

Factors Influencing Effective Green Procurement Implementation on Performance of Manufacturing Firms In Nakuru County Kenya

Elizabeth Wangari Mburu¹, Dr. Jacqueline Omuya, PhD²

¹ Student, Masters of Science Degree in Procurement and Supplies Management, Mount Kenya University, ²Lecturer, Department of Accounting and Finance, Mount Kenya University,

Abstract: This study examined how green procurement impacts the effectiveness of industrial firms in Nakuru County, Kenya. The study purposed to determine how procurement policies impact the execution of green procurement programmers. The study's specific objective was to analyze the impact of Eco Supplier Selection on green procurement implementation. A theory of legitimacy was used to guide the research. Data was gathered from three levels of management across five organizations. The study used a design that was descriptive. The target audience included 109 employees from 15 industrial enterprises in Nakuru County, Kenya. The investigation used census because the population is small. The linear regression model was applied in demonstrating the link between factors that are independent and the variable of dependency. Pilot testing in three industrial enterprises in Nyandarua County was performed to enhance its reliability and validity. Tables were used to provide descriptive data such as frequencies, means, percentages, and standard deviations, along with explanations. Inferential statistics, such as the ANOVA and its Pearson correlation coefficient, were applied in order to evaluate the correlation between variables. Results from this study indicated a relationship that was a correlation that was positive between eco-friendly supplier and green procurement implementation among manufacturing companies in Nakuru. From the result the researcher concludes that eco-friendly supplier was significant in explaining green procurement implementation among manufacturing companies in Nakuru.

Keywords: Green Procurement Implementation, Performance of Manufacturing Firms, Nakuru County, Kenya.

I. Introduction

Many organizations are using green public procurement as an enforcement mechanism to address sustainability, climate change consequences, and environmental challenges. Green procurement, often referred to as affirmative procurement, is the process of using well-established "green" procurement schemes to acquire environmentally friendly goods and services. Buying goods or services that, when compared to conventional alternatives, have a less overall environmental effect is known as "green procurement." This means that while making judgements about purchases, natural variables like value, execution, and quality must be taken into account. This implies that goods and services with lower resource use should take precedence over rival goods and services. According to Kull, T. J., and Talluri, S. (2018), commodities or services that consume fewer regular resources should be prioritized above those that use a higher number of natural resources. Such efforts prioritize environmental effects in along with cost, functionality and other standard purchasing criteria to reduce waste and pollution. Green procurement programs often cover products with recycled content, energy-efficient goods and standby power devices, alternative fuel vehicles, bio-based goods, non-ozone-producing and depleting chemicals, and environmental protection. Green Procurement Programs urge purchasers to adhere to Environmentally Preferable Purchasing (EPP) principles. Green Procurement prioritizes environmental effect in purchasing decisions, with procurement officials considering factors beyond price and quality. Many organizations worldwide want to acquire environmentally friendly products and services (Hu, A. H., & Hsu, C. W., 2020). Talluri (2018) reports that both public and commercial organizations are adopting green procurement techniques that include environmental and social factors. Leading private sector organizations have made significant progress towards

green procurement methods. Several commercial businesses are aiming to improve the natural execution. According to Chopra (2022), green procurement has complemented their operations and commodities. For certain products, such as recycled office paper, renewable energy, paints, and cleansers, private companies have implemented green buying strategies within the last 20 years. They are also, nonetheless, looking into the elements, materials, and chemicals that go into their products and services. This inventory network technique goes beyond the organization's "entryways" to reduce expenditures and risk. Prominent companies employ life-cycle analysis and resource monitoring instruments to detect substances and materials that provide noteworthy hazards to the environment, human well-being, and safety. They then redesign their products to reduce or eliminate these materials. Green procurement is considered as a natural way to improve goods and operations in the private sector, reducing risk, total cost of ownership, and improving inventory network execution (Chopra, 2015). Four primary ways are used in public and private companies' green procurement operations: supply chain efforts, internal assessments, third-party evaluations, and obtaining eco-labeled goods or services. Private enterprises' administrative, procurement, environmental, or operational divisions frequently implement these techniques (Talluri, 2018). Green procurement purchasing generally relies on product standards, labelling, and certifications to identify environmental features and performance. Leading private enterprises prioritize bottom-line performance and view green procurement as an essential component of good supply chain management methods. Private organizations employ both internal and external assessments to guide their green buying decisions. However, until there are definite financial benefits for them and/or their clients, private companies are hesitant to start green procurement initiatives (Sarkis, 2012).

