

# Effects of Green Supply Chain Management on Organizational Productivity: A Survey of Textile Industries in Eldoret

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**Abstract**—Green Supply Chain Management practice is a multi-dimensional concept which can be measured from different perspectives. The study purpose was to assess effects of green supply chain management on organizational productivity: a survey of Textile Industries in Eldoret. Its objectives were; to analyze the effects of green procurement, green manufacturing and the effects of operations and reverse logistics on organizational productivity in Textile Industries in Eldoret Town. The study was guided by public value theory and institutional theory; the study adopted descriptive survey research design. The research was carried out in all the departments of Textile Industries in Eldoret Town. For the purpose of getting a representative sample, the researchers used a census of the target population. Questionnaires were used as data collection instruments. The data was analyzed using both descriptive statistics (frequencies, percentages, mean and standard deviation and inferential statistics (multiple linear regression model) the findings was presented in tables. The study findings indicate that all the three predictor variables; green procurement, green manufacturing and operations and reverse logistics showed a strong relationship with the dependent variable organizational productivity. The study thus mechanisms should be put in place by the textile industries to address the challenges that are hampering the implementation of green procurement. It should consider the environmental aspects to performance criteria when making purchasing decisions, also, organizations should adopt production processes which use inputs with relatively low environmental impacts, which are highly efficient, and which will generate little or no waste or pollution, this can lead to lower raw material costs, production efficiency gains, reduced environmental and occupational safety expenses, and improved corporate image, further, textile industries should adopt reverse logistics practices in order to conform to set environmental regulations, this should include all activities of the flows of products, information and services

between the point of origin and the point of consumption. Lastly the study recommends that organizations should increase diversity and dynamics, environmental issues which are important in ensuring organizational productivity. This will ensure organizations reduce the impact on the environment on the procurement process and to develop sustainable transport and supply chain strategies. This research that a research of the same kind since the study only focused on the effects of green procurement, green manufacturing and operations and reverse logistics of textile industries in Eldoret Town, a comparative research is suggested with other regions of the same characteristics. Further owing to the limitations of the study it is suggested that same study be done but in other sectors as the results on the current study may not be generalized to other institutions, also, as more reliable data becomes available on green procurement and organizational productivity, it may also be useful to determine whether or not the relationships examined in this study hold over time.

**Keywords**—Green Supply Chain Management, Pollution, production efficiency gains.

## I. INTRODUCTION

Green Supply Chain Management practice is a multi-dimensional concept which may be measured from different views. [1] defines green supply Chain management as a method of integrating environmental thinking into supply chain management, together with product design, material sourcing and selection, manufacturing processes, delivery of the ultimate product to the consumers, and end-of-life management of the merchandise after its helpful life

According to [2] green manufacturing, green distribution and green logistics vital dimensions of green supply chain management practices required by manufacturing sectors to attain increased sustainability performance[3]. Suggested that GSCM practices ought to embrace internal environmental management, green information systems,

inexperienced getting, cooperation with customers, eco-design and investment recovery. [4] noted that GSCM practices are composed of company and operational ways to enhance environmental sustainability including environmental management, cooperation with customers and eco-design. [5] investigated the impacts of pro-active and re-active practices of GSCM on economic, environmental and intangible performance in Thailand processing companies. Taken along, these studies are representative of efforts to deal with the diversity of interesting dimensions of GSCM practices. Green supply Chain Management is method that converts inputs into output by reducing hazardous substances, increasing potency in lighting and minimizing waste by actively planning and redesigning green processes.

According to [6].green supply chain management needs organizations to design products that facilitate the use, recycle and recovery of components and material components; avoid or cut back the utilization of hazardous product among production process; minimize consumption of materials. Green supply chain management consists of green packaging that aims to downsize packaging, use green packaging materials, encourage recycling and re-use of organizational programs, work with vendor to standardize packaging, encourage and adopt revertible packaging ways, minimize material uses and time to take , use reusable pallet system and finally, save energy in warehouses. As for green logistics/transportation, it's concerning delivering product on to user site, using alternative fuel vehicles and grouping orders along, instead of smaller batches investing in vehicles that are designed to cut back environmental impacts, and designing vehicle routes [5]. Green logistics concerns reverse logistics that features collecting used products and packaging from customers for reuse, returning packaging of products to suppliers for reprocessing and requiring suppliers to collect their packaging materials.

