FACTORS INFLUENCING THE ADOPTION OF GREEN PROCUREMENT IN MANUFACTURING INDUSTRIES IN NAIROBI, KENYA

BY

ANN NZISA MUSILA

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DECLARATION

I declare that this dissertation is my original work and has not been previously published or submitted elsewhere for a degree in any other university. I also declare that this contains no materials written or published by other people except where due reference is made and author duly acknowledged.

Ann Nzisa Musila

Reg. No. 16/03145

Signature  **Date: 27/12/2021**

I do hereby confirm that I have examined the master's project of **Ann Nzisa Musila** and have approved it for examination

Signature  **Date 27/12/2021**

Dr. Paul Jilani

ABSTRACT

In the wake of international outcry against runaway global warming, companies are increasingly being called upon to adopt green procurement practices. This emanates from the fact that adoption of these practices is seen as a panacea to adverse effects of environmental degradation. The study set out to investigate the factors influencing the adoption of green procurement in manufacturing industries in Nairobi, Kenya. The objectives of the study were to examine the influence of top management support on the adoption of green procurement in manufacturing industries in Nairobi, Kenya, assess the influence of ICT infrastructure on the adoption of green procurement in manufacturing industries in Nairobi, Kenya, determine the influence of supplier management practices on the adoption of green procurement in manufacturing industries in Nairobi, Kenya and, explore the influence of staff training on the adoption of green procurement in manufacturing industries in Nairobi, Kenya. The study was based on four theoretical foundations namely: organization theory, supply chain management theory, technology adoption model and learning organizational theory. The study used the descriptive survey research design to gather data on the utilization of green procurement in the 2300 manufacturing industries in Nairobi. The population included in this study was 2198 procurement officers drawn from the manufacturing industries that had such officers. Simple random sampling was used to obtain a sample of 96 persons. Data was collected using questionnaires. Statistical Packages for Social Sciences (SPSS) software was used to analyze quantitative data received from closed-ended questions. Various statistical tests were undertaken on the data. These include means, percentages, frequencies, correlation analysis, and multivariate regression analysis. Data from open-ended questions was subjected to content analysis. The findings show that there were significant relationships between the Adoption of Green Procurement and independent variables as follows: top managements, $r=0.796$ $p<0.05$; ICT infrastructure level, $r=0.854$, $p<0.05$; supply chain management practices, $r=0.826$, $p<0.05$; and staff training, $r=0.854$, $p<0.05$). Analysis of Variance (ANOVA) shows that top managements, ICT infrastructure level, supply chain management practices and staff training could statistically and significantly predict the adoption of Green Procurement ($F= 120.582$, $p<0.05$). In this light thus, the study concludes that top managements, ICT infrastructure level, supply chain management practices, and staff training influenced the adoption of Green Procurement. Based on the findings of the study, the study recommends that top management must be proactive in addressing internal barriers to green procurement. It is also important for manufacturing firms to roll out and sustain modern ICT technologies. Strategies must be put in place by firms to ensure those suppliers relationships with the firm are positively kept. In addition, Supply chain management practices can pose a threat to the effectiveness of green procurement. As a result, it necessitates close collaboration between company departments and businesses, resulting in a harmonious integration of GP practices into the supply chain. Manufacturing firms in Nairobi should put in place strategies for continuous training of procurement staff and mentoring of new employees.

Keywords: Top Management Support, ICT Infrastructure, Supplier Management Practices, Staff Training, Green Procurement, Manufacturing Industries in Nairobi, Kenya

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To my family and the KCA University Fraternity for their unwavering support throughout the course of this study

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ACRONYMS AND ABBREVIATIONS

COSO	Committee of Sponsoring Organizations of the Treadway Commission
EALB	East African Breweries Limited
GP	Green Procurement
GSD	Green Supplier Development
ICT	Information and Communications Technology
ICTI	Information and Communications Technology Infrastructure
MS	Management Support
PLS	Partial least square
SCM	Supply Chain Management
SCMPs	Supply Chain Management Practices
SMPs	Supplier Management Practices
SPSS	Statistical Packages for Social Sciences
ST	Staff Training
TM	Top Management
TMS	Top Management Support
TPB	Theory of planned behavior

OPERATIONAL DEFINITION OF TERMS

Green Procurement: this is "purchasing products and services which have low adverse impacts on the environment" (Quyen, 2020). In this study, green procurement entails ensuring that manufacturing firms procure goods that are friendly to the environment.

ICT Infrastructure: these are "the ICT technologies deployed by a firm to realize selected objectives" (Kumar, Singh, & Modgil, 2020). This is, in this study, the deployment of sufficient ICT technologies to support green procurement.

Staff Training: this entails equipping staff with the knowledge they need to perform their duties (Gegovska, Koker, & Cakar, 2020). In this study staff training includes training initiatives aimed at ensuring that members of staff are equipped with the right knowledge to undertake green procurement activities.

Supplier Management Practices: these are the strategies put in place by a firm to ensure that suppliers' relationships with the firm are positively kept (Thakker & Rane, 2018). Within this study is putting in place strategies for ensuring that suppliers understand the green procurement needs of the firm.