To encourage the development and transmission of environmentally conscious goods and services through public procurement policies" was the request issued by the 2020 World Summit on Sustainable production (Walker & Brammer, 2021). Given that government, private businesses and worldwide organizations have been including environmental requirements into their procurement procedures more often in an effort to support the organization's overarching objectives of long-term growth (Srivastava, 2017; Brammer & Walker 2021; Preuss, 2019; Nijaki & Worrel, 2022). It has been determined that public procurement is a tool that may influence choices about Waste management and disposal, pollution control, source selection, and environmental norm adherence (Testa, F., Iraldo, F., Vaccari, A., & Ferrari, E. (2015) Green procurement (GP) has emerged as the current arena for worldwide competitiveness (Rao & Holt, 2020). 2018 saw the adoption of an integrated product policy (IPP) message by the European Commission (EC). This described their approach to lessening the harm that product due to the environment. The commission made numerous decisions in this message to encourage ongoing enhancements to products' environmental performance throughout the course of their whole lifespan. Regarding green public procurement (GPP), the commission urged member states to release their National Action Plans (NAPs) for greening public procurement in a publicly accessible manner (Zuzana, 2022). These should include an assessment of the existing situation as well as ambitious goals for the ensuing years. The steps that will be taken to achieve this should also be made clear in the NAPs. Before the end of 2016, they should be thoughtfully drafted, and then periodically reevaluated after that. Although these NAPs won't have legal authority, they will provide political impetus to advance the realization and awareness of Green Public Procurement (GPP) concerns. Furthermore, they will allow member states to choose the choices that best match their level of success and political structure (European Commission, 2018). Japan was the first country to use Green Public Procurement to save almost extinct forest resources. The nation first implemented a national government procurement strategy for regionally sustainable forest management before launching a global programme.

Many manufacturing organizations in Africa consider the efficient adoption of green procurement techniques to be an expensive add-on or strategy. Over the course of the purchase, sustainable solutions can, in fact, frequently be less expensive. A few of the key benefits consist of the return on money, environmental protection and enhancement, more efficient resource use, increased participation in society, enhanced risk management, reduced whole-life costs, enhanced supplier relationships, air and ethical commerce, a flexible and varied supply chain, and a competitive advantage in your industry (Talluri, 2018).

South Africa is dedicated to addressing the climate change problem and acknowledges the danger of both global warming and general environmental deterioration (RSA 2019). In order to solve this issue, the nation has developed a variety of green policy initiatives. One of the advanced green projects for 2021 is the National Environmental Change Response White Paper (DEA 2021). Green (sustainable) public procurement is one of the ways where climate change may be handled; this idea was proposed during the annual Sustainable Development Forum Summit (WSSD, 2022). Taking into consideration that metropolitan areas serve as centers for both consumption and production – activities that significantly increase greenhouse gas (GHG) emissions, which will eventually lead to climate change and global warming. The purpose of this study was to examine how much legislation exists on green procurement. Being a major

actor in the world and one of the top 15 emitters of greenhouse gases, South Africa—and particularly its local government— must be perceived as taking action to mitigate greenhouse gas emissions through green procurement. By use of the efforts of Helen Testa et al., 2022; Correia et al., 2018; Touboullic and Walker 2018; Walker and Brammer 2009; Brammer and Walker 2021; Crespín-Mazet and Donte, 2022; Walker, colleagues, and additional writers, the subject of sustainable public procurement has been widely explored.

Green Procurement in Kenya Practices has a 51.4% rate, placing it 83rd out of 132 nations in the worldwide environmental performance ranking (Burgess, 2016). This suggests that in order to be well regarded while protecting Mother Earth from further harm, there is a need to be more environmentally conscious through the application of green buying. Kenya is a party to the Kyoto Protocol, and the concept of the "green economy" has gained popularity as a useful framework for focusing growth in a way that would maintain environmental quality for future generations. Green procurement must thus be implemented in order to reduce contamination to the ecosystem; it is not a choice. In some industries, including as agriculture, water, energy, housing, transportation, and tourism, macroeconomic policies and financial tools have been implemented to promote the green economy (Michuki, 2021). The Kenya Vision 2030, Kenya Constitution 2010, and national plans all highlight every Kenyan's inherent right to a sustainably managed environment. The minister claims that Kenya has supported energy efficiency initiatives and established an atmosphere that encourages funding for the development of hydroelectric, geothermal energy, and wind energy technologies. All of these will encourage and spur investment in environmentally friendly growth, which includes turning garbage into clean energy sources like biogas. It has been observed that a large number of industrial companies operate at night, when they might not be seen by law enforcement, in order to evade prosecution rather than manage the environment (Michuki 2021).

Five industrial enterprises in Nakuru have already included a green buying strategy in their strategic plan, according to Muturi, P. (2018). Over the previous 10 years due to their spontaneous responses to the growing need for goods and services brought on by the expanding population, a sizable number of industrial enterprises have kept expanding (Thomson 2018). As a result, the cost of operating a manufacturing firm has gone up since more green raw materials are being purchased. This has led to unhappiness in many businesses, and in an attempt to make their goods both high-quality and reasonably priced, effective procurement techniques are being required to assist reduce the costs (Bernard 2018). The principles of waste management and pollution elimination form the basis of green procurement buying, which aims to minimize or completely eradicate hazards to the environment and public health (Bolton, 2020). It entails assessing purchases according to a range of standards, from whether the purchase is actually necessary to what choices are available for its final disposal (Berger & Luckman, 2017). Despite the creation of supportive policy frameworks, the use of green procurement in the context of manufacturing firms has received very little attention in research (Walker & Brammer, 2019). Odhiambo (2018) reports that a large number of private companies have made an effort to boost the environmental performance of their environmentally conscious goods and operations in Kenya.

