
EFFECT OF GREEN PROCUREMENT PRACTICES ON PERFORMANCE OF MANUFACTURING FIRMS IN KISUMU COUNTY, KENYA.

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Abstract

Keywords:

Green Procurement Practices;
Green Purchases;
Green Suppliers' Collaboration;
Green Distribution;
Performance.

Green procurement refers to the purchase of services and products that have a lesser effect on the environment throughout its life cycle more than average equity. The Kenya Association of Manufacturers reiterates that the decline in productivity is disrupting business and reflects total competition and jeopardizes the government's 20% growth ambitions for Kenya to succeed. As experts point out the possible correlation between green procurement and general organizational performance, there is a need to establish the effects of green procurement processes in practice on the performance. The research sought to investigate the effect of green procurement practices on the performance of manufacturing firms in Kisumu County, Kenya. The objectives of the study are; to assess the effect of green purchases on the performance of manufacturing factories in Kisumu County, Kenya; to determine the effect of green suppliers' collaboration on the performance of manufacturing factories in Kisumu County, Kenya; to assess the effect of green distribution on the performance of manufacturing factories in Kisumu County, Kenya. The research is important for the manufacturing industry, the general public, and future researchers. The research was anchored on resource-based theory, systems theory, and logistics management theory. A cross-sectional survey design was employed by the research. The study population were 141 employees of the procurement, finance, manufacturing and transport departments in all six manufacturing firms in Kisumu County, Kenya. Yamane formula was applied in sampling 104 respondents. The study adopted stratified and simple random sampling to select 104 respondents from all six manufacturing industries. The structured questionnaire and interview guide were used as data collection tools. Descriptive and inferential statistics were used to analyze data. The study found that green purchases had effect on the performance of manufacturing firms in Kisumu County, Kenya (mean = 4.5; std. deviation = 0.807); The collaboration of green suppliers had effect on the performance of manufacturing firms in Kisumu (mean = 4.44; std. deviation = 0.962) and green distribution had effect on the performance of manufacturing firms in Kisumu County, Kenya (mean = 4.46; std. dev. = .959) ; and green procurement practices had a significant effect on the performance of the manufacturing firms in Kisumu County, Kenya (mean = 4.33; std. dev. = .981). The regression results displayed a strong relationship between green procurement practices and the performance of manufacturing firms in Kisumu County, Kenya ($R = .835$; p value $< .05$). Squared R indicated that green procurement practices contributed to a 69.8% variation in the performance of the manufacturing firms in Kisumu. The research concluded that: green purchases had effect on the performance of manufacturing firms in Kisumu County, Kenya; The collaboration of green suppliers had effect on the performance of the manufacturing firms in Kisumu County, Kenya; and the green distribution had effect on the performance of the manufacturing firms in Kisumu County, Kenya. The results revealed that green procurement practices played key role in the overall performance of the manufacturing firms in Kisumu County, Kenya. The study recommended that managers of manufacturing firms in Kisumu County, Kenya should employ adequate green purchasing strategy in order to boost performance. In addition, the study recommended that, there is a need to increase the collaboration of green providers. In order to increase quality performance, the study recommended that managers of manufacturing enterprises in Kisumu employ the suitable green distribution strategy.

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1. Introduction

Green procurement, according to Coddington (2013), is the purchase of products or services that have a lesser environmental impact throughout their life cycle than traditional equity. It entails incorporating environmental considerations into purchase decisions that are based on price, performance, and quality. Increased waste management costs, employee safety and public health concerns, and the creation of harmful and chronic environmental problems locally and globally are just a few of the drivers driving local communities to improve their businesses' environmental features (Maignan, Hillebrand & McAlister, 2012).

Kisumu is the third largest city in Kenya and it is situated along the Lake Victoria. It covers an area of 417 square kilometer. Over 500,000 people are living in Kisumu City (Kisumu Regional Government, 2013). Agong and Otom (2015) estimated the waste generation in Kisumu to be between 200 and 450 tons of waste. Twenty percent is collected and transported to the dumping site in Kachok, a dumping ground near the City Stadium. In addition, the population of Kisumu City is expected to grow by 2.8 percent annually. (Munala and Moirongo, 2011). Citizens are exposed to associated health risks. One of the long-term solutions to this is 'raw' therefore the study focused on the effects of green procurement practices on performance of manufacturing firms.