Top Management Support: This entails the support by the top management of a firm towards achieving a particular goal (Song & Zhang, 2017). It is, in this study, support to manufacturing farms to realize green procurement processes

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The importance of green procurement, which entails "purchasing products and services which have low adverse impacts on the environment" (Quyen, 2020), cannot be gainsaid. As greenhouse gas emission continues to occupy international discourse the world over, firms have been encouraged to put in place measures aimed at reducing their carbon footprint. As a result, green procurement (GP) has been identified as a plausible solution to environmental conservation and sustainable growth (Makumba, 2017). This emanates from the fact that it has numerous benefits such as better health of employees, reduced waste, elimination of waste management costs, and conservation of natural resources (Ngunjiri, 2018).

In response to global and national statutory demands, organizations put in place numerous efforts aimed at ensuring that GP is overtly embedded into working processes. It has been integrated into all procurement processes by law in most developed countries. The European Commission (2011), for example, advocates for gradual increment in the volume of recycled content by firms until they reach a final goal of 100% recycled content.

For the effectiveness of GP to be realized though, an interplay of factors often comes into play. This study hypothesizes that efficient GP could be predicted by top management support (TMS) (Song & Zhang, 2017), ICT infrastructure (ICTI), supplier selection, and supply chain management practices (SCMPs). In this context, various studies have sought to investigate the influence of these factors on the implementation of effective GP interventions.

1.1.1 Factors Influencing the Adoption of Green Procurement

In the People's Republic of China, there has been increased emphasis on GP in all sectors of the economy. To this end, the top management (TM) of most companies have been involved in supporting GP through employee empowerment and involvement. They have been active in ensuring that internal bottlenecks to GP such as costs and a lack of awareness by suppliers in are promptly mitigated (Song & Zhang, 2017). A similar study in Indonesia by Wirahadikusumah, Abduh, Messah, and Aulia, (2019) shows that "top-management has a direct impact on green purchasing, but it also has an indirect impact on green purchasing through environmental cooperation with suppliers." The study, though not focused on all the variables that will be studied in this study, is pivotal in showing the importance of top-management in procurement processes. However, the level to which TM influences the efficacy of GP processes in other parts of the world such as developing countries in Africa is hard to fathom without systematic study.

Among firms in Gulf countries, a systematic review of existing literature shows that firms use numerous interventions aimed at spurring GP practices. These include "supplier cooperation, flexibility with partners, lean production, use of modern communication methods such as the internet, customer focus, internal integration, and quality management among others" (Al-Shboul, Garza-Reyes, & Kumar, 2018). The application of these practices is strongly integrated into all aspects of the firm and enjoys TMS. Though not focused on firms in Africa or Kenya for that matter, it is evident that GP is an important practice among Asian firms.

In India, dedication to GP is an integral component of most organizations. A study by Kalpande and Toke (2020) for example found out that companies put in place meticulous efforts to enhance innovation, efficiency, and management of GP processes.

Though not focused on Kenya, the study shows that the centrality of a firm's management in strengthening GP processes in the Indian subcontinent. It is thus worth investigating how MS influences GP practices in Kenya.

Information communication technology (ICT) has also been found to play pivotal roles in buttressing GP processes. In Malaysia, a study by Fernando, Wah, and Shaharudin (2016) shows that environmental compliance has become a critical concern. In this regard, companies leveraged the use of modern technologies to ensure that GP practices were carefully embedded in all stages of the supply chain. Conversely, a study by Quyen (2020) in Vietnam shows that ICT was leveraged in the Manufacturing Industry to ensure GP compliance. However, the level to which these findings apply to firms in Kenya is hard to fathom without studies such as this current one. For example, it is important to find out the level to which rapid evolution in ICT influences its use in GP processes.

Green procurement is also hard to achieve without supplier support. Thakker and Rane (2018) created a model for green supplier development (GSD) and tested it through a case study in the Indian automotive industry. They found out that the selection of green suppliers had significant effects on the performance of GP. The selection of green suppliers was also found to contribute to the responsiveness of supply chain practices to GP in Spain (Yazdani, Chatterjee, Pamucar, & Abad, 2019). It is thus pertinent to find out the veracity of the findings by Thakker and Rane as well as Yazdani et al. in the African context.

SCMPs have also been found to play pertinent roles in the efficacy of green practices. In Jordan, Al-Shboul, Barber, Garza-Reyes, Kumar (2017) found out that SCMP affected the efficacy of GP. However, the context of the study was Jordan in the Middle East and may not readily relate to firms in Africa. It is thus important to find

out the level to which the confluence of SCMPs and other variables affect GP practices in the continent.

In the African continent, extant literature shows a close nexus between GP and organizational performance. In Ghana, for example, a study by Anane (2020) focused on "three companies namely Water Company Ltd. and Bayport Savings and Loans Plc." The findings show that water found out that GP was a major predictor of organizational success in this study. In this regard, the support of suppliers as well as the TM played key roles in enhancing organizational success.

In South Africa, Agyepong and Nhamo (2017) studied 30 procurement officers, town planners, and economic development experts in metropolitan municipalities. They found out that legislative requirements are requiring GP in South African metropolitan municipalities. This increased the importance placed on GP among firms in the country. However, the exactness of these findings in other parts of Africa such as Kenya can only be established through systematic study.