Global aggressiveness is that driver of GSCM that states the existence of competition among various organizations that serve international customers. An index of the competitiveness of the countries within the world is compiled once a year by World Economic Forum Economic Forum. International competition is employed to explain the worldwide market, and the struggle of various corporations or businesses to prevail over the other. International competition can help with providing GSCM practices concerning suppliers and customers and are involved with the organizational supply chain management. Greening the supply chain has varied advantages for a corporation, starting from value reduction, to integration of suppliers in a very participative decision making process that promotes environmental innovation .A larger part of the GSCM function primarily

contains of green purchasing ways adopted by organizations in response to increasing international considerations of environmental sustainability [7].

Within the developing nations global green supply chain management is taken into account to possess numerous benefits that a company can revel in. Green SCM enables to enhance agility by way of mitigating risks and dashing improvements. It additionally will increase adaptability thru revolutionary strategies and continuous enhancements. Green SCM includes negotiating guidelines with suppliers and clients, which ends up in higher alignment of enterprise methods and principles. alternative advantages of GSCM are it ensures organizational financial performance; resource sustainability, low costs in procurement process, product differentiation and competitive advantage, adapting to regulation and reducing risks and improved quality and product. All these result into alignment of supply chain [8].

Green supply chain practice normally is believed to represent the environmentally friendly image of product, process, systems and technologies, and the way the business is conducted .Most corporations in developing nations have adopted the green solutions into their organization and tries to reduce negative environmental effects instead of adopting a proactive approach to cut back the sources of waste or pollution. Therefore, there's need to place additional interest in finding out the adoption and implementation of GSCM in developing countries [9]. In the developing countries particularly in Africa, stress has been made on corporations to run their business responsibly [10]. [11] emphasizes that majority of businesses that answer environmental problems does so solely in marginal ways. With the increasing awareness on environmental sustainability problems, producing companies these days begin to think and act green. There are many organizational difficulties in measuring performance among organizations which arise in inter-organizational environmental performance measuring visage with rising pressures to develop additional environmental and social responsibility, organizations are developing new communication approaches in conjunction with attempts to include sustainability measures into strategic performance measuring systems. Sustainable supply chain performance measuring is aimed toward addressing environmental, social and economic aspects of sustainable supply chain management.

In Kenya, there has been conscious awareness in several companies to undertake vital efforts towards establishing effective organizational green supply chain Management initiatives [12]. This encompasses environmental initiatives in inbound logistics which includes green purchasing, eco-design and production as outbound which has reverse logistics because the name implies, these

initiatives involve the relevant stakeholders like materials suppliers, service contractors, vendors, distributors and end users whom work cohesively to eliminate adverse environmental impacts which may presumably produce attributable activities [13].

## II. STATEMENT OF THE PROBLEM

According to [1] environmental sustainability is a very important issue to business practice. Waste and emissions caused by the supply chain production are the major sources of environmental issues together with global warming and air pollution. In Kenya Green supply chain management (GSCM) is gaining growing hobby amongst researchers and supply chain control practitioners. The growing significance of GSCM is pushed particularly through the escalating deterioration of the surroundings, like diminishing raw material sources, overflowing waste websites and increasing level of pollution, textile industries are faced with diverse challenges which encompass: lack of appropriate technology to aid organizations and their efforts to go green and enterprise techniques needed to capture the suitable information in the supply chain and therefore make great use of their current existing technology; the change-off among green requirement supply chain optimization efforts with green supply chain efforts.

There are various studies done on the effects of green supply chain management, these studies come up with various demanding situations dealing with groups at the same time as trying to implement green deliver chain. [14] recognized five challenges of implementing GSC. These are lack of standards, consciousness, organizational business case development, organizational sustainability implementation programs and communication planning in organizations. [15] found out that human activities had unwittingly contributed to global warming and decrease in the ozone layer. [16] argue that the widespread practices of capitalism for commercialization of commodities in organizations to complement modernized routine has slightly ruined the environmental exploitation of resources. Therefore the knowledge gap exists in these studies as to whether green procurement, green manufacturing and operations and reverse logistics affects organizational productivity in Textile Industries in Eldoret Town.

## III. OBJECTIVES OF THE STUDY

### 3.1 General objective

The overall objective of this study was to determine the effects of green supply chain management on organizational productivity a survey of Textile Industries in Eldoret Town.

