



Green Procurement Practices and Organizational Performance of Logistics and Supply Chain Companies in Kenya: A Case Study of Kuehne+Nagel Nairobi

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ABSTRACT

This research investigates green procurement practices and organizational performance of logistics and supply chain companies in Kenya by focusing on Kuehne+Nagel Nairobi. Four specific objectives that guided the study include; to establish the effect of carbon footprint measurement, environmental regulations, warehouse sustainability and supplier sustainability screening on organizational performance of Kuehne+Nagel Kenya. The study was grounded in three key theories: legitimacy theory, stakeholder theory, and institutional theory. The study design employed descriptive research surveys. The target population of 1130 employees in the supply chain, freight, and warehouse management. A structured questionnaire was used to collect data. Data analysis was done using SPSS version 29. The study used a sample of 296 employees of Kuehne+Nagel Kenya. The correlation analysis and regression analysis revealed significant and positive correlation between carbon footprint measurement and performance of Kuehne+Nagel with a coefficient correlation of 0.513 and a t-value of 4.905, there was a significant positive relationship between environmental regulations and performance of Kuehne+Nagel with a coefficient correlation of 0.545 and a t-value of 6.036, there is a significant positive relationship between warehouse sustainability and performance of Kuehne+Nagel with a coefficient correlation of 0.510 and a t-value of 5.482 and that there is a significant positive relationship between supplier sustainability screening and performance of Kuehne+Nagel with a coefficient correlation of 0.504 and a t-value of 6.036. From the findings, the study concluded that carbon footprint measurement, environmental regulations, warehouse sustainability and supplier sustainability screening positively affect the performance of Kuehne+Nagel. Organizations should, therefore, focus on improving carbon footprint measurement ensuring that aspects of environmental regulations are adhered to, policies to guide attainment warehouse sustainability are developed and that suppliers are vetted to ensure that they are compliant with sustainability practices. The study recommended adherence to carbon footprint measurement, environmental regulations, warehouse sustainability and supplier sustainability screening. It also recommended that policymakers should develop laws to ensure mandatory adherence to the green procurement practices. Also, further study should focus on other factors that may be influencing the effect of green procurement practices on organizational performance of logistics and supply chain firms in Kenya.

Key words: carbon footprint measurement, environmental regulations, sustainability practices, supplier sustainability screening, organizational performance

1.0 INTRODUCTION

The logistics and supply chain industry facilitates global trade and commerce. It enables businesses to operate efficiently by connecting manufacturers, suppliers, and consumers. In recent years, industry has been undergoing significant changes due to factors such as globalization, technological advancements, and increasing consumer expectations (Adesanya Adeola, Bakare Oluwaseun, and Williams John, 2020). It is due to these changes, organizations operating in this space are facing mounting pressure to adopt sustainable practices and integrate green procurement strategies to mitigate their impact (Lau & Lo, 2019).

Sustainability, as defined by the widely accepted Brundtland report, is the concept of development that strives to fulfill current needs while ensuring that future generations can satisfy their own needs without compromise (Hajian & Kashani, 2021). The essence of sustainability lies in meeting present requirements without jeopardizing the ability of future generations to meet their own (Oliveira, 2021). Management of energy usage to reduce its usage, waste reduction and management of the treatment of waste are considered when measuring green logistics activities. Today, environmental pollution presents an extremely complex problem, and many environmentally conscious people are becoming increasingly aware of this fact Dong et al. (2019). Increased awareness of climate change and environmental degradation has prompted organizations to rethink their strategies and adopt sustainable practices.

Emissions from the logistics industry are rising at a greater concern than any other industry and the trend is expected to continue such that by 2030 these levels were 80% higher than they were in 2007 unless there is a change (Hussein & Mutoka, 2021). Appealing to firms to embrace green logistics practices begins by discovering the enhancements these practices are likely to bring, not just in the economic aspect but also in other aspects like the environmental and social image of the firm (Hussein & Mutoka, 2021). The logistics and supply chain industry, given its inherent environmental challenges, serves as an ideal sector for studying green procurement practices its influence on the performance of organization. The choice of Kuehne+Nagel as a focus is based on its significant presence in Kenya and its commitment to sustainability. The case study methodology allows for detail synthesis of the problems, successes, and outcomes of the organization's sustainability initiatives with respect to carbon footprint measurement, environmental regulations, warehouse sustainability and supplier sustainability screening.

Carbon footprint measurement refers to the assessment of the total carbon emission from vehicles or other emitters (Bin et al., 2022). Carbon footprint measurement is important as it promotes understanding of greenhouse gas emissions. Countries have been keen to adopt green practices, which have enabled them to develop policies to track carbon emissions. The logistics industry has been found to be one of the most greenhouse-emitting industries, and, as a result, efforts have been made to measure carbon footprint in the logistics industry (Bin et al., 2022). It is important to note that carbon footprint measurement, though it is good to promote understanding of greenhouse emissions, is not easy. Accurate reporting that is not easy to obtain is required (Zhang et al., 2022). Focusing on carbon footprint measurement is important as it will help deal with carbon emissions, which is important for promoting sustainability.

Environmental regulations refers to the set laws, regulations, and standards that are intended to protect the environment and public health (Islam et al., 2020). It entails observing environmental requirements that govern the emission of greenhouse gases, among other pollutants. Environmental regulations requires a proper understanding of the regulations that govern the monitoring and reporting of greenhouse emissions. It also requires an understanding of pollution prevention measures and reporting of environmental performance (Islam et al., 2020). Environmental regulations also requires cooperation with regulatory agencies, which is important to ensure that compliance issues are addressed adequately (Al-Minhas et al., 2020). Working with different stakeholders helps to ensure fast compliance, which is important to minimize environmental risks significantly and promote sustainability significantly.

