Green Sourcing and Environmental Sustainability in Selected Manufacturing Entities in Kampala District, Uganda

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Abstract: The purpose of this study was to empirically establish the relationship between green sourcing and environmental sustainability in the Kampala district. The study employed a cross-sectional design. The study also used quantitative approaches in collecting and analyzing the data both descriptively and inferentially. The study population was 675 manufacturing entities. Using the purposive sampling technique, the study took a sample of 248. Data were obtained from 186 usable questionnaires. The researcher applied Statistical Package for Social Scientists (SPSS) to test all four hypotheses. The results are presented in terms of descriptive statistics and inferential statistics in terms of correlation analysis, simple regression and multiple regression analysis models. Results indicate that Pearson's correlation results indicate a relatively moderate, positive and significant association between Green Sourcing and Environmental Sustainability in Kampala industries (r= 0.558, sig .000, p< .01) ; Multiple regression results indicated that Green sourcing (β = 0.387) was found to significantly predict Environmental Sustainability in Kampala industries. Green sourcing has a significant effect on Environmental Sustainability in Kampala industries. The study recommended that National Environment Management Authority (NEMA) takes deliberate steps to try to step adherence to green sourcing by Manufacturing by empowering the enforcement department.

Keywords: Green Sourcing, Environmental Sustainability, Manufacturing Entities, Kampala district

1 Introduction

Green sourcing is the process of establishing suppliers and purchasing goods that aren't detrimental to the environment (Sarkis, 2017). This involves buying materials that can be used multiple times and those that don't emit toxic gases. Materials that can be used and reused through recycling lead to resource use efficiency which in turn saves non-renewable resources from quickly depleting. This also means buying environmentally safe materials even from suppliers who aren't sure whether the items they are selling are environmentally friendly as long as you the buyer are sure of the environmental safety aspect of those goods.

Environmental sustainability is the process of human beings carrying out all activities they do in a manner that protects the natural environment and keeps it conducive for today and future generations (Zimon, Tyan, & Sroufe, 2020). other activities (Sarkis, 2017; Ameknassi, 2016; De Sousa Jabbour, 2017). Environmental sustainability means carrying out activities that we want but making sure that the natural environment is preserved for both today and the future generations since it is their right to have a pleasant environment (Sarkis, 2017). Globally, it is anticipated that supply chain activities like sourcing, manufacturing and transportation are the main actors that lead to environmental sustainability challenges which happen through greenhouse gas pollution The dependent variables that were used to measure environmental sustainability in Kampala district were, resource use efficiency, resource use efficiency has been used in multiple studies to measure environmental sustainability and it scored so well. Resource use efficiency has actually led to many manufacturing entities adopting green practices because apart from saving the natural environment from abuse, it helps manufacturers to save the natural resources from quickly being depleted, resource use efficiency manifests through low energy consumption systems, the use of materials that can be used multiple times hence replacing the deplete able materials with reusable ones and use of modern manufacturing systems that ensure low raw materials consumption while also producing high-quality output. This has gotten many industrialists attracted to it, the main challenge is that it isn't clearly known in most developing countries and probably that's why many Ugandan manufacturing entities aren't practising reverse logistics for recycling. Ecological balance was also used as the second variable to measure environmental sustainability, ecological balance is a situation where both humans and the natural environment like vegetation, wild animals, and other organisms are living together in harmony. It is evident that the ecological balance in Kampala isn't good, this is portrayed by the way trees and vegetation cover have been cleared for the construction of factories, and vegetation and habitats of different species of animals and plants have been lost with other rare species of animals being threatened with total extinction too. This makes ecological balance a good measure of environmental sustainability in   Kampala because it clearly indicates the extent to which there is harmony amongst the people who are the supply chain operators and the natural environment.

The world is under threat of being destroyed by poor environment-related disasters than ever before, and entities are compelled to align activities that promote green supply chain practices in order to reverse the situation (Tseng, Chiu, &

Liang, 2017). This is due to the continued warming of the planet by carbon emissions, especially from manufacturing-based supply chains (Hendriks, et al., 2017). In addition, for example, the wildfires that raved the Amazon rainforest in Brazil destroyed forestry and animal species (San-Miguel-Ayanz, Durrant, Boca, Maianti, Alberta, Artes, Jacome, Branco, De Rigo, Ferrari, Pfeiffer, Grecchi, Nuijten, Onida, & Loffler. 2020). The wildfires in California USA, South Wales and Victoria in Australia killed people and animal species, destroyed properties worth billions of dollars and many more storms in Asia and the USA (Food and Agricultural Organization & United Nations Environment Programme, 2020). In Africa, a study on environmental sustainability focusing on health hazards espoused by poor environmental sustainability found that much as poor environmental sustainability and its effects were taking a toll on Zimbabweans, the local communities in the Mount Darwin district of Zimbabwe still believed that environmental adverseness isn't real and simply not existing (Ncube & Tawodzera, 2019). Zimbabwe experienced a series of heat waves and storms which left a lot of devastation (Ncube et al., 2019).

In Uganda, continued occurrences related to poor environmental sustainability include increased drought spells, air and water pollution, poor wetland management which has seen many wetlands being claimed for construction of industries with impunity, inadequate waste management, continued flooding incidences, not to mention the multiple loss of human life and food in the regions affected (Akiyode, Katongole, & Tumushabe, 2018). These are alleged to be caused by inadequate resource use resulting in the continuous search for the depleting key raw materials. Tendencies that suggest an ecological imbalance are noticeable through drought spells mostly evidenced in the central-north eastern part of the country. In addition, continuous wetland misuse is evidenced through relentless human activity and poor waste disposal tendencies that have a potent effect on the environment (NEMA Report, 2017/2018). Efforts like educating the masses on environmentally safe operations have been made by a number of autonomous bodies in Uganda to counter the situation but no significant results have been registered

Globally, the challenge of environmental sustainability is evident, disasters are on the rise and still manifesting with a potential of more deaths and devastation occurring (Choudhary, Nayak, Dora, Mishra, Ghadge, 2019). This is all due to the continued warming of the planet by carbon emissions from especially manufacturing-based supply chains

Green supply chain management is the process of handling all activities on the supply chain that chronologically flow as, planning, sourcing, transportation, manufacturing, distributing and returning in a manner that protects the natural environment such that the planet remains a better place for us in it now and future generations to live in (Yawar & Seuring, 2019). The study was carried out in Kampala Uganda specifically in the Kampala manufacturing industries. The impact of environmental management is still insignificant, in Uganda, there is evidence of poor environmental sustainability which manifests through droughts, floods and diseases like cholera
that kill people, especially in Kampala, and air and water pollution that is caused by the high concentration of manufacturing industries, reclamation of wetlands for the construction of manufacturing industries and harvest of raw materials which has led to the fast depletion of un renewable raw materials, congestion by the huge number of vehicles on the roads that also pollute the air and make it very unhealthy for human consumption. (Budget Monitoring and Accountability Unit, 2018). In reference to air pollution as the biggest environmental challenge threat to human life, Uganda's capital city Kampala's state of air pollution is seven times worse than what UNWHO recommends as bearable (World Air Quality Report 2021). People move around littering everywhere with impunity, and garbage hips are seen in different spots within the city Centre and suburbs which don't only keep the city untidy but also blocks drainage systems hence causing floods with sewage spilling on roads which causes disease and multiple other disease threats (National Environment Management Authority, 2018).

