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THE EFFECT OF GREEN PROCUREMENT ON FIRM PERFORMANCE; THE MODERATING ROLE OF GREEN INFORMATION SYSTEMS

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BY

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DECLARATION

I hereby declare that this submission is my own work towards the Master of Science in Procurement 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 other degree of the University, except where due acknowledgements have been made in the text.

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ABSTRACT

As the starting point for reducing environmental pollution, green procurement is a critical process for the management of the green supply chain. In fact, rather than being a costly inconvenience, environmental initiatives have become a source of competitive parity. The study focused on examining the moderating role of green information systems in the link between green procurement and firm performance. Specifically, the study sought to examine the relationship between green procurement and firm performance; investigate the association between green information systems and firm performance; examine the moderating role of green information systems on the relationship between green procurement and firm performance. The correlational research design was used. A quantitative research approach was adopted for the study. The purposive sampling techniques were used to select 75 firms as the sample size. The study relied on a questionnaire as the primary data collection instrument and further employed SPSS version 25 to test all formulated hypotheses. The findings from the study indicate that there is positive relationship between green procurement and firm performance. The study also found that there is a positive relationship between green information systems and firm performance ce. Again, the study found that green information systems positively moderate the relationship between green procurement and firm performance. The study further recommends that managers should actively adopt and implement green procurement practices within their organizations. These practices should prioritize environmentally friendly sourcing of materials, products, and services, which not only contribute to sustainability but also enhance firm performance.

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LIST OF ABBREVIATION

CEOs	Chief Executive Officers
ENP	Firm Performance
GIS	Green Information Systems
GPP	Green Procurement Practice
IT	Information Technology

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DEDICATION

I dedicate this study to the Almighty Allah.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Corporate responsibility, especially concerning environmental consciousness, is increasingly acknowledged as a crucial business necessity for a growing array of firms. Environmental initiatives have transformed from being viewed as expensive inconveniences to becoming sources of competitive equivalence (Reuter et al., 2010; Hollos et al., 2012). The expansion of the economy contributes to heightened consumption of materials and energy, worsening the depletion of resources and environmental challenges. Striking a balance between economic performance and environmental accountability has become imperative for enterprises due to market pressures, regulations, and societal expectations. In the present era, a majority of companies are adopting sustainable practices and environmental considerations as they embrace green methodologies (Shultz and Holbrook, 2000).

Green procurement stands as a foundational approach for diminishing environmental pollution and is crucial for overseeing an ecologically mindful supply chain (Chin et al., 2015). Green procurement encompasses a variety of endeavors aimed at ensuring procured goods and materials do not have negative ecological impacts. These actions encompass diminishing resource wastage, embracing circular resource usage, advocating recycling processes, substituting raw materials, and similar initiatives (Carter and Carter, 1998; Min and Galle, 2001; Zsidisin and Siferd, 2001). Such eco-friendly procurement methods have the potential to improve resource efficiency and operational efficiency, thus enhancing business performance by curbing energy consumption, controlling pollution, and evading remediation expenses.

While maximizing profits remains a central objective for corporations, both the corporate realm and academia on a global scale have placed notable emphasis on green procurement. Escalating concerns regarding global warming, climate change, and the urgency of conserving natural resources have propelled green procurement to a prominent subject of interest for enterprises, academic institutions, and international organizations (Anane, 2020).

Furthermore, rapid advancements in IT technologies have facilitated the broader adoption of green principles, particularly through technology-driven initiatives (Chiabai et al., 2013; Liu et al., 2018). The rapid expansion of digital technologies has played a pivotal role in advancing sustainable development (Liu et al., 2020). The integration of a Green Information System (GIS) can bolster a company's pursuit of sustainable growth by enhancing information processing capabilities and facilitating the flow of information throughout the supply chain (Dedrick, 2010). An efficient GIS connects suppliers and customers, fostering sustainable supply chains and providing a platform for augmenting business performance (Dao et al., 2011; Green et al., 2012; Leenders et al., 2003; Liu et al., 2018; Wei and Wang, 2011). A Green Information System surpasses the conventional role of an information system, playing a pivotal part in propelling green procurement and corporate sustainability. It streamlines processes such as waste recycling, sustainable operational reuse, strategic planning, customer engagement, supplier collaboration, and more (Loos et al., 2011). Integrating green procurement within a well-designed GIS can amplify collaborative endeavors and ultimately elevate business performance.

Melville (2010) and Watson et al. (2010) contend that comprehensive research on the use of information systems to enhance environmental performance is insufficient. They underscore the need for a better delineation of the role of information systems in promoting environmental sustainability. Hence, the primary aim of this research is to empirically establish the connections between a company's capacity to engage in green procurement, the degree to which environmental

concerns have been integrated into its information system, and the resultant impact on the company's performance.

1.2 Problem Statement

To embrace eco-friendly procurement practices, numerous businesses have integrated ecological criteria into their purchasing protocols and guidelines. Nevertheless, a notable portion of these enterprises lacks a structured approach to systematically address the performance consequences of green procurement or to align it strategically (Song et al., 2016).

Recent times have witnessed significant progress in tackling environmental concerns, marked by heightened scrutiny and evaluation of business performance, along with mounting pressures on companies to incorporate environmental considerations into their operations (Chan et al., 2012). More businesses now acknowledge the importance of effectively managing their relationship with the natural environment due to increased environmental awareness among consumers and stakeholders (OECD, 2012).

The literature on green procurement delves into various aspects, encompassing its definition (Carter and Carter, 1998), the incentives and pressures driving participation (Bloemhof-Ruwaard et al., 1995), the interplay of resources and capabilities (Bowen et al., 2006; Green et al., 1996; Green et al., 2012), and the intricate connection between green procurement and firm performance, which exhibits inconsistencies. While a majority of research suggests a positive impact of green procurement on firm performance (Zsidisin and Hendrick, 1998; Carter et al., 2000), a minority of studies propose a marginal or unfavorable influence. Zhu and Sarkis (2004) categorize management strategies within green supply chains as yielding both favorable economic outcomes (e.g., reduced procurement costs) and unfavorable outcomes (e.g., increased expenses for eco-friendly materials). Similarly, Liu and Zhao (2008) examine the impact of green

procurement in the Chinese manufacturing sector and observe positive improvements in nearly all performance indicators except two variables.

These conflicting findings arise from various factors. Firstly, the multifaceted nature of green procurement can lead to divergent impacts on company performance (Liu and Zhao, 2008). Secondly, prior research primarily focuses on the direct impact on financial success, which might not materialize immediately and could be influenced by specific performance objectives such as operational efficiency (Jeffers, 2010; Green et al., 2012). Thirdly, organizations exist within a complex social network, influenced by stakeholders with distinct effects on both green performance and procurement.

The inconclusive outcomes regarding the relationship between green procurement and business performance underscore a lack of comprehensive comprehension of how green procurement practices distinctly enhance performance. This inconsistency might stem from the absence of complementary skills needed to fully harness the benefits of green procurement, contributing to the unclear relationship (Agyabeng-Mensah et al., 2020a). To address this, there have been calls to explore the mechanisms by which green procurement strategies elevate performance (Rashid et al., 2019).

Hence, this study aims to introduce green information systems as a moderating element and examine its influence on the connection between green procurement and company performance. The objective is to illuminate the intricate dynamics of how these factors interact to shape business outcomes.

1.3 Research Objectives

1.3.1 General Objectives

The main focus of this study is to analyze the connections and interactions between green information systems, green procurement practices, and the performance of companies.

1.3.2 Specific Objectives

The study has three specific objectives:

i. To explore the correlation between green procurement practices and company performance.

ii. To investigate the relationship between green information systems and company performance.

iii. To analyze the moderating effect of green information systems on the connection between green procurement practices and company performance.

1.4 Research Questions

i. What is the association between green procurement and company performance?

ii. What is the link between green information systems and company performance?

iii. What is the moderating role of green information systems in the relationship between green procurement and company performance?

1.5 Significance of the Study

This research holds significance as it aims to contribute to both academic exploration and the enhancement of public policy. The outcomes of this study are relevant to academia as they will broaden our understanding of the operational dynamics of green information systems in crisis scenarios and the impact of green procurement on corporate performance.

This endeavor is poised to provide unique insights into the examined constructs within the specific context of Ghana. By addressing gaps identified in existing literature, the findings of this study will serve as a valuable repository of knowledge for future researchers.

Regarding policy implications, the researcher intends to utilize the study's conclusions to formulate recommendations concerning policies related to green procurement and green information systems within healthcare institutions. As a result, this study has the potential to benefit various stakeholders within Ghana's healthcare sector, including senior management, procurement personnel, suppliers, and vendors.

1.6 Overview of Research Methodology

In this research, a quantitative research design was utilized. The selection of a quantitative approach was justified due to its ability to collect numerical data for the purpose of examining the relationships among green information systems, green procurement practices, and company performance within hospitals located in the Northern region of Ghana. The entire population of hospitals in the Northern region of Ghana was included in the study. Through a combination of purposive and convenience sampling methods, a total of seventy-five (75) hospitals were selected to participate in the research.

Data collection primarily involved surveys administered to supply chain managers, CEOs, and procurement officers in the participating hospitals. To align with the research objectives, a comprehensive questionnaire was meticulously developed. The data obtained was analyzed using the Statistical Package for Social Sciences (SPSS) version 25, employing both descriptive and inferential statistical techniques.

Throughout the data collection process, ethical considerations, including informed consent, confidentiality, and anonymity, were carefully observed to ensure the rights and well-being of the participants.