Warehouse sustainability covers various activities and initiatives that are important to reduce environmental impact, optimize the use of resources, and enhance social responsibility in warehouse operations (Saderova et al., 2021). Using energy-efficient lighting and renewable energy sources and optimizing warehouse layout and design to ensure efficient use of space can help promote warehouse sustainability. Implementing waste reduction and recycling programs can also help ensure warehouse sustainability (Saderova et al., 2021). Promoting eco-friendly transportation and logistics practices also helps to promote warehouse sustainability. In addition, worker safety, community engagement, and fair labour practices are important to promote warehouse sustainability (Minashkina & Happonen, 2020). Giving priority to sustainability in the management of the warehouse can help reduce the carbon footprint, lower operation costs, and ensure continuous sustainability.

Supplier sustainability screening refers to the incorporation of environmental, social, and ethical considerations in the selection and management of suppliers in the supply chain (Matthess et al., 2022). It entails an assessment of the suppliers' environmental practices and readiness to adopt good environmental practices. This can be done by examining suppliers' use of resources, waste management practices and emissions, and social and labor practices like salaries, human rights, and working conditions (Zhan et al., 2021). Giving priority to suppliers who have adopted good sustainability practices can mitigate sustainability risks significantly and enhance the reputation of the company. It can also help attain sustainability goals (Zhan et al., 2021). Supplier audits, engagement, and collaboration are some of the practices that can help ensure continuous sustainability improvement as they will promote sustainable practices across the supply chain.

Kenya has a vibrant logistics industry that is instrumental in ensuring an efficient supply chain. Logistics firms have been growing significantly over recent years owing to government initiatives to improve roads and build standard gauge railways (Mboya, 2020). Kenya is also strategically positioned in East Africa, which has helped the logistics firms to grow. Retail imports and exports have also been growing over the years due to the growth of the economy, which has consequently influenced the growth of logistics firms. In 2018, the logistic performance index in Kenya was ranked 68th but has significantly improved since (Ken Research, 2024). The logistics industry in Kenya makes up 60% of the businesses. It contributes 7% of the Gross Domestic Product (GDP). The industry generates approximately 75% of the new jobs (Ken Research, 2024). The industry nonetheless brings about environmental concerns that need attention to foster sustainability.

In 1890, Kuehne+Nagel was founded as a freight forwarding company in Germany and has evolved from a traditional international freight forwarder to a leading global provider of innovative and fully integrated supply-chain solutions (Kuehne+Nagel, 2024). As for 2024, the company has nearly 1,300 operating destinations in 100 countries and over 79,000 workers. The company in Kenya is one of its locations offering elaborate logistical services, that include distribution, warehouse management, airfreight forwarding, contract logistics and sea freight. Kuehne+Nagel Kenya is a representative logistics and supply company and is currently Kenya's biggest market shareholder (Hussein & Mutoka, 2021). The company is keen to adopt technology to enable it to improve on service delivery and achieve excellence.

Emissions from the logistics industry are rising at a greater concern than any other industry and the trend is expected to continue such that by 2030 these levels will be 80% higher than they were in 2007 unless there is a change Mutie et al. (2020). Global energy-related CO₂ emissions rose to 36.8 billion tonnes in 2022 with 8% of the global emissions caused by trade-related freight transport (International Energy Agency [IEA], 2023). The logistics and supply chain industry, particularly exemplified by firms like Kuehne+Nagel Kenya, is facing an evolving landscape where the integration of green procurement and sustainability practices is increasingly recognized as imperative for the ongoing quest for a cleaner and safer environment that can only be achieved through a visionary strategy (Hussein & Mutoka, 2021). Despite the growing awareness of environmental considerations, there exists a

knowledge gap in comprehending the specific effects of incorporating green procurement practices into the overall operations plan and how this integration influences organizational performance.

Research Objectives

- i. To establish the effect of carbon footprint measurement on the organizational performance of Kuehne+Nagel Kenya.
- ii. To analyze the relationship between environmental regulations and organizational performance of Kuehne+Nagel Kenya.
- iii. To examine the effect of warehouse sustainability practices on the organizational performance of Kuehne+Nagel Kenya.
- iv. To determine the relationship between supplier sustainability screening and organizational performance of Kuehne+Nagel Kenya.

2.0 LITERATURE REVIEW

Theoretical Literature Review

The study's anchor theory was the institutional theory. The supplementary theories included Legitimacy Theory and Stakeholder Theory.

Institutional Theory

The anchoring theory of this study is institutional theory. Institutional theory was developed by two sociologists, Meyer and Rowan in the late 1970s and early 1980s (Peters, 2022). The theory explains how organizations are influenced by societal norms and culture. It explains how organizations adjust to institutional pressures to enhance legitimacy and survival. According to the theory, organizations must adjust to the institutional pressures and that of society to become or remain competitive (Peters, 2022). The strength of this theory is its ability to explain how institutions adjust to institutional pressure to enable compete favorably in the dynamic business environment. The theory nonetheless takes lightly individual agency and the role of competition in shaping institutions (David et al., 2019). It is essential to consider the influence of individual agencies and competition in the industry in shaping institutional behaviours and decisions.