Currently, garbage collection in Kampala is costly since people and entities have to pay for the waste they create and individuals have to pay for the collection of their domestic waste. This is most suburbs have always been a challenge with many people dumping their domestic waste by the roadsides or in drainage trenches because they claim that the cost of disposing of it off rightly is high. The garbage collectors charge highly according to the suburb communities who are left with no option but to dump their waste in the environment. This is probably among the reasons that have led to the growth of a littering culture which gets eroded waste into drainage trenches and causes floods in Kampala.

Environmental sustainability is very important, without having a sustainable environment humankind, animals and plant species will be destroyed (Sarkis, 2017). Uganda is facing unprecedented environmental sustainability challenges caused by traditional supply chain practices which operate in total disregard for environmental protection (BMAU, 2018). Supply chains must continue to operate since they improve economic sustainability which is much needed, but the main challenge is that as they continue operating, they jeopardize environmental sustainability which threatens our existence and the existence of future generations (UGGDS, 2017/18) . This is the main gap since without solving the current challenge, it

would lead to a serious situation which threatens the extinction of all living things on the planet (Tesfaye & Kitaw, 2020) . The state of affairs if not addressed expeditiously, would also lead to adverse situations like raw materials depletion, perpetual flooding which destroys lives and properties, wetland abuse, water and air pollution, and ecological challenges (National Environment Management Authority, 2018) . Organizations like NEMA, KCCA, Ministry of water and environment, have educated the country on how to uphold environmental sustainability but all efforts haven't yielded enough (National Environment Management Authority, 2018). They have encouraged green sourcing, green manufacturing, green transportation, and reverse logistics among others (Ministerial Policy Statement, Ministry of Water and Environment; FY 2020-2021). Despite all these efforts, environmental sustainability has continued to be a challenge in Kampala and this is due to supply

chains not operating consistent with environmental sustainability (BMAU briefing paper, 2018). If environmental sustainability in Kampala is to be improved, certain aspects that negatively impact it must be effectively identified and consequently addressed. Green supply chain practices in the manufacturing sector have been identified as a critical way of improving environmental sustainability Sarkis, (2017), and that is what compelled this study.

As such this study sets out to establish the relationship between green sourcing and resource use efficiency, Since they are key to environmental sustainability, embracing green supply chain activities, and would allow sustainable solutions to environmental sustainability challenges.

Green sourcing has been identified as being very critical in the process of adopting green supply chain practices because it allows only environmentally safe materials and services into the supply chain since it controls the entry point of everything getting into an organization's supply chain (Mingxuan, et al. 2019). This however isn't yet being seriously implemented in African countries especially, with Uganda having considered it in their public procurement regulations recently in September 2019. Many studies on green sourcing and its impact on environmental sustainability found that green sourcing is quite pertinent to the sustainability of the environment thereby leading to harmony between supply chain operations and environmental sustainability. The world realized much earlier that there is a trend that is leading to the crumbling of the earth, that wasn't all about the critical discovery but it was also found out that actually supply chains that are mostly manufacturing oriented are the ones that create heat and warm the planet, causing climate change and challenges to environmental sustainability, but on a sad note, despite science having the ability to understand that the planet is warming and there are feasible solutions that can reverse the trend, governments have only talked about what can be done to reverse the challenge but they remain adamant on walking the talk.

In most studies, green sourcing takes the lead in enforcing green supply chain practices, especially in manufacturing operations and if it is strictly upheld with supporting systems like empirical knowledge provision, supporting infrastructure and enforcement of clear regulations, there is no doubt that it would significantly contribute to environmental sustainability. Surely, there are a multiplicity of ways in which green sourcing could be implemented, some of which are, identifying and working with suppliers that are supportive of green supply chain practices and have been certified by governing bodies as being compliant with green supply practices, buying only items that have been certified as being compliant with green supply chain regulations like natural gas and biodegradable materials, substituting hazardous materials with non-hazardous ones, improved quality, minimal usage of raw materials, supplier development in order to have them comply with green supply practices, reduced resource consumption (Pallawi. 2019). Green sourcing may include though not limited to, organizing seminars for suppliers and contractors for green awareness, using electronic systems to communicate between suppliers and procuring organizations, motivating suppliers to set up their own environmental programs, organizing supplier meetings from the same industry for sharing their knowledge on the same subject matter, pressuring suppliers to take environmental upright action, selecting suppliers by environmental sensitive criteria, eco-labelling of products, cooperation with suppliers for environmental objectives, environmental audits for suppliers internal operations, selecting the suppliers with ISO14000 certification. These are not difficult to apply and have the world avert the danger of burning out.

The purpose of the study was therefore to establish the relationship between green sourcing and environmental sustainability in Uganda, focusing on selected manufacturing entities in the Kampala district.

The study was guided by the following hypothesis: H1: **There is a statistically significant relationship between green sourcing and environmental sustainability in selected manufacturing entities in the Kampala district.**

2 Brief Review of Empirical Literature

Relationship between green sourcing and environmental sustainability

A number of related studies are available on green sourcing and environmental sustainability. For example, Saeed & Kersten, (2019) held the view that green sourcing is the process of carefully finding organizations that will provide you or the organization with commodities or services that when being used or consumed in any way, won't negatively impact the environment. Resource use efficiency is a process of ensuring that when manufacturing, no materials are lost or put to waste. The emphasis is to reduce the loss of raw materials, and damage of raw materials and finished goods (Schmidt, et al., 2017). Resource use efficiency basically aims at lean production which ensures that a combination of raw materials, energy, manpower and technology is usually produced at optimal or even exceeding optimal levels. If a manufacturing system is well calibrated and the right green raw materials are input in good configuration, there is a high chance of the system superseding the expected output and that highly supports environmental sustainability. Such raw materials and methods of manufacturing are known and have to be communicated to supply chain managers such that the sourcing of everything they want is oriented towards getting the right raw materials, right technologies, and right manpower, in the right configurations and this would definitely improve resource use efficiency and environmental sustainability at large (Dunlop et al., 2022).

Green sourcing is also defined as finding suppliers who are environmentally conscious to supply you (Sarkis, 2017). However, this research decided to define green sourcing as a process of searching and establishing suppliers of goods and services that won't jeopardize the environment while being used and at their end-of-life point when no longer being used. These goods and
services must be environmentally friendly throughout their entire life cycle (Taylor & Vachon, 2018) . Actually, such goods don't easily get to their end lifetime, they are usually repaired and reused or recycled and remanufactured for resale (Schmidt, et al., 2017).

In their study, "Environmental sustainability in the follow-up and evaluation stage of logistics services purchasing perspectives from UK shippers and third party logistics services providers", Bahr & Stweeney, (2019), used semi-structured interviews in the study, and data collected from the interviewees was analyzed using a combination of content and grounded analysis. Findings indicated that indeed there was a positive relationship between green sourcing and operational cost saving and that there is a possibility of further improving resource use efficiency to greater heights. The main gap here is that much as they indicate that indeed green sourcing leads to cost savings, they still don't divulge the practical ways of carrying out green sourcing.

 The research agrees with this definition because the literature shows that if the greening of the supply chains is upheld, other sustainability aspects like social and economic sustainability are realized too (De Carvalho, Stefanelli, Viana, & Vasconcelos. 2020). The fact that especially public organizations spend most of their budgets on sourcing and outsourcing, this becomes one of the most reliable points of the supply chain to effectively enforce green supply chain management (Janssen, Johnson, & Schaltegger, 2015). Green sourcing can also lead to resource use efficiency in the sense that, when green materials like reusable and recyclables are sourced, they ensure the availability of more materials instead of buying new ones since the recyclable ones can be recycled and used many times (Bahr & Stweeney, 2019). Governments and other administrative organs would reap a lot in terms of protecting the environment while also assisting businesses to improve their resource use efficiency if green sourcing is enforced. Social and economic benefits would be realized too (Maleki, Minbashrazgah, Shabani, 2019). In reference to a paper published in Uganda by Budget Monitoring and Assurance Unit, (2018) on environmental and natural resources and what is affecting their performance, they recommended green sourcing for all public entities as a means of initializing green supply chain practices since sourcing and procurement are the first levels of acquisition of goods and services. This is quite noble, but how exactly is the green sourcing going to be implemented? Who suppliers the green products? How are green products identified such that the implementation of green sourcing is devoid of ambiguity amongst both the public and private sectors? The government of Uganda encourages green sourcing but hasn't come up with more practical knowledge about how to implement it and the ambiguity must be cleared immediately such that green sourcing is carried out with a clear output expectation (Bahr & Stweeney, 2019).

