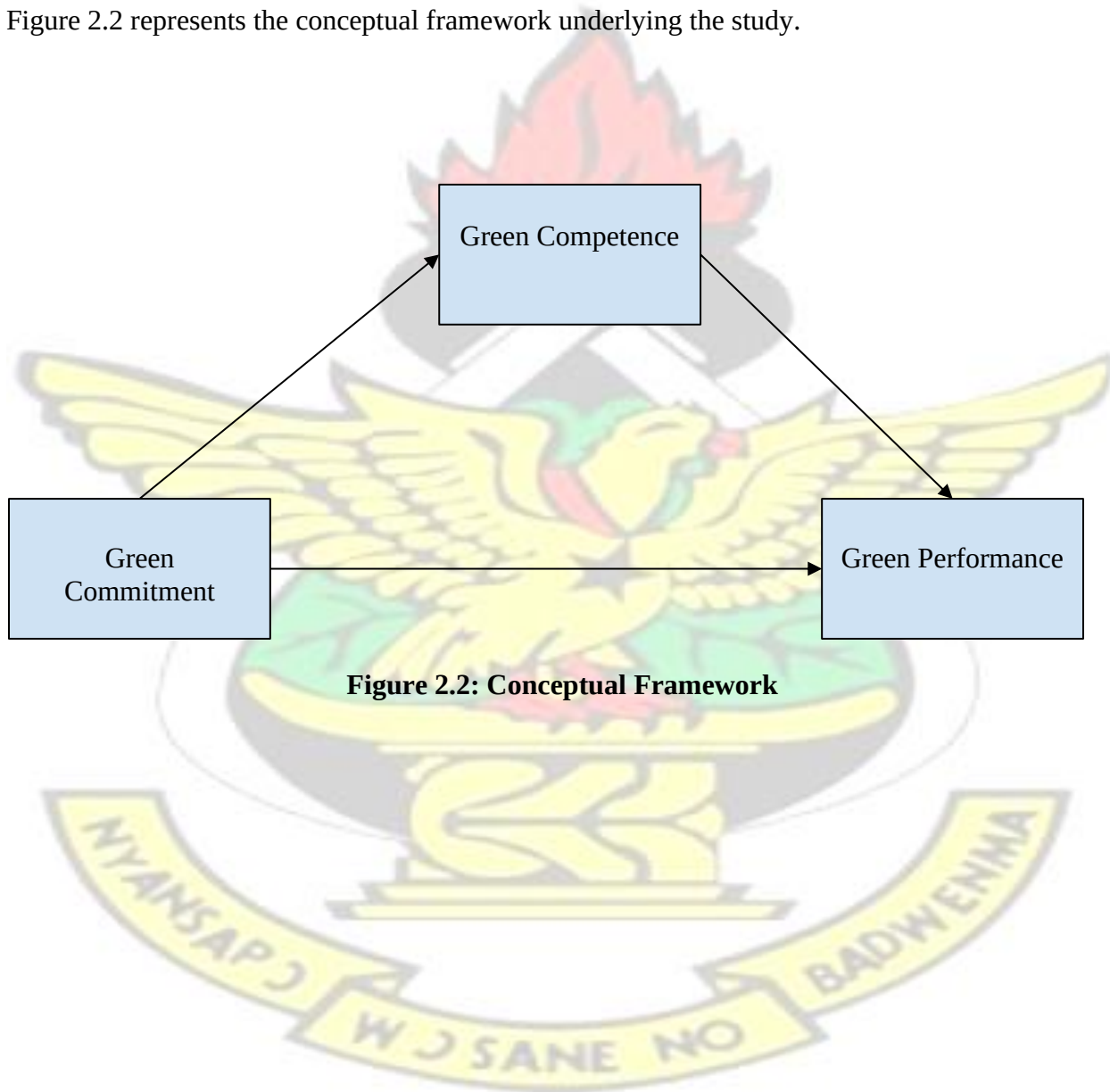


Figure 2.2: Conceptual Framework

CHAPTER THREE

METHODOLOGY

3.1 Research Design

The study approach used is quantitative. Quantitative research approach is employed when collecting and analysing numerical data or data that has been assigned numerical values. This study seeks to determine the moderating role of green commitment in the relationship between green commitment and green performance. In order to achieve this aim the authors adopt a quantitative approach and a correlational research design to collect and analyse data. According to Groat and Wang (2013) correlational research is used in studies where the research seeks to investigate the relationship between variables that have not or cannot be influenced by a researcher. This precisely describes the nature of our study.

3.2 Scope of the Study

This study is limited to the manufacturing companies operating in Ghana and limited to the industrial scene in Accra as there may be differences in other cities within the nation. The study will include both multinational and local companies in terms of ownership and founding. The study is also limited to measuring responses from executives who work within the company.

3.3 The Study Setting

The study took place in Accra, Ghana. Ghana is a country that is rapidly developing its industries and infrastructure. As has been the case with many industrialised and economically developed countries, this rapid development can have a significantly negative impact on the environment. Information on environmental conservation can help. Therefore this study setting provides information on the status quo of these manufacturing companies in achieving a sustainable environment. Accra being the capital of Ghana is the industrial hub of the nation. Locations such

as North Industrial Area and Tema are populated by multinational and local manufacturing companies. In order to create a standard for company type our study classifies the specific companies as worksite and goes ahead to classify them under various company types.

3.4 Study Population

The study population are representatives of respective manufacturing company worksites in Ghana. The representatives occupied positions in the company that makes them privy to and influential to company regulation, policy formulation, or important decision making. The focus was on factory managers, directors, owners, and top executives.

3.5 Sampling Techniques

Due to the specific characteristics of our population of interest, purposive sampling was used to select respondents for the study. Purposive sampling is a sampling method that centres on the researchers' judgement owing to the fact that the population of interest has highly unique characteristics (Jagero et al., 2012). A total of 57 executives each representing one manufacturing firm in the Greater Accra region were contacted online for the study. 30 of them responded.

3.6 Data Collection Method

Primary data from the sample will be collected using a questionnaire. The questionnaires are of a semi-structured nature and designed to measure green commitment, green competence and green performance. All variables are to be measured with a five-point likert scale with options ranging from completely agree, partially agree, unaware/unsure, partially disagree, and completely disagree. Green commitment is measured with a seven item scale with items adapted from Zeffane et al. (1994) and Roy et al. (2001). The scale items focused on the existence and enforcement of an environmental policy and their record of responding to environmental issues.

Green competence was measured by assessing three tenets, green knowledge, green behaviour and green attitude. The green knowledge scale was adapted from the conceptualisations of Cabral and Dhar (2020). Some items of the green behaviour scale were adapted from Stevenson and Peterson (2015)'s questionnaire on pro-environmental behaviour. The green attitude scale was also adapted from Lavelle et al. (2015). All three scales added up to an eleven (11) item scale for the measurement of green competence.

Green performance was measured using a six item, self-rating, five point likert scale with options ranging from excellent, good, average, poor and very poor. The items were extracted from the literature of Gupta and Sharma (2016). The items are the environmental goals corporate structures should achieve in environmental conservation. The scale measures the degree to which the worksite has achieved these goals.