Green procurement faces challenges despite its many benefits, and even high environmental awareness and pressures in factories, this awareness did not translate into the adoption of green buying processes, let alone the expected development in other workplaces. Public skepticism about the adoption of raw materials has led to a lack of accessible access to a reliable environment, health information and safety products and chemicals. (Tan, 2002)

1.1 Statement of the problem

Green procurement is becoming more popular in many industries throughout the world, including manufacturing, and scholars are discovering a link between raw material procurement and organizational performance. Green procurement has become a mainstay in firms that want to maintain the environment and boost production where there is growing competition, according to Qinghua, Sarkis, and Lai (2007).

Green procurement methods in the public sector: an issue for all commercial enterprises in Kenya (Khisa, 2011). Further, Kenya Association of Manufacturers reiterates that there is a decline in productivity disrupting business and reflects total competition and jeopardizes the government's 20% growth ambitions for Kenya to succeed. Environmental degradation, such as resource depletion, trash overcrowding, and rising pollution levels, are driving the development in the value of green procurement techniques. Green procurement standards have remained low in the public sector in Kenya, with most processes receiving a 3 or 4 rating. His research found that the most significant barrier to green procurement adoption is a lack of knowledge about the concept, followed by the acquisition of raw materials, and finally financial resources. They propose a separate study that employs a variety of data collection methods, including interviews.

However, a study conducted in Kenya by Kimira, Getuno, and Kiarie (2016) discovered a robust link between green procurement and company performance. According to Malaba, Ogolla, and Mburu (2014), there is a poor link between green procurement and organizational performance. The objective of the study was to determine the effect of green procurement practices on the firm performance of manufacturing firms in Kisumu County, Kenya.

1.2 Research Objectives

The research objectives are as follows;

- i. Assessing the effect of green purchases on the performance of manufacturing firms in Kisumu County, Kenya.
- ii. To establish the effect of the of green suppliers' collaboration on the performance of manufacturing firms in Kisumu County, Kenya.
- iii. To assess the impact of green distribution on the performance of manufacturing firms in Kisumu County, Kenya.

1.3 Research Hypothesis

- i. H_{O1} : There is no significant effect of green purchases on the performance of manufacturing firms in Kisumu County, Kenya.
- ii. H_{O2} : There is no significant effect of green suppliers' collaboration on the performance of manufacturing firms in Kisumu County, Kenya.
- iii. H_{O3} : There is no significant effect of green distribution on the performance of manufacturing firms in Kisumu County, Kenya.

2. Research Method

2.1 Review of Theories

2.1.1 Systems Theory

The study is based on the theory of systems. A system, according to Mele, Pels, and Polese (2010), is a collection of elements connected together by a given form of normal interaction or dependence. A system having

strong input and output is called an organization. Furthermore, organizations are termed functioning programs if they can survive in a given environment as a result of continual dynamic processes and a few sorts of internal adjustments. However, throughout the planning phase, the decision maker must analyze the structure of his system and take the required steps to ensure survival. The systemic approach to systems in the economic context, according to Carayannis, Campbell, and Scheherazade (2016), refers to the relationship of supply and demand. System theory focuses on the interactions and relationships that generate a better knowledge of activities and results between elements of organizations. Smaller systems are needed to help coordinate the transformation process when organizations acquire inputs and convert them into products that are exported to the environment. Organizational structure, according to Lozano and Valles (2013), is defined as a stable pattern of relationships between organizational components, most notably patterns in relationships and functions. These themes include consolidation (job organization), segregation (job division), the establishment of high relationships (executive systems), and the organization's official rules, processes, and regulatory controls (management systems) (Maignan, 2012). This theory supports the initial variation of this study in that the decision maker in the system should aim to make purchasing decisions that will improve the implementation of green procurement processes

2.1.2 Natural Resource Based View Theory

NRBV-based visual aids, which are based on Hart's Natural Resource Based View Theory (Hart & Dowell, 2011), provide a mechanism to link natural acts to performance. According to NRBV, in order for businesses to obtain a competitive edge, they must invest their natural resources in programs targeted at pollution avoidance, product management, and sustainable growth. Assets, skills, organizational processes, and information are examples of these resources. While other theories, such as institutional theory, explain why firms make green purchases, NRBV demonstrates how environmental efforts might help firms achieve a competitive edge.