The issue of enforcing green sourcing shouldn't in any way be taken for granted. Those earlier ways where organizations were blindly greedy to an extent that they traded their sustainability for short time gains must end (Yawar & Seuring, 2019). In production processes, all final outputs are based on the initial inputs and process of production and if through sourcing we don't insist and actually oversee the sourcing of green raw materials such that we protect the environment, we shall continue to dream of environmental sustainability while we perish slowly (Jia, & Mathiyazhagan,
2015) . A simple example is a computing-based belief of when garbage is put into the system, garbage is then the outcome (GIGO). This perfectly applies in the manufacturing sector too. You will never expect environmentally friendly products

if the raw materials used aren't environmentally supportive (Ahmed, Ahmed, & Najmi, 2018). That's why we should not only encourage green sourcing but also practically enforce it.

Many scholars have researched the subject of green supply chains and their impact on resource use efficiency, their findings indicate that the very first step in promoting green supply chain practices should start with the sourcing/buying of green raw materials (Meixell & Luoma, 2015).

This is consistent with Bulent, & Sibel. (2013) who in their study findings insist that purchasing should be the first dimension of green supply chain management. However, much as they support green sourcing to be a means of environmental sustainability, they don't clearly define ways of implementing it. They never narrate how exactly raw materials producers should produce green materials. This probably explains the reason why green sourcing as a critical aspect of green supply chain practices isn't being well implemented, hence keeping the world continuously grappling with environmental sustainability challenges (Manavalan, & Jayakrishna, 2019).

Green sourcing must at all times at least fulfil aspects of promoting the acquisition of materials that are, reusable, recyclable, not polluting the air, not polluting the water, not polluting land, low energy consumption and with a long-life cycle (Wang, Dong, Peng, Khan, & Tarasov. 2018). Achieving this is more inclined to sourcing for suppliers who are compliant and uphold green practices as being key in all business operations (Shun-Pin & Sun-Jen, 2018). Most important is educating all producers on how to go green, showing them how to adopt green practices and enforcing green supply chains by law (Nwankwoala, 2015).

Globally, disposal of reusable, refurbish able, reparable and recyclable materials is continually becoming a challenge, and this should stop because there exists a scientific solution to that problem (Almansoori, Lafta, Matured, Asghar, & Haiyan. 2021). Landfill grounds are getting full and that calls for immediate and reliable alternative means of solving the problem of which producing long-life products is among the major solutions (Islam, Karia, Fauzi, & Soliman. 2017). Walmart a renowned retail chain operator in the USA assists its suppliers in getting environmentally friendly materials, they aim at availing health-related commodities while also protecting the environment (Jing & Enes, 2019). This is a perfect way of ensuring resource use efficiency as well as environmental sustainability while also avoiding conflict with suppliers.

Unfortunately, there are already known counterforces and hurdles in implementing green sourcing, these may vary depending on the organization's culture and other strategies, some of the most documented is, the absence of support from top management due to a lack of knowledge on how to implement it, they also aren't aware of the financial benefits that would come with greening their supply chains, insufficiency of clear corporate ways of working, insufficient resources to fix the initial requirements, lack of enough time to devote to something new and not fully known, lack of technical expertise required to perform the job, and expected outputs (Sunil & Sachin, 2018).
However, all these can be resolved by clearly educating the supply chain operators on how to fully adopt green practices such as green sourcing which leads to benefits, like resource use efficiency.

Finally, the main gaps evident here are, the lack of uniform and scientific methods of how to implement green sourcing, also government bodies aren't sufficiently enforcing the aspect of green sourcing which needs to be urgently done. Green sourcing can be done by benchmarking best practices like what Walmart in the USA is doing, also the following can be done in addition to what Walmart is doing during sourcing. Substituting hazardous materials with non-hazardous, buying improved quality raw materials, buying recyclable materials, agreeing with suppliers on how to work and support green, aim at highly lean manufacturing systems. From the above review, a number of gaps were identified. Many of the published studies relied on few of the predictors utilized in the current study creating contextual gaps. Some of them used different study designs and used secondary data which are thus less authentic creating methodological gaps. The majority of the studies were conducted outside the East African region creating geographical gaps. A number of similar studies were grounded by different classical theories creating theoretical gaps which the study hopes to fill. Above all, all the studies that were reviewed never addressed how green supply chain practices can be implemented, they also never addressed the issue of supporting infrastructure provision and sufficient enforcement which seem to be a great challenge globally. From the aforementioned, it can be hypothesized thus:

3 Methodology and Ethical Consideration

3.1 Methodology

The study adopted Positivism Philosophical orientation. Positivism is mainly associated with the philosophical stance of the natural scientist, which entails working with an observable social reality to produce law-like generalizations (Saunders,

2019). This philosophy was found to be sufficient for the study because it establishes the truth about what's exactly happening in supply chains thereby helping to develop a scientific model to enforce green supply chain practices (Crowther & Lancaster, 2008).

The study employed both a survey and phenomenological design. The survey encompassed a cross - sectional approach whereby data was collected at a particular point in time. The study chose only a few illustrative sample essentials of a cross-section of manufacturing entities in Kampala. The researcher was not obliged to have further interactions with the study respondents.

In regard to the nature of the study objectives, a cross-sectional survey design was the most suitable to gather quantitative data and make statistical predictions and correlations of factors associated with green supply chain practices and environmental sustainability.
The phenomenological approach was also adopted for this study, this was applied to establish inner most qualitative data using an open-ended question appended to the survey tool at the end of each objective, this open-ended question sought to establish the respondent's view on how green supply chain practices could be improved in order to have them contribute to environmental sustainability. The use of two methodological designs aimed at detailed information gathering from respondents is highly recommended and supported due to its nature of helping the study to obtain more insight into what is happening in the area (Ntayi, 2005, Mafabi, 2012).

The study area was environmental sustainability in selected manufacturing entities in the Kampala district. This geographical area has many high scale manufacturing facilities, many of them being concentrated in close proximity, making accessibility easy (BMAU Briefing Paper. 2018). The target population was all the manufacturing entities in the Kampala district. Kampala has 675 manufacturing entities(www.Uma.or.ug).

The unit of analysis was the manufacturing entities and units of inquiry included top management like managing directors, general managers, operations managers, production managers, and procurement managers of these entities because they were well positioned to provide information on green supply chain practices and environmental sustainability in manufacturing entities in Kampala district.

The sample size constituted 248 entities from a population of 675 entities; This was decided upon using Robert V. Krejcie and Daryle W. Morgan's table of sample size determination. The research considered a more targeted way to select units of analysis and units of inquiry from whom to collect primary data. After determining the sample size of 248 manufacturing entities, they were categorized according to their level of activity and those with higher operations that were likely producing more waste were purposively selected. From these manufacturing entities and top management, production and operations managers, and procurement managers were selected. Purposive sampling from the categorized population was chosen as the method was fit for the purpose as only the managers of entities that produced a lot of waste were targeted as study participants. The study collected and analyzed primary data.