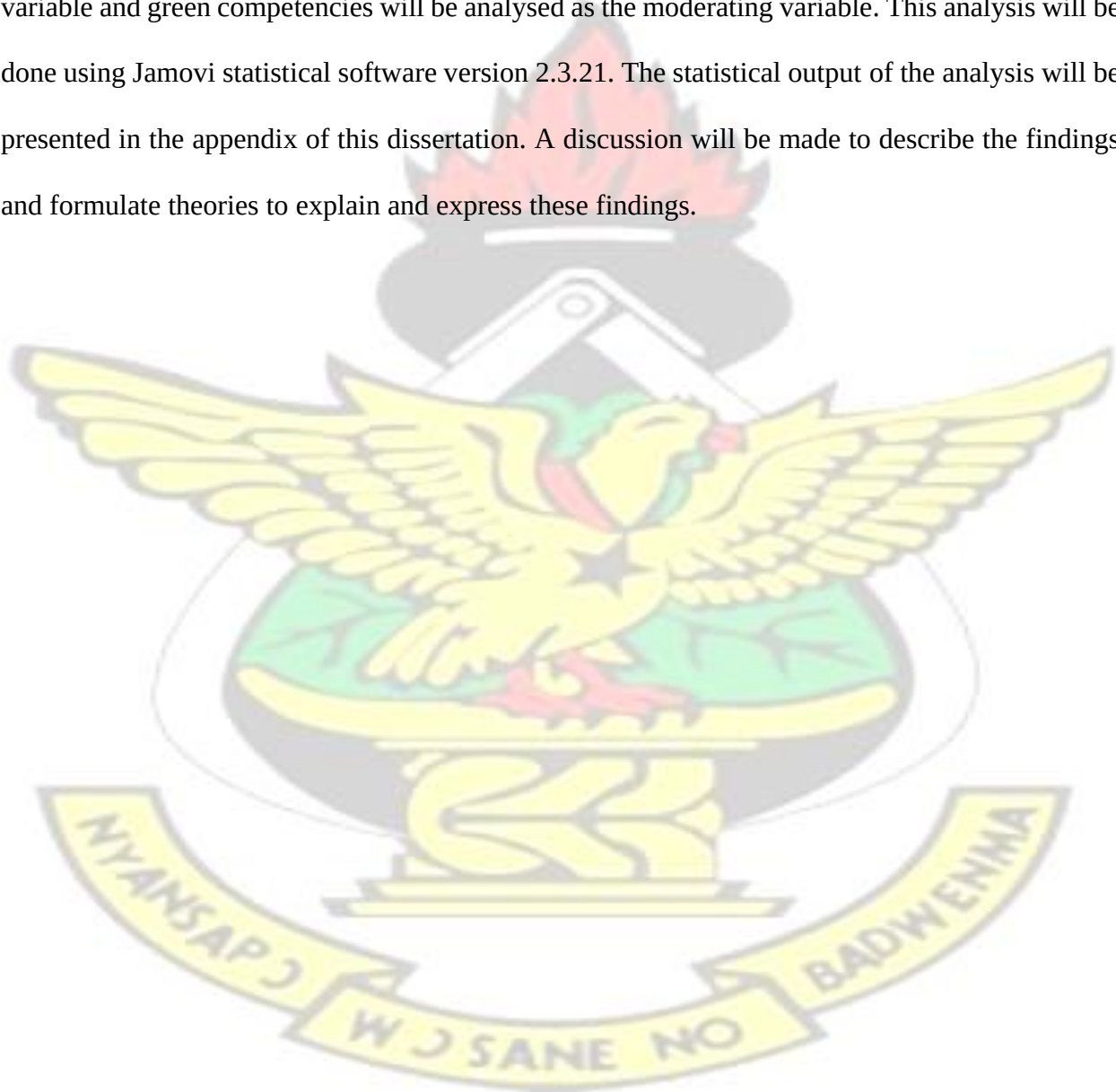
3.7 Data Handling

Data on the demographic characteristics of the respondents will be analysed to derive the distribution of respondents across the variables measured. These descriptive statistics will provide a summary of the characteristics of the various organisations that the respondents work for. Descriptive statistics will be presented in a graphical form in this dissertation. This will aid in informing the explanation of the results of the data analysis and in revealing relevant trends in the data.

The levels of green commitment, green competence, and green performance will be assessed by recoding the scales to represent three levels prefaced by the terms highly, moderate and lowly. That instance, the scale has been recorded so that scale option 1 showing complete agreement to the statement has been merged with option 2 partial agreement, and these accounts are now in the column prefaced by 'highly'. Scale item 5 (completely disagree) has been merged into option 4

(partially disagree) and labelled as 'lowly committed,' while the column 'moderately committed' displays the number of those between the two extremes. This design was adapted from Haanpää's methodology (2007).

Data on the three variables will be subjected to moderation analysis. Green commitment will be analysed as the independent variable, green performance will be analysed as the dependent variable and green competencies will be analysed as the moderating variable. This analysis will be done using Jamovi statistical software version 2.3.21. The statistical output of the analysis will be presented in the appendix of this dissertation. A discussion will be made to describe the findings and formulate theories to explain and express these findings.



CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This section of the study presents the results of the data analyses conducted. Data was collected from 30 executives, each representing their respective manufacturing companies within Greater Accra. The data was subjected to descriptive statistics and mediation analysis using Jamovi 2.3.21.

4.2 Profile of Respondents and their Organisations

According to Table 4.1, 24 (80%) of the respondents worked for firms that converted raw material into finished product while the least of them worked for firms dealing in primary production. 30% of the respondents worked in institutions that employed less than 100 staff, the same proportion of respondents worked in institutions that employed 100 - 200 staff and 200 -300 staff as well. Thus only a few respondents worked at work sites that employed above 300 staff. 12 (40%) of respondents worked at the work sites which are considered the parent company while a similar proportion worked at work sites that could be considered a subsidiary of a domestic firm. 14 (46.7%) of the respondents were directors or administrators and the same proportion were managers only 2 (6.7%) of the respondents surveyed were owners. The highest proportion of respondents (26.7%) had more than 10 years' worth of experience. The second highest proportion (23.3%) had 2 - 4 years' worth of experience. Respondents who had less than 2 years' experience made up 20% of the respondents. A majority of the respondents (53.3%) worked in companies who have been in operation for greater than 20 years. Only 16.7% worked for companies who have been operating for less than 5 years.

These results show that the respondents are experienced personnel working in decision making roles for companies with significant years of experience in their respective industries.

Table 4.1: Classification of business operations

Classification of business operations	Counts	% of Total
Primary	6	20%
Secondary	24	80%

Table 4.2: Number of Employees

Number of Employees	Counts	% of Total
Less than 100	9	30%
100 - 200	9	30%
200 - 300	9	30%
300 - 400	1	3.3%
400 - 500	1	3.3%
600 - 700	0	0
700 - 800	0	0
800 - 900	1	3.3%

Table 4.3: Category of work site

Category of work site	Counts	% of Total
Parent company	12	40%
Subsidiary of domestic firm	12	40%
Subsidiary of foreign firm	6	20%

Table 4.4: Position of the respondent

Position	Counts	% of Total
Director/Administrator	14	46.7%
Factory Manager	14	46.7%
Owner	2	6.7%

Table 4.5: Years working in the organisation

Years working in the organisation	Counts	% of Total
Less than 2 years	6	20%
2 - 4 years	7	23.3%
4 - 6 years	6	20%
8 - 10 years	3	10%
More than 10 years	8	26.7%

Table 4.6: Years that the company has been in operations

Years that the company has been in operations	Counts	% of Total
Less than 5 years	5	16.7%
5 - 10 years	1	3.3%
10 - 15 years	5	16.7%
15 - 20 years	3	10%
Greater than 20 years	16	53.3%

4.3 Green Commitment

The green commitment of the organisations the respondents worked for were assessed from the opinions and knowledge of the respondents. Owing to the experience and positions of the respondents these responses can be considered a reflection of the organisation's true green commitment. Slightly more than half (53.3%) of the respondents reported that they completely agreed and 23.3% partially agreed to the statement, "My organisation has a formal written environmental policy." Only 6.7% of the respondents disagreed with that statement. Slightly less than half of the respondents (46.7%) completely agreed and 26.7% of the respondents partially agreed to the statement, "My organisation has an office dedicated to the enforcement of environmental policy." Only 6.7% of the respondents completely disagreed and 10% of the respondents partially disagreed with the statement, "My organisation's standard operating procedure includes management of environmental issues." A majority of the respondents admitted agreement completely (53.3%) and partially (23.3%) to the statement, "My organisation organises training sessions centred on managing environmental issues." Exactly half of the respondents and 26.7% of them completely agreed and partially agreed respectively to the statement, "My organisation has communicated the environmental policy to all employees." According to 40% of the respondents, their organisation has a protocol for responding to environmental issues while 33.3% of the respondents partially agreed to that statement. Finally 56.7% of the respondents completely agreed that their organisation promptly responds to environmental issues. Figure 4.1 shows that 25 out of the 30 respondents work for organisations that are highly committed to the Green cause.