1.7 Scope of the Study

To investigate the correlations among green information systems, green procurement, and company performance in hospitals located in the Northern region of Ghana, a research study was undertaken. The study specifically targeted 75 hospitals within this geographical region. The survey respondents were individuals participating from healthcare establishments situated in the Northern region of Ghana. In line with the research's conceptual framework, the evaluation of company performance encompassed both operational and environmental aspects.

1.8 Limitations of the Study

A notable limitation encountered by this study relates to the data collection process. The difficulty arose from the necessity to gather data from procurement and other personnel across a total of seventy-five (75) hospitals. The complexity emerged due to the scattered distribution of these hospitals across diverse locations within the Northern region of Ghana. As a result, the considerable geographical distances among the hospitals presented a substantial hindrance in executing the data collection. Furthermore, obstacles related to obtaining access to the appropriate procurement and administrative personnel further compounded the difficulties, leading to delays in the data collection timeline.

1.9 Organization of the Study

The study is structured into five distinct chapters, each serving a specific purpose. The first chapter provides an introduction to the research, presenting the background, problem statement, research objectives, research questions, and the significance of the study. It also outlines the

research methodology, defines the scope of the study, acknowledges its limitations, and presents the organization of the remaining chapters.

The second chapter is dedicated to the literature review. It comprehensively explores relevant topics related to the research area, offering insights from previous studies. This chapter not only synthesizes existing knowledge but also introduces hypotheses based on the reviewed literature. A conceptual framework is also developed to guide the study.

Chapter three details the research methodology employed in the study. It elaborates on the research design chosen, the target population under investigation, the sampling approach utilized, the procedure followed for data collection, the tools employed for data collection, the methods employed for data analysis, and the ethical considerations taken into account.

In the fourth chapter, the study's findings are presented in a clear and organized manner. These findings are then discussed in relation to the existing literature, establishing connections and uncovering insights. This discussion aims to provide a deeper understanding of the results and their implications.

The final chapter, chapter five, draws the study to a close. It begins by summarizing the key findings, then proceeds to draw conclusions based on the research outcomes. Recommendations stemming from the study's conclusions are also offered, suggesting practical actions that can be taken based on the findings. This chapter effectively ties together the research process, outcomes, and implications, contributing to the overall contribution of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Considering the topic and goals of this study, this section embarks on a comprehensive investigation of the ideas and findings put forth by other scholars. It engages in a meticulous side-by-side evaluation to uncover common viewpoints and disparities within the currently available pool of knowledge. Additionally, this segment meticulously evaluates the concepts and outcomes derived from studies pertinent to the primary focus of the research. In this part, the conceptual, theoretical, and practical aspects are extensively deliberated upon, leading to the development of the conceptual framework and the creation of hypotheses that establish the fundamental basis of this research.

2.2 Conceptual Review

Within this portion of the literature review, an investigation into the definitions and ideas related to the main factors of the research – specifically, environmentally conscious procurement, eco-friendly information systems, and company effectiveness – is carried out.

2.2.1 Green Procurement

Current strategies within supply chain management that focus on acquiring raw materials and improving manufacturing and service procedures are progressively incorporating eco-friendly procurement techniques. To guarantee that procured goods and materials have no adverse ecological effects, a set of measures known as "green procurement" are put into action (Carter and Carter, 1998; Min and Galle, 2001; Zsidisin and Siferd, 2001). Wallace and Omachar (2016) offer the description of Green Procurement Practice (GPP) as the act of procuring products and services while considering their social, economic, and environmental consequences. Green procurement, often referred to as environmental purchasing, involves

the consideration of all environmental aspects during supply management decisions (Manimay G., 2018; Yook et al., 2017; Zailani et al., 2012).

The rising acceptance of green approaches among businesses is influenced by the expansion of environmental regulations and mounting pressure for legitimacy from various stakeholders (Rusinko, 2007). Klassen and Vachon (2003) state that manufacturing and service enterprises can alleviate their environmental impact by investing more in environmental technologies and by moving from pollution control to pollution prevention. While the necessity for a coordinated endeavor to tackle sustainability challenges is recognized, businesses have only recently started to adopt green procurement practices that extend throughout the upstream supply chain (Awasthi et al., 2010).

Upstream supply partners and procurement, a pivotal cross-boundary function, jointly shape the environmental impact of the central firm through different avenues, including ecological pollution linked to inbound logistics, the environmental imprint of provided materials, energy use and emissions during production, and the environmental efficiency of the product's lifecycle (Lee and Klassen, 2008; Ross and Jayaraman, 2009). Various terms are used in the literature to depict green practices encompassing the entire upstream supply chain or focusing solely on first-tier suppliers. Sustainable procurement/purchasing, closed-loop supply chain, and green supply chain management are some of the terms linked with green procurement strategies.

Despite their dedicated efforts, dealing with the emerging challenge of mitigating waste or pollution during the procurement of materials is a struggle for businesses. Implementing effective procurement tactics is vital for accomplishing exceptional performance. Government commitment to enriching the environment and quality of life has led to the integration of environmental considerations in procurement with the aim of decreasing environmental impacts (Raf et al., 2003). At present, many businesses adhere to green purchasing policies,

which not only contribute to their financial health but also minimize their environmental impact. Moreover, participating in green procurement confers competitive advantages, enhances efficiency, and reduces liabilities. Embracing a green purchasing program is a viable strategy for identifying high-value products with increased usage rates (Aoshima et al., 2016). Encouraging the adoption of green procurement practices has the potential to address numerous environmental problems, consequently creating new business prospects for both public entities and private companies.

2.2.1.1 Importance of Green Procurement

Green procurement entails incorporating environmental considerations into purchasing decisions and supply chain management procedures. It extends beyond traditional procurement methods by focusing on the ecological consequences linked to the acquired products and services. Green procurement aligns with the broader global objective of sustainable development and responsible consumption, aiming to curtail resource usage, diminish pollution, and endorse circular economy principles.

Various advantages emerge from the adoption of green procurement practices. Firstly, it enables organizations to shrink their environmental impact by opting for products with lower energy consumption, diminished emissions, and reduced waste creation. Such endeavors contribute to overall environmental preservation. Secondly, green procurement heightens corporate social responsibility (CSR) by showcasing an organization's dedication to sustainable practices, potentially leading to an enhanced brand image and increased stakeholder trust. Thirdly, by demanding environmentally conscious products, organizations stimulate innovation within industries, propelling the advancement of more environmentally friendly technologies and solutions.

Green procurement profoundly affects environmental conservation. Through favoring products with eco-friendly attributes, organizations contribute to diminished air and water

pollution, decreased carbon emissions, and more accountable resource extraction. These actions correspond with global endeavors such as the United Nations Sustainable Development Goals, especially those related to climate action, responsible consumption, and ecosystems.

However advantageous, green procurement faces certain challenges. A notable obstacle is supplier cooperation, as finding suppliers meeting rigorous environmental criteria can be challenging. Moreover, cost considerations pose difficulties; environmentally friendly products might initially carry higher price tags, potentially straining procurement budgets. Overcoming this challenge necessitates a long-term perspective that accounts for total ownership costs, including operational savings and potential avoidance of regulatory costs.

The regulatory landscape significantly shapes the adoption of green procurement. Many jurisdictions are enacting stricter environmental regulations and standards, compelling organizations to adopt sustainable practices to remain compliant. By embracing green procurement, businesses can proactively align with evolving regulations, mitigate legal risks, and ensure lasting operational sustainability.

Several organizations have effectively integrated green procurement into their operations. For instance, the Swedish government's procurement policy mandates the consideration of environmental factors in purchasing choices. This approach has not only lessened environmental impact but also cultivated a market for sustainable products. Similarly, companies like Unilever and Walmart have demonstrated how adopting sustainable sourcing can enhance their reputation and contribute to broader sustainability objectives.

Green procurement emerges as a crucial strategy for organizations to simultaneously address environmental concerns and business goals. Its significance lies in its potential to diminish environmental impact, enhance corporate standing, and stimulate innovation. While challenges persist, strategic planning, collaboration with suppliers, and a forward-looking

perspective can facilitate the successful implementation of green procurement. As regulations evolve and consumers demand sustainable solutions, embracing green procurement is no longer an option but a necessity for organizations striving to thrive in a ecologically conscious world.

2.2.2 Green Information Systems (GIS)

Esty and Winston (2006) define green information systems as systems that have been adapted to monitor environmental practices and results. These management tools are utilized to manage environmental data, decrease energy consumption, monitor emissions, and control waste production (Esty and Winston, 2006). Moreover, green information systems provide information that promotes environmentally conscious consumer choices, aids executive decision-making on sustainability issues, supports renewable energy production and distribution, and clarifies the role of information systems in energy policy (Esty and Winston, 2006). For instance, the use of information systems can motivate individuals to adopt more ecologically friendly behaviors (Ijab et al., 2010).

For organizations striving to make environmental sustainability a strategic goal, the establishment and utilization of green information systems are essential (Meacham et al., 2013). These systems play a pivotal role in effectively executing environmental enhancement initiatives by gathering data about an organization's environmental sustainability efforts and results (Preuss, 2002). Serving as the foundation of environmental management efforts, green information systems assist a company's internal environmental management systems while fulfilling reporting obligations to diverse stakeholders (El-Gayar and Fritz, 2006). They provide the information needed for collaboration with customers across eco-design, production, packaging, transportation, recycling, disposal, and waste reduction.

Regarding integration and coordination, the application of green information systems for sharing information significantly supports supply chain management (Chandra et al., 2007).

According to Frohlich and Westbrook (2001), logistical integration involves the extent of collaboration in managing crucial data and material flows across the supply chain. Hamprecht et al. (2005) stress the importance of combining environmental controls with other quality controls within an information system, exemplified through a case study in the food sector. Green information systems supply the data essential for making eco-design decisions, encompassing statistics related to material and energy usage, reuse, recycling, and material recovery.