Data were collected at a single point in time since the study was a cross-sectional study. The crosssectional kind of study was used due to its adequacy in fully exhausting the avenues of such a study and this method has been used in many more studies (Walugembe, 2018). Data was collected from one source and that is primary data which was collected through direct interviews with respondents.

3.2 Validity of Research Instrument

The researcher used the judgment of different experts to verify the content validity of the instruments. To assess this, judges were contacted to evaluate the relevance of each item in the instruments in relation to the objectives. The experts rated each item as either relevant or not
relevant. The questionnaire was developed based on already used questionnaires which makes it appropriate enough for the exercise. Biases and inaccuracies were reduced through the creation of rapport between the interviewer and interviewee, and explanations to make statements and questions well understood were also emphasized. Validity was determined using the Content Validity Index (C.V.I). C.V.I = Items rated relevant by both judges divided by the total number of items in the questionnaire.

CVI = <u>No. of items rated relevant</u> ≥ 0.5

 Total no. of items

In case less than the projected number of respondents had participated due to different reasons that caused failure to participate, a mathematical formula to establish a sufficient number like the one below was provided to ensure that the number of respondents is sufficient.

The CVI for the questionnaire was valid at above 0.5 because the least CVI recommended in a survey study should be 0.5 (Amin, 2005). CVI results were as presented in Table 3.2.

Content Validity Index

Items	Number of Items	Items Deleted	Items Retained	Content Validity Index
Green Sourcing	12	2	10	0.833
Green Manufacturing	7	1	6	0.857
Green Transportation	6	2	4	0.667
Reverse logistics	6	1	5	0.833
Resource use efficiency	7	2	5	0.714
Ecological balance	8	3	5	0.625
Clean air and water	6	1	5	0.833
Wetland Management	7	2	5	0.714
Total Items	59	14	45	0.76 (AVG CVI)

Source: Primary Data 2021 **Instrument**
Reliability
Reliability is the extent to which a research instrument yields consistent results across the various items when it is administered again at a different point in time (Sekaran, 2016). To establish reliability, the instruments were pilot tested in areas with designated industrial parks in Namanve, Jinja and Gulu industries. Reliability was assessed using an intra-class reliability measure. The intra-class correlation coefficient is computed to measure agreement between two or more raters

Intra-class Correlation Coefficient

	Intraclass Correlation	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.703[b]	.622	.769	5.728	185	185	.000
Average Measures	.825[c]	.767	.869	5.728	185	185	.000

Source: Primary Data

The intra-class correlation coefficient values less than 0.5 are indicative of poor reliability. Values between 0.5 and 0.75 indicate moderate reliability; values between 0.75 and 0.9 indicate good reliability and values greater than 0.9 indicate excellent reliability (Sekaran, 2011). This study scored an intraclass correlation coefficient of 0.825 which is indicative of a tool with good reliability.

3.3 Data Analysis and Presentation

The data collected was analyzed using a computerized analysis application called Statistical Package for Social Scientists (SPSS). This included descriptive and inferential analysis. The descriptive analysis gives data structures in form of frequency tables, standard deviation, and percentages. The inferential analysis gives correlations, Regression and ANOVA tables. These were used to determine the relationship between the independent variables and the dependent variable. The results from the statistical analysis were presented in tables. This kind of analysis was done for each objective in the study.

3.4 Ethical Consideration

The ethics were handled with utmost care since any divergence or neglect of the ethical considerations would lead to a dispute regarding the study outcomes. In this regard, all necessary ethical guidelines were considered. Ethical approval was sought from Mengo Hospital Research Ethics Committee (MHREC) and Uganda National Council for Science and Technology (UNCST) was consulted for guidance on the ethical aspect of the study. Prior consent from the respondents was sought and all data collected from respondents was handled in a way prior agreed upon between the researcher and respondent. Exposing the respondent's identity and publishing sensitive material without permission wasn't and won't be done too. Environmental sustainability is quite a sensitive area which is fast affecting the world and we all have to participate in countering the trajectory. In doing so, all of us who decide to make an input in the quest to find a solution should do it with the best of ethics and integrity. Things like reporting falsehoods must at all times be avoided.

4 . Results

Response rate

This study involved 248 respondents to enable the researcher come up with conclusive results about the relationship between green supply chain practices and environmental sustainability in the Kampala district. Only 186 of the respondents that were set for the study or research were able to respond to the study. This reflected a 75 per cent response rate

Table showing Response rate

| Instrument	Distributed	Returned	Response Rate
Questionnaire e	248	186	75 %

Source: Primary data (2021)

Background of the Respondents

This theme handles the background information on the respondents that participated in the study. The study identifies characteristics of the respondents that help judge their aptitude in expressing views about the relationship between supply chain practices and invites the entire environmental sustainability in the Kampala district. These characteristics include gender, age, the highest level of the education job description and tenure in the current docket.

Gender of the respondents

To take into consideration the gender of the respondents, the researcher recorded the results in figure 4.1.

Figure 4.1: Gender of the respondents
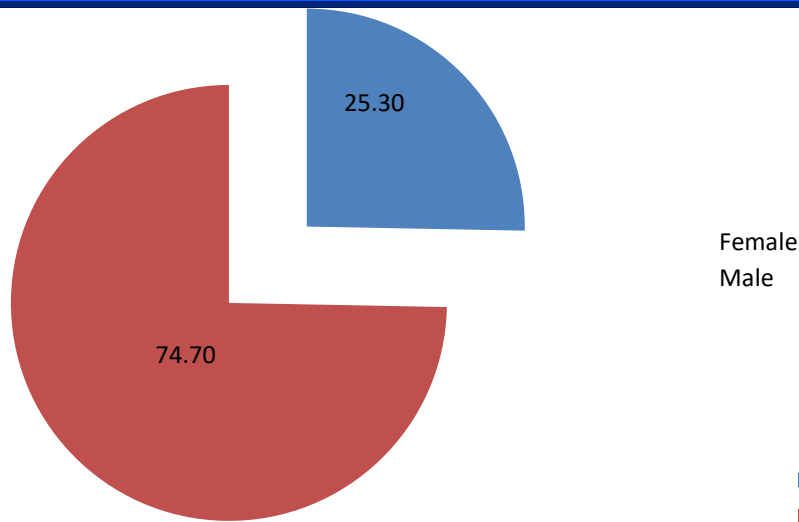
Female
Male

Primary Data 2022

From Figure 4.1 above, the study was conducted with mainly male respondents who constituted 74.7%. Female respondents, on the other hand, were 25.3%. The implication of such gender percentages in the study was that all genders were represented and their respective viewpoints on the relationship between green supply chain practices and environmental sustainability in the Kampala district were captured in the study in a legitimate manner. The responses were however male dominated. **Age of the Respondents**

To ascertain their respective age distribution, the respondents were asked to provide the study with their ages. Information presented in figure 4.3 below:

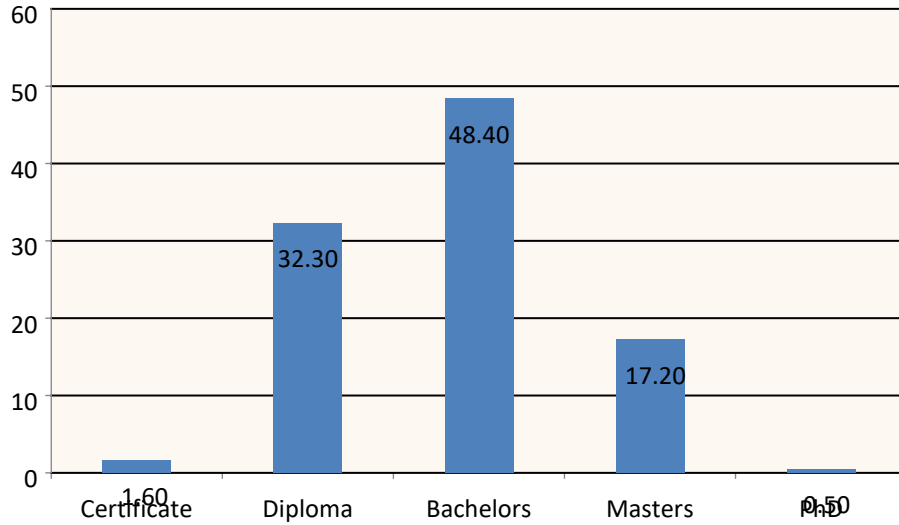*Figure 4.2: Age of the Respondents*
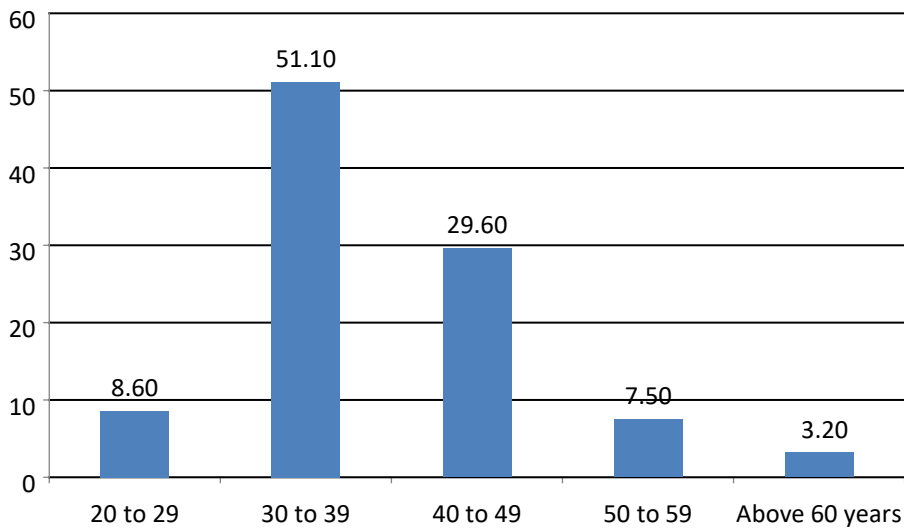
Primary Data 2022

Figure 4.2 above indicated that of the respondents who participated in the study, 8.6%, were in the range of 20 to 29, 51.1% were in the range of 30 to 39, 29.6%, were in the range of 40 to 49 years, 7.5% were in the range of 50 to 59 and 3.2% were Above 60 Years of age respectively.

The above statistics imply that all respondents (100 %) covered by the study were above ≥20 years of age and considered mature enough to give responses that were consistent and legitimate. The statistics also imply that there was fair distribution in terms of respondents' ages, which provided the study with views of respondents from all ranges in terms of age, without bias.

Highest Level of Education of the Respondents

Respondents were also asked to state their level of education and most of them indicated that they had a bachelor's degree as shown in figure 4.4 in detail below.

*Figure 4.3: Level of education of the respondents*

Primary Data 2022

Figure 4.3 depicts the fact that the largest part of the respondents had attained a bachelor's degree which stood at 48.4%. Only 1.6% held certificates. Those who had attained a Diploma constituted 32.3% of the respondents and Master's Degree holders were 17.2% of the respondents. One PhD holder participated in the study. This implied that the respondents who took part in the study were adequately educated and could provide information that was pertinent to the study.

Job description held in Industry.

The research also sought to know the job description of the respondents. The findings are shown in table 4.4 below:

Figure 4.4: Showing Job description held in Industr
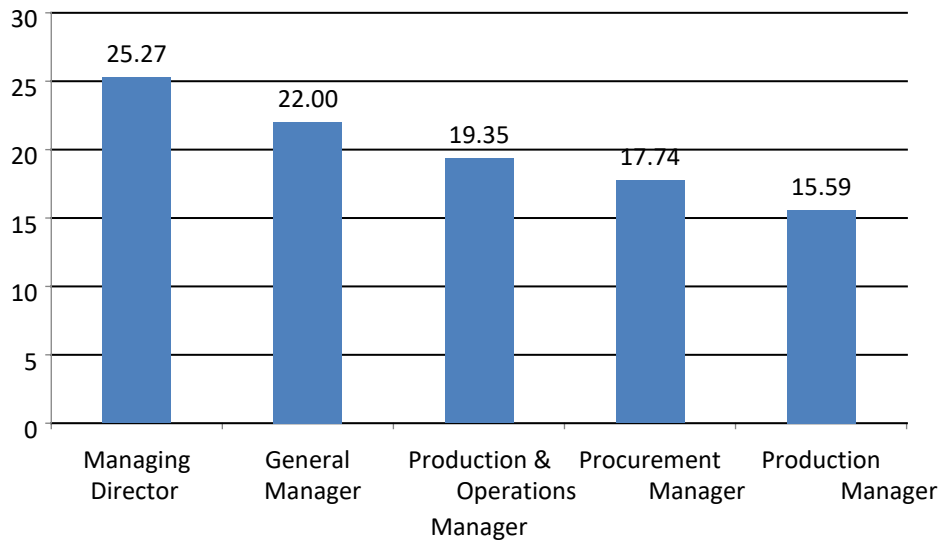
Primary Data 2022

Prominent from figure 4.4 above it is clear that 25.27% of respondents were managing directors, 22.04% were general managers, 19.35% were production and operation managers, 17.74% were procurement managers, and 15.59% were production managers. The implication was that the majority of respondents involved in the running of factories were the right people to give their opinion on the relationship between green supply chain practices and environmental sustainability in the Kampala district and their responses would be considered consistent and legitimate.

Descriptive statistics on Green Sourcing

Green sourcing constituted one of the green supply chain practices. The section avails a detailed presentation of the descriptive statistics; on this variable. To understand Green Sourcing in Kampala industries, the respondents were introduced to different items to have their say. Their responses were computed by making an aggregate of responses given by respondents to the 5-point Likert scale (1= Strongly disagree, 2 =Disagree, 3 =Not sure, 4 =Agree, 5 =Strongly agree). The basis for interpretation of mean values and t-values is indicated in Appendix C. means & standard deviations and t-value results can be seen in the descriptive information Table 4.6 below: In order to register significance, the t-value obtained from the data must be equal to or larger than the critical t statistic values at the selected conventional significance levels of, for example, 10%, 5% or 1% (Amin, 2005).

Table 4.6: Descriptive statistics on Green Sourcing

Items on Green Sourcing	Mean	S.D	t-Values
My organization is aware of the effect of green sourcing on environmental sustainability	4.16	0.670	6.21
My organization establishes supply that upholds environmental sustainability standards at all times	4.06	0.714	5.69
Green sourcing in my organization at all times fulfils aspects of promoting the acquisition of materials that are reusable, recyclable, and not polluting the air.	3.92	1.034	3.79
Souring for suppliers is restricted to those who are complaining, and uphold green practices as being key in all business operations	3.85	0.888	4.34
There is continuing education for all producers on how to go green	3.71	1.091	3.40
My organization enforces green supply chain practices by law	3.40	1.136	2.99
Suppliers are assisted in getting environmentally friendly materials while avoiding conflicts with them	3.93	0.942	4.17
Top management supports the implementation of green sourcing	4.03	0.712	5.66
Organizational members are aware of the financial benefits that come with greening their supply chains	3.93	0.883	4.45
My organization ensures that goods produced are environmentally safe through their entire life cycle	3.92	0.869	4.51
Average Mean, Standard Deviation and t-value	**3.89**	**0.894**	**4.52**

Source: Primary Data 2021

Table 4.6 above illustrates descriptive statistics on Green Sourcing in Kampala industries. The highest mean recorded was 4.16 and the lowest was 3.40. The average mean value of 3.89 indicates a general agreement that organizations are aware of the effect of green sourcing on environmental sustainability. The average standard deviation of 0.894 indicates that the dispersion of responses was skewed tan towards agreement with the statements. The average t-value of 4.52 is higher than 2.51, with a significance level of 1 %.