Green procurement is not a new thing among Kenyan firms. Wambui (2017) in her research in Kenya discovered that "organizational management influences implementation of GP practices to a great extent." To this end, suppliers had significant influences on the implementation of GP practices. The former study was however focused on the Nairobi City Water and Sewerage Company Limited and may not relate to private manufacturing firms. Without focused studies, studying the applicability of these findings to manufacturing studies may remain untenable.

As shown by the foregoing discourse, GP has been increasingly streamlined in the procurement processes of most firms (Al-Shboul et al., 2017; Agyepong & Nhamo, 2017). However, the existing body of literature does not investigate all the factors under investigation in this study namely top management support (TMS), ICTI, supplier

selection, and SCMPs in one banner. This means that it may not expressly answer all the questions under investigation in this study. In this background thus, this study sets out to investigate the firm-specific predictors of the adoption of GP in manufacturing industries in Kenya.

1.1.2 The Adoption of Green Procurement in Manufacturing Industries

Green procurement has seen unprecedented increase since the turn of the millennium. In Spain, Yazdani, Chatterjee, Pamucar, and Abad (2019) reported high level of adoption of GP a construction company the study shows that top management and procurement had tools at their disposal to help them in adopting GP. Since the former study was carried out in Spain. It may not expressly relate to Kenya which is in another continent. This calls for studies focused on Kenya to bridge this apparent knowledge gap.

In India, a study by Kalpande and Toke (2020) shows that GP has been engrained in procurement processes. The study shows that "three organizational context dimensions: innovation, efficiency, and management" played important roles in guiding the adoption of GP. It is thus clear that companies in Asian countries were putting in place immense importance on GP. Since supply chains are highly interconnected, it is important to investigate the level to which these findings apply to African countries irrespective of the intercontinental differences that may exist.

Green procurement has also been highly adopted in African countries. The study in Ghana by Anane (2020) shows that GP had been identified as an important contributor to organizational performance in corporate organizations. Some of the most important predictors of the adoption of GP was supplier cooperation as well as top

management support. Though the study by Anane was undertaken in another African country, the findings could reflect the GP adoption trend in African countries.

In South Africa, a study by Agyepong and Nhamo (2017) posits “the City of Cape Town and the Metropolitan Municipality of Nelson Mandela Bay” had GP strategies. This shows that government bodies in Africa were appreciating the importance of GP in their day-to-day activities. This could bring GP to the forefront of firms that do business with the government. Since the former study was undertaken in South Africa, it may not expressly relate to Kenya. This begs studies aimed at testing the veracity of the findings of the study in the Kenyan context.

There was an increases in the adoption of GP among Kenyan firms. Sarhaye (2017) posits that to enhance performance, Coca-Cola Company adopts GP practices in all its operations and processes. This emanates from the fact that GP management had enormous economic benefits to the company. It led to cost reduction and organizational efficiency through sustainable procurement. However, the former study was focused on only one entity. Hence, its findings may not be generalized to the whole manufacturing industry in Kenya.

Focused on the East African Breweries Limited (EALB) the study by Nderitu and Ngugi (2014) established that there was high level of use in the firm. To this end, there was effort to ensure that there was effort to ensure that staff members understood the essence of GP principles. To this end, EABL increased its contribution to GP by utilizing its extensive ICTI. This led to enhanced organizational efficiency. The study recommended the need for a skilled technical workforce, comprehensive investment in ICTI, supplier management systems, and a proactive investment approach to GP.

Makumba, (2017) studied the impact of GP on organizational efficiency with reference to Almasi Beverages - Kisii Branch. It was evidenced that the firm had put in

place strategies for adopting GP. However, its success was thwarted by obstacles in implementing GP such as inadequate awareness of the definition of GP, a lack of legal compliance, short-term planning over long-term planning, a lack of intelligence, a lack of internal communication, and a lack of support or tailored guidance were some of the challenges (Makumba, 2017). This shows high level of use of GP in various parts of Kenya.

Njoroge (2019) assessed the factors affecting effective implementation of GP in manufacturing firms in Nyeri County, Kenya. The study showed that GP was integrated into the procurement processes of most firms in the county. This was influenced by information communication, financial capital, eco-supplier selection, and procurement policies. It is thus evident that there is high level of appreciation of the role GP plays in the performance of firms.

1.1.3 Manufacturing Industries in Nairobi

Numerous scholars and researchers have classed the large manufacturing enterprises in Nairobi City County, Kenya, depending on various attributes. Nairobi is Kenya's and East Africa's business and financial capital. The number of firms and organizations with headquarters in the city exemplifies this. Nairobi, the capital, is a regional commercial center. Kenya has the largest economy in East and Central Africa in terms of GDP (Kenya Association of Manufacturers, 2016).

Large manufacturing enterprises are classified by the authors based on the quality of service or output, the size of the workforce, and the number of facilities. According to the KAM directory (2015/2016), large-scale manufacturing enterprises employ more than 100 people, medium-scale manufacturing firms employ 51 to 100

people, small-scale manufacturing firms employ 11 to 50 people, and micro-scale manufacturing firms employ 10 or fewer people.

The manufacturing industry includes businesses that turn materials, substances, or components into new products by mechanical, physical, or chemical means. Kenya Association of Manufacturers (2016) represents manufacturing companies in Kenya. KAM is Kenya's leading representative organization for an industry that brings together industrialists, serves as a unified voice for Kenya's manufacturing sector, and serves as an important link for cooperation, conversation, and understanding with the government.