This theory also highlights that the environment can be a stressful component in a long-term competitive setting, and it argues that companies who have a stronger environmental link than others may have a competitive edge (Hart, 1995). Because the firm must manage its assets so that they do not have a detrimental impact on the environment, which is the source of all natural resources, provider testing / partnership as a study variable is closely tied to this notion. Molamohamadi (2013), established that the high value providers involved play a role in stabilizing natural resources and reducing industrial pollution.

2.1.3 Logistics Management Theory

Morris and Imrie (2012), were the pioneers of logistics management theory. According to this theory, planning entails arranging, organizing, and managing all operations in the flow of products, from raw materials to final use, as well as reversing the flow of the product created, in order to meet the needs of the customer and other interested parties. Better customer service, reduced costs, lower bond costs, and less environmental impact are all goals (Christopher, 2012). This function's dependability is determined by how well the system's architecture allows for this type of movement. Performance management is a subset of procurement management that organizes, operates, and manages the efficient, effective, and timely supply of goods, services, and information linked to their origin and use in order to meet customer needs. Inbound and outbound transport management, ship management, inventory management, logistics management, order fulfillment, transport network design, inventory management, supply chain planning or demand, and outsourced service providers are all examples of asset management functions. Acquisition and purchase, manufacturing planning and planning, packing and packaging, and customer support are all examples of logistics activity at various levels. It is involved at all levels of strategy, operations, and strategy development and implementation (Alex, 2013). Asset Management is a completely integrated function that integrates and conducts all transportation functions, as well as combining transportation operations with other areas such as marketing, marketing, manufacturing, finance, and information technology (Morris & Imrie, 2012). Flexible green distribution has been supported by logistics management theory.

2.2 Research design

Cross-sectional survey research was used in this study. Cross sectional survey research, as defined by Cooper & Schindler (2014), is a data collection procedure used to answer questions concerning the present status of research. This was crucial in the study because it allowed for the collecting of consistent data that revealed the true nature of the problem in Kisumu County's manufacturing firms.

2.3 Target Population

The target population is the group from which the researcher wishes to draw broad generalizations about the overall population (Obwatho, 2014). The target population in this study was 141 employees which included procurement staff, finance department, production department and transport department from the six firms. The firms are; Kenya Breweries Limited, Tuffoam Mattresses Limited, United Bread Manufactures Limited, Rai Cement Limited, Crown Paints Limited and Equator Bottlers Limited. Employees from all six organizations' procurement, finance, manufacturing, and transportation divisions were included in the study.

2.4 Description of the Sample and Sampling Procedures

The sample size is large enough to represent a huge population (Bryman, 2012). The sample size was calculated using Yamane's (1967) formula. The sample size was 104 people, chosen using Yamane's (1967) formula.

According to Yamane (1967)

$$n = \frac{N}{[1+N(e)^2]}$$

Where: n= the sample size

N= the population

e= the error limit (0.05 on the basis of 95% confidence level)

Therefore;

$$n = \frac{141}{[1 + 141(0.05)^2]}$$

$$n=104$$

The study used a sample size of 104 people. As demonstrated in Table 1, this sample size is suitably representative and evenly distributed across each sector.

Table 1: Sample population.

SNo.	SECTION	Kenya Breweries	Tuffoam Mattresses	United Bread Manufacturers	Rai Cement	Crown Paints	Equator Bottlers	Total sample size
1	Procurement	02	02	02	02	02	02	12
2	Finance	03	03	02	02	02	02	14
3	Production	08	10	03	09	08	07	45
4	Transport	06	05	05	07	05	05	33
	Total	19	20	12	20	17	16	104

Source: (Researcher 2019)

2.5 Description of Research Instruments

To acquire primary data, the researcher employed a standardized questionnaire and interview guide. The questionnaire is a set of pre-created written questions in which respondents write down the answers usually based on their own opinion. The questions were based on a 5-point Likert scale. Respondents were asked to rate their level of agreement on a five-point scale: Very Small Extent, Small Extent, Medium Extent, Great Extent, and Very Great Extent on the Likert scale. The questionnaires were issued to the operational managers in the four departments within the manufacturing firms.

The interview guide was based on a set of questions about specific topics with green procurement practices and performance of manufacturing firms in Kisumu County, Kenya. This helped to verify and request additional data not included in the questionnaire. The interview schedules were administered to head of departments within the manufacturing firms. The interview schedules took around 15 minutes per session.