### 3.2 Specific objectives

- i. To analyze the effects of Green procurement on organizational productivity in Textile Industries in Eldoret Town.
- ii. To determine the effects Green manufacturing on organizational productivity in Textile Industries in Eldoret Town.
- iii. To assess the effects of operations and reverse logistics on organizational productivity in Textile Industries in Eldoret Town.

## IV. RESEARCH HYPOTHESIS

The study was guided by the following research hypotheses

- H01: There is no significant relationship between green procurement and organizational productivity in Textile Industries in Eldoret Town
- H02: There is no significant association between green manufacturing and organizational productivity in Textile Industries in Eldoret Town
- H03: There is no significant relationship between operations and reverse logistics and organizational productivity in Textile Industries in Eldoret Town.

## V. LITERATURE REVIEW

### 5.1 THEORETICAL REVIEW

#### 5.1.1 Public Value Theory

Public value theory was developed by [17] to provide public sector managers with a larger understanding of the challenges and opportunities available in the environment within which they work, and therefore the challenge to form publicly valuable outcomes. Public value theory describes the value that a corporation contributes to society. The term changed into at first coined with the aid of Harvard academician Mark H. Moore who saw it because the equal of stockholder value in public management. Public fee is supposed to offer managers with a belief of the way activities will contribute to the common good.

Public values are those providing normative accord concerning the rights and benefits to which citizens ought to and are entitled; the obligations of citizens to society, the state and one another; and therefore the principles on that governments and policies ought to be based mostly. Public value is value for the general [18]. Value for the general public may be as a result of evaluations concerning however basic desires of people, teams and therefore the society as a full and are influenced in relationships involving the general public. Public value then is additional value from the public, drawn from the expertise of the general public. The general public is an imperative operational fiction of society. Public value creation is

placed in relationships between the individual and society, supported in people, brought about by subjective evaluations against basic needs, activated by and realized in emotional-motivational states, and created and reproduced in experience-intense practices [3]. [17] argue that Public value theory envisages a manager's purpose as going on beyond implementation of policy and adherence to institutional values and norms. The theory seeks out opportunities to form vital enhancements to the lives of the public. According to constable [18] in contrast to private enterprise, organizations providing public services are directly responsible to citizens and their democratic representatives. The public value theory is relevant to the current study because it determines the extent to which green supply chain management contribute to improvement of organization productivity in terms of provision of better services, organizational output, quality product and organizational sales turn over.

### 5.1.2. Institutional Theory

According to [19] Institutional theory is a widely prevalent theoretical posture that emphasizes rational mythology and legitimacy Institutional concept specializes in the deeper and further resilient factors of social structures. It considers the processes that structures, together with organizational culture and become established as authoritative strategies for social behavior [19]. Different components of institutional theory justify that these parts are created, diffused, adopted, and tailored over space and time; and the way they fall into decline and disuse. According to [20]. Institutional theory adopts a social science perspective to elucidate organizational structures and behavior. It attracts attention to the societal factors that influence organizational planning processes and above all how rationalized activities are adopted by organizations [19]. The institutional theory is the ancient approach that's used to examine components of public procurement [21].

[19] identified three pillars of institutions as regulative pillar, normative pillar and cultural cognitive organizational pillar. The regulative pillar emphasizes the utilization of rules and regulations as social control mechanism which ensures expedience as basis for supply chain management. The normative pillar is the organizational norms and values within the social institutions obligation as the basis of supply chain management. The cultural-cognitive organizations pillar rests on shared understanding on institutions common beliefs, symbols, and shared understanding.

Critics of institutionalism have maintained that the thought of institution is so central as a consequence, the meaning of institution has resulted in a never ending dispute which scholars are institutionalists or not and an identical confusion concerning what's purported to be the core of the theory. In alternative words, institutional economics

have become well-known as a result of it means all things to all individuals, which in the end of the day is meaning of nothing. The institutional theory is relevant to the current study because it is used to examine the elements of green supply chain management.

### 5.1.3 Resource Dependency Theory

The study was guided by the resource dependency theory; the idea of this theory focuses on the idea of costly-to-copy attributes of the firm to comprehend superior performance and competitive advantage [22]. The speculation argues that sustained competitive benefit is generated by means of the unique package deal of assets on the core of the company in which enterprise owners build their agencies from the resources and abilities that they presently own or none transmitted. In preferred, the RBV principle addresses the critical difficulty of ways superior performance is attained relative to numerous companies in an equal market and posits that superior overall performance outcomes from effort and exploiting extraordinary assets of the firm [23].