One of the six core sectors within the economic pillar recognized as having the highest potential in realizing Kenya Vision 2030 is manufacturing (Were, 2016). The manufacturing sector's objective is to establish robust, diverse, and competitive manufacturing processes. Most of these manufacturing firms have adopted GP (Sarhaye, 2017). However, the determinants of the adoption of GP by these firms is scantily studied. This underlines the importance of this study.

1.2 Statement of the Problem

In the wake of international outcry against runaway global warming, companies are increasingly being called upon to adopt GP practices. This emanates from the fact that the adoption of these practices is seen as the panacea to the adverse effects of environmental degradation (Quyen, 2020). However, the use of GP practices in most developing countries is meagre. In the European Union, firms are obligated to integrate GP practices such that eventually, 100% of all goods contain recycled content (The European Commission, 2011). However, this is often not the case in developing countries. A study by Gachukia (2018) focusing on the Kenya pipeline company limited

shows that the use of GP practices was dismal and was still low and was challenged by lack of guidelines limits (42%), lack of clear definition and evaluation criteria (38%), lack of information (16%) and difficulties in tendering processes (4%).

Among ISO 14001 certified manufacturing firms, a study by Odock (2016) shows slightly above average use of GP practices (Mean of 3.46 on a scale of 5). Firms in Kenya were at different levels of adoption of GP with some manufacturing firms undertaking it dismally. This could deny the country the benefits associated with GP including but not limited to better health of employees, conservation of natural resources, elimination of waste management costs and, reduced waste (Ngunjiri, 2018). In this context, it is pertinent to find out why firms undertake GP practices or not as well as the factors that determine the efficacy of such practices for firms that use them.

The foregoing is of paramount importance since the success of GP cannot always be assured. Companies have to deliberately practice it. In this regard, existing literature shows that factors such as support from the TM, putting in place the requisite ICTI (Nderitu & Ngugi, 2014), supplier selection (Sarhaye, 2017) and SCMPs among others have immense influences on the efficacy of GP practices. Regrettably, though, the joint influence of these factors among firms in Kenya is hard to establish by a desk review of existing literature alone. This calls for studies such as this current one since there is an apparent literature lacuna on the factors that influence the adoption of GP practices in firms in Kenya.

1.3 Objectives of the Study

1.3.1 General Objective of the Study

The general objective of the study was to investigate the factors influencing the adoption of green procurement in manufacturing industries in Nairobi, Kenya.

1.3.2 Specific Objectives of the Study

Specifically, the study set out to:

(i) Examine the influence of top management support on the adoption of green procurement in manufacturing industries in Nairobi, Kenya.

(ii) Assess the influence of ICT infrastructure on the adoption of green procurement in manufacturing industries in Nairobi, Kenya.

(iii) Determine the influence of supplier management practices on the adoption of green procurement in manufacturing industries in Nairobi, Kenya.

(iv) Explore the influence of staff training on the adoption of green procurement in manufacturing industries in Nairobi, Kenya.

1.4 Research Questions

(v) What is the influence of top management support on the adoption of green procurement in manufacturing industries in Nairobi, Kenya?

(i) How does ICT infrastructure influence the adoption of green procurement in manufacturing industries in Nairobi, Kenya?

(ii) What is the influence of supplier management practices on the adoption of green procurement in manufacturing industries in Nairobi, Kenya?

(iii) How does staff training influence the adoption of green procurement in manufacturing industries in Nairobi, Kenya?

1.5 Justification of the Study

The study is important to unravel and understand the factors affecting the adoption of green procurement in manufacturing industries in Kenya.

1.5.1 Manufacturing Firms

The findings could be significant to manufacturing firms, policymakers, and scholars. Manufacturing firms would gain an understanding of how the efficacy of GP can be enhanced. They would also understand the areas that need improvement within the processes of strengthening GP.

1.5.2 Policymakers

Policymakers would also understand the challenges facing GP practices and would formulate policies aimed at reducing the gravity of these challenges.

1.5.3 Scholars

Theoretically, the study would make contributions to the existing body of literature on GP in Kenya. The findings could prompt other scholars to come up with follow-up studies on the gaps identified.

1.6 Scope of the Study

The study took place in Nairobi City County. It was limited to manufacturing firms in the county. Samples were obtained from the procurement staff of selected firms based on the number of employees and annual financial turnover. The study focused solely on procurement officials in these firms. Only firms that have been operating for at least five years (2016-2020) were studied.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the theories explaining the factors affecting GP. It also includes an empirical review of extant literature. A conceptual framework is also developed to demonstrate the interrelations between the study variables relationships as well as operationalize these variables.

2.2 Theoretical Review

To have a broader understanding of the topic, the study was based on four theoretical foundations namely: organization theory, supply chain management theory, technology adoption model and learning organizational theory.

2.1.1. Organizational Theory

This theory explains the influence of TM on the adoption of GP in firms. Organization theory within business and management is influenced by a variety of other disciplines. It is essential to comprehend organizational theory, which is derived from a managerial perspective and used to describe organizational action, architecture, and frameworks (Ketchen & Hult, 2007). The inter-organizational supply chain relationships have prompted a fundamental analysis in organization theory at the inter-organizational level.