Green Information Systems (GIS) offer the necessary infrastructure for businesses to exchange information with their suppliers and customers. As emphasized by Siau and Tian (2004) and Morash and Clinton (1997), well-designed and effectively implemented GIS provide operational, tactical, and strategic information to core businesses, suppliers, and customers. According to Rajagopal (2002), the advantage of GIS lies in its provision of a "single piece of information" accessible to all participants in the supply chain. This immediate and seamless information access (Gefen and Ragowskyrik, 2005) ensures continuous connectivity (Rajagopal, 2002). The real-time, seamless capabilities of GIS enable timely, accurate, and relevant information delivery to supply chain partners (Green et al., 2007), eliminating the need for sequential information transfers that cause delays and distortions (Cigolini et al., 2004). Existing GIS enables synchronized, real-time information exchange among supply chain participants, including suppliers, manufacturers, retailers, wholesalers, and customers. Green information systems particularly integrate information about environmental enhancement initiatives and outcomes, thereby expanding this existing capacity for information exchange. Through the utilization of GIS software and business application programming interfaces, organizations can access and analyze a centralized database containing transactional and operational data. Additional sustainability application programming interfaces present sustainability initiative and outcome information using data derived from sustainability processes. As a result, the combined implementation of green

information systems and green procurement is projected to enhance business performance. Hence, this study aims to investigate how the practice of green procurement, alongside the adoption of green information systems, influences business performance within the healthcare context.

2.2.2.1 Importance of Green Information Systems

Green Information Systems (Green IS) represent the convergence of information technology and environmental sustainability. They encompass the planning, implementation, and management of IT systems that prioritize energy efficiency, carbon reduction, and responsible resource utilization. Green IS expand the conventional boundaries of IT management by emphasizing environmental stewardship throughout the entire lifecycle of technology.

The adoption of Green IS brings about a range of benefits for organizations. Primarily, it enables the reduction of energy consumption and greenhouse gas emissions associated with IT operations. By employing strategies such as optimized data centers, energy-efficient hardware design, and intelligent power management, Green IS contribute to significant energy savings. Moreover, these systems promote efficient resource utilization by advocating for virtualization, cloud computing, and environmentally conscious hardware disposal practices.

Green IS play a direct role in advancing sustainability by aligning technological pursuits with environmental objectives. Through the reduction of electronic waste, decreased energy consumption, and support for renewable energy integration, organizations effectively address ecological concerns and contribute to global sustainability endeavors like the Paris Agreement and the UN Sustainable Development Goals.

Numerous prominent organizations have effectively integrated Green IS into their operations. For instance, Google's data centers prioritize energy efficiency through innovative cooling techniques and the adoption of renewable energy sources. Walmart has leveraged Green IS to optimize its supply chain, resulting in lowered emissions and improved operational efficiency.

These instances serve as illustrations of how implementing Green IS can lead to tangible environmental and operational benefits.

However, the adoption of Green IS comes with its set of challenges. Organizations often grapple with technological intricacies since integrating energy-efficient hardware and software requires specialized expertise. Additionally, effective organizational change management is pivotal, as the implementation of Green IS may necessitate adjustments in operational processes and employee behavior. Considerations of data security also come into play, as energy-saving measures could potentially clash with stringent security protocols.

The regulatory landscape is increasingly emphasizing environmental responsibility, with stricter regulations compelling organizations to adopt sustainable practices. Green IS align with these regulations, mitigating compliance risks. Furthermore, as consumers and investors prioritize sustainability, businesses that embrace Green IS gain a competitive edge by showcasing their dedication to responsible business practices.

The significance of Green IS is projected to expand as technology continues to permeate all facets of business. The integration of emerging technologies like the Internet of Things (IoT) and artificial intelligence (AI) into Green IS frameworks holds the potential for even greater gains in resource efficiency and sustainability. In summation, Green IS transcends being a mere trend to become a strategic necessity for organizations striving to amplify their environmental performance, curtail costs, and establish themselves as conscientious global contributors.

2.2.4 Performance

Santos and Brito (2012) emphasize that firm performance holds significant importance in organizational and strategic management research, often serving as a dependent variable. According to Taouab and Issor (2019), performance encompasses a variety of financial and non-financial measures that provide insights into the achievement of goals and outcomes.

However, differing viewpoints exist regarding its definition, dimensions, and measurement within and across disciplines (Selvam et al., 2016). Financial, operational, market, and environmental performance are commonly examined in the context of green procurement practices (Hong et al., 2019; Laosirihongthong et al., 2013; Qorri et al., 2018; Zhu et al., 2013). This study specifically focuses on the environmental performance of hospitals within Ghana's Northern Region.

Within this study, hospital operational performance (OP) is assessed through efficiency performance and quality performance (Cheng et al., 2015; Clark et al., 2013; Toussaint and Berry, 2013; Chadha et al., 2012). These metrics are extensively utilized in healthcare literature to evaluate hospital operational performance. They encompass a comprehensive array of measurements employed in literature under various terminologies.

Efficiency performance revolves around the reduction of waste, including resources, energy, equipment, and ideas, contrasting with the concept of efficiency (IOM, 2001). Economists define efficiency as cost-effectiveness, which involves optimizing healthcare services for a given cost, minimizing costs for a specific service level, or assessing whether an additional cost is justifiable based on potential benefits (Donaldson et al., 2002). Efficiency essentially establishes a link between resource input and healthcare output. In this input-output framework, actual efficiency is compared to a target value to calculate cost savings (Womack and Jones, 2003).

On the other hand, quality performance is tied to enhancing patient satisfaction by delivering suitable, prompt, and high-quality services through flexible operations. Improved quality performance is also associated with reduced errors and mistakes (Hussain et al., 2015), shorter patient wait times (Rexhipi and Shrestha, 2011), and improved staff performance (Shezali et al., 2013).

2.2.4.1 Environmental performance

Enhancing environmental sustainability is reflected in improved environmental performance. A reduction in carbon emissions and greenhouse gases directly corresponds to an enhancement in environmental performance. According to Zhu et al. (2008), an organization's capability to decrease air emissions, effluent waste, and solid wastes serves as a gauge of its environmental performance. It also underscores the organization's ability to curtail the consumption of toxic and hazardous substances, as well as the frequency of environmentally impactful accidents (Zhu et al., 2008).

Environmental performance has risen as a pivotal concept in the modern era, underscoring the growing acknowledgment of the interrelation between human activities and the environment. This review of concepts delves into the multifaceted facets of environmental performance, exploring its measurement criteria, influences, and ramifications across diverse sectors. By amalgamating existing literature and case studies, this review accentuates the significance of robust measurements of environmental performance, the part played by internal and societal factors in shaping performance outcomes, and the broader effects on sustainability, regulations, and stakeholder involvement.

Environmental performance encompasses the evaluation of an entity's influence on the natural world. It forms an essential component of sustainable development, reflecting the dedication of organizations and societies to curbing detrimental environmental impacts while magnifying positive contributions.

The assessment of environmental performance rests on a range of metrics that gauge impacts spanning diverse dimensions. Indicators like carbon footprint, water usage, waste production, and biodiversity conservation provide tangible gauges of an entity's ecological influence. The formulation of standardized metrics aids in comparability across industries and regions, facilitating benchmarking and goal establishment.

Environmental performance is molded by a complex interplay of internal and external factors. Internally, elements such as management dedication, technological innovation, resource efficiency, and employee involvement carry significant weight. Externally, regulatory frameworks, stakeholder pressures, supply chain practices, and market dynamics mold the environment within which organizations function.

Organizations adopt diverse strategies to boost environmental performance. These strategies may encompass the establishment of environmental management systems, the incorporation of circular economy principles, and the infusion of sustainability into core business operations. Instances from companies like Patagonia and Interface illustrate how proactive environmental strategies not only diminish ecological footprints but also amplify brand reputation and customer allegiance.

Robust environmental performance directly contributes to overarching sustainability targets. It dovetails with global initiatives like the United Nations Sustainable Development Goals, aiding in climate change mitigation, resource conservation, and ecosystem preservation. Regulations and policies are evolving to motivate enhanced environmental performance, with mechanisms such as carbon pricing, emissions reduction objectives, and eco-labeling programs encouraging responsible practices.

Environmental performance is increasingly perceived as a pivotal indicator of an organization's social responsibility. Stakeholders, encompassing customers, investors, and communities, seek transparency regarding environmental impacts. Organizations that adeptly convey their performance and interact with stakeholders gain a competitive edge, as transparency cultivates trust and fosters affirmative relationships.

While environmental performance has gained prominence, challenges endure. These challenges involve measuring indirect impacts, ensuring data precision, and managing the

trade-offs between economic growth and environmental safeguarding. Future directions incorporate integrating emerging technologies such as blockchain for transparent supply chain monitoring, along with a heightened emphasis on social and environmental equity.

Environmental performance embodies a multidimensional concept that encompasses both quantitative metrics and qualitative commitments to sustainability. It resonates across industries, molding corporate strategies, regulatory landscapes, and societal perceptions. Thorough measurements of environmental performance, coupled with proactive tactics, foster a more sustainable future by harmonizing human endeavors with the mandates of ecological preservation.

2.2.4.2 Efficiency Performance

Efficiency performance serves as a central tenet across diverse domains, embodying the optimal utilization of resources to attain desired outcomes. This conceptual analysis delves into the multifaceted facets of efficiency performance, encompassing its definitions, metrics, and the influences that shape it. Through the synthesis of prevailing literature and the inclusion of pertinent case studies, this analysis underscores the significance of resource allocation efficiency, the impact of technological advancements, and the consequences for organizational efficacy and sustainability.