1.2 Statement of the Problem

Private enterprises may believe it is appropriate to utilise sustainable or green procurement procedures in light of the growing Concerns and understanding of ecological issues vary among numerous supply chain players and interested organisations, such as customer organisations. Wanjiru. 2018. According to Kenyan Solid Garbage Control (2018), just about twenty-five percent of the projected 1,500 tons of solid trash generated daily are collected, with industrial wastes accounting for roughly 23 percent of all waste generated in Nairobi. The Kenyan government enacted the Environmental Management and Coordination Act in response to the aforementioned circumstances. This act requires the creation of a suitable institutional and legislative framework for managing natural resources and related concerns (Okidi, Kameri-Mbote, and Akech, 2018).

According to recent research, the practice of green buying is associated with a number of benefits for both individuals and businesses. These results include avoiding waste and/or toxic material management expenses, maintaining good public relations, improving worker health, reducing solid waste, conserving water, and protecting natural resources (Martinsons, 2020). Even though green procurement is crucial for maintaining public health, safety, and environmental performance, the majority of studies on the topic have been carried out in developed nations; consequently, Kenya has produced a dearth of empirical research on the topic (Eyaa&Oluka, 2021). In light of this, assessing the factors was the aim of the study affecting Kenyan manufacturing firms' success while implementing green procurement.

1.3 Objective of the study

To ascertain the effect of eco-friendly suppliers on the performance of manufacturing firms in Nakuru county Kenya

1.3 Research Questions

What is the effect of eco-friendly suppliers on the performance of manufacturing firms in Nakuru county Kenya?

II. Literature Review

This section examines both the theoretical literature and empirical literature that has been done so far on the variables affecting how well green procurement is implemented.

2.1 Theoretical Review

2.1.1 Theory of Legitimacy

A social compact between an organization's constituents and itself is a prerequisite for legitimacy (or stakeholders). One widely accepted definition of legitimacy, while defined differently by different scholars, is the general sense or presumption that an entity's actions are suitable in the context of a socially created framework of definitions, values, norms, and beliefs (Chien, M. K., & Shih, L. H. 2017). Many people agree that good behavior may result in better incentives and benefits since it is a powerful tool for linking organizational activities to stakeholder expectations. Institutional theory and strategic theory have historically been used to examine the legitimacy of organizations. From an institutional standpoint, the process of institutionalization by which external standards and ideas are accepted mindlessly is known as legitimization. The strategic theoretical approach, on the other hand, views legitimacy as proactive, instrumental, and most significantly, as a purposeful endeavor that may eventually strengthen external beliefs and produce newer and higher degrees of legitimacy.

The legitimacy-based approach offers a solid theoretical foundation for understanding organizational actions that are focused on the environment as it can explain initiatives that deviate from profit maximization rules. According to studies based on the institutional theory, a corporation would seek legitimacy in the eyes of its stakeholders in response to institutional domain needs. According to Oliver (2015), a firm's response to external institutional pressure "emphasizes the importance of obtaining legitimacy in order to demonstrate social worthiness." In addition, institutional theory suggests that companies should limit their green initiatives to those that would fundamentally meet stakeholder needs. This is because institutionalization emphasizes "organizational skepticism" in situations where actions taken in the name of legitimacy conflict with other firm goals, such as maximizing profits. A recent study discovered that corporate environmental actions are mostly backed by regulatory compliance, economic gain, and social concerns, all of which coincide with these ideologies under the institutional view of legitimacy. Furthermore, proponents of organization theory assert that the visibility of an organization may result in more institutional pressure to adopt eco-friendly procedures. Organizational visibility indicates that a firm is well-known to the public and, as a result, is subject to increased scrutiny from outside parties, such as consumers, the media, environmentalists, and government organizations when it comes to environmental matters. In order to preserve their legitimacy and reputation, prominent organizations will thus need to deliberately respond to stakeholder demands (Scott, 2018). This theory explains the benefits of adopting green procurement practices that are focused on the environment.

2.2 Empirical Review

2.2.1 Identifying Eco-friendly Suppliers

Supplier selection is the process through which businesses locate, evaluate, and enter into agreements with suppliers. A company makes significant financial investments in the process of choosing its suppliers. Lunsford and Glader (2017) state that in order to prevent the dire outcomes of a supplier's non-performance, buyers typically take proactive steps to verify a supplier's qualifications prior to making an offer to them. Reducing the possibility of non-performance by the supplier, such as late or nonexistent deliveries or the provision of defective or nonconforming items, is the main objective of "supplier qualification screening". To only ensure that the supplier is a secondary objective, trustworthy, and accommodating partner in the ongoing business interactions with the purchaser. Many variables influence the supplier qualification screening process. To learn more about the supplier's delivery performance, contract compliance, and any (if any) issues brought up and how they were resolved, the buyer may get in touch with previous clients. Buyers may demand suppliers to achieve ISO 9000 certification, or a comparable certification, as this demonstrates that the supplier has policies, processes, records, and training in place to guarantee that quality requirements are met continuously.