This theory nonetheless is useful to the research as it promotes the better comprehension of the Kuehne+Nagel norms, regulations, and expectations and how they influence performance. It also helps to shed light on the company practices and how they align with the expectations of the company (David et al., 2019). Further, it helps in understanding how it impacts on performance of organization as far as social economic and environmental performance is concerned. Institutional theory stipulates the norms, rules, policies and practices that guide the operations of organizations or actors in the economy. Thus, the institutional theory is useful in understanding and carbon footprint measurement and environmental regulations. The theory is also useful in informing sustainable warehouse sustainability practices and supplier sustainability screening in logistic and supply chain firms.

Legitimacy Theory

Legitimacy theory is a sociological theory that was developed by Berger and Luckman in 1966 (Deegan, 2019). The theory aims to explain how organizations legitimize themselves in the face of society. According to the theory, organizations work to gain and ensure that legitimacy is maintained by aligning their actions, work, culture, behaviors, and structures with societal norms, values, and expectations (Deegan, 2019). It is by meeting the needs and demands of society that the organization will be able to maintain legitimacy.

Legitimacy theory can be used to explain organizational behavior effectively (Silva, 2021). The theory provides insights that are important to know why organizations adopt certain practices to appear legitimate in the eyes of the customers and other interested parties. The theory also helps to predict how organizations respond to societal pressures and changes in expectations (Silva, 2021). The theory highlights the significance of managing stakeholder perceptions and expectations to ensure the organization's sustainability.

The theory nonetheless has some limitations. The theory assumes that organizations act rationally to gain and maintain legitimacy without looking into other factors that might be at play. The theory also cannot be used to fully explain an organization especially when it is faced with conflicting pressures (Tharmini & Lakshan, 2021). The theory overlooks the organization's contribution to shaping societal norms rather than conforming to them.

The study is relevant as it promotes understanding of the Kuehne+Nagel behavior. It also promotes understanding of the Kuehne+Nagel legitimization strategies and this is important to gain a good understanding of the company's green procurement practices. Finally, it also promotes understanding of how the organization has been able to adapt to societal expectations as far as sustainability is concerned.

Stakeholder Theory

Stakeholder theory was developed by Edward Freeman in the 1980s (Schaltegger et al., 2017). The theory changed the traditional views about corporate responsibility by emphasizing the need of the business to take into consideration the needs of all the stakeholders as opposed to shareholders only (Schaltegger et al., 2017). The theory's strength lies in the understanding that the prosperity of the business is determined by all the stakeholders. As a result, the business should give priority to the diverse interests of the stakeholders. The theory fosters good relationships which is important to build trust, loyalty, and long-term sustainability of the business (Freeman et al., 2021).

Balancing stakeholders conflicting interests is a challenge for the stakeholder theory. The theory has not explained effectively how conflicting stakeholder interests can be handled (Freeman et al., 2021). Notably, a decision that may be beneficial to one group might pose a challenge to another group which calls for elaborate structure to ensure that the conflict is addressed. Also, measuring the impact of stakeholder engagement on the performance of the organization is a challenge and complex (Freeman et al., 2021).

The theory nonetheless is relevant in understanding the Kuehne+Nagel company. Adopting stakeholder theory enables the study to comprehend how the company relates to and treats its stakeholders. It also promotes the understanding of how the company has managed to influence stakeholders to enable them to adopt sustainable practices. Further, it enables the understanding of how the company has been able to engage stakeholders to improve operational efficiency and performance.

Empirical Literature Review

Carbon footprint measurement and organizational performance.

Ghosh et al. (2020) did a systematic literature review of the carbon management footprint for sustainable supply chains. The study used a bibliometric approach where "Scopus" database was used for investigation. 37 articles were selected for careful examination and screening. The study revealed that managing the carbon footprint is essential to achieve sustainable development. The industries that have managed to reduce carbon emissions significantly are the food, electricity, and energy industries. The study focuses more on reducing carbon emissions by failing to explore carbon footprint measurement which is important to better understand the amount of carbon being released by the industries.

In Hungary, Szennay et al. (2021) studied the ecological footprint as an indicator of corporate environmental performance. The study used an online survey to study the ecological footprint of 73 Hungarian SEs. It focused on transportation, construction, production, retail and wholesale, white-collar jobs. According to the study corporate environmental performance and the financial performance of SMEs is positively related. Adopting measures that can promote environmental conservation, therefore, may enhance organization performance. This research focuses on SMEs, and this brings about the contextual gap as the focus was on the logistics industry.

Lee and Cheong (2011) examined carbon footprint and environmental programs in supply chain management in the Korean automobile industry using a case study of Hyundai Motors. A qualitative study technique employing document analysis of data and interviews was employed. The study found that Hyundai is doing well as far as carbon management is concerned. Monitoring and evaluating the carbon emissions of the suppliers helps the company to reduce carbon emissions significantly. This is important.

In Sub-Saharan Africa, Omoruyi-Aigbovo and Aigbovo (2022) studied carbon emissions and the profitability of selected insurance companies. The study gathered secondary information from 45 insurance companies from 2010 to 2019 in selected sub-Saharan African countries. Accordingly, carbon footprint significantly and affects the performance of insurance companies negatively. There is a need, therefore, for insurance companies to ensure that sustainable insurance procedures are adopted if they are to enhance the performance of the insurance companies. This research focuses on insurance companies as opposed to logistics companies, thus bringing about the contextual gap.

In Kenya, Mutie et al. (2020) investigated green logistics practices influence the performance of logistics companies. The study employed a cross-sectional research approach using 300 firms. Structured questionnaires were deployed to collect data and analyzed accordingly. According to the Study, green logistics practices and success of logistics companies have positive relationship. Logistics companies, therefore, should keen on adopting green logistics practices to improve performance and growth. The study, nonetheless, has failed to examine how carbon emission can be measured appropriately to determine the effectiveness of the strategies that have been undertaken to reduce its emission.