Descriptive statistics on Environmental Sustainability
According to the conceptual framework (figure 2.1), in chapter two, the dependent variable was Environmental Sustainability which was operationalized as resource use efficiency, ecological balance, clean air, and water and wetland management. A continuous dependent variable was generated on overall environmental sustainability; means and standard deviations were determined so as to confirm whether or not manufacturing entities in Kampala were practising environmentally sustainable operations. Descriptive statistics results on environmental sustainability are presented in table 4. the Interpretation of mean, standard deviations and t-values are indicated in Appendix C.

Table 4.7: Descriptive statistics on Environmental Sustainability

Items on Resource Use Efficiency	Mean	S.D	t-values
My organization is aware of environmental sustainability	4.04	0.605	6.68
My organization minimizes raw materials loss	4.23	0.643	6.58
My organization promotes lean manufacturing and the reduction of breakage during production.	4.14	0.642	6.45
There is a policy on efficient energy usage	2.95	1.304	2.26
The organization teaches its staff members the importance of resource use efficiency	3.69	1.026	3.60
Average Mean & Standard Deviation	**3.81**	**0.844**	**5.11**
Ecological Balance	**Mean**	**S.D**	**t-Values**
My organization is aware of the importance of a conducive natural environment	4.12	0.518	7.95
My organization adheres to NEMA regulations	4.03	0.866	4.65
My organization has an environmental policy	3.45	1.315	2.62
The organization teaches its staff members how to protect the environment	3.88	0.895	4.34

The organization encourages all its supply chain members to be environmentally friendly 4.03	0.716 5.63		
Average Mean & Standard Deviation **3.90**	**0.862**	**5.04**	
Items on Clean air and water Preservation	**Mean**	**S.D**	**t-Values**
My organization is conscious of clean air and water preservation 4.10	0.489	8.38	
The organization doesn't let out fumes in the atmosphere 2.49	1.270	1.96	
My organization uses most materials with very few going to waste 4.15	0.709	5.85	
My organization professionally disposes of waste products 4.16	0.590	7.05	
The organization advocates for water bodies' protection against pollution 3.87	0.983	3.94	
Average Mean & Standard Deviation **3.75**	**0.808**	**5.44**	
Items on Wetland Management	**Mean**	**S.D**	**t-Values**
My organization is aware of the importance of wetlands protection 3.61	0.942	3.83	
The organization teaches its staff members how to protect wetlands 3.27	1.032	3.17	
My organization doesn't encroach on wetlands. I.e. construct on them 3.15	1.243	2.53	
My organization avoids dishonest ways of harvesting wetland vegetation 3.57	0.837	4.27	
Avoiding disposing of waste in wetlands is highly considered at all times 3.43	1.059	3.24	
Overall Average Mean, Standard Deviation & t-values **3.72**	**0.894**	**4.75**	

Source: Primary Data 2022

Table 4.7 above illustrates descriptive statistics on environmental sustainability. The highest mean for resource use efficiency in Kampala industries registered was 4.23 and the was lowest 2.95. The average mean value of 3.81 indicates a general agreement that organizations are aware of resource use efficiency and its effect on environmental sustainability. The average standard deviation of 0.844 indicates that the mean does represent the data well. The average t-value of 5.11 is higher than 2.51, with a significance level of 1%.

Inferential Analysis

Findings on the relationship between Green Sourcing and Environmental Sustainability in selected Manufacturing Entities in Kampala district.

Objective one of the study was to establish the relationship between Green Sourcing and Environmental Sustainability in selected manufacturing entities in the Kampala district. This section gives inferential statistics obtained from primary data analysis. It goes on to present and answer the research questions. These findings were thus obtained on the relationship between Green Sourcing and Environmental Sustainability in Kampala industries in terms of Green Sourcing and how it relates to Environmental Sustainability in Kampala industries.

In order to assess the correlation between Green Sourcing and Environmental Sustainability in Kampala industries, the study computed Pearson product-moment Correlation (PPMC) between Green Sourcing and Environmental Sustainability in Kampala industries. The bivariate Pearson Correlation produced a sample correlation coefficient, *r*, which measured the strength, association and direction of linear relationships between pairs of the two continuous variables. The weights of the correlation were interpreted on the following basis: 1.00 perfect relationship; 0.90 – 0.99 very high; 0.70 to 0.89 high; 0.50 to 0.69 moderate; 0.30 to 0.49 low; 0.01 to 0.29 very low and 0.00 translates to a non-existent relationship. Results can be seen in Table 4.8:

Table 4.8: Correlations between Green Sourcing and Environmental Sustainability in Kampala industries
Correlations

Correlations between Green Sourcing and Environmental Sustainability in Kampala industries	**Green Sourcing**	**Environmental sustainability**
Pearson Correlation Sig. (2-tailed) N	**1** **186**	.558[**] **.000** **186**
Pearson Correlation Sig. (2-tailed) N	.558[**] 000 186	**1** **186**

Source: Primary Data 2022

Results in Table 4.8 above show the results from the correlations computed. The findings show that there was a moderate positive correlation (*r*= 0.558, sig .000, p< .01) between Green Sourcing and environmental sustainability. This implies that any improvements made in Green Sourcing will lead to a corresponding positive improvement in Environmental Sustainability in Kampala.

Regression results of Green Sourcing on Environmental Sustainability in Kampala industries.

In order to derive the coefficient of determination and to also appreciate the predictive power of the Green Sourcing on Environmental Sustainability in Kampala, a Linear Regression Analysis (LRA) was adopted. The findings are presented in Table 4.9 below.

Table 4.9: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.558[a]	.312	.308	.30014

a. Predictors: (Constant), Green Sourcing

Primary Data 2022

Results in Table 4.9 reveal an Adjusted R Square that gives the variance in Environmental Sustainability due to changes in Green Sourcing and Environmental Sustainability. The Adjusted R square value of 0.308 accounts for the variations noted in Environmental Sustainability in Kampala by 30.8% (at 100% test level). The remaining variations (69.2 %) in Environmental Sustainability in Kampala are accounted for by other factors.

Table 4.10: Analysis of Variance

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.510	1	7.510	83.373	.000[a]
	Residual	16.575	184	.090		
	Total	24.085	185			

a. Predictors: (Constant), Green Sourcing

b. Dependent Variable: Environmental Sustainability

Source Primary Data 2021

Green Sourcing reflects a large F statistic of 83.373 indicating a great variation between sample means relative to the variation within the samples. This means an F statistic of 83.373 provides evidence that there is a difference between the group means. The p-value associated with this F value is very small (0.0000) which is typically ($P<.05$) which signifies that the Adjusted R Square value is significantly greater than zero. Therefore, the model using Green Sourcing as a predictor (independent variable) did a good job of predicting the dependent variable and proves that there is a significant relationship between the predictor (Green Sourcing) and the dependent variable (Environmental Sustainability).