Organizational theory has influenced a wide range of organizational methods and research. Separately, the application of organizational theory to supply chain management (SCM) (Ketchen & Hult, 2007) is gaining traction. However, its effect on environmental management and GP has not been thoroughly investigated. To advance

this area, a review of the literature on GP in the sense of various organizational theories is needed. The analysis will be guided by organizational theory to determine how different levels of leadership and management affect the relationship between the independent and dependent variables.

Many companies have devised a wide implementation of management methods that are strongly influenced by organization theory in recent years. According to Ketchen and Hult (2007), organization theory in SCM is more well-established in most organizations than it was previously. The lack of comprehensive literature on GP practices, despite its impact on management practices, is a gap that most research has failed to address. The study will use organization theory to assess the degree to which management activities affect GP adoption in the manufacturing sector.

2.1.2 Supply Chain Management Theory

This theory explains the influence of SCMPs on the adoption of GP in manufacturing industries Porter's (1985) posits that “value chain, which is the collection of processes a company utilizes to produce value for its consumers, is the foundation for supply chain.” Originally defined as a chain, “supply chain is now defined as a network of companies involved in many processes of production of value in the form of products and services for the end customer” (Christopher, 2005). The chain includes two or more legally distinct entities linked by material, information, or financial transactions, in addition to the final client.

The supply chain's goals are to offer service to customers, reduce operational expenses, and reduce the chain's assets (Skjøtt-Larsen et al., 2007). Global competition has many organizations focusing on cost, quality, technology, and other competitive advantages and many manufacturers focus on SCM techniques to achieve this. SCM is

a multi-disciplinary issue that is increasingly important in modern business. It enhances organizational efficiency and profitability while ensuring long-term competitiveness (Gunasekaran et al., 2004). Through collaboration and information exchange, SCM stresses the overall and long-term benefit of all participants in the supply chain.

SCM as defined by Simchi-Levi et al. (2009) "integrates suppliers, manufacturers, warehouses, and stores to produce and deliver products in the appropriate amounts, to the right locations, and at the right time." SCM seeks "to connect all aspects of the production and supply processes, from the acquisition of raw materials to the processing of commodities and finally to the final end users of the product."

It focuses on how companies exploit the procedures, technology, and capabilities of their suppliers to gain a competitive edge. In order to achieve enhanced competitiveness, SCM aims to regulate all sections of the supply chain as a unit, rather than as individual organizational units (Stadtler & Kilger, 2008). This concept highlights the view that a fundamental driver of effective SCM is "a focus on the customer in terms of meeting expectations and providing timely service" (Doyle & Stern, 2006). It aims to "raise inter-supply chain competition from inter-company competition by making greater use of internal and external capabilities to build a more smoothly linked supply chain" (Lummus et al., 2003). In relation to this current study, "it is evident that SCMPs could yield synergies that could be exploited within the process of adoption of GP in manufacturing industries."

2.1.3 Technology Adoption Model

This theory is relates to the influence of ICTI on the adoption of GP. The Technology Acceptance Model (TAM) is "a theory of information systems that describes how

consumers accept and use technology. When consumers are introduced with new technology, the model argues that a variety of factors influence their decision on how and when to use it." In order to understand customer [manufacturing firms in the case of this study] intention to use technology, Luaren and Lin (2005) employed "the technology acceptance model. In their study on internet usage," Nysveen, Pedersen, and Thorbjrnsen (2005) advocated "the use of the deconstructed theory of planned behavior." He also points out that there are few research on supply chain technology that are based on information systems theories.

Lauren and Lin (2005), on the other hand, "used the technology acceptance model in his research since he sees technology as an innovation for businesses." The technology acceptance model (TAM) is a frequently used model in the information system sector, according to Yan et al (2009), and it provides a theoretical contribution to understanding technology adoption. TAM attempts "to provide a generic explanation of the drivers of technology acceptance that can explain user behavior across a wide range of technologies and user demographics while also being both parsimoniously and theoretically justified" (Davis et al., 1989).

TAM focuses on the psychological reasons for a person's desire to utilize a particular technology (Nysveen et al 2005). TAM includes five variables: perceived utility, perceived ease of use, attitude toward use, behavioral intention, and actual use. The main determinants of user approval are hypothesized to be two distinct variables: perceived ease of use and perceived usefulness (Davis, 1989). The anticipation that technology would improve job performance and service delivery is defined as perceived usefulness, while perceived ease of use is defined as the assumption that utilizing technology will be painless (Davis 1989). Acceptance of technologies and their integration into GP procedures could increase GP adoption as envisaged by this study.

2.1.4 Learning Organizational Theory

This study relates to the influence of staff training (ST) on the adoption of GP in manufacturing industries. The learning organization theory was postulated by Senge (2010). A learning organization is “one that fosters the learning of its members while also transforming itself on a regular basis. It emerges as a result of the demands that modern businesses face, and it allows them to remain competitive in the marketplace.” Senge's work and research in the 1990s gave birth to the learning organization concept. In the long term, the organization's ability to learn faster than competitors is the only way to build a sustainable competitive advantage, therefore educating and relating directly to employee resourcing, rewarding, and career management on employee engagement in the company is critical (Senge, 2010).

Learning organizations, according to Senge (2010), are “organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together,” implying employee training. The primary rationale for such organizations is that “only those that are flexible, adaptable, and productive would succeed in conditions of rapid change. In order for this to happen, firms must figure out how to tap into employee commitment in terms of employee resourcing and learning capacity at all levels of career management” (Alegre & Chiva, 2014).