According to useful resource dependence concept (RDT), businesses get uncertainties and manipulate dependence with the aid of intentionally structuring their change relationships, establishing formal and semi-formal linkages with opportunity agencies. Through interdependency, organizations will synergistically blend their own resource units with the complementary resources in their companions and consequently broaden aid bundle this is distinct and arduous to mimic [24]. By cultivating such relationship-specific capabilities that become superior to what the organizations could possess on their own corporations [25].

The resource dependence theory may be a relevant theory to SCM as a result of its facilitation on organizational-environmental scanning spanning activities, which imply that one firm will hardly deliver the goods property growth. Therefore, corporations ought to depend upon the buyer-supplier relationship that helps improve cooperation and coordination among supply chain members. In the context of GSCM, inter-organizational collaboration is necessary for managing the inner and external coordination and cooperation to possess the system with success enforced throughout the entire offer chains [26]. [27] developed a call model to live environmental observe of suppliers employing a multi-attribute utility theory approach. [28] projected the multiple attribute utility theory methodology for assessing supply chain as well as re-use and utilization throughout the life cycle of product and services.

The Resource Dependency Theory has been criticized because of rarity is obsolete: though conspicuously gift in Wernerfelt's original articulation of the resource-based read (1984) and Barney's sequent framework [29]. the



conception that resources have to be compelled to be rare to be ready to operate as a potential supply of a sustained competitive advantage is senseless [27]. As a result of the implications of the opposite ideas (e.g. valuable, unreplicable and non substitutability)

Although the resource-based view (RBV) has emerged jointly of the substantial theories of strategic management, it's aforementioned that it's over-looked the role of entrepreneurial methods and entrepreneurial skills jointly of the crucial sources of the competitive advantage of a firm. Even today, once entrepreneurship analysis is in demand, most economic analysis, and consequently abundant of strategic management analysis, views entrepreneurship because the specter that haunts economic model.

Many students have tried to research into the mechanism of property competitive advantage of a firm through the RBV with original ideas like 'core 'VRIO framework [29] and routine and skills [30]. However, very little add RBV has been created to understand the role of entrepreneurship because the crucial supply of competitive advantage, despite the skills of the enterpriser are without doubt the principal human resource possessed by a firm [31].

## 5.2 EMPIRICAL REVIEW

According to [32] green supply chain came into context in 1989. [32] article were the first scholars of this literature that developed an best prognostication system for organizations to use to forecast product that may be probably be reused. This prognostication system, however, was extremely contentious as a result of returning individual containers isn't sometimes proverbial with certainty, therefore, their findings could otherwise be incoherent. GSCM has gained quality with both scholars and practitioners to aim in reducing waste and conserving the standard of product-life and also the natural resources. Eco-efficiency and remanufacturing processes as currently necessary assets to attain best [33], [1]. International market demands and governmental pressures and pushing businesses to become a lot of more sustainable [34].

[35] discuss however in developed countries like the USA, powerful pressures through laws and rules improved awareness and therefore drove environmental management practices. Large prosperous corporations in any business sometimes face intense scrutiny from competitors and external environmental activists [36]. Hence, several organizations work in an environment that features pressures from their competitors that induce organizations to adopt inexperienced initiatives to combat competition and gain competitive advantage [37].

The concept of supply chain management has been ascertained as a recent and novel tool and therefore the literature on organizational green procurement has been

grown tremendously. [38] conducted an empirical survey of US purchasing managers with reference to green procurement and have found that primary driving force to green purchasing is an urge to meeting laws instead of environmental monitoring or partnerships. The effectiveness of green purchasing also depends on whether or not the firm has centralized or decentralized decision making that determines the extent of flexibility within the green purchasing process. In a survey conducted by the [39] purchasing managers listed the impact of environmental laws on purchasing activities as their second most vital future concern