The certification documents, however, may occasionally be false and/or readily falsified. The buyer may need to do a detailed organizational study of the supplier to ensure that the supplier is qualified and capable of meeting the buyer's needs in order to evaluate if an acceptable level of quality can truly be attained. Businesses anticipate substantial benefits in exchange from working with suppliers who provide high value. The common procedures in supplier selection processes are discussed in this article, including supplier identification, information request, contract

conditions negotiation, supplier evaluation, and supplier assessment (Chopra, 2015). Research on the significance of comprehending supplier engagement has grown over time because of the critical role that suppliers play in guaranteeing raw material supply. It's crucial to remember that the procurement process begins with the user defining a need, creating a specification, and asking the supplier to supply the requirement, which the provider agrees to do. However, those assurances and expectations are typically ambiguous and unpredictable in nature, particularly for procurement initiatives involving a lot of technology, claim Carter, Ellram, and Kathryn (2017). A supplier's poor environmental performance might negatively impact the firm's performance and reputation, purchasing businesses (Cabrita&Bontis, 2018). Large purchasers typically transfer ecological pressure on their suppliers down the supply chain, making upstream supply chain participants more vulnerable to environmental laws (Caniels et al., 2018). The use of standardized environmental management systems, like ISO 14001, is one way to achieve improved environmental supplier performance (Corbett &Krisch, 2021, Caniels et al, 2018). Prior to a supplier being considered for an order, focal firms may set this up as an order qualification that must be met (Min & Galle, 2021). Caniels et al. (2023) assert that the chain leader has the power to influence its suppliers' environmental plans and policies and require them to participate in eco-friendly supply chain initiatives. According to Carter and Easton (2021), sustainability is a license to operate in the twenty-first century. Throughout the supply chain, sustainable practices must be used in order to receive this license. Caniels (2023) provides an instance from the German automobile sector in which original equipment manufacturers create their own standards, typically surpassing ISO norms, especially in regards to environmental concerns. The maker of the final product defines these green criteria; however occasionally important suppliers are involved in their development. As stated Fet, 2021; Igarashi, 2023), each of the dimensions receives an adequate distribution of the efforts. It is unlikely to be useful to overemphasize some aspects by creating complex "green strategy" documents without taking into account the right decision-making instruments for carrying out green supplier selection. The opposite would also be true: investing significant resources in creating sophisticated systems for assessing green criteria in supplier tenders could be challenging if there is no clear plan for how suppliers are expected to support the organization's overarching strategy. The organization's green strategy and operational decision tools 33 should complement one other and reflect the organization's place and function in the supply chain.

2.2 Analysis of the research study-related publications currently in publication

Theoretical and empirical research indicates that there is a dearth of literature on the use of successful green procurement practices in Africa, and Kenya specifically. The majority of research on the use of efficient green procurement is widespread in industrialized nations like Canada, the United States, and Europe. Studies by Bovaird (2017), Ryall (2021), Murray (2019), and Stonebraker (2017) provide an explanation for this.

2.2.2 Choosing Eco-Friendly Suppliers

Varnäs, A., Balfors, B., & Faith-Ell, C. (2019) discovered that more than 46% of Canadian businesses have applied strategic sourcing techniques such supplier development, global sourcing, and multiple sourcing with success in implementing successful green procurement. The author did not, however, elaborate on how each sourcing strategy may help manufacturing companies execute efficient green procurement. This suggests that there isn't particular research that makes explicit recommendations on the best sourcing tactics to help with the implementation of efficient green procurement.

The selection of suppliers is one way to incorporate environmental requirements into green buying. According to Murray and Cupples (2018), buying should prioritize choosing reliable suppliers; as a result, a successful green supplier assessment should evaluate the provider as opposed to the product. Numerous frameworks have been established as a result of extensive study on the procedures and methods used to choose suppliers throughout the procurement process. For instance, Nocci (2022) identified performance standards that businesses could take into account when choosing green suppliers and offered advice on how to choose them wisely from an environmental perspective. In contrast, Shen, Olfat, Govindan, Khodaverdi, and Diabat (2023) proposed a fuzzy approach to evaluating green suppliers, which makes use of mathematical capabilities to address cognitive uncertainties in human judgement. Analytical Hierarchy Process (AHP) was the most widely used individual strategy in supplier selection, according to Govindan et al.'s (2013) research. Handfield, Walton, Sroufe, and Melnyk (2022) claim that the Analytic Hierarchy Process (AHP), which was first developed by Saaty (1980), offers a framework for solving many kinds of multi-criteria decision issues by weighing the relative importance of each criterion in reaching a given objective. This is a benefit measurement (scoring) methodology wherein management inputs that are subjective and based on a variety of criteria are translated into scores that are then utilized to evaluate every potential option. Using AHP is important because it approaches a choice as a system. Therefore, systematically combining all relevant information—both quantitative and qualitative—about a choice—like whether to incorporate environmental factors in the supplier selection process—makes complicated decision processes

more reasonable. Additionally, the manager is able to prioritize the criteria in a way that would not be feasible without the process of carrying out the analysis (Handfield et al., 2022; Govindan et al., 2023). Environmental regulations shouldn't increase the amount of red tape in the system. To be efficient, the organization has to be able to concentrate mostly on its core business. The Green Markets Strategy will help to achieve both a more intricate and connected manufacturing system and green purchases. Moreover, there exist businesses that use a significant degree of outsourcing, function in global markets and adhere to environmental regulations even in the absence of any environmental standard frameworks. The production capacity and technological skills enable procurements. Production of tiny boats involves captive and cooperative connections. It takes more than simply an ISO 14001 environmental management standard to choose subcontractors. Interactions underpin the functions performed by technological standards, modular linkages, and cooperative and collaborative partnerships. The green criteria are applied in global commodities chains. Modern manufacturing methods, precise delivery, flexible pricing, and high-quality services with a competitive edge are all provided by the active Estonian engineering enterprises. For subcontractors as well, the modular relations are crucial (Lindroos, 2022).