Environmental regulations and Organizational Performance

In the United States, Earnhart and Harrington (2021) examined audit frequency and quality influence on environmental compliance. The study did an empirical study of the chemical manufacturing industry employing EPA survey information that is publicly available. The study found that frequent and quality audits significantly improve environmental compliance for older facilities. There is a need to ensure audits are done frequently as they enable firms to know their environmental sustainability status, which is important to enable them to improve significantly. Though the study has focused on environmental compliance, the contextual gap has been noted as the study focused on chemical industries in US. The chemical industry in the US differs significantly from the logistics industry in the Kenyan context.

In India, Gupta and Gupta (2021) studied how environmental practices mediate environmental compliance and the performance of the firm. Survey design was employed where a structured questionnaire was employed to gather data from 240 corporate management executives. According to the study environmental practices have a mediating effect on environmental compliance and performance. Environmental practices promote voluntary compliance which is important to improving the performance of the company. Going forward, ensuring that firms are motivated to comply voluntarily will be important as it will reduce monitoring costs. The study has focused much on environmental practices, but it fails to examine environmental compliance in detail.

In Nigeria, Etemire and Sobere (2020) examined how environmental regulations can be improved to meet the changing needs. In doing so, the study examined the African norms and practices. The study found that traditional Africa norms and practices helped to initially protect the environment but have been overtaken by time. There is a need to ensure that environmental practices are updated to promote adherence with modern environmental policies. This research, nonetheless, has failed to examine explicitly environmental regulations as it has focused much on African environmental norms and practices.

In Algeria, Hamhami et al. (2020) examined environmental economics among the industries. The study did an empirical study of the industries in West Algeria. The study found that environmental compliance can be explained by regulation intensity. Intensifying regulations, therefore, helps a lot to promote environmental compliance. Strategies should be developed to improve regulations and intensify environmental compliance. Hamhami et al. (2020) revealed contextual and conceptual shortcomings as it focuses on manufacturing industries in Algeria as opposed to the logistics industry. The manufacturing industry differs significantly from logistics in management and operations, which explains contextual and conceptual gaps.

Focusing on construction companies in Kenya, Gichamba and Kithinji (2019) studied the effect of environmental regulation on their performance. The study employed correlational research design where 824 registered construction firms in Nairobi were studied. The study asserts that waste management regulation influences the performance of companies. The study nonetheless has failed to explicitly examine environmental compliance and performance on performance of the construction firms. It also focusses on the construction industry which differs significantly in operations with logistics industry.

Warehouse sustainability Practices and Organizational Performance.

In Saudi Arabia, Ali et al. (2022) evaluated the sustainability initiatives in the warehouse and their effect on sustainable performance. The study found that sustainable objectives play enhances a sustainable work culture. Organizations should be encouraged to develop sustainable policies. This is important to ensure sustainable performance outcomes.

In Malaysia Ashfaq (2020), examined the influence of green logistics on organizational performance. This research used a survey approach where 346 employees of medium and large manufacturing companies were studied. Structured questions were employed to gather data. The research found that green practices improve the production or performance of the organization significantly. The manufacturing sector is important economic progress in Malaysia and, as a result, the idea of green logistics can help a lot to ensure sustainability. The manufacturing industry is the biggest source of carbon emissions and waste, but the research did not examine in detail the aspects of warehouse sustainability practices like energy consumption, waste reduction, water conservation, and sustainable packaging.

Bartolini et al. (2019) did a systematic review and bibliometric analysis of green warehousing and found that there is increasing interest in sustainability. Green warehousing lacks case studies and empirical data and, as a result, comprehensive findings have not been put forth. Green warehousing is the way to go in the current world with the increased emphasis on sustainability. Organizations should review policies to effectively address sustainability issues.

In Ethiopia, Buzu (2021) examined the study effect of warehousing management on the performance of warehouses. Both descriptive and explanatory designs were adapted where secondary and primary data were employed. Employing questionnaires and interviews from 101 respondents, primary data were collected. According to the Study, warehousing management influences the performance of the warehouse. Organizations, therefore, should work on improving their warehousing management practices to streamline their processes.

In Kenya, Muema and Achuora (2020) studied the influence logistics management practices on the prosperity of manufacturing firms. This research used a descriptive research design where 708 assembling firms in Kenya were studied. The study found that management of warehouses is linked to how the manufacturing firms in Kenya perform in terms of financial performance. Accordingly, inventory management practices impact on the performance. The study focuses on management practices leaving out aspects of energy consumption, waste reduction, water conservation, and sustainable packaging.

Supplier Sustainability Screening and Organizational Performance.

Giannakis et al. (2020) examined supplier sustainability screening and performance in the UK and France. The survey was used to collect data from 144 supply chain professionals. Analytic network techniques were used to examine and investigate sustainability parameters and identify the relationship between variables. The study found that aligning the sustainability performance of suppliers with the organization's strategic aims is important to improve performance. The study nonetheless has failed aspects such as supplier assessments, collaborative initiatives, sustainability, and supplier compliance.

Awan et al. (2020) examined buyer-driven knowledge transfer activities that could be used to enhance organizational sustainability of suppliers. Questionnaires were used to gather information from 239 firms. The study found buyer knowledge transfer activities play an important role in influencing suppliers to make environmentally friendly investments. It motivates suppliers to adopt waste reduction procedures, recycle materials and ensure that employees are well-trained in sustainability and pollution prevention strategies. This is important as it enables suppliers to develop sustainability and align their goals and policies accordingly and ensure sustainability.