Efficiency performance can be perceived as the antithesis of waste, encompassing resources, energy, equipment, and ideas. From an economic perspective, efficiency is defined as cost-effectiveness, involving the maximization of healthcare services for a specified cost, the minimization of costs for a particular service level, or an evaluation of the value of incurring additional costs considering potential gains (Donaldson et al., 2002). Efficiency essentially establishes a linkage between resource input and healthcare output. In line with this input-output dynamic, actual efficiency is gauged against a target value to calculate cost savings (Womack and Jones, 2003).

Efficiency performance pertains to an entity's ability to achieve its objectives using minimal resource inputs. It encapsulates the notion of achieving more with less and stands as a pivotal driver of organizational and societal advancement (Scherer and Harhoff, 2000; Teece, 2007). Efficiency spans diverse dimensions, spanning operational processes, technological innovations, and strategies for resource allocation.

Measuring efficiency performance entails an array of quantitative metrics that capture the correlation between outputs and inputs. Common metrics encompass labor productivity, resource utilization, energy efficiency, and cost-effectiveness (Charnes et al., 1978; Golany and Roll, 1989). These metrics enable comparisons both within and across industries, guiding organizations toward more informed decision-making.

Efficiency performance is influenced by a confluence of internal and external factors. Internally, elements such as process design, technological capabilities, human capital, and management practices play pivotal roles in optimizing resource usage (Damanpour, 1991; Datta et al., 2019). Externally, factors like market conditions, regulatory landscapes, and industry competition mold the context within which organizations strive for efficiency (Baumol, 1967; Porter, 1980).

Technological advancements emerge as a pivotal catalyst for efficiency performance. Innovations like automation, data analytics, and artificial intelligence empower organizations to streamline processes, minimize waste, and refine decision-making accuracy (Brynjolfsson and McAfee, 2014; Laudon and Laudon, 2019). Case studies of companies such as Amazon and Tesla underscore how technology-driven efficiencies have disrupted traditional business models and reshaped industries (Gallaugher and Ransbotham, 2010; Goldberg, 2015).

Efficiency performance yields profound implications for organizational productivity and sustainability. Efficient resource utilization translates to enhanced operational outputs and

reduced expenses, bolstering organizational competitiveness and profitability (Porter, 1985; Ittner and Larcker, 2001). Additionally, effective resource allocation aligns with sustainability objectives by curbing waste generation, conserving resources, and mitigating environmental impacts (Elkington, 1997; Bansal, 2005).

While efficiency is an aspirational pursuit, it comes with challenges and trade-offs. Pursuing extreme efficiency might lead to unintended consequences like employee burnout, compromised product quality, or adverse environmental outcomes (Carr et al., 1996; Zsidisin and Ellram, 2003). Striking a balance between efficiency and other goals, such as innovation and stakeholder well-being, necessitates thoughtful deliberation.

Efficiency performance stands as a pivotal concept that transcends industries and fields, shaping organizational prosperity, societal advancement, and environmental sustainability. With the emergence of advanced technologies and evolving market dynamics, the quest for efficiency becomes increasingly intricate. Organizations must navigate efficiency determinants while considering wider repercussions to achieve a harmonious equilibrium between effectiveness, innovation, and responsible resource utilization.

2.3 Theoretical Review

The underpinnings of this research draw from two fundamental theories: the information processing theory and the natural resource-based view theory. In the subsequent sections, a thorough explanation of how these theories are employed in the context of the current study is presented.

2.3.1 Natural Resource-Based View Theory

The study employs the natural resource-based view theory to elucidate the connection between green procurement and company performance. The Hart (1995) natural resource-based view remains a prominent theory in the realm of sustainable operations literature (McDougall et al., 2019). Several studies (Agyabeng-Mensah et al., 2020a; AmoresSalvadó et al., 2014; Mishra

and Yadav, 2021) have employed this theory to illustrate the relationship between sustainable practices and company performance. The natural resource-based view theory stems from the foundational resource-based view hypothesis (Hart 1995).

The primary rationale for adopting the natural resource-based perspective lies in its ability to recognize the competitive advantages that organizations can attain by embracing sustainable practices (Hart, 1995). Proponents of the natural resource-based perspective argue that incorporating sustainability considerations into strategic planning processes is crucial for businesses (Hart, 1995; Chan, 2005). According to this perspective, such integrations empower companies to cultivate organizational capabilities relevant to competition, effectively addressing uncertainties that arise at the intersection of business activities and sustainability challenges (Banerjee, 2001; Hart, 1995; Chan, 2005). Essentially, a foundational assumption of the natural resource-based view is that proactive adoption of sustainable practices by an organization leads to improved performance and a competitive edge. This study establishes a pathway from green procurement to company performance, rooted in the theoretical foundations of the natural resource-based perspective.

2.3.2 Information Processing Theory

The information processing theory, as articulated by Xavier (1998), centers on developing structures and procedures to meet information processing requirements. As defined by Galbraith (1973) and Tushman and Nadler (1978), information processing in organizations encompasses activities such as collecting, transforming, communicating, and storing information within the business. The information processing theory views organizations as information systems that need to enhance their capacity to gather, process, and utilize environmental information to address uncertainty and ambiguity (Daft et al., 1987; Daft and Weick, 1984; Tushman and Nadler, 1978).

Aligned with this theory, Busse et al. (2017) emphasize that inadequate management of sustainability-related information processing can lead to poor firm performance due to uncertainty related to sustainability. Within the healthcare domain, hospitals must establish effective information processing systems with appropriate capabilities to manage green procurement data and extract valuable insights for organizational success (Daft et al., 1987; Daft and Weick, 1984). The alignment between a company's information processing capabilities and its green information processing requirements is pivotal.

In the context of this study, the information processing theory is particularly relevant for exploring the moderating impact of green information systems on the relationship between green procurement and hospitals' performance. Previous studies rooted in the information processing theory have identified a range of strategies that businesses employ to address uncertainty originating from their operational environment. These strategies encompass enhancing information processing skills, investing in information systems, nurturing lateral relationships, and implementing corrective measures to reduce the need for extensive information processing (Busse et al., 2017).

From the information processing theory's perspective, hospitals' ability to gather, interpret, synthesize, and effectively utilize information pertaining to sustainable practices significantly influences their potential to attain diverse performance outcomes (Flatten et al., 2011; Hong et al., 2019). Green information systems, for example, can heighten hospitals' agility in implementing sustainable initiatives by facilitating interactions with suppliers and customers (Shafique and Hyder, 2019), thereby contributing to various performance outcomes (Hong et al., 2019). Similarly, Cegielski et al. (2018) emphasize that organizations must bolster their information processing capabilities to accumulate data that can enhance organizational outcomes. Hospitals can harness green information systems to amplify their information processing capacities, consequently enhancing their performance (Chen et al., 2015).

2.4 Empirical Review

Author(s)	Context	Independent Variable and definition	Moderator	Mediator	Dependent Variable and Definition	Findings
Song et al. (2016)	China	Green procurement	Self-regarding stakeholder satisfaction	Operational Efficiency	Firm Performance	The results of the study indicate that both process-based and product-based green procurement strategies have favorable impacts on a company's performance. However, Chinese businesses predominantly concentrate on evaluating the impact of product-based green procurement on their operational efficiency.
Anane (2020)	Ghana	Green Procurement practice	Supplier collaboration		Organizational Performance	The study's findings revealed a significant correlation between supplier collaboration and organizational performance. This underscores the importance of strong collaboration with suppliers in shaping the overall performance of the organization.
Quyen (2020)	Vietnam	Green Procurement Practices			Organizational Performance	- The study's results indicate a positive and beneficial correlation between the implementation of green procurement practices and organizational performance.
Makaira (2014)	Kenya	procurement practices			Performance	- The study's results suggest that the performance of the Kenya National Police Service is notably influenced by a range of factors associated with procurement. These factors encompass procurement strategy, control mechanisms, monitoring practices, and employee training within the procurement processes.

Author(s)	Context	Independent Variable and definition	Moderator	Mediator	Dependent Variable and Definition	Findings
Galeazzo (2020)	Europe, Asia, North America	Green Procurement	green purchasing behaviour		financial performance	- According to the study's findings, there was no evident correlation observed between green purchasing practices and financial performance.
Blome (2013)	western Europe	Green procurement		green supplier development	supplier performance	- The outcomes of the study unveiled a positive connection between the adoption of green procurement practices and the market performance of the purchasing firm.
Dasanayake and Amarasena (2022)	Sri Lanka	Green Procurement			Purchasing Performance	The study's results pointed to a positive and advantageous relationship between the incorporation of green procurement practices and the market success of the buying firm. Additionally, the study underscored the significance of top management commitment in steering green procurement initiatives and fostering relationships with green suppliers.
Wanja and Odoyo (2020)	Kenya	Sustainable procurement practices			Procurement performance	According to the study's findings, the implementation of sustainable procurement practices has a notable impact on enhancing procurement performance, which in turn leads to favorable outcomes for overall company performance.
Sarhaye and Marendi (2017)	Kenya	Green Procurement (reverse logistics and supplier assessment)			Organizational Performance	- Based on the study's findings, it is evident that sustainable procurement practices have a substantial positive effect on enhancing procurement performance, ultimately resulting in favorable outcomes for the overall company performance.

Author(s)	Context	Independent Variable and definition	Moderator	Mediator	Dependent Variable and Definition	Findings
Islam et al. (2017)	Saudi Arabia	Sustainable Procurement Practices		nonfinancial performance (quality and operational performance, social, and environmental performance)	Organizational Performance (financial performance)	-According to the findings of the study, it was determined that direct influence from summary measures of sustainable procurement practices on financial performance was not significant. However, a statistically significant indirect impact was identified. This influence operated through the pathway of organizational nonfinancial performance, ultimately leading to an effect on financial performance. In other words, while sustainable procurement practices did not directly impact financial performance, they had a meaningful effect on nonfinancial aspects of the organization, which in turn contributed to changes in financial performance.