Table 4.7: Green commitment

Green commitment	Completely Agree	Partially Agree	Unsure/unaware	Partially Disagree	Completely Disagree
My organisation has a formal written environmental policy.	53.3%	23.3%	6.7%	10%	6.7%
My organisation has an office dedicated to the enforcement of environmental policy.	46.7%	26.7%	10.0%	3.3%	13.3%
My organisation's standard operating procedure includes management of environmental issues.	53.5%	30.0%	0	10.0%	6.7%
My organisation organises training sessions centred on managing environmental issues.	53.3%	23.3%	3.3%	13.3%	6.7%
My organisation has communicated the environmental policy to all employees.	50.0%	26.7%	3.3%	13.3%	6.7%
My organisation has a protocol for responding to environmental issues.	40.0%	33.3%	13.3%	6.7%	6.7%
My organisation promptly responds to environmental issues.	56.7%	16.7%	10.0%	10.0%	6.7%

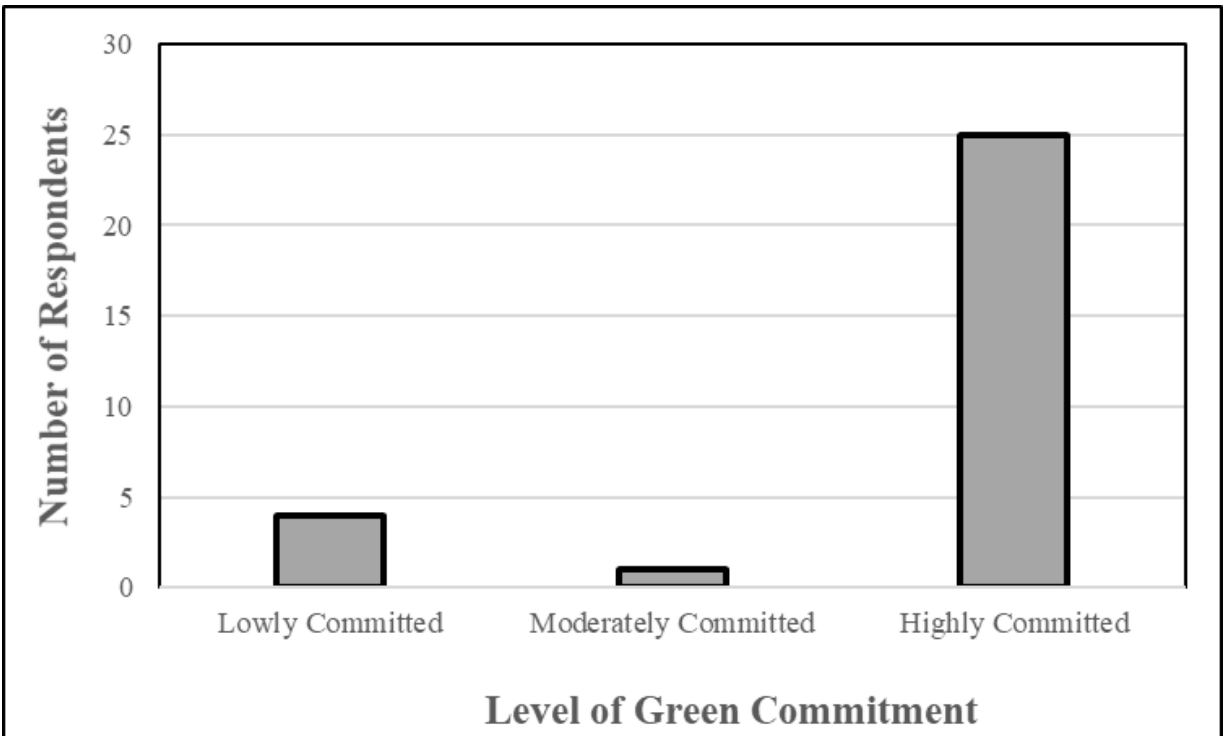
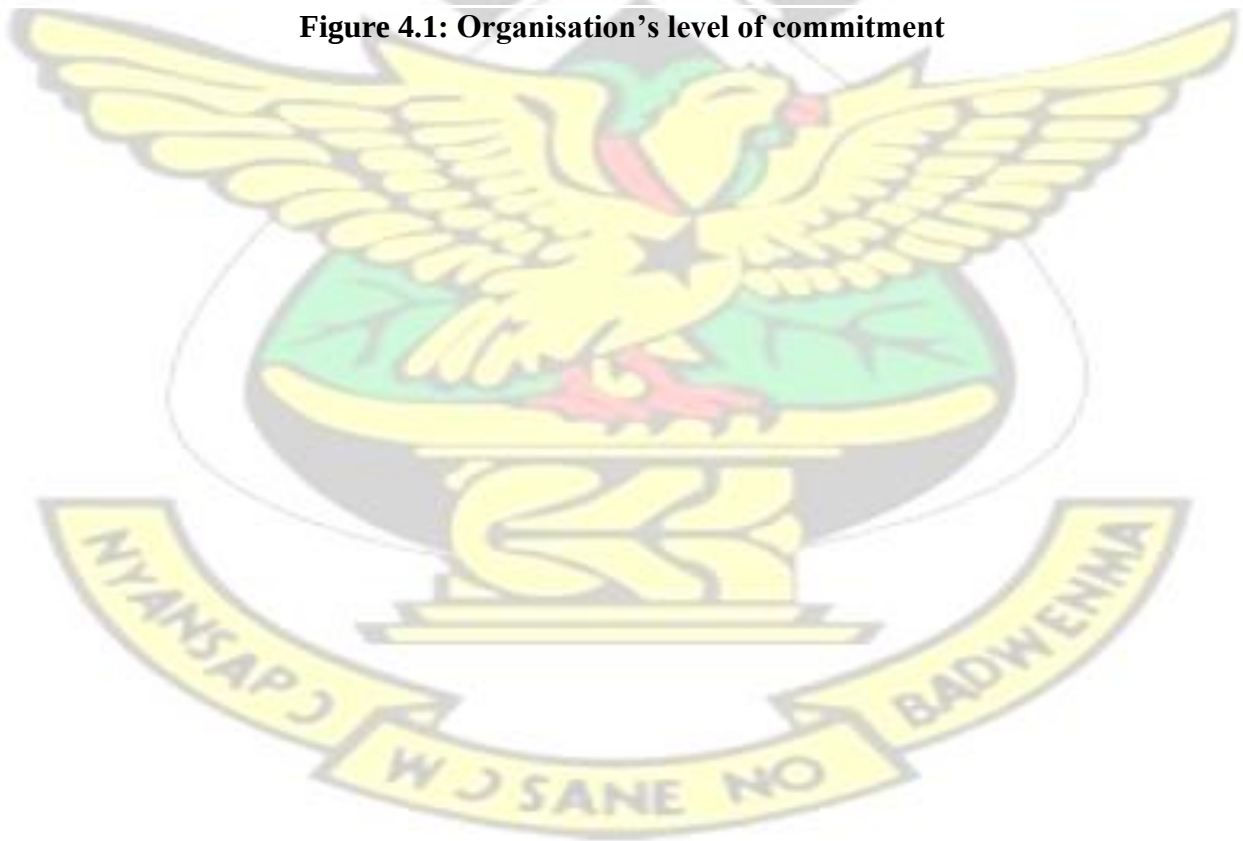