Adesanya et al. (2020) examined how sustainable performance can be improved through supplier relationship management in the tobacco industry. International tobacco company was taken as the case study where data was gathered using semi-structured interviews. The focus was on people who were engaged in improving sustainability. As per the Study, supplier relationship management is crucial to promote sustainable performance. There is also the need to deal with perception of sustainability to make sure that people have a better comprehension of sustainability.

In Kenya, Nyaga and Achuora (2020) examined sustainable procurement practices and the performance of beverage and food processing companies. The investigation employed descriptive cross-sectional survey research design where 108 firms were studied in Nairobi County. Data from procurement managers were gathered by employing structured questionnaires. It was established that sustainable procurement practices influence significantly the performance of beverage and food manufacturing firms. Nyaga and Achuora (2020) nonetheless has failed to investigate the aspect of supplier assessments, collaborative initiatives, sustainability, and supplier compliance that are important in understanding supplier sustainability screening and organizational performance.

Summary and Research Gaps

Several studies have investigated various factors that are critical to the performance of an organization and include, (Trivellas & Reklitis, 2020), who defined sustainability in business as a dynamic condition resulting from a firm's action in developing perpetual stakeholders and nurturing the values of shareholders. Agyabeng-Mensah et al. (2020) found that organizations prioritizing both societal and environmental concerns tend to better serve their shareholders and customers compared to those that do not emphasize these aspects, highlighting the importance of incorporating sustainable values for organizational performance. Rashidi and Cullinane (2019) assessed various factors relating to organizational performance, such as employee satisfaction, operational efficiency, and relational efficiency. This study focused on measuring organizational performance based on the definition (Baah et al., 2020). The area of focus was operational efficiency, customer satisfaction, market share, and financial performance and their relationship after adopting green procurement and sustainability practices such as carbon footprint measurement, environmental regulations, warehouse sustainability, and supplier sustainability screening.

The current emphasis on economic performance in the logistics industry often sidelines the crucial dimensions of sustainability. Mutie et al. (2020) highlights a notable opportunity for future research, advocating for an examination of the interrelationship between green procurement practices and organizational performance bringing out conceptual gap and contextual gap. This research gap emphasizes the need to explore if and how green procurement practices can be effectively be made part of the operations of the logistics firms alongside conventional economic considerations.

A study by Szennay et al. (2021) on ecological footprint as an indicator of corporate environmental performance of Hungarian SEs (state enterprises) established a positive correlate between ecological footprint and corporate environmental performance. However, the study focused at SEs whereas this study focuses at logistic and supply firms indicating the existence of contextual gap. In another study by Lee and Cheong (2011) examined carbon footprint and environmental programs in supply chain management in the Korean automobile industry and found that Hyundai is doing well as far as carbon management is concerned. This contrasts the current study focuses at logistic and supply firms. The study by Omoruyi-Aigbovo and Aigbovo (2022) assessed carbon emissions and the profitability of selected insurance companies contrasting this study that focuses at logistic and supply firms. Compared to other firms in other sectors like insurance or just SEs, logistic and supply firms contribute immensely to carbon food print. Therefore, the study purposes to investigate green procurement and sustainability practices effect on organizational performance within the logistics and supply chain sector by focusing at Kuehne+Nagel Kenya. By scrutinizing the interplay between green procurement practices and performance of the firm, this research seeks to add value into the successful integration of supply chain sustainability principles into the strategic planning of logistics firms, paving the way for an elaborate comprehension of their influence on overall performance of the organization.

Conceptual Framework

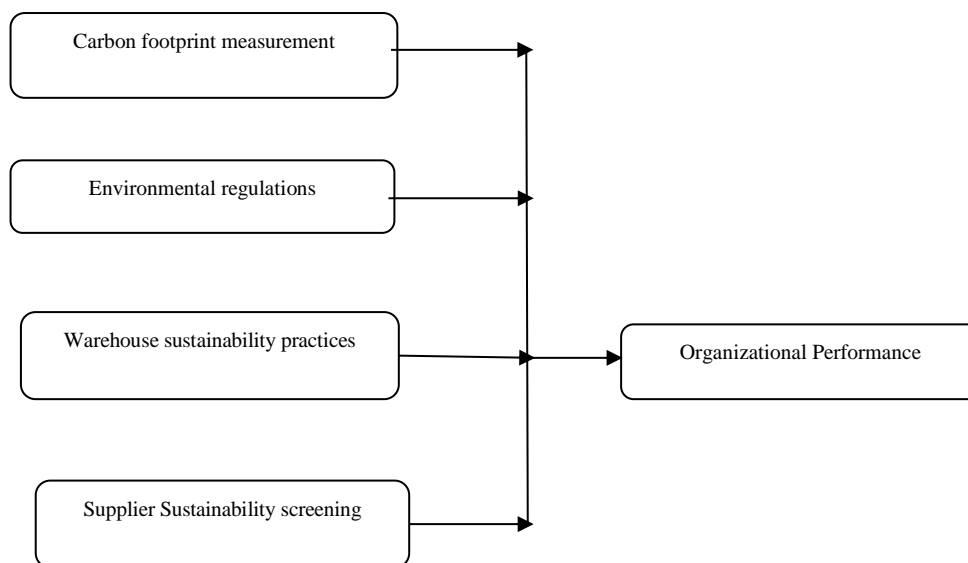


Figure 1: Conceptual Framework

3.0 METHODOLOGY

Descriptive survey study design was employed. The design was useful in examining how green procurement practices influence organizational performance using Kuehne+Nagel Nairobi as a case study. The design was useful in examining the variables and describing their characteristics. To collect data, a structured questionnaire was employed. Collected data was analyzed using SPSS version 29. Descriptive and inferential analysis was done consequently enabling the study to better understand the variables that were the focus of the study.