2.6 Description of Data Analysis Procedures

After data were collected from the respondents, data sorting, categorization and coding was done. The researcher used Statistical Package for Social Sciences program (SPSS Version 21) to analyze data. This program is capable of providing complete data management as well as a wide range of statistical analysis capabilities that can examine data of various sizes. (Muijs,2004). The advantage of this program is that it can be utilized to examine high-quality data, while descriptive statistics were used to convey quantitative conclusions. The regression analysis produced a statistic that described the relationship between two variables, but the correlation analysis assisted in determining the linear relationship's strength, or how closely the variables are related. (Mutai, 2000). The study was guided by the following regression model in order to establish a relationship between the study variables.

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + e$$

Where:

Y= Performance

X₁= Green Purchasing

X₂= Green supplier Collaboration

X₃= Green Distribution

e = Error Term

β₀=The Model Constant

β_{1,2,3}=Regression Coefficients

At a value level of 5%, the regression model assumed an independent, uniform, and often random distribution with zero definition and a continuous difference. The findings of the study were presented in the form of frequency tables.

3. Results and Analysis

3.1. Green purchasing on the performance of manufacturing firms in Kisumu, Kenya.

The first objective of the study was to assess the effect of green purchasing on the performance of manufacturing firms in Kisumu, Kenya. Table 2 shows the descriptive results.

Table 2: Descriptive statistics on green purchasing.

Statement	1	2	3	4	5	M	SD
The organization makes material choices to ensure that the items selected are not so harmful to the environment	1(1.1%)	1(1.1%)	8(8.4%)	18(18.9%)	67(70.5%)	4.57	.781
The organization buys energy-efficient products or products that require less energy to make	1(1.1%)	1(1.1%)	16(16.8%)	17(17.9%)	60(63.2%)	4.41	.881
The organization has officially introduced the design of products that reduce the consumption of goods and services	0(0.0%)	3(3.2%)	10(10.5%)	18(18.9%)	64(67.4%)	4.51	.810
The organization buys equipment that are easy to repair.	0(0.0%)	1(1.1%)	12(12.6%)	20(21.1%)	62(65.3%)	4.51	.756
Overall Mean Score						4.5	0.807

Key: 1=Very Small Extent; 2=Small Extent; 3= Moderate Extent;4=Great Extent and 5=Very Great Extent; M=Mean; SD=Standard Deviation

Source: Field Data (2021)

The findings in Table 2 reveals that majority of respondents (70.5%) strongly agree that the organization makes material choices to ensure selected items are environmentally friendly while 1.1% of the respondents strongly disagree. Also, 63.2% of the respondents strongly agrees that the organization buys energy-efficient products or those requiring less energy to make while 1.1% strongly disagrees. Further, 67.4% of the respondents strongly agree that the organization has officially introduced products designed to reduce consumption of goods and services. Finally, 65.3% of the respondents strongly agrees that the organization buys equipment that is easy to repair. The overall mean for all statements combined is 4.50, indicating a high level of agreement with green purchasing practices within the manufacturing firms in Kisumu Kenya.

The study carried out Pearson Correlation to test the research hypothesis. The research hypothesis was H_{01} : There is no significant effect of green purchases on the performance of manufacturing firms in Kisumu County, Kenya. The finding is shown in Table 3.

Table 3: Testing Hypothesis between Green Purchasing and Performance.

		Green purchasing	Performance
Green purchasing	Pearson Correlation	1	.798**
	Sig. (2-tailed)		.000
	N	95	95
Performance	Pearson Correlation	.798**	1
	Sig. (2-tailed)	.000	
	N	95	95

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

Source: Field Data (2021)

The finding in Table3 shows that Correlation Coefficient was $r = .798$ at a significant value less than 0.05. Since the p-value was less than 0.05, the null hypothesis was rejected. Therefore, the study concluded that there was a significant effect of green purchasing on performance of manufacturing firms in Kisumu County, Kenya.

3.2. Green Supplier Collaboration and Performance of manufacturing firms in Kisumu County, Kenya

The second objective of this study was to establish the effect of the green supplier collaboration on the performance of manufacturing firms in Kisumu County, Kenya. The descriptive statistics was illustrated in Table 4.

Table 4: Descriptive statistics on green supplier collaboration.