Figure 4.1: Organisation's level of commitment



4.4 Green competence

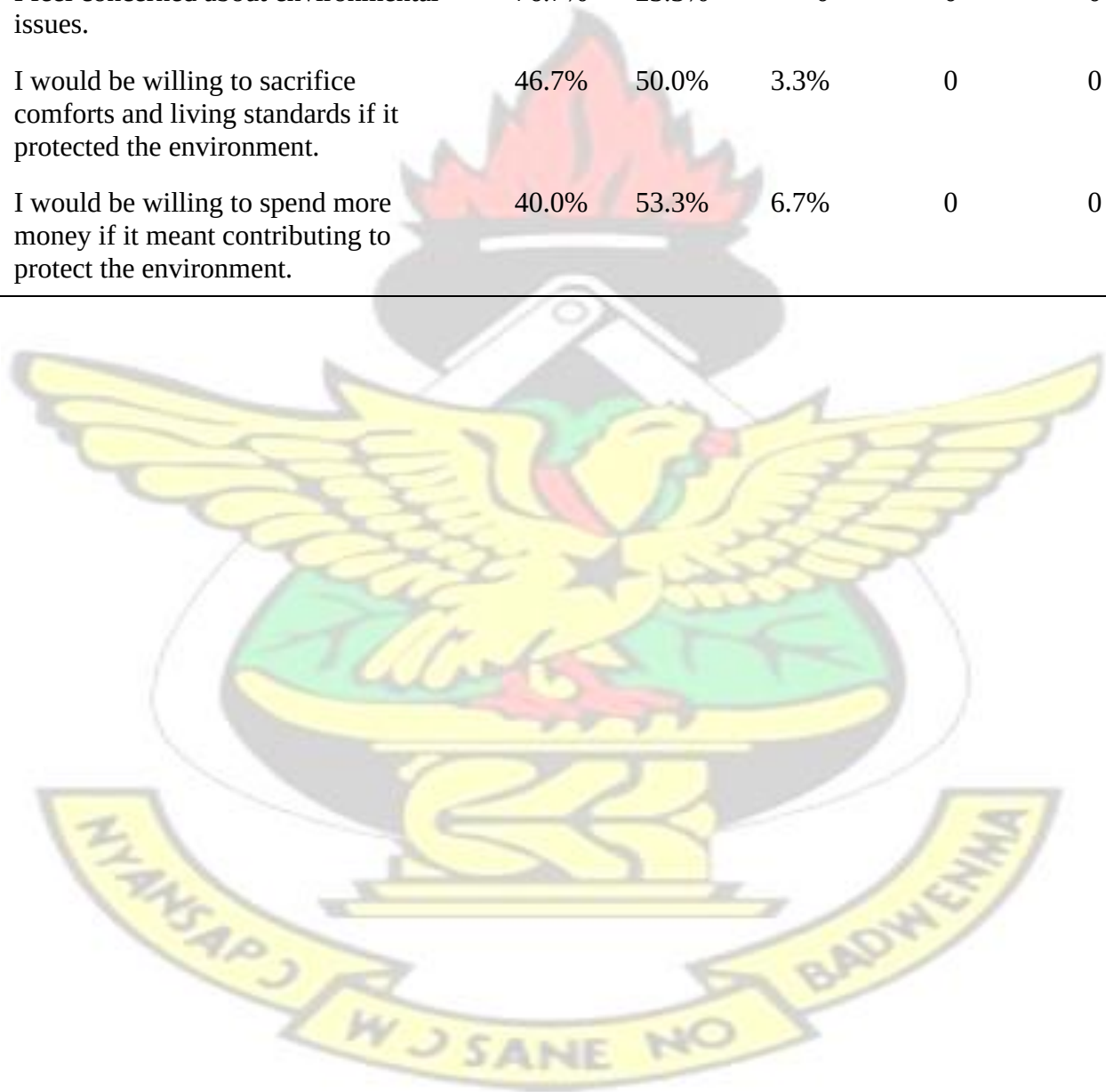
Table 4.8 presents the frequency statistics of each of the items assessing the knowledge, behaviour and attitude of the respondents to collectively assess their green competence. Figures, 4.2, 4.3, and 4.4 present the levels of green knowledge, green behaviour and green attitudes of the respondents. Figure 4.5 presents the overall green competence of the respondents. For all of the scale items, a majority of the respondents completely and partially agreed. A majority of the respondents had high knowledge, displayed high valuable green behaviour and had a positive attitude to the green cause, leading to no respondent displaying low or moderate green competence.

Table 4.8: Green Competence

Green competence	Completely Agree	Partially Agree	Unsure/unaware	Partially Disagree	Completely Disagree
Knowledge					
I understand the concepts underlying the natural environment, environmental very well.	60.0%	36.7%	3.3%	0	0
I understand the concepts underlying environmental degradation very well.	66.7%	23.3%	10.0%	0	0
I understand the concept underlying environmental conservation very well.	66.7%	23.3%	6.7%	0	3.3%
I understand the concept underlying environmentally friendly activities very well.	66.7%	30.0%	3.3%	0	0
Behaviour					
I efficiently control the way I use company utilities.	60.0%	36.7%	3.3%	0	0
I practise reusing and recycling.	46.7%	43.3%	6.7%	3.3%	0
I only purchase and use energy saving appliances and products.	56.7%	36.7%	6.7%	0	0

Table 4.8: Green Competence

Green competence	Completely Agree	Partially Agree	Unsure/unaware	Partially Disagree	Completely Disagree
I control my diet to avoid food waste.	53.3%	40.0%	3.3%	0	3.3%
Attitude					
I feel concerned about environmental issues.	76.7%	23.3%	0	0	0
I would be willing to sacrifice comforts and living standards if it protected the environment.	46.7%	50.0%	3.3%	0	0
I would be willing to spend more money if it meant contributing to protect the environment.	40.0%	53.3%	6.7%	0	0