According to a study by [40] the integration of suppliers into environmental management processes ends up in two evolving trends. Foremost they suggest that environmental problems are becoming an intrinsic part of strategic planning in organizations attributable to stricter laws and therefore the demands of environmental answerability. They conjointly observe a second trend amongst their case examples, that organizations are integrating their supply chains to cut back operational prices and improve their client service. Green purchasing strategies arguably resolve around two key parts, the analysis of providers' environmental performance and mentoring to help suppliers to enhance their performance has elaborated the range of processes put in place to evaluate the suppliers behaviour in ensuring the recruitment of the best suppliers. Additionally, organizations urge suppliers to develop their own internal environmental management system, and many requests that a supplier puts to an environmental management standard

According to [41] green supply chain offer companies competitive advantage and also result in raised economic performance. They ascertained that the image of product of companies that practiced reverse logistics in Philippines had been positively affected giving such companies a competitive advantage. Their study mainly centered on the financial outcomes of organizational performance. Additionally [42] in their study looked into the outcomes of green supply chain initiatives among certified companies in Malaysia and environmental sustainability. Among the four doable outcomes they investigated, including environmental, economic, cost reductions and intangible outcomes. This study tests the hypothesis that reverse logistics practices have a positive result on each the financial and marketing performance of an organization.

Reverse logistics offer companies competitive advantage and also result in raised economic performance [43]. They observed that the image of product of firms that practiced reverse logistics in Philippines had been completely affected giving such firms a competitive advantage. Their study in the main targeted on the financial outcomes of

structure performance. [42] investigated the outcomes of green supply chain initiatives among certified firms in Asian nation and environmental property. Among the various four possible consequences they investigated, in addition to environmental outcomes, monetary consequences, fee reductions and intangible consequences, reverse logistics become found to possess a large high-quality end result on price reductions only. This study tests the hypothesis that reverse logistics practices have a positive result on every the financial and promoting performance of a corporation.

In Kenya, a lot of importance of the Reverse provision programs the a lot of necessary is for the organization to face the uncertainty in these activities that's more and more high [43]. During this case it will increase the requirement for flexibility of data distribution as a result of it helps to reduce this uncertainty [44]. Reverse logistics allows the organization to enhance handiness of choices, reducing uncertainty and rising decisions [44]. In Reverse logistics programs are used for systems improvement, processing operations that facilitate or assist organizations build higher selections [44], reducing response times and raising the pliability of data distribution [45]

#### Conceptual Framework

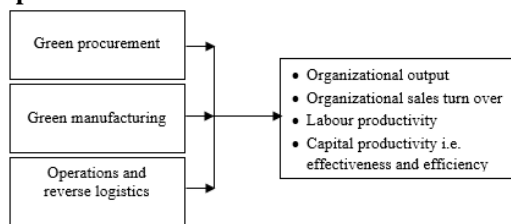


Fig. 1: Conceptual Framework

## VI. RESEARCH METHODOLOGY

### 6.1 Research Design

The study adopted a descriptive survey research design. This design attempts to determine the cause or reason for pre-existing differences in groups of individuals. It is treated as a type of descriptive researcher since it describes conditions that already exist. The study design was used to finalize the outcomes from the selected subjects used in the study

### 6.2 Target population and sample size

The target population of this study comprised of employees from different departments of textile industries in Eldoret town. Who included the procurement staff, finance department staff, the human resource, marketing staff and production staff, making a total of 135 respondents. Since the population of the study was small (135), census was used to collect information from the entire population [46]

### 6.3 Data collection instrument

The study used questionnaires; this is a collection of items to which a respondent is expected to react in a written

form. The questionnaire included both structured and semi-structured questions. This allowed the respondents to give their own views.

### 6.4 Data Analysis and Presentation

The researcher employed multivariate regression model to study the effects of green supply chain management on organizational productivity.

The multiple regression model used was as follows.

$$Y = \alpha + B_1X_1 + B_2X_2 + B_3X_3 + \mathcal{E}$$

Where Y was organizational productivity and

$X_1$  = Green procurement

$X_2$  = Green manufacturing

$X_3$  = Operations and reverse logistics

$\alpha$  = constant value

$\mathcal{E}$  =error term

## VII. FINDINGS AND CONCLUSION

Table 7.1: Response Rate

Questionnaires	No.	%
Issued	135	100
Returned	126	93.3

[47] proposes a questionnaire return rate of 50 percent as suitable for a study.

### 7.2 Green procurement and organizational productivity

According to the [48] green procurement is the selection and acquisition of product and services that most effectively minimize negative environmental impacts, it involves the subsequent environmental friendly activities: manufacturing, transportation, use and recycling or disposal. The study sought to establish the extent that green procurement influence organizational productivity in textile industries in Eldoret Town.