The goal is to guarantee that the standards and the customer's purchasing procedure satisfy the demands of premium materials and subcontracting services. For this reason, working with suppliers to identify the best solutions is crucial. The procurer undergoes periodic evaluations through visits, audits, or other process criteria. The purpose of the materials handling procedure is to guarantee that the materials meet the specifications set forth for acquired materials, that the materials can be traced back throughout the treatment process, and that the materials' quality is maintained all the way through. The purpose of the treatment is to guarantee the products' identities and prevent harm to the processing cycle, starting with product delivery to reception. Supplier optimization is needed to support the creation of the policies required to make green procurement a reality (Igarashi, de Boer, &Michelsen, 2015).

2.3 The Conceptual Framework

This section presents conceptual framework that shows the relationship between variables under study.

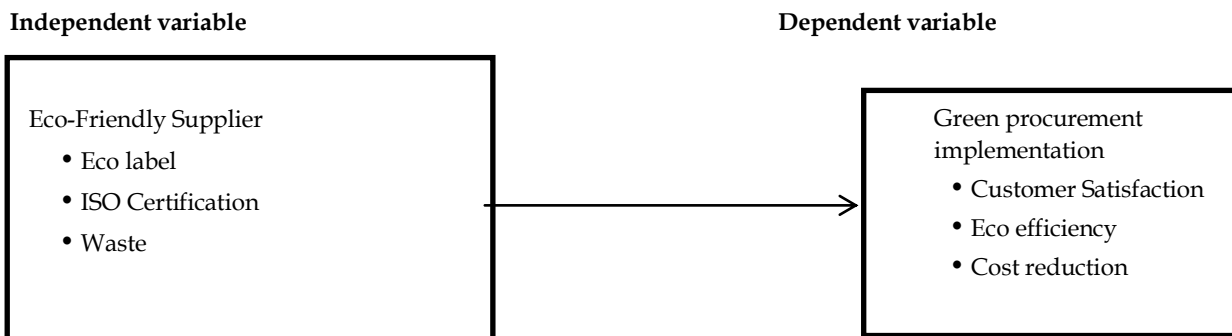


Figure 1: Conceptual Framework

Source: Researcher (2024)

III. Research Methodology

3.1 Research Design.

The research design is the road map for gathering, measuring, and analyzing data. Cooper and Schindler (2018) state that it is an investment Structure and approach designed to provide solutions to research questions. Descriptive research design will be used for this investigation. In order to collect data, summaries it, display it, and analyses it for the goal of clarity, descriptive survey designs are utilized in preliminary and exploratory investigations (Zikmund et al., 2020; Creswell, 2018). According to Cooper and Schindler (2021), descriptive research is more informative than one that does not evaluate the bivariate connection between variables, identify whether the variables are independent, and if not, ascertain the strength or size of the correlations. According to Orodho (2018), descriptive research provides answers to the who, what, where, when, and how research questions. This approach will make it possible to obtain answers to concerns about the linkages that now exist between GSCM, lifecycle phases, and the impact of green procurement implementation on manufacturing businesses' performance that other research methods would not be able to fully address.

3.2 Location of the Study

This research took place in Nakuru county in the following companies; Super Mabati, Royal Eco bags, Farm Parts Ltd, Menengai Oil Refinery, Premier Seed, Maxicorso chemicals, Great choices glass, Nuteck overseas, Halcon packaging, Nakuru plastics, Njoro canning and Kapi Limited.

3.3 Target Population

According to Agarwal (2019), a population is a sizable group of people or things that have similar features and are the subject of a scientific investigation. According to Zikmund et al. (2020), the population is the vast group of all persons from which a stratified sample is taken. As said by Kothari. As of 2018, a population also referred to as the "universe" refers to all objects in any field of study. Five industrial enterprises in Nakuru County were included in green procurement policies in their strategic plans, according to Muturi, P. (2015), and these companies were all chosen for the researcher's investigation. Five firms in all comprised the study's target group.

Table 1: Target Population

Manufacturing Firm	Top Management (CEO & Directors)	Middle Management	Lower management (Dept Heads)
Super Mabati	2	1	5
Royal Eco bags	2	1	3
Farm parts limited	2	1	5
Menengai oil refinery	2	1	7
Premier seed	2	1	4
Maxicorso chemicals	2	1	4
Great choices glass	2	1	3
Maxicorso chemicals	2	1	5
Great choices glass	2	1	3
Nuteck overseas	2	1	4
Halcon packaging	2	1	3
Nakuru plastics	2	1	6
Savannah cement	2	1	4
Njoro canning	2	1	5
Kapi Limited	2	1	3
Total	30	15	64

Source, (HR department, 2024)

3.4 Sampling Procedure and Sample Size

The act of selecting a subset of a population to take part on research that is representative of a wider group is known as sampling design (Ogula, 2018). The current research employed the census approach because the target population was not very huge.

3.5 Data Collection Methods and Instruments

The primary instrument for gathering data was a self-administering survey. A questionnaire is a method of gathering data in which participants are needed to respond to the same series of questions in a prearranged sequence (Sekaran, 2016). According to Kothari (2018), credible and accurate data will be collected since questionnaire responses are free from bias and researcher influence. Krishnaswamy, Sivakumar, and Mathirajan (2016) believe that questionnaires are a useful tool for gathering data because they guarantee respondents' anonymity and confidentiality and allow them to complete the forms at their convenience.