Statement	1	2	3	4	5	M	SD	
The organization looks for suppliers who have received or are in the process of obtaining an ISO 14000 certificate.	1(1.1%)	2(2.1%)	12(12.6%)	15(15.8%)	65(68.4%)	4.48	.874	
The organization formally cooperates with its suppliers for environmental objectives.	2(2.1%)	3(3.2%)	6(6.3%)	16(16.8%)	68(71.6%)	4.53	.909	
The organization develops and maintain data base of suppliers in which information relating to environmental conduct is maintained.	3(3.2%)	4(4.2%)	8(8.4%)	20(21.1%)	60(63.2%)	4.37	1.022	
The organization officially introduced the use of materials and components that can be used and recycled	2(2.1%)	7(7.4%)	7(7.4%)	17(17.9%)	62(65.3%)	4.37	1.042	
Overall Mean Score							4.44	0.962

Key: 1=Very Small Extent; 2=Small Extent; 3= Moderate Extent;4=Great Extent and 5=Very Great Extent; M=Mean; SD=Standard Deviation

Source: Field Data (2021)

According to the study's findings in Table 4, majority of respondents (68.4%) strongly agree that the organization looks for suppliers with ISO 14000 certification or in the process of obtaining it while a very small proportion (1.1%) strongly disagree. Also, significant portion of the respondents (71.6%) strongly agrees that the organization formally cooperates with suppliers for environmental objectives while only a very small percentage (2.1%) strongly disagrees. Further, a considerable number of respondents (63.2%) strongly agree that the organization develops and maintains a database of suppliers with environmental conduct information Finally, a substantial portion of respondents (65.3%) strongly agrees that the organization has introduced recyclable materials and components. The overall mean for all statements combined is 4.44, indicating a high level of agreement with green supplier collaboration practices within the manufacturing firms in Kisumu Kenya.

The study carried out Pearson Correlation to test the research hypothesis. The research hypothesis was H_{02} : There is no significant effect of the collaboration of green suppliers on the performance of manufacturing firms in Kisumu County, Kenya. The finding is shown in Table 5.

Table 5: Testing Hypothesis between Green Supplier Collaboration and Performance.

		Green supplier collaboration	Performance
Green supplier collaboration	Pearson Correlation	1	.712**
	Sig. (2-tailed)		.000
	N	95	95
Performance	Pearson Correlation	.712**	1
	Sig. (2-tailed)	.000	
	N	95	95

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

Source: Field Data (2021)

The finding in Table 5 shows that Correlation Coefficient was $r = .712$ at a significant value less than 0.05. Since the p-value was less than 0.05, the null hypothesis was rejected. Therefore, the study concluded that there was a significant effect green supplier collaboration on performance of manufacturing firms in Kisumu County, Kenya.

3.3 Green distribution and performance of manufacturing firms in Kisumu Kenya

The final objective of the study was to assess the effect of green distribution on the performance of manufacturing firms in Kisumu County, Kenya. The descriptive statistics were shown in Table 6.

Table 6: Descriptive statistics on green distribution.

Statement	1	2	3	4	4	M	SD
Organization is eco-design packaging materials for productive products.	1(1.1%)	12(12.6%)	6(6.3%)	15(15.8%)	61(64.2%)	4.29	1.110
The organization has officially introduced the use of materials and components that reduce the use of assets and assets in its storage areas.	2(2.1%)	2(2.1%)	9(9.5%)	15(15.8%)	67(70.5%)	4.51	.909
The organization has officially started planning routes to avoid urban congestion by another method	1(1.1%)	4(4.2%)	7(7.4%)	15(15.8%)	68(71.6%)	4.53	.885

The organization has invested in modern infrastructure to reduce service delivery	1(1.1%)	5(5.3%)	7(7.4%)	21(22.1%)	61(64.2%)	4.51	.933
Overall Mean Score						4.46	0.959

Key: 1=Very Small Extent; 2=Small Extent; 3= Moderate Extent;4=Great Extent and 5=Very Great Extent; M=Mean; SD=Standard Deviation

Source: Field Data (2021)

According to Table 6, a significant portion of respondents (64.2%) strongly agrees that the organization is eco-designing packaging materials for productive products. Moreover, the majority of the respondents (70.5%) strongly agrees that the organization has officially introduced the use of materials and components to reduce the use of assets and space in its storage areas. Also, a considerable number of respondents (71.6%) strongly agrees that the organization has officially started planning routes to avoid urban congestion by other methods.