Kuehne+Nagel has a one branch in Mombasa Kenya and three branches in Nairobi Kenya with a total population of 1803 employees in Kenya. However, the study only focused on employees in Nairobi with target population of 1130 employees. Thus, the study's target population was 1130 supply chain

employees, freight managers, and warehouse managers of Kuehne+Nagel Kenya (Kuehne + Nagel Kenya, 2024). Focusing on this population is important because it enabled the study to get accurate information that can be used to come up with results that can be relied upon.

The sample size was 297 respondents using Krejcie and Morgan's (1970) technique. This research employed a stratified sampling method. Using a stratified sampling method enabled the study to get representation from different levels of the organization which is important to get information that can be relied upon. A simple random sampling technique was used to select employees from each category, hence giving equal chances for selection in each as suggested by (Thomas, 2023).

The study employed a structured questionnaire. The use of the questionnaire ensured the anonymity of the study which is important to ensure that the study meets the ethical requirements of the research (Mcleod, 2023). Also, a structured questionnaire was convenient and effective as it is cost-effective. It also enabled the study to collect data that is not biased. The questionnaire was employed to collect data from the respondents.

After data has been gathered using questionnaires, it was sorted as per the research study objectives with the help of statistics analysis software, SPSS version 29. The SPSS version 29 helped analyze the quantitative data to make study conclusions. Similarly, data analysis was made much simpler using statistical measures of regression and correlation to obtain the relationships between the variables under study. Descriptive analysis was conducted by employing frequency distribution tables and then followed by inferential analysis calculations on the coefficient of determination, coefficient of correlation and multiple regressions to attain the link and weight that exists between the research variables.

4.0 FINDINGS

Response rate

The study targeted 257 supply chain employees, 12 freight managers and 27 warehouse managers. 73.31% supply chain employees filled and returned the questionnaires, 3.38% freight managers filled and returned the questionnaires while 7.09% warehouse managers filled and returned the questionnaires. Overall, 248 questionnaires which represents 83.78% questionnaires were filled and returned. According to Mohajan (2020), a response rate of above 50% is representative of the population. 83.78% response rate, therefore, was a representative of the population.

Correlation Analysis

The correlation analysis for the study is presented in Table 1. The correlation results are based on Pearson's correlation coefficient which ranges from -1 to +1. The correlation value of -1 shows a perfect negative correlation, the value of +1 shows a perfect positive correlation while a value of 0 shows that there is no correlation at all. Carbon footprint measurement, environmental regulations, warehouse sustainability practices and supplier sustainability screening had a Pearson correlation value of 0.513, 0.541, 0.510 and 0.504 respectively. The values indicate a positive and strong correlation between carbon footprint measurement, environmental regulations, warehouse sustainability practices and supplier sustainability screening and organizational performance. The coefficients gave values of 0.5 and above (50% and above) showing a positive relationship between the study variables which is in line with the assertion of Shrestha (2021).

Table 1: Correlations

		Organizational performance	Carbon Footprint Measurement	Environmental Regulations	Warehouse Sustainability practices	Supplier Sustainability screening
Organizational performance	Pearson Correlation	1				
	Sig. (2-tailed)					
Carbon Footprint Measurement	Pearson Correlation	.513**	1			
	Sig. (2-tailed)	0.000				
Environmental Regulations	Pearson Correlation	.545**	.396**	1		
	Sig. (2-tailed)	0.000	0.000			
Warehouse Sustainability practices	Pearson Correlation	.510**	.318**	.296**	1	

	Sig. (2-tailed)	0.000	0.000	0.000		
Supplier Sustainability screening	Pearson Correlation	.504**	.270**	.266**	.315**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	248	248	248	248	248

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

Regression Analysis

Table 2 presents the results which showed how well the data fits on the regression model to explain the phenomena under study.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.747a	0.558	0.551	0.43508

a Predictors: (Constant), Supplier Sustainability screening, Environmental Regulations, Warehouse Sustainability practices, Carbon Footprint Measurement

From Table 2 R square is 0.558. The R square of 0.0.558 implies that 55.8% of the variations in the organizational performance of Kuehne+Nagel can be explained by carbon footprint measurement, environmental regulations, warehouse sustainability practices and supplier sustainability screening. This is supported by the adjusted R square of 0.551. R square of 0.558 means that 55.8% of variability in the performance of Kuehne+Nagel is explained by the four variables carbon footprint measurement, environmental regulations, warehouse sustainability practices and supplier sustainability screening in the regression model. Focusing on the improvement of carbon footprint measurement, environmental regulations, warehouse sustainability and supplier sustainability screening, therefore, will improve the performance of the organization.

According to Hajian and Kashani (2021), focusing on factors that can ensure sustainability can enable the business to be efficient. It can enable the organization to connect with manufacturers, suppliers and consumers that are keen on sustainability. The supply chain industry has been undergoing changes in recent years Kiptum et al. (2024). Ensuring that the organization keeps up with changes, therefore, is important. Focusing on carbon footprint measurement, environmental regulations, warehouse sustainability practices and supplier sustainability screening can enable the organization to meet its needs and that of its customers as far as sustainability is concerned (Lau & Lo, 2019).