3.6 Pilot Study

Before doing a full-scale research project, a pilot study is a small-scale exploratory analysis conducted to evaluate the viability, duration, expense, unfavorable outcomes, and to try and forecast if research instruments will be appropriate, whether questions will be clear, and how the study will be designed (Hulle y & Stephen, 2017). According to Newing (2021), there is no way to overstate the value of field piloting as you will almost certainly encounter questions that people are unable to comprehend or interpret in a different manner, as well as those that just fail to yield meaningful data. Mburu and Mwangangi (2018) proposed that pilot research should have between 10 and 30 participants. Ten volunteers from three Nyandarua County manufacturing companies who were not to be included in the data collection were used in the pilot project. According to Mertens (2020), a pilot study's sample size should be sufficient to allow the researcher to collect data on validity and reliability. The pilot study's goal is to make it possible to test the data. collecting instrument's dependability as well as the instrument's content validity, language, and question clarity and capacity to gather pertinent information.

3.7 Validity and Reliability of the Research Instrument

3.7.1 Validity of the Research Instrument

Validity is the extent to which a test measure represents what it is intended to capture (Nachmias & Nachmias, 2016). Because of this, the validity of a test instrument is determined by how accurate and significant the conclusions drawn from the research are. Therefore, validity is the extent to which conclusions drawn from the examination of the gathered data really symbolizes the phenomena that is being studied (Mugenda & Mugenda, 2018). The study made use of construct validity, which is the degree to which a test is thought to cover what it claims to assess, and content-related methodology, which gauges how much the question items represent the particular topics examined. Expert judgement enhances an instrument's validity, claim Mugenda & Mugenda (2018). To find out how closely the data analysis results truly reflect the study's variables, two supply chain management specialists were consulted during the questionnaire's development. As part of the content and structure validation of the research instruments, the appropriateness, relevance, sequence, and clarity of the instructions provided to the respondents were checked.

3.7.2 Reliability of the Research Instrument

Before any data is actually collected, It is necessary to confirm the study instruments' validity and dependability (Drost, 2021). Data validation and reliability checks was made to ensure correctness. The consistency with which a research instrument produces data or outcomes after several trials is known as data reliability Ng'ang'a, Kosgei, and Gathuthi (2018). Ten respondents who were not going to participate in the main study were given the research instruments as part of a pilot study to see if the questionnaire language was appropriate and the instructions were clear. The goal of the pilot project was to improve the research instrument in order to lessen the possibility that respondents would have difficulty answering the questions and experience data recording challenges (Saunders, 2019). The most often used metric for assessing a test's dependability, stability, or reliability is Cronbach's alpha (Nachmias & Nachmias, 2016). The scale's components' internal consistency rises with the distance between the Cronbach's alpha coefficient and 1.0. If the instrument has an Alpha value of 0.7 or above, it is deemed dependable.

3.8 Data Analysis and Presentation

According to Agarwar (2019), data presentation is the act of arranging the gathered information such that conclusions that are relevant may be made. The data processing technique used both qualitative and quantitative methodologies. The basic data from the questionnaire was coded to provide descriptive statistics. The study was carried out using the Statistical Package for Social Sciences (SPSS), version 24.0 which was used for the analysis. The results were presented in the form of tables with explanations for the frequencies, means, percentages, and standard deviation. Two types of inferential statistics, the Pearson correlation coefficient and ANOVA, were used to evaluate the relationship between the variables. The study utilized a 95% significance threshold. Multilinear regression analysis was used in the study to look into the relationships between the independent and dependent variables. Regression analysis, according to Alan (2019), is a helpful statistical technique for analyzing correlations between variables and establishing the causal relationship between one variable and another by computing the relationship between the dependent and independent variables. The following multilinear regression equation was used throughout the experiment:

$$Y = \beta_0 + \beta_1 X_1 + \epsilon$$

Where:

Y = Green Procurement Implementation

β_0 = Constant (coefficient of intercept)

X1 = Eco-friendly Suppliers

ϵ = Error term

B1 = regression coefficient of the variable.

IV. Findings and Discussion

4.1 Descriptive statistics for Eco-friendly Suppliers on Green Procurement Implementation

The second objective of the study was to ascertain how choosing an eco-friendly supplier impacts performance manufacturing firms in Nakuru County, Kenya, while implementing green buying strategies. The responses were ranked from 1 to 5. The mean and standard deviation of descriptive statistics were used to summarize the response.

Table 2: Responses to Eco-friendly Suppliers

Opinion	SD	D	N	A	SA	M	S Dev.
	%	%	%	%	%		
Using vendors that have earned ISO certification simplifies the implementation of green buying.	3.8	3.5	5.7	54.5	32.5	3.29	1.13
An essential consideration for the subsequent deployment of green procurement is the supplier's prior performance in this regard.	6.7	7.6	7.1	46.4	32.2	3.19	1.17
The lack of competent workers with the requisite technical skills and knowledge is one of the primary barriers to the effective implementation of green procurement.	4.4	5.1	4.2	39.5	46.8	3.11	1.15
The supplier selection staff is suitably educated to facilitate the adoption of green buying.	6.7	7.5	8.2	37.4	40.2	3.15	1.14

Source: Researcher (2024)

Key: n = 96, SD= strongly disagree, D =disagree, N = neutral, A = agree, SA = strongly agree, M = mean, Std. Dev = standard deviation.