Finally, a significant portion of respondents (64.2%) strongly agrees that the organization has invested in modern infrastructure to reduce service delivery. The overall mean score for all statements combined is 4.46, indicating a high level of agreement with green distribution practices within the manufacturing firms in Kisumu Kenya.

The study carried out Pearson Correlation to test the research hypothesis. The research hypothesis was H_0 : There is no significant effect of green distribution on the performance of manufacturing firms in Kisumu County, Kenya. The finding is shown in Table 7.

Table 7: Testing Hypothesis between Green Distribution and Performance.

		green distribution	performance
green distribution	Pearson Correlation	1	.757**
	Sig. (2-tailed)		.000
	N	95	95
performance	Pearson Correlation	.757**	1
	Sig. (2-tailed)	.000	
	N	95	95

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

Source: Field Data (2021)

The finding in Table 7, shows that Correlation Coefficient was $r = .757$ at a significant value less than 0.05. Since the p-value was less than 0.05, the null hypothesis was rejected. Therefore, the study concluded that there was a significant effect green distribution on performance of manufacturing firms in Kisumu County, Kenya.

3.4 Performance of manufacturing firms in Kisumu, Kenya.

The general purpose of this study was to determine the effect of green procurement practices on the performance of manufacturing firms in Kisumu County, Kenya. The descriptive statistics were shown in Table 8.

Table 8: Descriptive statistics on the performance of manufacturing firms in Kisumu County, Kenya.

Statement	1	2	3	4	5	M	SD
Level of timely delivery of goods and services.	1(1.1%)	5(5.3%)	7(7.4%)	21(22.1%)	61(64.2%)	4.43	.919
Rate of cost reduction.	4(4.2%)	2(2.1%)	6(6.3%)	20(21.1%)	63(66.3%)	4.431	0.07
Order fulfillment rate.	4(4.2%)	2(2.1%)	6(6.3%)	20(21.1%)	63(66.3%)	4.27	.994
Quality level of goods and services purchased.	4(4.2%)	1(1.1%)	10(10.5%)	30(31.6%)	50(52.6%)	4.191	0.03
Overall Mean Score						4.330	0.981

Key: 1=Very Small Extent; 2=Small Extent; 3= Moderate Extent;4=Great Extent and 5=Very Great Extent; M=Mean; SD=Standard Deviation

Source: Field Data (2021)

The findings in Table 8 shows majority of respondents (64.2%) strongly agree (rated 5) that the organization delivers goods and services timely. Also, a significant portion of respondents (66.3%) strongly agrees that the organization effectively reduces costs. Further, a majority of respondents (66.3%) strongly agrees that the organization fulfills orders efficiently. Finally, a considerable number of respondents (52.6%) strongly agree that the quality of goods and services purchased is high. The overall mean score for all statements combined is 4.33, indicating a high level of satisfaction with various aspects of green procurement practices on the performance of manufacturing firms in Kisumu County, Kenya.

3.5 Regression results

Multiple regression analysis was carried out to determine the level of significance of green procurement practices on the performance of manufacturing firms in Kisumu, Kenya. Tables 9, 10 and 11 display the regression results.

Table 9: Model summary of of green procurement practices and performance of manufacturing firms in Kisumu

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.835 ^a	.698	.688	.52203

a. Predictors: (Constant), green distribution, green purchasing, green supplier collaboration

Source: Field Data (2021)

The finding in Table 9, R was the correlation coefficient that indicated the relationship between the independent variables and the dependent variables. It has been noted that there is a strong correlation between green procurement practices and performance of manufacturing firms in Kisumu (R = .835; p value <.05).

Table 10: ANOVA test of green procurement practices and performance of manufacturing firms in Kisumu

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	57.257	3	19.086	70.036	.000 ^b
1 Residual	24.799	91	.273		
Total	82.055	94			

a. Dependent Variable: performance

b. Predictors: (Constant), green distribution, green purchasing, green supplier collaboration

Source: Field Data (2021)

The study results in Table 10 reveals that green procurement practices had a statistical impact on the performance of manufacturing firms in Kisumu (F = 70.036; p value = .000) which was an indication that the data was ready to conclude on human boundaries as a significant value (p-value) was less than 0.05. The calculated value was greater than the significant value which shows that green purchases, green distribution and green supplier collaboration all contribute to the performance of manufacturing firms. The model was significant because the significance value was less than 0.05.