2.5 Conceptual Framework

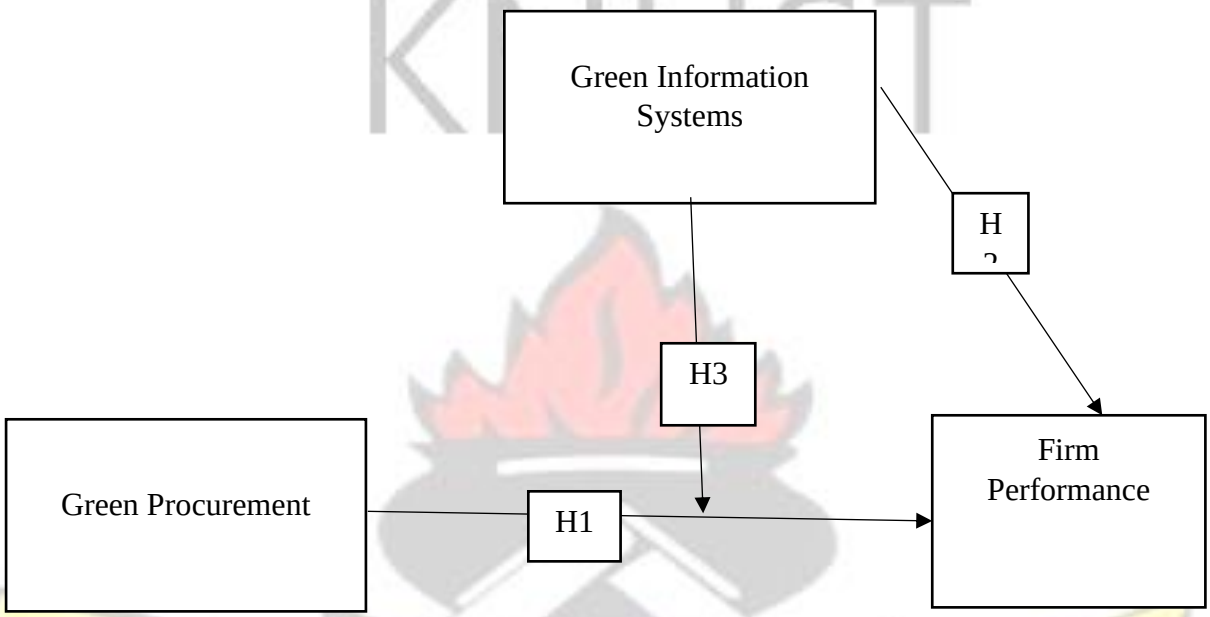

Figure 2.1: Conceptual framework

Source: (Author's own construct, 2023)

Hypotheses Development

2.5.1 Green Procurement and Firm Performance

The study underscores that the increasing demand from customers for goods and services that exhibit self-sustainability and environmentally conscious operations has elevated green procurement practices to a strategic priority. This aligns with the central premise of the natural-resource-based perspective theory, which asserts that proactively embracing sustainable business practices can enhance organizational performance and confer a competitive advantage. Research by Jabbour et al. (2015) and Diabat et al. (2013) further substantiates green procurement as a form of sustainable business practice that not only supports operational sustainability but also aligns with profitability objectives.

As organizations progressively recognize the impact of sustainable practices on performance, the adoption of green procurement has become widespread (Centobelli et al., 2017; Li and Huang, 2017; Stekelorum et al., 2021). Empirical studies have extensively investigated the relationship between green procurement practices and performance, advocating for their implementation (Song et al., 2016; Islam et al., 2017; Wanja and Odoyo, 2020). For instance, Song et al. (2016) demonstrated the positive influence of green purchasing on business performance, while Islam et al. (2017) established a significant correlation between sustainable procurement methods and financial performance. Similarly, Wanja and Odoyo (2020) identified a positive impact of sustainable procurement practices on business performance. Such practices empower businesses to maintain competitiveness while addressing sustainability concerns in the market (Green et al., 2012; Zhu et al., 2012). Building on these insights, the study puts forth the following hypothesis:

H1: There exists a positive relationship between green procurement and firm performance.

2.5.2 Green Information Systems and Firm Performance

The successful implementation of green procurement practices hinges on an organization's information systems' ability to gather data related to its sustainability endeavors and outcomes (Preuss, 2002). The analysis of this data equips decision-makers with the necessary knowledge to enhance sustainability throughout the procurement process (Preuss, 2002). Green information systems (GIS) play a pivotal role in this context, as they complement internal management systems and fulfill reporting obligations for various stakeholders, forming the bedrock of sustainability initiatives (El-Gayar and Fritz, 2006). With an increasing number of businesses recognizing the positive influence of sustainable practices on performance, the adoption of green information systems has gained significant traction (Stekelorum et al., 2021).

Green information systems offer organizations a platform to seamlessly integrate environmentally sustainable practices into various operational stages, spanning manufacturing, procurement, sales, and shipping. Through the collection and analysis of data on environmental sustainability, organizations can extract valuable insights to propel green initiatives and innovations that bolster environmental sustainability (Preuss, 2002). For instance, GIS can assist companies in reducing raw material and energy consumption by optimizing scheduling, procurement, and processes, thereby minimizing their environmental impact and enhancing operational efficiency. The literature has witnessed a growing body of empirical studies exploring the relationship between green information systems and performance, with many demonstrating a positive correlation (Gholami et al., 2013; Meacham et al., 2013; Bokolo, 2019). Based on this understanding, the study puts forth the following hypothesis:

H2: A positive relationship exists between green information systems and firm performance

2.5.3 The Moderating Role of Green Information Systems

Sharing information among supply chain partners through established ERP systems is undoubtedly crucial for effective procurement processes. However, solely relying on ERP systems may not lead to substantial improvements in environmental performance. To fully unlock the benefits of environmental performance, the establishment of a dedicated Green Information System (GIS), built upon the foundation of ERP systems, becomes imperative. This concept of moderation is strongly advocated by Watson et al. (2010), who emphasize the emergence of environmental informatics to address the role of information systems in achieving environmental sustainability. According to Watson et al. (2010), existing information systems are insufficient in adequately supporting sustainability endeavors and require augmentation through dedicated green information systems, like GIS, designed explicitly for improving environmental performance.

Integrating the capabilities of green information systems, including GIS, into the existing information systems, especially ERP systems, is crucial to effectively bolster sustainability initiatives. This incorporation ensures that organizations possess the tools to gather, process, and leverage information pertaining to green procurement practices, thus amplifying their potential impact on organizational performance. Drawing from the information processing theory, the study anticipates that organizations equipped with well-developed green information systems will experience a more immediate positive effect on firm performance stemming from their green procurement practices. Consequently, the study formulates the following hypothesis:

H3: The relationship between green procurement and firm performance is moderated by green information systems.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides a detailed overview of the methodological approaches employed in the research. It outlines the systematic steps taken to conduct the study and offers insights into the types of data utilized. The research methodology is divided into the following sections: research design, target population, sample size and selection methods, data sources, data collection tools, validity and reliability of research instruments, ethical considerations, and data analysis techniques.

3.2 Research Design

As outlined by Saunders et al. (2012), the research approach chosen to address the research questions is referred to as the research design. This design encompasses the overall strategy of the research. Furthermore, Saunders et al. (2009) emphasize that the research design incorporates elements such as the time frame, research methods, and research preferences. Research can be broadly categorized into three main types: qualitative, quantitative, and mixed methods, as classified by Rea and Parker (2008). In the context of quantitative research, as described by Saunders (2012), it is closely aligned with positivism and involves structured data collection processes to generate objective data for the purpose of assessing reality. According to Creswell and Creswell (2007), the quantitative approach is particularly effective for establishing and validating relationships, making predictions, and generalizing findings, primarily focusing on the correlations between variables. This method typically entails the formulation of hypotheses, data collection, and subsequent analysis (Creswell and Creswell, 2007). Additionally, Saunders et al. (2012) identify three primary research objectives: descriptive, exploratory, and explanatory.

The research questions posed in this study revolve around the effective implementation of green procurement practices and their impact on company performance. Given the aim to quantify the influence of green procurement on organizational performance, particularly considering the role of green information systems, the research adopted an explanatory research approach. This approach seeks to quantitatively analyze and uncover relationships between variables.

Qualitative research involves delving into participants' perceptions and opinions through methods like interviews and textual analysis. The resulting responses are often subjective, and researchers focus on understanding contextual intricacies (Saunders et al., 2009). On the other hand, mixed research, as described by Ridenour and Newman (2008), combines data from both qualitative and quantitative sources within a single study. In the context of this study, the quantitative method was employed to explore the connections between green procurement practices, business performance, and the role of green information systems.

Barnett (2002) draws a connection between the deductive research approach and the survey strategy, commonly used to address questions related to "what," "who," "where," "how much," and "how many" in business research. The survey method allows for cost-effective, standardized data collection from a sizable population, enabling meaningful comparisons (Barnett, 2002). Given the research approach of this study, the survey strategy was selected for collecting quantitative data that would later undergo both descriptive and inferential statistical analyses. This approach is conducive to modeling interactions and providing plausible explanations for correlations between variables.

3.3 Population of the Study

As outlined by Orodho (2003), the term "population" in research refers to the larger group that the study is relevant to, from which a sample is later drawn. This population comprises all the

elements or entities that possess the data upon which the study is based. In the context of this study, the population encompasses all the hospitals situated in the Northern region of Ghana.