Table 2 shows that all the four items under consideration had standard deviations that were more than 1.0, informing that the items had accurate measures without extremes. The statement "Using vendors that have earned ISO certification simplifies the implementation of green buying" had a variability of 1.13 which shows no extremes. The number shows that very few respondents strongly disagreed at 3.8% or disagreed at 3.5%, but a big number of the respondents either agreed at 54.5% or strongly agreed at 32.5%. The item " An essential consideration for the subsequent deployment of green procurement is the supplier's prior performance in this regard " had a standard deviation of 1.17. This tells that

most of the respondents had similar opinions (strongly agree and agree) about the statement as being good measures. Results show that 46.4% and 32.2% either agreed or strongly agreed that “an essential consideration for the subsequent deployment of green procurement is the supplier's prior performance in this regard” respectively, with only 6.7% and 7.6% strongly disagreeing or disagreeing respectively with the same statement. Though a few of the respondents showed indecisiveness at 7.1%. In addition, the statement " The lack of competent workers with the requisite technical skills and knowledge is one of the primary barriers to the effective implementation of green procurement" provided a standard deviation of 1.14. A big number of the respondents were in support of this statement with 39.5% and 46.8% either agreeing or strongly agreeing while 5.1% and 4.4% disagreeing or strongly disagreeing respectively. On whether supplier selection staff is suitably educated to facilitate the adoption of green buying, 37.4% and 40.2% of the respondents agreed or strongly agreed to the statement while 7.5% and 6.7% disagreed or strongly disagreed to the statement. The mean was 3.29 at its highest and 3.11 at its lowest. The findings showed that respondents took a more positive stance of more than 3.0. This indicates that the majority of respondents to the survey agreed with the statements. The majority of employees in the manufacturing firms in Nakuru concurred that eco-friendly supplier selection was essential to performance of manufacturing firms in regards to green procurement implementation.

4.2 Correlation Analysis between Eco-friendly suppliers and green procurement implementation

The study used the Pearson correlation coefficient (r) to examine the strength of the relationship between the variables. The correlations matrix in table 9 provides an illustration of the relationship between the variables.

Table 3: Correlation on Eco-friendly suppliers and green procurement implementation.

		Green procurement implementation(GPI)
Eco-friendly supplier (EFS)	Pearson Correlation	.356*
	Sig. (2-tailed)	.001
	N	96

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Researcher (2024)

Results in Table 3 also show that Eco-friendly Supplier is strongly linked with green procurement implementation, with a positive correlation of r (EFS, GPI) = 0.356, p 0.001. This informs that any positive adjustment in Eco-friendly suppliers will result in positive green procurement implementation among manufacturing firms.

4.3 Regression analysis between Eco-friendly suppliers and green procurement implementation.

Regression analysis was done to establish the relationship between the variable under study. regression analysis was used in the study to determine the combined impact of eco-friendly suppliers on the implementation of green procurement. The results are presented in Table 4

Table 4: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error
1	.532	.464	.356	.352

- a. Predictors: (Constant), Eco-friendly Suppliers
- b. Dependent Variable: Green Procurement Implementation

Source: Researcher (2024)

The result of the regression, which is displayed in Table 4 indicate that the influence of eco-friendly suppliers towards the dependent variable (green procurement implementation) of manufacturing companies to a degree of 46.4%. This is indicated by the R2 of 0.464. The remaining percentage (53.6%) is associated with the error and other unimportant factors. Furthermore, the R= 0.532 value was more than adequate to show that the model was modified to include additional variables in an effort to ascertain the combined impact of the independent variables on the dependent variable among Nakuru's manufacturing enterprises.

Table 5: ANOVA Results

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	18.542	3	6.181	24.239	.043
Residual	29.636	92	.255		
Total	48.178	95			

- a. Predictors: (Constant), Eco-friendly Suppliers
- b. Dependent Variable: Green Procurement Implementation

Source: Researcher (2024)

The ANOVA results show that the residuals' mean square (0.255) was significantly smaller than the regression's mean square (6.181). Furthermore, the results show that there was statistical significance ($p < 0.05$) for the $F(3, 92) = 24.239$. This suggests that the model fit the data well overall and that the coefficients do not equal zero. As a result, the model accurately forecasts how the predictor variables will affect the dependent variable.

Table 7: Regression Coefficients

Regression Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Beta	Std. Error	Beta		
	(Constant)	2.324	.462		
Eco-friendly Supplier	0.131	.044	.121	2.977	.021

1

- a. Predictors: (Constant), Eco-friendly Suppliers
- b. Dependent Variable: Green Procurement Implementation

Source: Researcher (2024)

According to the equation by taking all other factors constant at zero green procurement implementation will increase by 2.324 units. It was also established that the relationship between Eco-friendly suppliers and green procurement implementation is positive and statistically significant ($\beta = 0.131, P < 0.05$, and that when Eco-friendly supplier increases by an additional unit, green procurement implementation increases by 0.131. From the regression results, the following regression model was derived;

$$Y = 2.324 + 0.131X_1$$

V. Summary

In the objective, the study's intention was to ascertain the impact of eco-friendly supplier on manufacturing firms' performance in Kenya's Nakuru County when it comes to the successful use of green procurement. The leading question was "How does the choice of eco-friendly suppliers affect the efficiency with which green procurement is implemented by performance manufacturing companies in Kenya's Nakuru County?". The outcome confirmed that there was a correlation that was positive between eco-friendly supplier and green procurement implementation among manufacturing companies in Nakuru. The findings consequently established that eco-friendly supplier is a factor in green procurement implementation among manufacturing companies in Nakuru.