While everyone has the ability to learn, the institutions in which they must operate are frequently inhospitable to thought and involvement. People may also lack the skills and guiding principles needed to make sense of the situations they find themselves in. Organizations that are constantly extending their power to shape the

future require a fundamental transformation in their members' mindsets. True education goes to the core of what it is to be human (Senge, 2014).

The learning organization theory is relevant in this study since it claims that employees need to be trained on a regular basis in order to keep up with industry changes. It promotes organizations to adopt a more interconnected mindset and to become more like communities to which employees can feel a sense of commitment, as people will work harder for an organization to which they feel a sense of commitment. Training employees in organizations is vital since it motivates them to be more committed to their jobs, and as a result, the organization's top performers are rewarded accordingly. This necessitates companies compensating their staff in order of merit based on their performance. As envisaged by this study, ST would play pivotal roles in enhancing the adoption of GP.

2.3 Empirical Review

2.3.1 Top Management Support

Green procurement needs TM commitment and support, as well as employee empowerment and involvement. Internal obstacles exist in “the form of cost and a lack of awareness about how to use the information given by suppliers to implement green purchasing practices. Laws and regulations, as well as a lack of interest from vendors, may be external obstacles” (Song & Zhang, 2017). Therefore, the company’s green SCM activities rely heavily on TMS. The climate that management creates is a strategic catalyst in fostering green supplier practices. Top management's support manifests itself in terms of “commitment, emotions, values, intentions, or a firm determination to achieve the target” (Song & Zhang, 2017). As a result, green procurement will boost resource use and service quality, which will improve the company's financial results

and effect on pollution control. The study by Song and Zhang (2017) was “focused on Chinese firms and may not expressly relate to firms in Kenya.”

Wirahadikusumah, Abduh, Messah, and Aulia, (2019) carried out a study titled, “introducing sustainability principles into the procurement of construction works - Case of Indonesian developers.” The findings show that “environmental cooperation with suppliers, top-management engagement, and consumer pressure all have a positive and important impact on firms' green purchasing. Top-management engagement has a direct impact on green purchasing, but it also has an indirect impact on green purchasing through environmental cooperation with suppliers” (Wirahadikusumah et al., 2019). “Though not focused on Kenya, the former study relates to this study that sets out to examine the effect of TMS on the adoption of GP in MFs in Kenya. The former study was also not focused on all the variables being studied in this study.” This means that holistic representation of the study is not tenable without other focused studies.

Al-Shboul, Garza-Reyes, and Kumar (2018) in “Best SCMPs and high-performance firms: The case of Gulf manufacturing firms,” undertook a systematic review of “medium and large-sized Gulf manufacturing companies (MFs). Supplier cooperation, flexibility with partners, internet use, and customer focus, lean production, internal integration, and quality management” were all investigated in the study. Based on a “t-test and multiple linear regression tests, the findings show that in the Gulf MFs, quality management, customer focus, and supplier partnership are considered best SCM practices” (Al-Shboul et al., 2018). Using the internet was once the best technique, but that is no longer the case. LP is not yet qualified as the best SCM practice, but it has the potential to become one. The study contributes to the field of best SCM practices by providing top administrators, policymakers, and researchers with better decision-making insights and a benchmarking base. “Since the former study was carried out in

a different context, it may not expressly show how SCM is likely to improve manufacturing companies' overall results in Kenya. The study was guided by desk-review of extant literature. The exactness of the findings to this study may not be well captured by the former study." This study sets out to bridge this empirical gap.

Kalpande and Toke (2020) carried out a study titled "Assessment of green SCMPs, performance, pressure, and barriers amongst Indian manufacturers to achieve sustainable development." Data were collected using survey and interview methods and analyzed using a five-point Likert scale. The findings established "three organizational context dimensions: innovation, efficiency, and management. The study's key contribution is the alignment of each category of GSCM procedures, performances, pressures and obstacles, and organizational dimension with the selected theoretical lenses, which will aid future research into GSCM." The study by Kalpande and Toke (2020) was "focused on India as opposed to this current study that focuses on Kenya. This means that the findings may not be expressly in the Kenyan context and therefore need to carry out a local study. However, the study was based on primary data sources, this thus makes it well related to this study."

Ismail, Hasan, Clark, and Sadique (2018) studied "Public Sector Procurement: The Effectiveness of Monitoring Mechanism. The study looked at the effectiveness of procurement processes and the involvement of internal auditors in public procurement issues as monitoring mechanisms." The findings indicate that without work rotations, procurement officers were more likely to collude with outsiders to commit fraud. Other variables that affected procurement problems, aside from job rotations, were linked to COSO process components of control activities. Furthermore, the study found that "both procurement practices and the position of internal auditors in the public sector had a negative impact on procurement issues" (Ismail et al., 2018). As opposed to the

position of internal auditors, only procurement procedures had a direct relationship with procurement problems in the public sector. Finally, both the monitoring mechanism used in this study in terms of procurement procedures and the role of internal auditors affect procurement issues in the public sector. “It is however pertinent to test the veracity of these findings in the Kenya manufacturing sector. This is particularly so since the study by Ismail and others was based on the public sector which has its unique inefficiencies especially corruption.”