3.4 Sample Size and Sampling Technique

Selecting a sample to represent the entire population is essential due to the practical limitations of involving every member of the population. According to Hair et al. (2008), a sample constitutes a subset of the larger population being studied. Sampling involves the process of choosing a relatively smaller number of elements from a larger, defined group of entities, with the aim that insights gained from the smaller subset can accurately infer characteristics of the broader collection.

Sampling techniques are categorized into two main groups: probability sampling methods and non-probability sampling methods, as outlined by Aaker et al. (1995). Probability sampling methods, including systematic, stratified, cluster, and simple random sampling, ensure that each member of the population has an equal chance of being selected. Non-probability sampling, on the other hand, relies on the researcher's discretion and doesn't guarantee an equal likelihood of selection for every potential participant. Examples of non-probability sampling methods include convenience sampling, quota sampling, purposive sampling, snowball sampling, and random sampling (Saunders et al., 2009).

For this study, a sample size of 75 was deemed appropriate. The choice of participants was guided by purposive sampling, where 75 individuals were intentionally selected. These participants include supply chain managers, department heads, and procurement executives. Within the context of this study, respondents were specifically chosen through purposive sampling. This approach allowed the researcher to deliberately select individuals who possessed the necessary qualifications, expertise, and willingness to contribute insights into green procurement practices. The selected respondents held senior positions closely associated with the procurement practices of the chosen firms.

3.5 Data collection methods

This portion of the research describes the characteristics of the obtained data, the approaches utilized for gathering data, and the tools employed for collecting this data.

3.5.1 Sources of Data

Data constitutes an essential necessity for fulfilling the aims and purposes of any research undertaking. Scholars make a distinction between primary and secondary data (Bulmer et al., 2009). While this investigation solely utilized primary data, it's worth acknowledging that research initiatives might choose secondary data exclusively or opt for a blend of the two. As per Bulmer et al. (2009), primary data is defined as novel information drawn from participant inputs or perspectives, procured through suitable data collection tools. In this research, simultaneous data collection was carried out from respondents to obtain cross-sectional data. The main source of primary data was a survey questionnaire.

3.5.2 Data Collection Instrument

To elicit insights and perspectives from participants, surveys were selected as the preferred instrument. As per Saunders (2012), a survey is a means of data collection that presents a standardized set of queries to each individual, affording them predetermined response options. The survey employed in this research was meticulously crafted to secure specific data essential for addressing the research queries and achieving the study's objectives. A substantial portion of the questions formulated featured predetermined, closed-ended answer choices.

The arrangement of the survey and the elements encompassed were devised through the integration of preexisting research, incorporating the format of the Likert scale. The survey underwent assessment by a supervisor who affirmed its suitability for capturing the precise requisite data. The reliability and consistency of this measurement tool were validated by demonstrating its capacity to yield dependable outcomes for the same individual in

comparable scenarios – a validation procedure enacted by various researchers to ensure precise and trustworthy data collection.

Table 3.1 Measurement Items

Variable	Number of Items	Source
Green Procurement	4	(Zhu et al., 2017; Nkrumah et al., 2020)
Green Information Systems	7	(Esty and Winston, 2006; Meacham et al., 2013)
Firm Performance	4	Adapted from (Zhu et al., 2008a; Meacham et al., 2013)

3.6 Data Analysis

The process of scrutinizing data through logical and/or statistical methods is known as data analysis. The gathered data underwent several stages, including editing, appropriate categorization, and input into SPSS version 25. This was undertaken to facilitate the necessary regression analysis, allowing for the formulation of conclusions from the study. The data examination was carried out using the Statistical Package for Social Sciences. Given that a substantial portion of the collected data had a quantitative nature, techniques such as correlation analysis and descriptive statistics—encompassing mean, standard deviation, and percentages—were applied to grasp the data's essence.

Moreover, the study integrated regression analysis to assess the model. This process entailed investigating the connections among the dependent variable (firm performance), the moderating variable (green information systems), and the independent variable (green procurement) through regression analysis. This methodology established the actual relationships existing between these variables. The outcomes were subsequently presented using tables, effectively displaying the data that had been collected and analyzed.

3.7 Ethical Consideration

Certainly, it is undeniable that the potential for encountering unethical behavior exists within any research undertaking. Such conduct might stem from deliberate actions or unintentional

oversights on the part of the researcher (Hair et al., 2008). It is imperative that research is conducted with a resolute dedication to ethical principles to avert any semblance of misconduct. In accordance with the definition provided by Hair et al. (2008), ethics refers to the "moral principles or standards that govern the manner in which individuals engage with their fellow humans in situations where harm could potentially be inflicted, whether it pertains to economic, physical, or mental aspects."

To ensure the incorporation of ethical considerations, the researcher adopted measures such as apprising the participants of the research's aims and securing their consent prior to their engagement in the study. This approach was adopted to maintain ethical standards throughout the research process.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This section comprises a thorough aggregation of the collected data, a meticulous examination of the data, and an extensive exploration of the resultant discoveries. It encompasses a broad spectrum of subjects, encompassing respondent demographic particulars, descriptive statistical information, correlation and regression assessments, hypothesis validation, and a comprehensive conversation on the implications. These assorted segments collectively contribute to a comprehensive investigation and comprehension of the research outcomes.

4.2 Demographic Data of Respondents

This segment covers the demographic details shared by the participants. To attain a holistic insight into the characteristics of the respondents, frequency tables were employed. The exploration of the demographic makeup also encompassed the utilization of frequency and percentage figures. A comprehensive dissection of the participants' demographics along with the associated findings is elaborated extensively within the framework of Table 4.1.

Table 4.1: Demographic of Respondents

	Responses	Frequency	Percentage (%)
Business Ownership	Locally Owned	70	93.3
	Foreign Owned	5	6.7
Firm Age	Less the 3 years	5	6.7
	3 – 5 years	10	13.3
	6 – 10 years	50	66.7
	11- 15 years	10	13.3
Employee Size	61 – 80	5	6.7
	81 – 100	19	25.3
	More than 100	51	68.0
Education	Diploma	2	2.7
	HND	3	4.0
	1st Degree	40	53.3
	2nd Degree	30	40.0
Position in the Supply Chain	CEO	14	18.7
	Managing Director	17	22.7
	General Manager	10	13.3
	Supply Chain Manager	16	21.3
	Procurement manager	18	24.0
Position held (in years)	< 3 years	3	4.0
	3 – 5 years	25	33.3
	6 – 10 years	35	46.7
	11 – 15 years	12	16.0
Gender	Male	40	53.3
	Female	35	46.7
	Total	75	100

Source: Field Data, 2023

As demonstrated in Table 4.1, a considerable majority of respondents (93.3 percent) indicated that their businesses were of local ownership. The remaining participants (6.7 percent) conveyed that their enterprises were under foreign ownership. Regarding the duration of operational existence, a significant portion of respondents (66.7 percent) mentioned that their organizations had been functioning for a span of six to ten years. Moreover, with respect to workforce size, the prevalent proportion of the studied organizations (68.0 percent) employed over 100 individuals.

Regarding educational attainment, the prevailing portion of participants (53.3 percent) held first degrees. In terms of job roles, a notable fraction of respondents (24.0 percent) held the

position of procurement manager, signifying a prominent representation. Regarding gender distribution, males constituted the larger segment (53.3 percent) of the respondent pool.

Furthermore, a considerable majority of participants (46.7 percent) had upheld their employment for a duration ranging from six to ten years, pointing to a notable degree of professional experience among the participants. These demographic attributes collectively offer an overview of the composition of the study participants.

4.3 Reliability Testing

To assess the dependability of the gathered data, the study employed the Cronbach's Alpha test. As depicted in Table 4.2, all the variables under examination—namely, green information system, green procurement, and firm performance—demonstrated a notable level of internal consistency, with Cronbach's Alpha coefficients surpassing 0.70. These coefficients, as stipulated by the standards set forth by Hair et al. (2014), indicate robust reliability for the constructs.

Even though green procurement was gauged using merely four items, and both green information system and firm performance were assessed through seven and four items respectively, all constructs emerged successful in the reliability assessment, thus affirming their trustworthiness. It's noteworthy that the three constructs, namely green information system, green procurement, and company performance, displayed Cronbach's Alpha values of 0.783, 0.870, and 0.874, respectively.

In conclusion, all constructs met the criteria for reliability with Cronbach's Alpha values surpassing 0.70, aligning with the parameters outlined in Hair et al.'s (2014) guidelines. The outcomes concerning the constructs' reliability are presented in Table 4.2.

Table 4.2: Reliability (Cronbach's Alpha) Results

Construct	Number of Items	Cronbach's Alpha
Green procurement	4	0.783
Green Information Sytems	7	0.870
Firm Performance	4	0.874

4.4 Descriptive Statistic of Constructs

Within this segment, descriptive statistics were computed for each of the constructs. The central objective of this study revolved around the examination of the interconnections between green information systems, green procurement, and company performance. As a facet of this investigation, descriptive statistics were employed to determine the means and standard deviations for every variable.

4.4.1: Descriptive Statistics of Green Procurement

Table 4.3: Green Procurement

SN		Min	Max	Mean	SD
GP1	Our firm furnishes environmental requisites to suppliers	1.00	5.00	3.51	1.10
GP2	Our firm collaborate with suppliers for attain environmental objectives	1.00	5.00	3.67	1.02
GP3	Our firm executes environmental audit for suppliers' internal management	1.00	5.00	3.47	1.08
GP4	Our firm assesses eco-friendly practices of second-tier suppliers	1.00	5.00	3.49	1.04

Drawing from the insights presented in Table 4.3, it can be deduced that participants share certain viewpoints about their respective companies' participation in specific actions. In particular, respondents indicate consensus that their organizations are engaged in the subsequent activities: Furnishing environmental design requisites to suppliers (mean = 3.51; Std = 1.10); Collaborating with suppliers to attain environmental objectives (mean = 3.67; Std = 1.02). In contrast, respondents adopt a neutral standpoint regarding their firms' involvement in the ensuing practices: Executing environmental audits for suppliers' internal management (mean = 3.47; Std = 1.08); Assessing eco-friendly practices of second-tier suppliers (mean =

3.49; Std = 1.04). These findings furnish insights into the participants' perceptions concerning their organizations' participation in various sustainability-related undertakings in conjunction with suppliers.