Oliveira (2021) observes that adherence to sustainability practices can enable the organization to meet present and future needs and this is important to enable it to achieve sustainable performance. Environmental pollution is becoming more complex day by day, which explains the importance of being environmentally conscious Mwangi et al. (2021). Increasing awareness about sustainability can help a lot to motivate organizations and people to adopt collaborative and collective approach which is important for good performance to be realized. Table 4.10 presents the analysis of variance (ANOVA).

The analysis of the variance shows that the overall model is statistically significant. As a result, carbon footprint measurement, environmental regulations, warehouse sustainability and supplier sustainability screening significantly influence the performance of Kuehne+Nagel. The analysis of variance found the F statistic to be 76.685 and the p-value to be 0.000 which shows that the overall regression model was statistically significant. A P-value that is lower than 0.05 suggests that the F statistic is significant. It means that at least one variable among the four variables namely, carbon footprint measurement, environmental regulations, warehouse sustainability and supplier sustainability screening has a significant effect on the performance of Kuehne+Nagel. The P-value was less than the probability value of 0.05 significance level which confirms the influence of carbon footprint measurement, environmental regulations, warehouse sustainability practices and supplier sustainability screening on the performance of the organization.

Hussein and Mutoka (2021) agree that factors that influence sustainability influence the performance of the organization. Organizations need to focus on environmental practices without looking at the economic aspect as it will help to build the image of the company for long-term gains. The logistics and supply chain industry across the world are keen to adopt practices that can help them to progressively enhance environmental sustainability of the products and services they offer (Amran et al., 2020). Focusing on environmental practices can enable organizations not only to enhance sustainability but also get financial advantages.

Table 3: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.065	4	14.516	76.685	.000 ^b
	Residual	45.999	243	.189		
	Total	104.064	247			

a. Dependent Variable: Organizational performance

b. Predictors: (Constant), Supplier Sustainability screening, Environmental Regulations, Warehouse Sustainability practices, Carbon Footprint Measurement

Table 4 presents the coefficient regression results.

Table 4: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.495	.148		3.341	.001
	Carbon Footprint Measurement	.218	.044	.236	4.905	.000
	Environmental Regulations	.256	.041	.301	6.300	.000
	Warehouse Sustainability Practices	.242	.044	.258	5.482	.000
	Supplier Sustainability Screening	.274	.045	.279	6.036	.000

a. Dependent Variable: Organizational performance

In the model above (Table 4), the predictive variables have positive beta values. For the carbon footprint measurement $\beta=0.218$, environmental regulations $\beta=0.256$, warehouse sustainability practices $\beta=0.242$ and supplier sustainability screening $\beta=0.274$. The beta values of carbon footprint measurement, environmental regulations, warehouse sustainability practices and supplier sustainability screening are greater than the p-value, 0.05 consequently confirming that the variables are predictors of the performance in Kuehne+Nagel.

From the results of carbon footprint measurement ($\beta=0.218$, $p=0.000<0.05$), there was a positive and significant relationship between carbon footprint measurement and performance of Kuehne+Nagel. From the regression model, it means that when the carbon footprint measurement is increased by one unit, the performance of Kuehne+Nagel will be increased by 0.218 units. P-value= 0.000 which is lower than 0.05 consequently showing that the relationship between carbon footprint measurement and performance was not by random chance.

Carbon footprint measurement should be made part and parcel to improve the organization, and this is supported by institutional theory. According to institutional theory, institutions need to identify what works for them and make part of their norms and culture (Peters, 2022). According to Ghosh et al. (2020) proper management of carbon footprint is important to achieve sustainable development. Accordingly, organizations that have managed to reduce carbon emissions significantly have managed to attract partners, customers and stakeholders which consequently enables them to improve performance significantly Dahlmann et al. (2017). Carbon footprint measurement is important to better understand the amount of carbon being released by the organization and this is important for the development of strategies to effectively reduce carbon emission to enhance sustainability and improve the performance of the organization (Szennay et al., 2021). Organizations should ensure that environmental programs in supply chain management as it will help to enhance good management practices.

From the results of carbon footprint measurement ($\beta=0.256$, $p=0.000<0.05$), there was a positive and significant relationship between environmental regulations and performance of Kuehne+Nagel. From the regression model, it means that when the environmental compliance via regulations is increased by one unit, the performance of Kuehne+Nagel will be increased by 0.256 units. P-value= 0.000 which is lower than 0.05 consequently showing that the relationship between environmental regulations and performance was not by random chance.

With the advancement in technology and globalization, people are now more informed than before. From the results, Kuehne+Nagel has not fully ensured that environmental regulations aspects that were the focus of the study are fully observed. To legitimize itself in the face of the society, the organization should observe the environmental regulations' aspects that have been identified as per the legitimacy theory (Deegan, 2019). Organizations should carry out frequent audit to understand how it is doing in terms of environmental regulations (Eamhart & Harrington, 2021). Frequent quality audits significantly improve environmental regulations for an organization as its sets stage for the development of strategies that are important to improve compliance. Organizations also should promote good environmental practices as it motivates them to be voluntarily compliant and improve the performance of the organization (Wu et al., 2020).