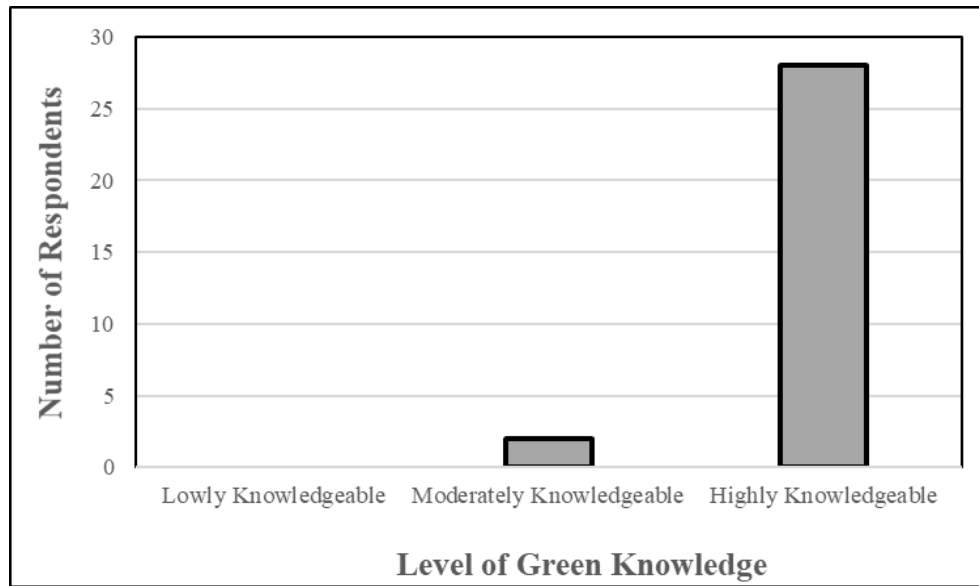


Figure 4.2: Respondent's level of Green Knowledge



Figure 4.3: Respondent's level of Green Behaviour

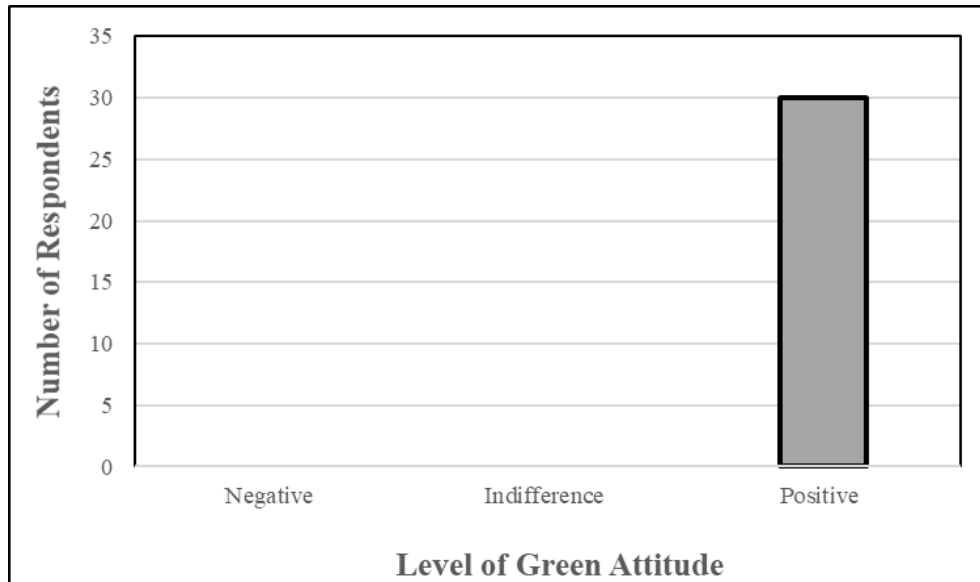


Figure 4.4: Respondent's level of Green Attitude

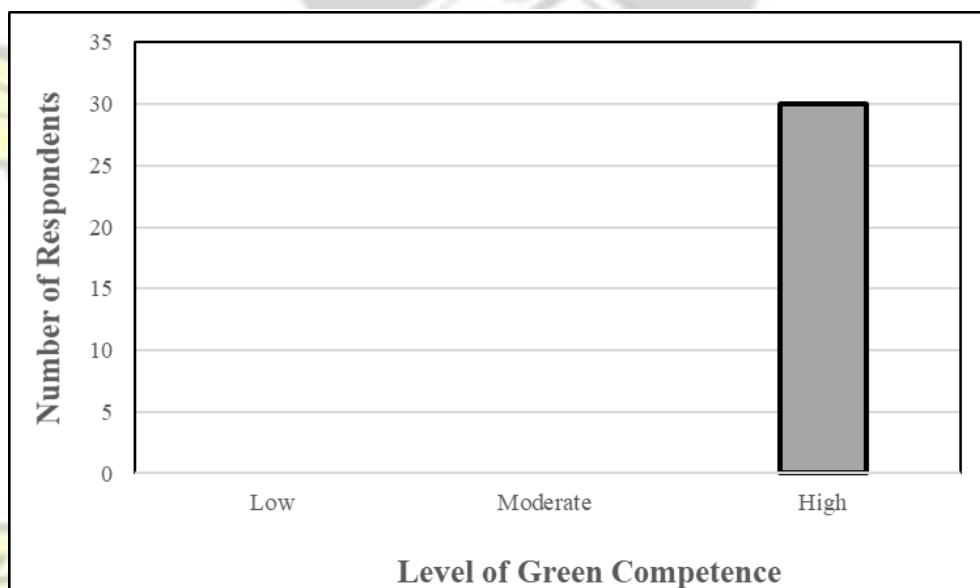


Figure 4.5: Respondent's level of Green Competence

4.5 Green Performance

The organisation's ability to champion the green cause was assessed and the results revealed that only one respondent reported that their organisation had a low green performance according to figure 4.9. This is impressive however table 4.9 provides more and interesting detail to contextualise this revelation. Apart from the “Zero pollution” scale item the majority of the respondents reported a rank of “Good” for every indicator of Green performance. In the context of this study, the rank of “Good” refers to a situation where the respondent acknowledges the organisation's performance but still identifies that either more could be done or the organisation is not doing all it can in that situation.

Table 4.9: Green performance

Green performance	Excellent	Good	Average	Poor	Very Poor
Zero energy waste	16.7%	73.3%	6.7%	0	3.3%
Zero pollution	46.7%	43.3%	6.7%	0	3.3
Zero water waste					
Complete and constant regulatory compliance (MAs and EPA).	26.7%	50.0%	13.3%	10.0%	0
Zero emission production process (Zero fumes, smoke, and greenhouse gases)	33.3%	43.3%	20.0%	20.0%	0
Non-Toxic Packaging (Paper or Biodegradable packaging)	33.3%	53.3%	6.7%	6.7%	0

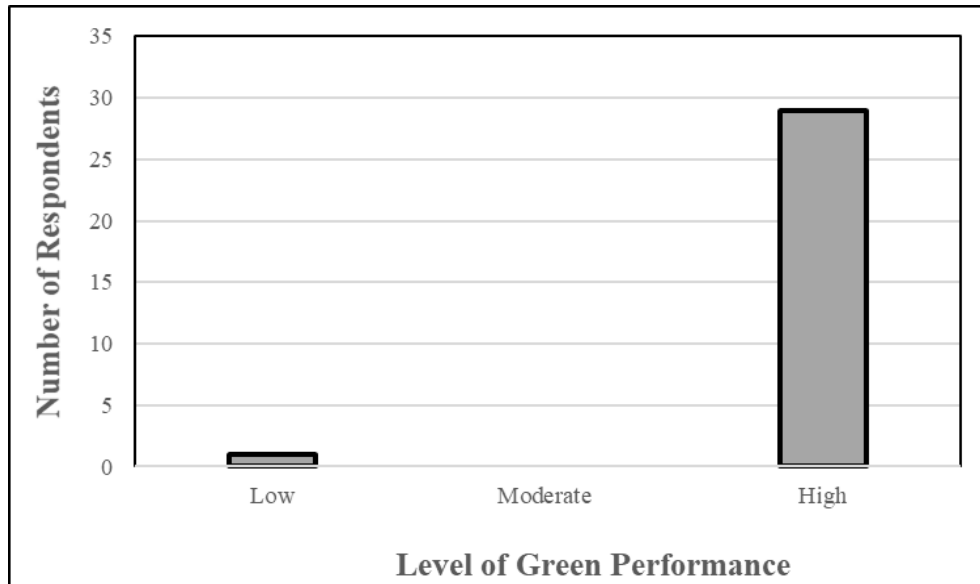


Figure 4.6: Level of Green Performance

The Moderating Role of Green Competence on the Relationship between Green Commitment and Green Performance

Mediation analysis was performed to assess the mediating role of green competence on the linkage between green commitment and green performance. The results revealed that the total effect of green commitment on green performance was not significant ($\beta = 0.1717$, $z = 1.748$, $p = 0.081$). The indirect effect of green commitment on green performance through green competence was also not significant ($\beta = 0.0480$, $z = 0.847$, $p = 0.397$) and neither was the direct effect of green commitment on green performance ($\beta = 0.1237$, $z = 0.847$, $p = 1.503$). Interestingly an analysis of the path estimates revealed a strong, positive, significant relationship between green competence and green performance ($\beta = 0.8526$, $z = 3.723$, $p < .001$)

These findings provide no evidence of the mediating role of green competence on the relationship between green commitment and green performance. It also shows no evidence of a significant relationship between green commitments on green performance. However the results reveal that the green competence of the executives in these manufacturing firms influenced positively the level of green performance within the firm.

These findings appear to contradict a number of studies on similar topics. One relevant study is that of Haldorai et al. (2022) which ascertains the relevance of top commitment management in the pursuit for the environmental performance of an organisation. Our study rather unintentionally highlights the importance of green competence in achieving high levels of green performance. This notion is a reiteration of the findings of Cabra & Dhaer. (2019) who highlighted the importance of knowledge, attitude and behaviour in planning for, hiring for and implementing a plan of action to achieve green goals.



Table 4.10: Mediation Estimates

Effect	Label	Estimate	SE	95% Confidence Interval		Z	p	%Mediation
				Lower	Upper			
Indirect	$a \times b$	0.0480	0.0567	-0.0632	0.159	0.847	0.397	28.0
Direct	c	0.1237	0.0823	-0.0376	0.285	1.503	0.133	72.0
Total	$c + a \times b$	0.1717	0.0983	-0.0209	0.364	1.748	0.081	100

Table 4.11: Path Estimates

Effect	Label	Estimate	SE	95% Confidence Interval		Z	p
				Lower	Upper		
Green Commitment → Green Competence	a	0.0563	0.0648	-0.0707	0.183	0.869	0.385
Green Competence → Green Performance	b	0.8526	0.2290	0.4038	1.301	3.723	< .001
Green Commitment → Green Performance	c	0.1237	0.0823	-0.0376	0.285	1.503	0.133

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section presents a synopsis of the findings of the study, followed a conclusion based on the findings. Subsequently, recommendations are made to both the organisations that participated in the study and further studies.