4.4.2: Descriptive Statistics of Green Information Systems

Table 4.4: Green Information Sytems

SN	Items	Min	Max	Mean	SD
GIS1	Trimming transportation costs	1.00	5.00	3.43	1.04
GIS2	Monitoring environmental data (such as toxicity, energy used, water used, air pollution)	1.00	5.00	3.31	1.15
GIS3	Overseeing emissions and waste generation	1.00	5.00	3.28	1.15
GIS4	Disseminating information to environmentally conscious decisions by consumers.	1.00	5.00	3.52	1.04
GIS5	Enhancing decision-making by emphasizing sustainability matters for executives	1.00	5.00	3.67	1.02
GIS6	Curtailing energy consumption	1.00	5.00	3.60	1.05
GIS7	Controlling carbon and other emissions	1.00	5.00	3.28	1.19

Drawing from the insights extracted from Table 4.4, it can be inferred that respondents harbor particular perspectives regarding the application of their organization's information systems for diverse purposes. To be specific, respondents are in agreement that their organization's information systems serve the subsequent objectives: Disseminating information to encourage environmentally conscious decisions by consumers (mean = 3.52; Std = 1.04); Enhancing decision-making by emphasizing sustainability matters for executives (mean = 3.67; Std = 1.02); Curtailing energy consumption (mean = 3.60; Std = 1.05). Conversely, respondents adopt a neutral stance concerning their organization's use of information systems for the ensuing aims: Trimming transportation expenses (mean = 3.43; Std = 1.04); Monitoring environmental data (such as toxicity, energy consumption, water usage, air pollution) (mean = 3.31; Std = 1.15); Overseeing emissions and waste generation (mean = 3.28; Std = 1.15); Controlling carbon and other emissions (mean = 3.28; Std = 1.19). These findings furnish insights into the respondents' viewpoints on the application of their organization's information systems for specific sustainability-oriented objectives.

4.4.3: Descriptive Statistics of Firm Performance

Table 4.5: Firm Performance

SN	Items	Min	Max	Mean	SD
ENP1	Curtailment of air emissions	1.00	5.00	3.25	1.16
ENP2	Mitigation of effluent waste	1.00	5.00	3.36	1.11
ENP3	Minimization of solid wastes	1.00	5.00	3.45	1.13
ENP4	A decrease in the utilization of hazardous/harmful/toxic materials was achieved	1.00	5.00	3.76	1.16

Analyzing the data laid out in Table 4.5, it can be deduced that respondents share the view that their respective organizations have attained specific accomplishments in the previous year. To be precise, there is a consensus that a decrease in the utilization of hazardous/harmful/toxic materials was achieved (mean = 3.76; Std = 1.16). Conversely, respondents adopted a neutral standpoint concerning their firms' achievements in the subsequent domains during the past year: Curtailment of air emissions (mean = 3.25; Std = 1.16); Mitigation of effluent waste (mean = 3.36; Std = 1.11); Minimization of solid waste (mean = 3.45; Std = 1.13). These findings offer insights into the participants' perspectives on their firms' accomplishments in environmental sustainability endeavors over the specified timeframe.

4.5 Model Testing and Evaluation of Hypotheses

The stage of model testing and hypothesis assessment employs correlation and regression analyses to scrutinize the connections among the pivotal variables encompassing causal, outcome, and mediating factors. This facet of the research centers explicitly on three principal hypotheses, with each aligned to one of the study's aims. These hypotheses underwent validation via regression analysis. Before executing the regression analysis, a correlation examination was carried out to procure an understanding of the interconnections among the focal constructs.

4.5.1 Correlation Analysis

In order to assess the existence of noteworthy interrelationships among the variables under consideration, a correlation analysis was executed encompassing all essential variables. The examination encompassed four pivotal variables: Green Procurement (GP), Green Information Systems (GIS), and Firm Performance (ENP). The results of this analysis have been outlined in Table 4.6, offering insights into the extent of correlation prevailing among the scrutinized variables of interest.

Table 4.6: Correlation Results

Variable	1	2	3
GP	1		
GIS	.718**	1	
ENP	.462**	.665**	1

**. Correlation is significant at the 0.01 level (2-tailed).

As depicted in Table 4.6, it is evident that all variables employed in the correlation analysis manifest notable interconnections. Derived from the findings of the correlation analysis, it becomes apparent that: GP (Green Procurement) exhibits a favorable correlation with GIS (Green Information Systems) (Coefficient = 0.718; p-value < 0.05). GP (Green Procurement) demonstrates a favorable correlation with ENP (Firm Performance) (Coefficient = 0.462; p-value < 0.05). GIS (Green Information Systems) is favorably correlated with ENP (Firm Performance) (Coefficient = 0.665; p-value < 0.05). These outcomes collectively emphasize the interrelatedness and substantial associations among the examined variables.

4.5.2 Regression Analysis

Table 4.7a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.462[a]	.213	.202	.86662

a. Predictors: (Constant), GP

Table 4.7b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.846	1	19.846	19.767	.000[b]
	Residual	54.826	73	.751		
	Total	69.672	74			

a. Outcome Variable: ENP
b. Predictors: (Constant), GP

Table 4.7c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.539	.443		3.477	.001
	GP	.543	.122	.462	4.446	.000

a. Outcome Variable: ENP

Drawing from the information presented in Table 4.7a, the R-squared value of 0.213 indicates that approximately 21.3 percent of the variability in ENP (Environmental Performance) can be attributed to the variable GP (Green Procurement).

Furthermore, as illustrated in Tables 4.7b and 4.7c, it is evident that GP exhibits a favorable correlation with ENP, and this connection is statistically substantial (Beta = 0.462; $p < 0.05$). This discovery validates that the adoption of green procurement practices is linked to an improved environmental performance, and this favorable relationship holds statistical importance.

Table 4.8a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.665[a]	.442	.434	.72993

a. Predictors: (Constant), GIS

Table 4.8b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.777	1	30.777	57.765	.000[b]
	Residual	38.894	73	.533		
	Total	69.672	74			

a. Dependent Variable: ENP

b. Predictors: (Constant), GIS

Table 4.8c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.768	.364		2.112	.038
	GIS	.776	.102	.665	7.600	.000

a. Outcome Variable: ENP

Referring to Table 4.8a, the R-squared value of 0.442 implies that approximately 44.3 percent of the variability in ENP (Environmental Performance) can be elucidated by the variable GIS (Green Information Systems).

Furthermore, upon reviewing Tables 4.9b and 4.9c, it becomes apparent that GIS exhibits a favorable connection with ENP, and this association holds statistical significance (Beta = 0.665; $p < 0.05$). This observation suggests that the adoption of green information systems contributes to enhanced environmental performance, and this positive correlation is statistically meaningful.4.5.3 Moderation Testing

Table 4.9 Moderation Testing

```
**************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : ENP
    X  : GP
    W  : GIS

Sample
Size:  75

**************************************************************************
OUTCOME VARIABLE:
 ENP

Model Summary
          R       R-sq        MSE          F        df1         df2
p
      .6974      .4864      .5040    22.4095     3.0000    71.0000
.0000

Model
             coeff         se          t          p       LLCI       ULCI
constant   -1.4673      .9987    -1.4693      .1462    -3.4586      .5240
GP           .7659      .3556     2.1535      .0347      .0568     1.4750
GIS         1.5915      .3499     4.5480      .0000      .8938     2.2893
Int_1        .2591      .1049    -2.4694      .0159     -.4683     -.0499

Product terms key:
 Int_1    :        GP       x        GIS

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1         df2          p
X*W      .0441     6.0981     1.0000    71.0000      .0159
----------
    Focal predict: GP       (X)
          Mod var: GIS      (W)
```

Based on the details presented in Table 4.10, the R-squared value of 0.4864 indicates that approximately 48.64 percent of the variability in ENP (Environmental Performance) can be explained by the variables GP (Green Procurement) and GIS (Green Information Systems). Moreover, the data underscores that GIS positively moderates the connection between GP and ENP, and this correlation holds statistical significance (Beta = 0.2591; $p < 0.05$).

Furthermore, the negative values of both the Lower Level of Confidence Interval (LLCI) and the Upper Level of Confidence Interval (ULCI) indicate that the interval does not encompass zero. This observation emphasizes the significance of the moderation effect of GIS, further affirming its noteworthy influence on the studied relationship.

4.5.3 Hypothesis Testing

Table 4.10: Hypotheses Table

Hypothesis	Paths	Beta-values	P-V	Decision
H1	GP→ENP	0.462	0.000	Supported
H2	GIS→ENP	0.665	0.000	Supported
H3	GP→GIS→ENP	0.259	0.001	Supported

4.6 Discussion of Results

Three separate goals were devised, all converging towards the overarching purpose of probing into the influence of green information systems on the interplay between green procurement and business performance.

4.6.1 Green Procurement and Firm Performance

The central aim of the study was to examine the correlation between green procurement and business performance. The outcomes of the investigation indicate that integrating eco-friendly purchasing practices contributes to an enhancement in business performance. The analysis exposed a noteworthy positive effect of green procurement on company performance (Beta = 0.462, $p < 0.05$), lending substantial backing to the initial hypothesis. The research's results validate that embracing green procurement methodologies is linked to improved business performance. This deduction aligns with the observations made by Song et al. (2016), who likewise ascertained that green procurement exerts a positive impact on business performance.