Table 11: Coefficients of green procurement practices and performance of manufacturing firms in Kisumu.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	.403	.340		1.187	.238
Green purchasing	.759	.131	.591	5.769	.000
Green supplier collaboration	.184	.153	.158	1.198	.234
Green distribution	.480	.122	.448	3.923	.000

a. Dependent Variable: Performance

Source: Field Data (2021)

As shown in Table 11, green purchasing is most predictable of performance, followed by the green distribution and then the green supplier collaboration with B values of .759, .480, and .184 respectively. Also, the study shows that green purchasing and green distribution were the most significant variable with significant values of .000 and green supplier collaboration was the least significant. The regression model for the above result was:
 $Performance = .403 + .759 * green\ purchasing + .184 * green\ supplier\ collaboration + .480 * green\ distribution + error$ (1)

Green procurement practices play a critical influence in the overall success of industrial enterprises in Kisumu, according to the study's findings. There was a need for the management of the Kisumu manufacturing companies to adopt appropriate green procurement practices to improve their performance.

3.6 Thematic Analysis

The study developed interview schedules to collect high quality data on the effect of green procurement practices on the performance of manufacturing firms in Kisumu County, Kenya. The interview schedule covered the objective areas which included: effect of green purchases, green supplier collaboration and green distribution on the performance of manufacturing firms in Kisumu County, Kenya.

On the part of the effect of green purchases on performance of manufacturing firms in Kisumu County, Kenya. The Interviews revealed that the green purchasing had effect on performance of manufacturing firms in Kisumu County, Kenya. According to reports, one of the interviewees said the following:

“Green purchasing helps an organization to procure less harmful materials to the environment”. Also, it enables organization to buy materials that are easy to repair.

[Interviewee 1]

In addition, the study developed interview schedules on the effect of green suppliers' collaboration on the performance of manufacturing firms in Kisumu County, Kenya. The following statement was attributed to respondents:

"The organization is legally cooperating with its suppliers for environmental purposes and the organization is looking for suppliers who have acquired or are in the process of obtaining an ISO 14000 certificate. [Interviewee 1,2& 3]

The study also collected quality data using interview schedules on the effect of green distribution on the performance of manufacturing firms in Kisumu County, Kenya. The following statement was recorded from respondents;

"The organization has officially started planning routes to avoid urban congestion by another method." [Interviewee 1 &3]

Also, another respondent was quoted to have said;

"To reduce service delivery, our firm has invested in modern infrastructure." [Interviewee2]

In addition, interview schedules were utilized to collect quality data from respondents about the effect of green procurement practices on performance of manufacturing firm in Kisumu County, Kenya. The following statement was recorded from the respondents;

"Green procurement practices have improved timely delivery of goods and services. In addition, it has minimized procurement expenditure"

[Interviewee 1 &3]

Another respondent was quoted saying the following statement;

"Green procurement practices have improved purchasing of quality goods and services".

[Interviewee 2&3]

4. Conclusion

The study concluded that green purchasing had a statistical effect on the performance of industrial enterprises in Kisumu, which was the study's initial goal. Also, the study concluded that green supplier partnership had a statistical influence on the performance of manufacturing enterprises in Kisumu, which was the study's second goal. Further, the study concluded that green distribution had effect on the performance of industrial enterprises in Kisumu, which was the study's final objective. Finally, the study concluded that green procurement practices played a vital effect on the overall performance of the manufacturing firms in Kisumu County, Kenya.

5. Recommendations of the study

Following the study's findings, the following suggestions were made:

For the first objective, the study recommended that managers of manufacturing enterprises in Kisumu should employ an adequate green purchasing strategy in order to boost performance. In addition, the study recommended that, in order to obtain better results, there is a need to increase the collaboration of green providers. Based on these findings, it became clear that there was a need for management to embrace the distribution of raw materials within the manufacturing firms in Kisumu Kenya. In order for the manufacturing industry to see efficiency it was necessary to plan eco-design packaging materials for productive products. Also, managers should use route planning to avoid urban congestion by another method. In addition, management needed to keep investing extensively in contemporary infrastructure in order to minimize delivery times. Management's failure to develop a green distribution strategy could have a substantial influence on manufacturing enterprises' success. In order to increase quality performance, the study recommended that managers of manufacturing enterprises in Kisumu employ the suitable green distribution strategy.

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