5.2 Summary of Findings

The aim of this research is to investigate the mediating role of green competence on the relationship between green commitment and green performance. Specifically, this study seeks to:

1. Determine the levels of green commitment, green competence and green performance of manufacturing companies in Ghana.
2. Determine the effect of green commitment on green performance.
3. Determine the mediating effect of green competence on the effect of green commitment on green performance.

The specific objectives discussed above are aimed at answering the following research questions.

1. What are the levels of green commitment, green competence and green performance that manufacturing companies in Ghana possess?
2. Does green commitment influence green performance among manufacturing companies in Ghana?
3. Does green competence influence the effect that green commitment has on green performance?

The study surveyed 30 executive personnel in decision-making positions at companies with extensive experience in their respective industries to evaluate their green commitment, green

competence and the green performance of their firms. The majority of respondents worked for companies that transformed basic materials into finished goods, while only a few worked at workplaces with more than 300 employees. A little more than half of the respondents reported that their organisations had a formal written environmental policy, an office dedicated to the enforcement of environmental policy, management of environmental issues in their standard operating procedures, and training sessions focused on the management of environmental issues. No respondent exhibited low or moderate green competence, as the majority of respondents possessed high levels of knowledge, exhibited high-value green behaviour, and have a positive outlook on the green cause.

Additionally, the study found no evidence of the mediating function of green competence on the relationship between green commitment and green performance, as well as no evidence of a significant relationship between green commitment and green performance. The findings indicated that the green competence of the executives in these manufacturing companies had a positive effect on the degree of green performance within the company. These findings appear to contradict the findings of Daily and Bishop (2012); Gull and Idrees (2021); and Boso et al. (2022) all found significant relationships between green competencies and various forms of environmental performance. Contradictory findings regarding the mediating function of green competence on the relationship between green commitment and green performance, as well as the relationship between green commitment and green performance, may be attributable to a number of factors: The studies may have used different sample sizes and/or various categories of businesses, which may have resulted in disparate findings. Different studies may have assessed green commitment, green competence, and green performance using distinct metrics. This disparity in measurement instruments may result in varying study outcomes. The environmental and social contexts in which

the studies were conducted could have led to differences in the interactions between green commitment, green competence, and green performance. For this study, the Ghanaian regulatory and market environments in which the companies operated may have had an impact on the relationship between green competence and green performance. The contradictory findings may be attributable to a number of factors, and additional research is required to comprehend the intricate relationships between green commitment, green competence, and green performance.

5.3 Conclusion

The study revealed that the green competence of the executives in these manufacturing firms positively influenced the level of green performance within the firm. However, there was no evidence of the mediating role of green competence on the relationship between green commitment and green performance, nor was there any evidence of a significant relationship between green commitment and green performance. The studies reviewed during this study all deviate from these findings. All of the studies found some evidence of a relationship between similar and related variables. Daily and Bishop (2012) found that environmental training has a strong positive relationship with environmental performance in manufacturing organisations. Gull and Idrees (2021) found that green competencies mediate the relationship between green training and organisational efficiency. Boso et al. (2022) found that green intellectual capital, which includes employees' competencies, innovative environmental technology, and stakeholders' environmental concern, positively influences environmental performance. Bawua and Owusu (2018): The introduction of the Akoben program, which rates mining companies based on environmental performance, led to some improvement in green performance. Conditional green commitment, driven by the desire for good ratings, was highly correlated with improvements in environmental performance.

El-Kassar and Singh (2019) found that strong top management commitment to green practices facilitated the achievement of green innovation practices. Kitsis and Chen (2021) found that top management commitment adequately mediated the relationship between stakeholder pressures and green operations. Mushtap et al. (2019) found that environmental commitment successfully mediated the relationship between green organisational identity and green innovation performance in manufacturing firms. Haldorai et al. (2022) also found that top management green commitment and green intellectual capital directly impacted hotel environmental performance. Pham et al. (2020) also found that employee commitment was found to be a successful predictor of green performance. In the hospitality sector, employee environmental commitment and cultural perspective mediated the relationship between environmental training and in-role green performance.

The deviation in the study's findings regarding the relationship between green commitment, green competence, and green performance compared to the reviewed studies can be attributed to several possible reasons. These include differences in the sample or contextual factors under study, variations in the measurement or operationalization of variables, disparities in the research methods employed, potential time-related dynamics or limitations in the temporal scope of the study, and the possibility of unaccounted factors or variables influencing the observed relationships. These factors highlight the complexity of the topic and emphasize the need to consider specific contexts and conduct further research to gain a more comprehensive understanding of the intricate interplay between green commitment, green competence, and green performance.

5.4 Recommendations for practice

Based on the study's findings, the following recommendations are made for companies and executives to improve their green performance. The firms should invest in training programs, certifications, and seminars that concentrate on environmental management, sustainable business practices, and green technologies to develop the green competence of executives. This could increase their capacity to implement eco-friendly practises and enhance their green performance. The firms should create a culture of environmental stewardship within the organisation to encourage green commitment from all employees. This may involve establishing sustainability objectives, engaging in eco-friendly activities, and promoting environmental responsibility via multiple channels.

5.5 Recommendations for practice further Studies

On the basis of the study's findings and the prospective factors that could have influenced the results, the following recommendations are made for future research. Researchers should examine the potential moderating effect of individual characteristics, such as gender, age, and educational background, on the relationships between green commitment, green competence, and green performance.

Researchers should examine the effect of various categories of green competence, such as technical knowledge, environmental awareness, and leadership skills, on green performance in various organisational contexts. Researchers should examine the impact of cultural and institutional factors on the relationships between green commitment, green competence, and green performance across a variety of countries and industries through comparative research.

Researchers should also consider utilizing various research designs, such as experimental or quasi-experimental, to determine the causal relationships between green commitment, green competence, and green performance.

KNUST



REFERENCES

- Ahakwa, I., Yang, J., Tackie, E. A., & Asamany, M. (2021). Green Human Resource Management Practices and Environmental Performance in Ghana: The Role of Green Innovation. *SEISENSE Journal of Management*, 4(4), 100-119.
- Alamsyah, D. P., & Othman, N. A. (2021). Consumer awareness towards eco-friendly product through green advertising: Environmentally friendly strategy. In IOP Conference Series: *Earth and Environmental Science* (Vol. 824, No. 1, p. 012043). IOP Publishing.
- Alvarez-Garcia, O., Sureda-Negre, J. and Comas-Forgas, R. (2018), “Assessing environmental competencies of primary education pre-service teachers in Spain”, *International Journal of Sustainability in Higher Education*, Vol. 19 No. 1, pp. 15-31,
- Anarfi, K., Hill, R. A., & Shiel, C. (2020). Highlighting the sustainability implications of urbanisation: a comparative analysis of two urban areas in Ghana. *Land*, 9(9), 300.
- Arasanmi, C. N., & Krishna, A. (2019). Employer branding: perceived organisational support and employee retention—the mediating role of organisational commitment. *Industrial and Commercial Training*, 51(3), 174-183.
- Asamoah, E. F., Zhang, L., Liang, S., Pang, M., & Tang, S. (2017). Emergy perspectives on the environmental performance and sustainability of small-scale gold production systems in Ghana. *Sustainability*, 9(11), 2034.

Awaliyah, H., & Haryanto, B. (2022). The Influence of Green Organizational Culture, Green Innovation, and Environmental Performance on Competitive Advantage Moderated by Green Supply Chain Management (Case Study on SME in Solo Raya).

Baca-Motes, K., Brown, A., Gneezy, A., Keenan, E. A., & Nelson, L. D. (2013). Commitment and behavior change: Evidence from the field. *Journal of Consumer Research*, 39(5), 1070-1084.

Bawua, S. A., & Owusu, R. (2018). Analyzing the effect of Akoben programme on the environmental performance of mining in Ghana: a case study of a gold mining company. *Journal of Sustainable Mining*, 17(1), 11-19.