Table 4.11: Regression Coefficients Table

Regression Coefficients Table

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.325	.154		15.105	.000
Green Supply Chain Practices	.357	.039	.558	9.131	.000

a. Dependent Variable: Environmental Sustainability

Primary Data 2021

The standardized Beta value of .558 (sig. 000, $p<.05$) in Table 4.16; means Green Sourcing explains 55.8% of the variance in the dependent variable – environmental Sustainability, the remaining 44.2% is explained by other factors in Green Sourcing operations. The findings show that Green sourcing is a good predictor of environmental sustainability. If industries are to improve environmental sustainability, they can achieve this by improving Green sourcing.

5 . Findings

In summary, this chapter provided insights into and demonstrated that manufacturing industries in Kampala, comply with all aspects of green sourcing as mentioned in the discussion of findings. Key findings obtained from objective one include:

The key descriptive findings indicated by the average mean of 3.89, and the standard deviation of 0.894 showed agreement on the majority of statements on green sourcing. An average t- the value of 4.52; proved that the mean was significant as it was > 1.65.
The bivariate test of association between independent and dependent variables using Pearson's correlation indicated a moderate and positive association between Green Sourcing and Environmental Sustainability in Kampala industries whereby Pearson's *r* coefficient was 0.558 and it was significant p<0.01.

Simple linear regression between Green Sourcing and Environmental Sustainability in Kampala industries; showed that the R square value of 0.308 accounts for the variations noted in Environmental Sustainability in Kampala industries by 30.8% (at 100% test level). The remaining variations (69.2%) in Environmental Sustainability in Kampala industries are accounted for by other factors. Furthermore, the F statistic of 83.373 provides evidence that there is a difference between the group means. The p-value associated with this F value is very small (0.0000) which is typically (P<.05) which signifies that the Adjusted R Square value is significantly greater than zero. To confirm all the above, the regression beta coefficient was positive, meaning that for every one (1) standard deviation increase in the independent variable (Green Sourcing), the dependent variable (Environmental Sustainability) will increase by 0.558 standard deviations.

6 . Discussion

This section provides a detailed discussion reflecting a linkage between the findings and the literature that was reviewed, the environmental legal framework in Uganda as well as the theory which underpinned the study. This study analyzed green sourcing along the following lines: awareness of the effect of green sourcing on environmental sustainability; establishing supply that upholds environmental sustainability standards; purchasing reusable and recyclable materials; sourcing from suppliers who uphold green practices; continuous education on how to go green; enforcing green supply chain practices by law; assisting suppliers get environmentally friendly materials while avoiding conflicts with them; top management support the implementation of green sourcing; organizational members being aware of financial benefits that come with greening their supply chains and ensuring that goods produced are environmentally safe.

The study findings on green sourcing and Environmental Sustainability in Kampala revealed that organizations are largely aware of the existing environmental protection standards. This statement can be supported by numerous submissions from other scholars. This is supported by Tricoire (2019) , who contends that complete awareness of environmental sustainability principles helps overall and minimizes the need for scrutiny and enforcement because all stakeholders appreciate the benefits that accrue to the society as a whole as a result of their efforts in upholding environmental sustainability standards; while Mingxuan et al. (2019) argued that training is the most important tool of environmental sustainability and to develop commitment and loyalty and to create a culture of cooperation among employees involved in manufacturing. Junjun et al. (2018), acknowledge that environmental sustainability standards in most developing countries are for the most part a new concept implying that the stakeholders should be accorded an adjustment period. The drop in adherence to environmental sustainability standards by some may be attributed to the increased supervision laxity by their supervisors as well as not attaching significant value to the
environmental sustainability matters. Another reason could be that many organizations are not sure about how to go about practicing green supply chain operations and this is why they fear venturing in something that might be very costly. This is also supported by (Hendriks et al. 2018). However, the study results obtained reveal indifferences in the adherence to environmental sustainability standards as specified in Part VII of The National Environment Act, 2019 regarding environmental planning and environmental information and literacy which the National Environment Management Authority needs to address. The study finding did not completely conform to the Institutional Theory which stipulates that organizations like manufacturing plants need to make efforts to adhere to the legislative powers vested with designated statutory bodies like the National Environment Management Authority and social claims of their environment that their actions should seek to improve.

The study established that manufacturing organizations seek supply from organizations that uphold environmental sustainability standards at all times. These revelations are supported by Diabat, Khodaverdi & Olfat (2013) who established that the advantage of only engaging with suppliers who endorse environmental sustainability standards from the onset, allows time for employees to focus on production since they are not distracted by the repeated need to continually vet new suppliers that are compliant. Other scholars like Chu et al. (2017), argue that widespread green sourcing in the entirety of an industrial park makes it easier for new manufacturers to easily adapt and take advantage of this type of industrial inertia at no additional cost. De Carvalho et al. (2020), acknowledge that organizations establishing suppliers who espouse environmental sustainability standards in developing economies far from the environmental authorities may prove difficult. However, the study results gotten reveal that the sensitization of stakeholders by NEMA lacks the explanation to top management of the necessity to engage exclusively with supply that upholds environmental sustainability standards as specified in Part VI of The National Environment Act, 2019 regarding Acute Pollution and Emergency Preparedness and Response System which manufacturing entities need to consider. The study finding partly conforms to the Institutional Theory which requires manufacturing entities to endeavour to uphold the law as guided by the National Environment Management Authority. Therefore, the lack of progress in this area remains and needs further engagement by all concerned parties.

Green sourcing in organizations was found by the study to fulfil canons of promoting the attainment of materials that are reusable, recyclable and do not result in pollution of air and water. This finding is in line with Aslam et al (2019) who argued that green sourcing normally takes place in a normal working situation in Europe; while Zhang et al (2018) assert that green sourcing in organizations, is also used as a strategy to ensure recycling and reuse of raw materials and Srivastava (2007) argues that green sourcing is one of the best methods because it is planned, organized, and ensures resource use efficiency as a tenet of environmental sustainability. However, further study findings seem to reveal the administrative challenges encountered during the fulfilment of aspects of promoting the acquisition of materials that are reusable. Some of these administrative challenges include inadequate follow-ups and ineffective supervision while
ensuring the acquisition of materials. However, these study results are partly in contravention to environmental sustainability standards as specified in Part XII of The National Environment Act, 2019 regarding Environmental and compliance monitoring which the National Environment Management Authority enforcement arm needs to deal with. The study funding did not completely conform to the Institutional Theory which specifies the value of compliance with current legislation and social responsibility towards their environment that their endeavours must put right. These are common administrative failings faced by NEMA hence they end up failing to attain green sourcing targets.

The study clarified that sourcing for suppliers is limited to those who are compliant and uphold green practices as being key in all business operations. This finding is in line with de Sousa et al. (2017) who argued that for a long-term solution to environmental sustainability deficits; the majority of manufacturers need to ensure that right from the onset; the materials they procure support green supply chain practices. Other scholars such as Govindan et al. (2014) also concur.

They posit that sourcing for suppliers that are compliant with green sourcing should be satisfied and engaged forthwith which in their considered view is cost effective and results in environmental sustainable scenarios. However, the fact that the study was able to identify pockets of manufacturers that are unsure whether sourcing for suppliers should be restricted to those who are compliant and uphold green practices is cause for concern and perhaps explains the lagging behind environmental sustainability initiatives in Uganda. This is partly contrary to Part X article 110 of The National Environment Act, 2019 concerning the purpose of environmental and social impact assessment which NEMA needs to address. The study outcome did not fully adapt to the Institutional Theory which stipulates institutional adherence to the laid down law like the National Environment Management Authority and consequences to society at large.