From the results of warehouse sustainability practices ($\beta=0.242$, $p=0.000<0.05$), there was a positive and significant relationship between warehouse sustainability practices and performance of Kuehne+Nagel. From the regression model, it means that when warehouse sustainability practices are increased by one unit, the performance of Kuehne+Nagel will be increased by 0.242 units. P-value= 0.000 which is lower than 0.05 consequently showing that the relationship between warehouse sustainability practices and performance was not by random chance. Ali et al. (2022) observes that warehouse sustainability practices are important for the attainment of sustainable performance. Setting sustainable objectives is important as it enhances a sustainable work culture. Organizations should also be encouraged to develop sustainable policies as they are important in ensuring sustainable performance outcomes (Silvestre & Tirca, 2018). Green warehousing is the way to save the world from environmental degradation. Environmental policies should be continuously reviewed to meet the changing needs (Bartolini et al., 2019). This is important as it enables organizations to adjust to changes in warehouse sustainability practices and achieve the best environmental outcomes and performance.

From the results of supplier sustainability screening ($\beta=0.274$, $p=0.000<0.05$), there was a positive and significant relationship between supplier sustainability screening and performance of Kuehne+Nagel. From the regression model, it means that when the supplier sustainability screening are increased by one unit, the performance of Kuehne+Nagel will be increased by 0.274 units. P-value= 0.000 which is lower than 0.05 consequently showing that the relationship between supplier sustainability and performance was not by random chance.

Organizations in the supply chain management should ensure stakeholders that include suppliers are brought on board to contribute to environmental sustainability and improve organizational performance as per stakeholder theory (Schaltegger et al., 2017). Ensuring that suppliers can align their sustainability performance to the organization strategic aims (Giannakis et al., 2020). Aspects such as supplier assessments, collaborative initiatives, sustainability, and supplier compliance are important as they contribute to organizational sustainability. Knowledge transfer activities play an important role in influencing suppliers to make environmentally friendly investments (Adesanya et al., 2020). It motivates suppliers to adopt waste reduction procedures, recycle materials and ensure that employees are well-trained about sustainability and pollution prevention strategies consequently enabling them to develop sustainability goals and align their goals and policies.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The study concludes that carbon footprint measurement positively affects the performance of Kuehne+Nagel. Organizations should, therefore, focus on improving carbon footprint measurement. They should also focus on ensuring that its stakeholders, particularly suppliers, adhere to the carbon footprint measurement practices and requirements. This is important as it will improve the image of the organization and foster performance of the organization. They should also focus on ensuring that their employees have a good understanding of carbon footprint measurement practices and requirements. This is important as it will enable them to support the organization to reduce carbon emissions.

The study also concludes that environmental regulations positively affects the performance of Kuehne+Nagel. The organization nonetheless has not ensured that specific aspects of environmental regulations are observed. There is a need for organizations to ensure that all aspects of compliances are adhered to. Ensuring that mandatory compliance is implemented will help a lot to ensure that this is achieved. Organizations should also be deliberate to ensure that environmental regulations that have not been observed are implemented according. This can be achieved by developing strategies with organization employees and putting manageable timelines that can be easily achieved.

Similarly, the study concludes that warehouse sustainability practices positively affects the performance of Kuehne+Nagel. Organizations are encouraged to develop proper policies to guide attainment warehouse sustainability practices. Policies should be designed in a way that enables the organization to adjust to changes in the industry. This is important as it will enable the organization to gain a competitive advantage and improve its performance. Organizations should also ensure that stakeholders are involved in coming up with the policies. Doing this will enable the organization to come up with policies that will help in attainment of warehouse sustainability practices.

Lastly, the study concluded that supplier sustainability screening positively affects the performance of Kuehne+Nagel. The organization should ensure that suppliers are vetted to ensure that they are compliant with sustainability practices. Organizations should ensure that stakeholders are brought together on environmental sustainability. This is important as it will enable organizations to adopt a collaborative approach that is important to ensure sustainability and improve organizational performance. Organizations should also ensure that suppliers are trained as per the sustainability policies and needs of the organizations. This will go a long way to ensure suppliers support the organization to achieve sustainability.

According to the study, green procurement practices that include carbon footprint measurement, environmental regulations, warehouse sustainability practices and supplier sustainability screening are essential to improve performance of logistics and supply chain organizations. As a result, logistics and supply chain organizations should ensure that carbon footprint measurement, environmental regulations, warehouse sustainability practices and supplier sustainability screening are adhered to. Organizations should develop internal sustainability policies in line with the international policies. This is important not only to enhance sustainability but also to enable the organization to develop capacity to compete globally. The study found that environmental regulations' aspects have not been observed in logistics and supply chain. The findings shows that organizations have more to do as far as environmental regulation is concerned. Organizations in the logistics and supply industry, therefore, should focus on ensuring that they are environmentally compliant. They should particularly focus on issues such training of the employees on environmental compliance practices.

Policymakers have a role in ensuring that correct laws and policies are in place to support the green procurement practices. Policymakers should develop laws to ensure mandatory adherence to the green procurement practices. Policies should be updated regularly to enable organizations with happenings in the industry. The policies should also focus on tightening loose ends in sustainability. This is important to enhance sustainability and improve the

performance of logistics and supply chain organizations. Policies should also focus on assisting organizations to observe green procurement practices. This is important as it will enable organizations to be well-empowered to implement and adhere to green procurement practices.

Lastly, the study focused only on four factors: carbon footprint measurement, environmental regulations, warehouse sustainability practices and supplier sustainability screening. Further, a study should be carried out to determine other factors that may be influencing the effect of green procurement practices on organizational performance of logistics and supply chain firms in Kenya. Factors such as green organizational behaviour and the size of the organization should be investigated to examine how they influence the organizational performance of logistics and supply chain firms in Kenya. It is also important to examine the mediating role of regulatory framework on the effect of green procurement practices on organizational performance of logistics and supply chain firms in Kenya.

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