Berk, J., & van Binsbergen, J. H. (2021). The impact of impact investing. Available at SSRN 3909166.

Boso, R. K., Adusei, E., & Demah, E. (2022). How does green intellectual capital affect environmental performance? Evidence from manufacturing firms in Ghana. *Social Responsibility Journal*, (ahead-of-print).

Bui, T. D., Tsai, F. M., Tseng, M. L., Tan, R. R., Yu, K. D. S., & Lim, M. K. (2021). Sustainable supply chain management towards disruption and organizational ambidexterity: A data driven analysis. *Sustainable production and consumption*, 26, 373-410.

Cabral, C., & Dhar, R. L. (2019). Green competencies: Construct development and measurement validation. *Journal of Cleaner Production*, 235, 887-900.

Cabral, C., & Dhar, R. L. (2020). Green competencies: insights and recommendations from a systematic literature review. *Benchmarking: An International Journal*.

Collins, C. J. (2021). Expanding the resource based view model of strategic human resource management. *The International Journal of Human Resource Management*, 32(2), 331-358.

Cousins, P.D.; Lamming, R.C.; Lawson, B.; Squire, B. (2008). Strategic Supply Management: Theories, Concepts and Practice; *Pearson Education Limited*: Harlow, UK.

Daily, B. F., Bishop, J. W., & Massoud, J. A. (2012). The role of training and empowerment in environmental performance: A study of the Mexican maquiladora industry. *International Journal of operations & production management*.

Davis, T. (1993). Effective supply chain management. *Sloan management review*, 34, 35-35.

El-Kassar, A. N., & Singh, S. K. (2019). Green innovation and organizational performance: The influence of big data and the moderating role of management commitment and HR practices. *Technological forecasting and social change*, 144, 483-498.

Fawcett, S. E., Magnan, G. M., & McCarter, M. W. (2008). Benefits, barriers, and bridges to effective supply chain management. *Supply chain management: An international journal*.

Filimonau, V., Derqui, B., & Matute, J. (2020). The COVID-19 pandemic and organisational commitment of senior hotel managers. *International Journal of Hospitality Management*, 91, 102659.

Fung, F., Wang, H. S., & Menon, S. (2018). Food safety in the 21st century. *Biomedical journal*, 41(2), 88-95.

Gelderman, C. J., Schijns, J., Lambrechts, W., & Vijgen, S. (2021). Green marketing as an environmental practice: The impact on green satisfaction and green loyalty in a business-to-business context. *Business Strategy and the Environment*, 30(4), 2061-2076.

Ghadimi, P., Wang, C., & Lim, M. K. (2019). Sustainable supply chain modeling and analysis: Past debate, present problems and future challenges. *Resources, conservation and recycling*, 140, 72-84.

Ghobadian, A., James, P., Liu, J., & Viney, H. (1997). A spatial approach to mapping corporate environmental behaviour. *International Journal of Environment and Pollution*, 8(1-2), 105-121.

Gull, S., & Idrees, H. (2021). Green training and organizational efficiency: mediating role of green competencies. *European Journal of Training and Development*.

Gupta, M., & Sharma, K. (1996). Environmental operations management: an opportunity for improvement. *Production and Inventory Management Journal*, 37, 40-46.

Haanpää, L. (2007). Consumers' green commitment: indication of a postmodern lifestyle?. *International Journal of Consumer Studies*, 31(5), 478-486.

Haanpää, L. (2007). Consumers' green commitment: indication of a postmodern lifestyle?. *International Journal of Consumer Studies*, 31(5), 478-486.

Haldorai, K., Kim, W. G., & Garcia, R. F. (2022). Top management green commitment and green intellectual capital as enablers of hotel environmental performance: The mediating role of green human resource management. *Tourism Management*, 88, 104431.

Hirunyawipada, T., & Xiong, G. (2018). Corporate environmental commitment and financial performance: Moderating effects of marketing and operations capabilities. *Journal of Business Research*, 86, 22-31.

Ivanović, T., & Mirčetić, V. (2020). Exploring students' attitudes towards green behavior. *Thematic Proceedings of the MEFkon 2020*, 1-18.

Jagero, N., Beinomugispha, P., Rwasheema, E., & Said, M. I. B. (2012). How culture affects women in management positions in higher educational institutions in Uganda. *International Review of Social Sciences and Humanities*, 3(1), 10-16.

Judge, W. Q., & Douglas, T. J. (1998). Performance implications of incorporating natural environmental issues into the strategic planning process: An empirical assessment. *Journal of management Studies*, 35(2), 241-262.

Karpf, A., & Mandel, A. (2018). The changing value of the 'green' label on the US municipal bond market. *Nature Climate Change*, 8(2), 161-165.

Kitsis, A. M., & Chen, I. J. (2021). Do stakeholder pressures influence green supply chain Practices? Exploring the mediating role of top management commitment. *Journal of Cleaner Production*, 316, 128258.

Koberg, E., & Longoni, A. (2019). A systematic review of sustainable supply chain management in global supply chains. *Journal of cleaner production*, 207, 1084-1098.

Kozar, Ł. (2017). Shaping the green competence of employees in an economy aimed at sustainable development. *Zarządzanie Zasobami Ludzkimi*, (6 (119)-Green Human Resource Management [Zielone Zarządzanie Zasobami Ludzkimi]), 55-67.

Kucęba, R. (2019). Environmental management and green attitudes of the European SME sector. In International Scientific-Technical Conference *MANUFACTURING* (pp. 12-25). Springer, Cham.

Lavelle, M. J., Rau, H., & Fahy, F. (2015). Different shades of green? Unpacking habitual and occasional pro-environmental behavior. *Global Environmental Change*, 35, 368-378.

Lee, K. H., & Ball, R. (2003). Achieving sustainable corporate competitiveness: Strategic link between top management's (green) commitment and corporate environmental strategy. *Greener management international*, (44), 89-104.

Li, S., Ngai, T., & Chen, F. (2017). Understanding the impact of green initiatives and green performance on financial performance in the US. *Business Strategy and the Environment*, 26(6), 776-790.

Li, Y., & Mathiyazhagan, K. (2018). Application of DEMATEL approach to identify the influential indicators towards sustainable supply chain adoption in the auto components manufacturing sector. *Journal of cleaner production*, 172, 2931-2941.

Liao, Y., Loures, E. R., Deschamps, F., Brezinski, G., & Venâncio, A. (2018). The impact of the fourth industrial revolution: a cross-country/region comparison. *Production*, 28.

Lin, J. C., Zhou, Z., & Leckie, C. (2020). Green brand communication, brand prominence and self–brand connection. *Journal of Product & Brand Management*.

Liu, H., Wang, Y., Xue, R., Linnenluecke, M., & Cai, C. W. (2022). Green commitment and stock prick crash risk. *Finance Research Letters*, 47, 102646.

Maksum, Azhar & Tamba, Paula. (2018). The Effect of Environmental Performance and Intellectual Capital on Financial Performance Moderated by CSR Disclosure on Manufacture Companies Listed in ISX. 10.2991/ebic-17.2018.32.

Mappesona, H., Ikhsani, K., & Ali, H. (2020). Customer purchase decision model, supply chain management and customer satisfaction: Product quality and promotion analysis. *Int. J Sup. Chain. Mgt Vol*, 9(1), 592.

Martin, D., Rhoda, S., Frederick, K., & Yunus, A. (2021). An empirical study discussing industrialisation and technical education in Ghana. *International Journal of Vocational and Technical Education*, 13(1), 1-12.

Mazzi, A., Mason, C., Mason, M., & Scipioni, A. (2012). Is it possible to compare environmental performance indicators reported by public administrations? Results from an Italian survey. *Ecological indicators*, 23, 653-659.

McPeak, C., Devirian, J., & Seaman, S. (2010). Do environmentally friendly companies outperform the market?. *Journal of Global Business Issues*, 4(1), 61.

Mensah, I. (2014). Stakeholder pressure and hotel environmental performance in Accra, Ghana. *Management of Environmental Quality: An International Journal*, 25(2), 227-243.