Anane (2020) studied “The Influence of GP Practice on Organisational Performance. Ghana Water Company Ltd. and Bayport Savings and Loans Plc as Point of Convergence. A formal questionnaire was used to collect primary data from 160 employees of the above companies. Based on the statistical analysis, GP was found to be a major determinant of organizational success in this study. Furthermore, supplier cooperation had a major impact on organizational success” (Anane, 2020). It is thus pertinent for the TM to implement GP in their organisations to improve efficiency. The study is important since it was focused on MFs in Kenya. “This current study investigates the exactness of these findings in Kenya which, though located in Africa may not share similar characteristics with Ghana.”

Guo, Sarpong, and Antwi (2020) in “Evaluation of GP Practices Among Mining Companies’ Hospitals in Ghana: A Qualitative Analysis”, adopted “a qualitative research methodology for the study. The study focused on the activities of procurement officers in 7 mining company hospitals for a period of a 5-year.” During this time, “key people with identifiable roles in the supply chain and procurement setup of the facilities were interviewed” (Guo et al., 2020). The study shows that whether or not consumers understood policies, tools, and procedures, for example, is less important than whether or not they put their understanding into effect. “The former study does not however

attempt to link role expectation regarding TM, GP practices, and company performance in the context of TM influence on GP practices as envisaged by this study. Also, the study was focused on Ghana, which has different characteristics in Kenya. There this study attempts to determine the effect of TM on GP in manufacturing industries in Kenya."

Agyepong and Nhamo (2017) carried out a study titled "GP in South Africa: perspectives on legislative provisions in metropolitan municipalities." The study sampled "30 procurement officers, town planners, and economic development experts in South African metropolitan municipalities. The study shows that only the City of Cape Town and the Metropolitan Municipality of Nelson Mandela Bay had GP strategies. To this end, the study finds that legislative requirements requiring GP in South African metropolitan municipalities are not entirely missing, though further work is needed to ensure that all metropolitan municipalities are covered" (Agyepong & Nhamo, 2017). However, "the former was undertaken in South Africa and did not relate to the role of TM in the implementation of the GP legislative provisions. This current study investigates the effect of TM on GP in manufacturing industries in Kenya."

Wambui (2017) in her research in Kenya discovered "that organizational management influences implementation of GP practices to a great extent." In relation to trading partners, the study established that suppliers were also highly influencing the implementation of GP practices." All these factors were found to contribute to GP practices either positively or negatively, hence the need for screening of suppliers for environmental performance should be the key deciding factor in the procurement processes (Wambui, 2017). "The former study was carried out in Nairobi City Water and Sewerage Company Limited, which is located in Nairobi, Kenya. Other factors may come into play including corruption. It may thus not expressly relate to this current

study which focuses on the manufacturing industries in Kenya." As a result, "testing the applicability of its finding may remain untenable in regards to manufacturing industries without focused studies hence the need for this study."

2.3.2 ICT Infrastructure

Fernando, Wah, and Shaharudin (2016) carried out a study on "Does a firm's innovation category matter in practicing eco-innovation? Evidence from the lens of Malaysia companies practicing green technology." The study shows that "environmental compliance has become a critical concern and that a lack of regulation can no longer be overlooked." Even though the studied companies conduct eco-innovation inspection activities regularly to ensure compliance with environmental legislation, the difficulties in deploying the new green innovations and their potential benefits remain evident. Often, a lack of funding has prevented companies from establishing in-house research and development units (Fernando, Wah, & Shaharudin, 2016). As a result, "it is suggested that green technology companies participate in an information-sharing culture with key suppliers to keep up with the latest know-how and technological advances. This current study investigates the reality of these findings in the manufacturing industries in Kenya."

Kumar, Singh, and Modgil (2020) carried out a study titled "Exploring the relationship between ICT, SCM practices and organizational performance in the agri-food supply chain." The study's theoretical framework was based on existing literature. "Using a structured questionnaire, data were collected from 121 executives and officers. Partial least square (PLS)–structured equation modeling was employed to test the framework and hypotheses." The study established that "ICT and SCM activities (logistics integration and supplier relationships)" had a significant relationship.

Moreover, SCM activities (information sharing, supplier relationships, and logistics integration) had an important and positive effect on the organization's success (Kumar et al., 2020). Since the moderation impact of SCM practices on ICT and organizational efficiency was not tested, his study sets out to investigate the possibility of expanding the research sample to include companies in other industries to increase the study's external validity and improve the quality of the parameters examined in Kenya.

Quyen (2020) in "The Relationship between GP Practices and Organizational Performance in the Manufacturing Industry of Vietnam" carried out a survey to assess GP compliance. The study established that "GP activities and organizational success had a significant relationship. Customer satisfaction and long-term success were influenced by compliance with laws and regulations, as well as implementation costs. TMS and ICT, on the other hand, had a huge effect on long-term success but were negligible in terms of customer retention" (Quyen, 2020). Supplier range, on the other hand, had a strong link to consumer retention, although only a minor link existed. However, the study's scope was limited to the only manufacturing industry in Vietnam while a mono-method of the quantitative design was selected to carry out the study. |It may thus not show the prevailing state of issues in Kenya hence, more research is needed to support these findings.|

Sarhaye (2017) studied "Role of GP on Organizational Performance of Manufacturing Firms in Kenya: A Case of Coca-Cola Company." Based on the descriptive survey design, "data were collected from a sample of 64 employees using both open and closed-ended questionnaires." The findings show that "to enhance performance, Coca-Cola Company adopts GP practices in all their operations and processes." This is because GP management is associated with economic benefits to the company (Sarhaye, 2017). As the study had shown that the cost of an organization had

an impact on efficiency, that sustainable procurement improved organizational operations, and that the availability of resources had an impact on organizational performance. The former study was more generalized and covered one entity. The level to which the findings can be generalized to the manufacturing industry in Kenya is thus hard to fathom without studies such as this one.