VI. Conclusion

Results indicate that eco-friendly supplier have a positive, significant impact on green procurement implementation among manufacturing firms in Nakuru. Findings show that there is a positive, significant effect of eco-friendly supplier on green procurement implementation among manufacturing companies in Nakuru. From the result the researcher was able to conclude that eco-friendly supplier was significant in explaining green procurement implementation among manufacturing companies in Nakuru.

Recommendation of The Study

The study also confirmed that eco-friendly supplier has effect on green procurement implementation among manufacturing companies in Nakuru. It is revealed that there exists a relation that is positive, and significant concerning eco-friendly supplier towards green procurement implementation among manufacturing companies in Nakuru. The study consequentially makes a recommendation that manufacturing firms should put in place a proactive process of selecting eco-friendly supplier in support of green procurement implementation in order to ensure improved firm performance.

Suggestion for Further Studies

The purpose of the study was to evaluate the factors impacting the profitability of manufacturing firms in Nakuru, Kenya, through the implementation of green procurement. Study puts a suggestion for studies of similar nature be extended in other sectors. The study also suggests that a further study on some other factors that are likely to affect green procurement implementation that were not covered in the study should be considered.

REFERENCES

- [1] Muzart, T., Temple, P., & Saffer, A. (2019). Enterprise development in the mining industry in Sub-Saharan Africa: Extracting value for enterprises. UNIDO, Africa Business Growth Initiative. Alchian, A.A. and H. Demsets (2016) *American Economics Review*, 62 (5), 777-795.
- [2] Benton W. (2018) Supplier Evaluations: Communications Strategies to Improve Supplier Performance, *Journal of Operations Management*, Volume 22, pages 39 to 62.
- [3] Walker, H., Brammer, S. (2021). An international comparative study of public sector sustainable procurement. *International Journal of Operations & Production Management*, 31(4), 452-476.
- [4] Brooks, W. (2019). Supply chain management methods and organizational performance.
- [5] *Journal of Supply Chain Management*.
- [6] Shih, L. H., and Chien, M. K. (2017). An empirical investigation of how green supply chain management techniques are being applied in the electrical and electronic sector and how such practices are affecting organizational outcomes. *Journal of Environmental Science and Technology International: (IJEST)*, 4(3), 383.
- [7] Lehner, M., and Chkanikova, O. (2015). Green market growth and private eco-brands: a path towards new types of sustainable governance in the sale of food. 107, 74-84 in *Journal of Cleaner Production*.
- [8] P. Chopra (2015). *Supply chain management and purchasing*. Kogan Page Publishers, a new jersey. 4th Ed
- [9] Christian, S. (2021). The procurement chessboard: Sixty-four ways to save costs and boost gains. *International Journal of Management of Operations*.
- [10] Morrison, K.R.B., Cohen, L., and Manion, L. (2017) *Research methodologies in education* (6th Edition). Published by Routledge.
- [11] Elia (2022). Optimization of natural gas to liquid transportation fuel (GTL) systems through strategic planning. *Chemical Engineering & Computers*, 72, 109-125
- [12] Elliott, R. (2017). Which inventory management strategy is best for a purchased item? *Journal of Purchasing*
- [13] De Boer, L., Igarashi, M., and Fet, A. M. (2013). What criteria must be met when choosing a greener supplier? A review of the literature and the creation of a conceptual model. *Journal of Purchasing and Supply Management*. 19(4), 247- 263
- [14] Kothari (2018), C. R. *Methodologies and approaches used in research*. International New Age journal
- [15] Matunga, D. A., Nyanyama, S. O., and Okibo, W. (2018). The impact of e-procurement techniques on public hospital efficiency in procurement.
- [16] Mugenda and Mugenda. *Methodology for research*. (2018). *Qualitative and Quantitative Approaches to Research Methods*. Nairobi Takes Action Press. (2nd Ed.)
- [17] Nasiche, F., and Ngugi, G. K. (2018). Kenya Pipeline Company case study: factors influencing the public sector's adoption of green procurement practices. *International Journal of Entrepreneurship and Social Sciences*, 1(11), 351-372.
- [18] Ngugi, K., and Mugo, H. (2020). Internal variables influencing the government ministries' supply buying process.
- [19] Odhiambo, (2018) The socioeconomic growth of small and medium-sized businesses in Nigeria and green procurement. *Journal of Human Resource & Procurement International (IJHRP)*, 1(4), 17-34.
- [20] Palmujoki, A., Parikka-Alhola, K., and Ekroos A. (2020) Green public procurement: an examination of how environmental standards are used in agreements. *Review of Environmental Law: European, Comparative, and International*, 19(2), 250-262.