- Mirčetić, V., Ivanović, T., Knežević, S., Arsić, V. B., Obradović, T., Karabašević, D., ... & Špiler, M. (2022). The Innovative Human Resource Management Framework: Impact of Green Competencies on Organisational Performance. *Sustainability*, 14(5), 2713.
- Mushtaq, S., Zubair, D. S. S., Khan, M., & Khurram, S. (2019). Mediating role of environmental commitment between green organizational identity and green innovation performance. *Pakistan Journal of Commerce and Social Sciences*, 13(2), 385-408.
- Namagembe, S., Ryan, S., & Sridharan, R. (2018). Green supply chain practice adoption and firm performance: manufacturing SMEs in Uganda. *Management of Environmental Quality: An International Journal*.
- Nayak, R., Akbari, M., & Far, S. M. (2019). Recent sustainable trends in Vietnam's fashion supply chain. *Journal of Cleaner Production*, 225, 291-303.
- Olayeni, A., Ogbo, A., Okwo, H., Chukwu, B., Ifediora, C., & Ezenwakwelu, C. (2021). Green strategy effect on financial and environmental performance: A mediation analysis of product quality. *Sustainability*, 13(4), 2115.
- Opatha, H. H. D. N. P., & Arulrajah, A. A. (2014). Green Human Resource Management: Simplified General Reflections. *International Business Research*, 7(8).
- Paillé, P. (2019). Green recruitment and selection: an insight into green patterns. *International Journal of Manpower*, 41(3), 258-272.
- Power, D. (2005). Supply chain management integration and implementation: a literature review. *Supply chain management: an International journal*.

Roberts, G. (1997). Recruitment and Selection: A Competency Approach; *IPD*: London, UK.

Rodgers, K., McLellan, I., Peshkur, T., Williams, R., Tonner, R., Knapp, C. W., ... & Hursthouse, A. S. (2020). The legacy of industrial pollution in estuarine sediments: spatial and temporal variability implications for ecosystem stress. *Environmental geochemistry and health*, 42(4), 1057-1068.

Roy, M. J., Boiral, O., & Lagace, D. (2001). Environmental commitment and manufacturing excellence: a comparative study within Canadian industry. *Business Strategy and the Environment*, 10(5), 257-268.

Sazvar, Z., Rahmani, M., & Govindan, K. (2018). A sustainable supply chain for organic, conventional agro-food products: The role of demand substitution, climate change and public health. *Journal of cleaner production*, 194, 564-583.

Shoaib, M., Abbas, Z., Yousaf, M., Zámečník, R., Ahmed, J., & Saqib, S. (2021). The role of GHRM practices towards organizational commitment: A mediation analysis of green human capital. *Cogent Business & Management*, 8(1), 1870798.

Stearns, P. N. (2020). The industrial revolution in world history. *Routledge*.

Stevenson, K., & Peterson, N. (2015). Motivating action through fostering climate change hope and concern and avoiding despair among adolescents. *Sustainability*, 8(1), 6.

Tarabieh, S. M. Z. A. (2018). Impact of Green Product Quality and Green Corporate Image on Green Customer Loyalty: Mediating Role of Green Customer Satisfaction. In *Conference Paper* (pp. 1-15).

Werner, T. T., Bebbington, A., & Gregory, G. (2019). Assessing impacts of mining: Recent contributions from GIS and remote sensing. *The Extractive Industries and Society*, 6(3), 993-1012.

Wieland, A. (2021). Dancing the supply chain: Toward transformative supply chain management. *Journal of Supply Chain Management*, 57(1), 58-73.

Xie, X., Huo, J., & Zou, H. (2019). Green process innovation, green product innovation, and corporate financial performance: A content analysis method. *Journal of business research*, 101, 697-706.

Xu, S., Zhang, X., Feng, L., & Yang, W. (2020). Disruption risks in supply chain management: a literature review based on bibliometric analysis. *International Journal of Production Research*, 58(11), 3508-3526.

Ye, X., Cai, S., Li, X., & Wang, Z. (2022). How and when top management green commitment facilitates employees green behavior: a multilevel moderated mediation model. *Chinese Management Studies*, (ahead-of-print).

Zeffane, R. M., Polonsky, M. J., & Medley, P. (1994). Corporate environmental commitment: developing the operational concept. *Business Strategy and the Environment*, 3(4), 17-28.

Zsidisin, G. A., & Siferd, S. P. (2001). Environmental purchasing: a framework for theory development. *European Journal of Purchasing & Supply Management*, 7(1), 61-73.

APPENDIX A - QUESTIONNAIRE

Demographic Information

1. What sector of the economy do you operate under?
 Primary ☐ Secondary ☐ Tertiary ☐
2. How many employees work in your location?
 Less than 100 ☐ 100-200 ☐ 200-300 ☐ 300-400 ☐ 400-500 ☐ 500-600 ☐ 600-700 ☐ 700-800 ☐ 800 - 900 ☐ More than 900 ☐
3. Which category does your work site fall under?
 Parent Company ☐ Subsidiary of Foreign Firm ☐ Subsidiary of Domestic Firm ☐ Public Establishment ☐ Other (Please specify in the box below)
4. What is your position in the work site?
 Director/ Administrator ☐ Factory Manager ☐ Owner ☐
5. How long have been with the company
 Less than 2 years ☐ 2 – 4 years ☐ 4 – 6 years ☐ 6 – 8 years ☐ 8 – 10 years ☐ More than 10 years. ☐

Green Commitment (Zeffane et al., 1994; Roy et al., 2001)

	Completely Agree	Partially Agree	Unaware /Unsure	Partially Disagree	Completely Disagree
6. My organisation has a formal written environmental policy.	☐	☐	☐	☐	☐

7.	My organisation has an office dedicated to the enforcement of environmental policy.	☐	☐	☐	☐	☐
8.	My organisation's standard operating procedure includes management of environmental issues.	☐	☐	☐	☐	☐
9.	My organisation organises training sessions centred on managing environmental issues.	☐	☐	☐	☐	☐
10.	My organisation has communicated the environmental policy to all employees.	☐	☐	☐	☐	☐
11.	My organisation has a protocol for responding to environmental issues.	☐	☐	☐	☐	☐
12.	My organisation promptly responds to environmental issues.	☐	☐	☐	☐	☐

Green Competence

	Completely Agree	Partially Agree	Unaware /Unsure	Partially Disagree	Completely Disagree
<i>Knowledge</i>					
13.	I understand the concepts underlying the natural environment, environmental very well.	☐	☐	☐	☐
14.	I understand the concepts underlying environmental degradation very well.	☐	☐	☐	☐
15.	I understand the concept underlying environmental conservation very well.	☐	☐	☐	☐
16.	I understand the concept underlying environmentally friendly activities very well.	☐	☐	☐	☐
<i>Behaviour</i>					
17.	I efficiently control the way I use utilities.	☐	☐	☐	☐
18.	I practice reusing and recycling.	☐	☐	☐	☐
19.	I only purchase and use energy saving appliances and products.	☐	☐	☐	☐

20.	I control my diet to avoid food waste.	☐	☐	☐	☐	☐
-----	--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Attitude

21.	I feel concerned about environmental issues.	☐	☐	☐	☐	☐
-----	--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

22.	I would be willing to sacrifice comforts and living standards if it protected the environment.	☐	☐	☐	☐	☐
-----	--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

23.	I would be willing to spend more money if it meant contributing to protecting the environment.	☐	☐	☐	☐	☐
-----	--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Green Performance

		Excellent	Good	Average	Poor	Very Poor
24.	Zero energy waste	☐	☐	☐	☐	☐
25.	Zero pollution	☐	☐	☐	☐	☐
26.	Zero water waste	☐	☐	☐	☐	☐
27.	Complete and constant regulatory Compliance (Metropolitan Assemblies and Environmental Protection Agency)	☐	☐	☐	☐	☐
28.	Zero Emission production process (Fumes, Smoke, Greenhouse Gases)	☐	☐	☐	☐	☐
29.	Non-Toxic Packaging (Paper or Biodegradable Packaging)	☐	☐	☐	☐	☐