The study results established that there is continuous education for all producers on how to go green and showing them how to adopt green practices. This great score is complemented by Dagher, Itani & Kassar (2015), who argue that continuous sensitization and training for suppliers and potential suppliers ensure that an environmental sustainability strategy has been made possible in West African countries like Gabon that have noticeably reduced carbon emissions by ensuring most suppliers uphold green practices. Similarly, Choudhary et al. (2019), indicated that in South Asian countries, education initiatives by regional environmental bodies through National environmental entities have ensured most suppliers try for the most part to adopt green practices even when extra costs are incurred. Although the results reveal a positive association between green sourcing and resource use efficiency, it also uncovered proof that some producers remain unconvinced about adopting green practices which proves that pockets of misunderstandings between suppliers and environmental authorities still exist. The mismatch may result from conflicting targets, differing business goals, differences in outlook, or any number of other reasons but clearly contravenes Part XIV; article 148 of The National Environment Act, 2019 regarding environmental planning by lead agencies which includes the component of continuous education which district officials and National Environment Management Authority needs to address. The study results did not wholly conform to the Institutional Theory which stipulates that factories and other supply chain operators need to be law abiding and follow social norms which encapsulate continuous education about environmental sustainability. NEMA needs to note that the longer the misunderstandings continue, the more difficult it is to resolve and this tends to affect overall environmental sustainability.

The study reached the conclusion that organizations enforce green supply chain practices by law. This finding was in line with Wadhah et al. (2019), who observed that enforcing green supply chain practices in developing countries was complex as the poverty levels could not realistically accommodate the necessary steps involved. To further strengthen these findings are Agyemang et al. (2018), who evaluated obstacles to green supply chain formulation and implementation in West Africa; they identify poor enforcement as a cardinal impediment to implementing green supply chain practices and Carola, Amaia & Anna Maria (2017) acknowledge that enforcement of legislation in the UK remains a challenge as manufacturers take advantage of all lapses in supervision to flout environmental laws. Despite the presence of laws that govern green supply chain practices, evidence also suggested that the incongruities linger concerning all those who are unsure might reveal some industrial employees' attitudes towards enforcement of green supply chain practices. This finding reveals incongruities in the observance of most aspects of part XII of The National Environment Act, 2019 regarding environmental compliance and enforcement which the National Environment Management Authority needs to look into. The study finding did not completely conform to the Institutional Theory which stipulates that organizations like manufacturing plants need to be law abiding and respect law enforcement as a social behavioural norm. This attitude might reveal why some of the industrial employees have continued to neglect the enforcement aspects hence negatively affecting the realization of the set targets.

Additionally, results obtained from the study further established that suppliers are assisted in getting environmentally friendly materials while avoiding conflicts with them. This good trend of positive results can be supplemented by Mingxuan et al. (2019), who observe that sustainable green sourcing, approaches need to be customized to suit local conditions and community standards and expectations to minimize friction. Further still, Rohani (2016) highlights the fact that without the goodwill and acceptance by suppliers, getting them to comply with green sourcing standards might prove insurmountable. Further study results attained reveal apathies in establishing that suppliers are assisted in getting environmentally friendly materials while avoiding conflicts with them as specified in Part XI article 121 of the National Environment Act,
2019 regarding enforcement of environmental easements which National Environment Management Authority needs to administer. The study finding partly aligns with the Institutional Theory which stipulates that organizations like the National Environment Management Authority are charged with ensuring all actions remain environmentally friendly and in harmony with society as a whole. The identified discrepancies can be linked to the fact that despite the sensitization

and training by NEMA, they still find difficulty in ensuring that the environmental sustainability set goals are met. This can be attributed to the fact that some of these goals tend to be complex and
hard to achieve.

The study findings revealed that top management in manufacturing industries support the implementation of green sourcing. This statement can be supported by numerous submissions from other scholars. This is supported by Saeed & Kersten (2019), who contend that such reforms as the implementation of green sourcing need the blessing of top decision makers while Luthra and Mangla (2018) argued that support from top management is the most important ingredient to develop commitment and loyalty and to create a culture of cooperation amongst employees as far as implementation of green sourcing is concerned and Govindan et al. (2014), acknowledges that green sourcing is an initiative that is a departure from traditional material sourcing situations. However, the study results obtained reveal doubts about the direction certain managers may take towards implementation of green sourcing hence a possible drop in their performance levels as far as resource use efficiency is concerned as specified in Part II article 28 of The National Environment Act, 2019 regarding functions of district environment and natural resources committees which National Environment Management Authority needs to supervise. The study funding did not completely conform to the Institutional Theory which stipulates organizations like factories should stick to laid down legislation and social support for environmental sustainability tenets that their actions should strive to uphold.

Additionally, the study established that organizational members are aware of the financial benefits that come with greening their supply chains. This high score is complemented by Manavalan & Jayakrishna (2019), who argue that awareness, as one of the indicators of successful and smooth implementation of green sourcing should be present. Similarly, Barzinpour & Taki (2018) indicated that awareness enhances trust with the employees given responsibility and it improves team building between suppliers and manufacturing industries. Although the results reveal a positive linkage between awareness and greening their supply chains, study findings pinpointed instances of clarity deficits between employees and awareness of cost cutting through green sourcing. Fortunately, the discrepancy is usually easy to address when discovered early. This position is buttressed by article 41 of Part III of The National Environment Act, 2019 regarding manufacturers being duty bound to operate on sound financial principles. The study funding did not completely conform to the Institutional Theory which stipulates that organizations like manufacturing plants need to make efforts to adhere to the laws and articles governing National Environment Management including matters of financial diligence while greening their supply chains and social responsibilities towards their environment that endeavours strive to improve. The longer the discrepancy continues, the more difficult it is to resolve and tends to affect overall environmental sustainability.

The study findings revealed that organizations ensure that goods produced are environmentally safe through their entire life cycle. This is supported by Aslam, Waseem & Khurram (2019), who asserts that the primary responsibility regarding environmental sustainability lies with manufacturers while Taylor & Vachon (2018) argued that throughout the tire life cycle
manufacturing industries in the EU have ensured they remain environmentally safe and Oguntoye & Evans (2017), acknowledge that for the strategy to work the entire manufacturing process must remain environmentally safe from start to finish. However, this is covered under Part VII of The National Environment Act, 2019 regarding control of pollution and environmental emergency preparedness which the National Environment Management Authority is expected to preside over. The entirety of the study findings did not completely conform to the Institutional Theory which stipulates organizations like factories need to continually adhere to the laid down procedures for their entire life cycle and do so for the good of social wellbeing that they should aspire to improve. The study findings support environmental sustainability and NEMA needs to do more in this direction.

5 Conclusion and recommendation

5.1 Conclusion

The study results concluded that the amount of unique variance Green Sourcing accounts for is statistically significant. The hypothesis that Green Sourcing had a relationship with Environmental Sustainability was not rejected thus confirming the predictive power of Green Sourcing on Environmental Sustainability.

The study, therefore, concludes that findings are partially supportive of The National Environment Act, 2019; specifically concerning Control of Pollution, Acute Pollution and Establishment of Environmental Sustainability.

Recommendations

Considering the finding which revealed that green sourcing accounted for some small variations in environmental sustainability in Kampala led to the conclusion that green sourcing when under consideration by National Environment Management Authority, has had some small effect on environmental sustainability in Kampala.

It is therefore recommended that National Environment Management Authority takes deliberate steps to try to step up adherence to green sourcing by manufacturing entities in Kampala. This can be easily done by empowering the enforcement department as they lack the clout needed to enforce the necessary laws to be followed by all manufacturing entities that are expected to green source for raw materials by law. Manufacturing organizations in Kampala should embrace Green Sourcing for Environmental Sustainability.

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