Table.7.2: Green procurement and organizational productivity

Variables	M	S
		D
Green procurement leads to successful implementation of procurement plans	3.92	1.205
Green procurement leads to sustainability of organizational productivity	3.89	1.115
Green procurement leads to compliance with customers' requirements related to the implementation of environmental management systems	4.20	.981
Green procurement ensures evaluation of the amount of waste flowing into business systems	3.76	1.308
Green procurement leads to decrease of	3.76	1.

consumption for hazardous/harmful/toxic materials	27
Green procurement leads to decrease of frequency for environmental accidents	6
	1.
	4.18
	10
	9

Green procurement leads to successful implementation of procurement plans was supported by a mean of 3.92 and a standard deviation of 1.205, regarding the issue that green procurement leads to sustainability of organizational productivity majority of the respondents agreed with a mean of 3.89 and a standard deviation of 1.115, on whether green procurement leads to compliance with customers' requirements related to the implementation of environmental management systems the respondents agreed with a mean 4.20 and a standard deviation of 0.981, on whether green procurement ensures evaluation of the amount of waste flowing into business systems the respondents agreed with a mean of 3.76 and a standard deviation of 1.276, on Green procurement leads to decrease of consumption for hazardous/harmful/toxic materials was supported by a mean of 4.18 and a standard deviation of 1.109, lastly on whether green procurement leads to decrease of frequency for environmental accidents.

It can therefore be shown that the effects of Green procurement on organizational productivity include the fact that green procurement leads to successful implementation of procurement plans.

### 7.3 Green manufacturing and organizational productivity

Green manufacturing will result in lower material costs, production efficiency gains, reduced environmental and activity safety expenses, and improved company image.

Table 7.3: Green manufacturing and organizational productivity

Variables	M	S D
Green manufacturing has led to lower raw material costs	3.76	1.308
Green manufacturing generate little or no waste or pollution.	3.76	1.276
Green manufacturing promotes reuse of raw materials	4.25	.902
Green manufacturing has led to reduced environmental and occupational safety expenses,	4.11	.943
Green manufacturing leads to compliance with environmental regulations in producing parts and components	3.73	1.314
Green manufacturing ensures greening of production to cleaner production	3.75	1.429

The results indicate that the textile industries consider green manufacturing which will enable them to maintain their customers' loyalty and achieve the intended objective of organizational productivity.

Table 7.4: Operations and reverse logistics and organizational productivity

Variables	M	S D
Operations and reverse logistics recovers materials that are harmful to environment	4.09	1.180
Operations and reverse logistics ensures launching of recycle system in our organization	4.37	0.936
Setting internal material recycling system	4.11	1.026
Operations and reverse logistics leads to implementation of recycle system in our organization	3.73	1.314
Operations and reverse logistics leads to implementation of reused package system	3.63	1.399
Operations and reverse logistics ensures use of packaging materials that can be reused for other purposes in our organization	3.80	1.208

This result concurs with [49] who indicated that green logistics describes all attempts to measure and minimize the logistical activities impact on organizational productivity.

### 7.4 Green Procurement and Organizational Productivity

This study sought to determine the effects of green procurement on organizational productivity. The participants were asked to respond to items in the questionnaire on a Likert scale of 1-5

Table 7.5: Green Procurement and Organizational Productivity

Variables	M	S D
Green procurement leads to improved organizational output	4.23	.957
Green procurement leads to organizational sales turn over	4.07	1.001
Green procurement leads to quality of products	3.78	1.394
Green procurement leads to effective waste control	3.98	1.138
Green procurement leads to compliance with environmental regulations	4.41	.857

This implies that green procurement in the textile industry is a significant factor in ensuring quality of products, effective waste control, compliance with environmental regulations, organizational sales turn over and improved organizational output.

**7.5 Correlation analysis**

Pearson correlation analysis was conducted to examine the relationship between the variables. The measures were constructed using summated scales from both the independent and dependent variables.