4.6.2 Green Information Systems and Firm Performance

The second focal point of the study was to investigate the link between environmentally-conscious information systems and business achievement. The study's deduction is that the adoption of green information systems positively contributes to elevated business performance. The study's outcomes unveiled a substantial positive influence of green information systems on company performance (Beta = 0.665, $p < 0.05$), thus validating the hypothesized connection. This revelation affirms the concept that the incorporation of green information systems fosters an improvement in organizational performance. This discovery corresponds with the observations made by Meacham et al. (2013), who also identified a positive impact of green information systems on businesses' environmental performance.

4.6.3 The Moderating Role of Green Information Systems

The third objective of the study was to delve into the impact of green information systems on the interplay between green procurement and business performance. The formulated hypothesis suggested that the positive connection between green procurement and business performance is fortified by the presence of green information systems. The research's outcomes exhibited a significant positive moderation effect of green information systems on the interrelationship between green procurement and business performance (Beta = 0.259, $p < 0.05$), thereby affirming the envisaged hypothesis. This discovery corresponds with the findings of Qu and Liu (2022), who observed that green information systems play a pivotal role in tempering the substantial influence of supply chain integration on enhancing organizational green innovations.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter functions as an assembly of the diverse discoveries extracted from the research, succinctly presented and deliberated upon. It additionally delves into the theoretical and pragmatic ramifications stemming from the conclusions reached by the study. The chapter encapsulates the deduced conclusions, suggested recommendations, and the research's outcomes as well.

5.2 Summary of Findings

5.2.1 Green Procurement and Firm Performance

At the outset, the aim was to establish a correlation between green procurement and business performance. The expectation was that a positive association would be evident between the implementation of green procurement practices and the overall performance of companies. Following the collection and analysis of data, it was ascertained that indeed a favorable connection exists between green procurement and firm performance. This deduction was fortified by corroborative findings from pertinent research investigations.

5.2.2 Green Information Systems and Firm Performance

The supplementary aim was to investigate the connection between environmentally-conscious information systems and business results. The hypothesis suggested that the introduction of green information systems would lead to favorable impacts on business performance. After the collection and scrutiny of data, it became apparent that a positive correlation does indeed exist between the adoption of green information systems and organizational performance. This observation was substantiated by complementary research endeavors conducted within the domain.

5.2.3 The Moderating Role Green Information Systems

The comprehensive objective was to explore the impact of green information systems in molding the interaction between green procurement and organizational performance. The hypothesis proposed that green information systems would serve as a positive moderating factor in the association between green procurement and business outcomes. By analyzing the effect of green information systems on the connection between green procurement and firm performance, the concept of moderation was scrutinized. Subsequent to data gathering and the research's implementation, it was uncovered that the relationship between green procurement and business performance is, in fact, positively moderated by the presence of green information systems. This determination is substantiated by supporting research conducted within the field.

5.3 Conclusion

The study focused on investigating two primary relationships: the correlation between green procurement and business performance, and the association between green information systems and business performance. The research unveiled a positive correlation between the implementation of green procurement practices and enhanced corporate performance. Likewise, the study identified a positive correlation between the integration of green information systems and improved business outcomes. Furthermore, the research established that the relationship between green procurement and business performance is positively moderated by the presence of green information systems.

5.4 Recommendation

Based on the conclusions drawn from the study, the following recommendations are put forth:

Managers should take proactive measures to introduce and integrate green procurement practices within their organizations. Prioritizing the selection of eco-friendly materials, goods, and services not only advances sustainability objectives but also yields positive impacts on

business performance. Emphasizing such practices can lead to improvements in operational efficiency.

Managers are advised to consider upgrading their information systems to support environmentally friendly processes and decision-making. Given the established positive relationship between green information systems and corporate success, investments in technology can facilitate the monitoring and reduction of environmental impacts. These systems enable better resource management and empower environmentally conscious choices.

Managers should recognize the pivotal role of green information systems in enhancing the link between green procurement and company performance. Effective utilization of these systems can provide insights into the environmental benefits derived from sustainable procurement practices. Engaging employees through training and awareness initiatives can cultivate a sustainability-oriented organizational culture.

Policymakers and governmental bodies can encourage businesses to adopt green procurement practices. Offering incentives, tax benefits, or subsidies can expedite the adoption of sustainable sourcing. Governments can also establish and enforce regulations that promote ethical purchasing practices. Mandating the disclosure of environmental impacts for products and services can foster transparency.

By incorporating these recommendations, organizations can contribute to the advancement of sustainable practices, fortify business performance, and contribute to positive environmental outcomes.

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APPENDIX

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

COLLEGE OF HUMANITIES AND SOCIAL SCIENCES

KNUST School of Business

SURVEY QUESTIONNAIRE – 2023

Dear Survey Participant,

Thank you for considering to participate in this research. This study seeks to examine the effect of green procurement on firm performance; the moderating role of green information systems. The study is undertaken by a team of researchers from the Department of Supply Chain and Information Systems of Kwame Nkrumah University of Science and Technology (KNUST). We can assure you that your responses will be treated in the strictest confidence, with the data collected anonymized and used for statistical and academic purposes only. Kindly note that you are responding to this survey as a member of the senior management team in your firm (preferably, as the CEO, Managing Director, General Manager, Production/Operations Manager, Logistics/Supply Chain Manager, Procurement or Purchasing Manager). We kindly request that you read each question carefully and answer to the best of your understanding as it pertains to your organization.

The questionnaire has specific instructions to follow and scales to use to indicate your responses. Please reflect on your personal experience in your firm and its operating environment to respond to the statements in the survey. Although some statements appear quite similar, they are also unique in many ways, so kindly do well to respond to each statement. The questionnaire will take about 15 minutes to complete. All questions and concerns about the study can be directed to Ms. Hikma Seidu (through Tel.: +233 243653734).

Please tick in response to each question

SECTION A: GREEN PROCUREMENT

On a scale of 1 (strongly disagree) to 5 (strongly agree), please rate the level of agreement with the following statements with respect to absorptive capacity

Code	Green Procurement	1	2	3	4	5
GP1	Our firm furnishes environmental requisites to suppliers					
GP2	Our firm collaborate with suppliers for attain environmental objectives					
GP3	Our firm executes environmental audit for suppliers' internal management					
GP4	Our firm assesses eco-friendly practices of second-tier suppliers					

Source: (Adapted from Zhu et al., 2017; Nkrumah et al., 2020)

SECTION B: GREEN INFORMATION SYSTEMS

On a scale of 1 (not used at all) to 5 (used to a great extent), Please indicate the extent to which your organization's information system is used for each of the following

Code	Green Information Systems	1	2	3	4	5
GIS1	Trimming transportation costs					
GIS2	Monitoring environmental data (such as toxicity, energy used, water used, air pollution)					
GIS3	Overseeing emissions and waste generation					
GIS4	Disseminating information to environmentally conscious decisions by consumers.					
GIS5	Enhancing decision-making by emphasizing sustainability matters for executives					
GIS6	Curtailing energy consumption					
GIS7	Controlling carbon and other emissions					

Source (Adapted from Esty and Winston, 2006; Meacham et al., 2013)

SECTION D: FIRM PERFORMANCE

Please indicate the extent to which you perceive that your firm has achieved each of the following during the past year (1 – not at all; 2 – a little bit; 3 – to some degree; 4 – relatively significant; 5 – significant

Code	**Firm Performance**	1	2	3	4	5
ENP1	Curtailment of air emissions					
ENP2	Mitigation of effluent waste					
ENP3	Minimization of solid wastes					
ENP4	A decrease in the utilization of hazardous/harmful/toxic materials was achieved					

Source: Adapted from (Zhu et al., 2008a; Meacham et al., 2013)

SECTION E: DEMOGRAPHICS

Instructions: Kindly respond to the questions /statements below by writing in ink or by ticking the fields that best apply you and your firm.

1. What is number of employees in your organization? Less than 20 [ ]; 20 – 40 [ ]; 41 – 60 [ ]; 61- 80 [ ]; 81 to 100 [ ]; More than 100 [ ]

2. Please indicate the annual revenue of your organization (GHS): less than 50,000 [ ]; 50,001-550,000 [ ]; 550,001-1,050,000 [ ]; 1,050,001 -1,550,000 [ ]; 1,550,001-2,050,000 [ ]; 2,050,001-2,550,000 [ ]; >2,550,000 [ ];

3. How long has your firm been operating in Ghana? < 3 years [ ]; 3 – 5 years [ ]; 6 - 10 years [ ]; 11 - 15 years [ ]; 16 - 20 years [ ]; Above 20 years [ ]

4. What is your position in the organization? CEO [ ]; Managing Director [ ]; General Manager [ ]; Supply Chain Manager [ ]; Procurement Manager [ ]; Operations Managers [ ].

5. How long have you held this current position? < 3 years [ ]; 3 – 5 years [ ]; 6 -10 years [ ]; 11 - 15 years [ ]; 16 - 20 years [ ]; Above 20 years [ ]

6. How long have you worked in this company? < 3 years [ ]; 3 – 5 years [ ]; 6 -10 years [ ]; 11 - 15 years [ ]; 16 - 20 years [ ]; Above 20 years [ ]

7. Your organization can be best described as: Locally owned [ ]; Foreign-owned; [ ] Jointly owned by locals and foreigner [ ]

8. What is your highest level of education? [ ] Diploma; [ ] HND; [ ] 1st Degree; [ ] 2nd Degree; [ ] PhD; [ ] Other

9. What is your gender? [ ] Male; [ ] Female