Table 7.6 Correlation Coefficients

		Green Procur ement	Green Manuf acturin g	Opera tions Logis tic	Organi zationa l Produc tivity
Green Procurement	Pearson Correlation	1	.		
	Sig. (2- tailed)				
	N	123			
Green Manufacturing	Pearson Correlation	.889**	1		
	Sig. (2- tailed)	.000			
	N	123	123		
Operations Logistic	Pearson Correlation	.838**	.929**	1	
	Sig. (2- tailed)	.000	.000		
	N	123	123	123	
Organizational Productivity	Pearson Correlation	.804**	.824**	.834**	1
	Sig. (2- tailed)	.000	.000	.000	
	N	123	123	123	123

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

From the results in Table 7.6 above, it is indicated that all the independent variables (green procurement, green manufacturing and operations and reverse logistics) had a strong positive correlation with the dependent variable (organizational productivity) with green procurement having the highest correlation of ( $r=0.889$ ,  $p=0.000$ ) followed by green manufacturing with a correlation of ( $r=0.838$ ,  $p=0.000$ ) and then operations and reverse logistics with a correlation of ( $r=0.804$ ,  $p=0.000$ ). This indicates that all the variables are statistically significant at the 99% confidence interval level 2-tailed. This shows that all the variables under consideration have a positive and statistically significant relationship with the dependent variable.

It should be noted, the above table was at 99% level of confidence, since a unit change in green procurement leads 88.9 % change in organizational productivity, also a unit change in green manufacturing leads to 88.3% change in organizational productivity, and lastly a unit change in

operations and reverse logistics leads to 80.4% change in organizational productivity.

**7.6 Regression analysis**

The research used multiple linear regression analysis to determine the linear statistical relationship between the independent and dependent variables for this study.

Table 7.7: Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.857 <sup>a</sup>	.734	.727	.35412

a. Predictors: (Constant), Operations and Logistic, Green Procurement, Green Manufacturing

The model summary in table 4.8 above shows that the model is significant at 0.05, the value of  $r$  is 0.857 indicating a strong linear relationship between the independent variables (green manufacturing, green procurement and operations and reverse logistics) and the dependent variable (organizational productivity). The model further indicates that the R-Square is 0.734 meaning that at least 85.7 % percent of all variations in the dependent variable can be explained by the independent variables leaving only 16.3 percent of variations which are as a result of other factors therefore we conclude that the model is a good predictor of the dependent variable

Table 7 8: Analysis of Variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	41.106	3	13.702	109.264	.000 <sup>b</sup>
Residual	14.923	119	.125		
Total	56.029	122			

A. Dependent Variable: Organizational Productivity

B. Predictors: (Constant), Operations and Reverse logistics, Green Procurement, Green Manufacturing

The significance of the regression model was tested using Analysis of Variance (ANOVA). Table 4.9 above presents the results of this test. The regression model also indicated that it was significant ( $p = .000$ ) to mean that it had not been computed by chance, this was because the significance value is 0.000 which is less than 0.05. This made the results of the regression model credible and reliable.

**7.7 CONCLUSION**

The study concluded that that the effects of green procurement on organizational productivity include the fact that green procurement leads to successful implementation of procurement plans, green procurement leads to sustainability of organizational productivity, green



procurement leads to compliance with customers' requirements related to the implementation of environmental management systems it ensures evaluation of the amount of waste flowing into business systems, leads to decrease of consumption for hazardous/harmful/toxic materials and lastly leads to decrease of frequency for environmental accidents.

On the effects of green manufacturing and organizational productivity the study concluded that green manufacturing has led to lower raw material costs, it generates little or no waste or pollution, it promotes reuse of raw materials, it has led to reduced environmental and occupational safety expenses, green manufacturing leads to compliance with environmental regulations in producing parts and components and lastly green manufacturing ensures greening of production to cleaner production.

On operations and reverse logistics it was concluded that operations and reverse logistics recovers materials that are harmful to environment, it ensures launching of recycle system in our organization, sets internal material recycling system, it can lead to implementation of recycle system in our organization, it leads to implementation of reused package system and lastly operations and reverse logistics ensures use of packaging materials that can be reused for other purposes in our organization.

It was also concluded that Green procurement leads to improved organizational output green procurement leads to organizational sales turn over, it leads to quality of products and effective waste control and also leads to compliance with environmental regulations. This indicates that green procurement in the textile industry is a significant factor in ensuring quality of products, effective waste control, compliance with environmental regulations, organizational sales turn over and improved organizational output.

Lastly it was concluded that the institutional theory applies to the study because the approach that is used to examine elements of green supply chain management.

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