Makumba, (2017) in "An Assessment on Factors Affecting GP on Organizational Performance" sought to establish the impact of GP on organizational efficiency with reference to Almasi Beverages - Kisii Branch. Primary data was collected using questionnaires from a sample of 35, while secondary data was gathered from company reports, papers, and previous studies on the same subject. The findings show that companies face a number of obstacles when it comes to implementing GP practices. Inadequate awareness of the definition of GP, a lack of legal compliance, short-term planning over long-term planning, a lack of intelligence, a lack of internal communication, and a lack of support or tailored guidance were some of the challenges (Makumba, 2017). Further analysis showed that companies were not following GP practices to aid in environmental conservation efforts due to a lack of awareness. |The former study was however focused on a single entity without any wider focus on the Kenyan manufacturing industry. The findings may thus not show the state of affairs in Kenya.|

Nderitu and Ngugi (2014) carried out a study titled "Effects of GP Practices on An Organization Performance in Manufacturing Industry: Case Study Of East African Breweries Limited." The study was based on a descriptive survey design. Data was collected from "a sample of 37 EABL employees using qualitative and quantitative methods." The findings show that the manufacturing industry's performance is influenced by a number of factors. Quality excellence is supported by GP attributes

(Nderitu & Ngugi, 2014). The ability of staff members to understand GP principles was a critical factor in the impact of GP. EABL increased its contribution to GP to 29 percent of operational success as an enterprise with already established ICTI and a mechanism that enables supplier involvement. However, because of the high costs, capital spending on GP has yet to have a significant effect on EABL. Since Nderitu and Ngugi's study was focused on a single entity, the findings may not relate to this study. Furthermore, the study did not investigate all the factors under investigation in this study. This means that it may not expressly answer all the questions under investigation in this study."

2.4.3 Supplier Management Practices

Supply chain management involves a multi-step decision-making process. Natural resources, raw materials, and components are transformed into a finished product that is shipped to the end-user (Sarhaye, 2017). As a result, SCMPs in manufacturing industries can pose a threat to the effectiveness of GP. As a result, it necessitates close collaboration between company departments and businesses, resulting in a harmonious integration of environmental protection into the supply chain.

Amoako, Bonsu, Caesar, and Osei-Tete (2020) in "finding the nexus between green supply chain practices and sustainable business advantage: an emerging market perspective" sought to explore "the connection between green supply chain practices (GSCPs) and long-term business advantage from the perspective of emerging markets, with a focus on developing countries." A general literature review was used as the methodology. Key academic databases such as "Emerald Online Journals, Taylor and Francis Online Journals, JSTOR Online Journals, and Elsevier Online Journals were all searched separately." In addition, "the Publish or Perish program version 7 was used to

look for papers on GSCPs and sustainability. A total of 19 publications were used since they met the predetermined requirements" (Amoako et al., 2020). The findings show that "even though leadership factors mediate the positive relationship between GSCPs and long-term business advantage, research on supply chain (SC) leadership as a construct is minimal, and further study is needed." Since "the former study did not collect data to test the proposed model and test the proposed research hypotheses, this current study investigates the reality of these findings in the Kenyan manufacturing industry to validate the model. "Furthermore, the former study was guided by desk-review of extant literature, the study findings may thus not directly relatedly relate to the situation among MFs in Kenya."

Al-Shboul, Barber, Garza-Reyes, Kumar, and Abdi, (2017) studied "The effect of SCMPs on supply chain and manufacturing firms' performance." A "survey questionnaire was used to collect data from 249 Jordanian manufacturing firms. Three hypotheses were used to represent the proposed relationships in the developed theoretical context. The study established that SCMPs had a positive effect on SCP (H1), which in turn had a positive effect on MFP (H3). Even though SCMPs had an indirect and positive effect on MFP through SCP, the study also indicated that SCMPs had a direct and positive effect on MFP (H2). Higher levels of SCMPs can lead to improved supply chain and firm efficiency, according to this study" (Al-Shboul et al., 2017). Furthermore, since this is one of the first SCM studies on the Jordanian manufacturing sector, the findings have broader implications for all manufacturing companies, especially in developing economies where manufacturing growth and the creation of integrated supply chains are critical stages in economic development. "However, since the context of the study was Jordan which is located in the Middle East, this study sets out to investigate the possibility of these findings in Kenya.

However, the former study is closely related to this current study since was based on primary data."

Kalyar, Shoukat, and Shafique, (2019) in "enhancing firms' environmental performance and financial performance through green SCMPs and institutional pressures," carried out a study to see how individual aspects of green supply chain management (GSCM) practices impact firms' financial performance both directly and indirectly through environmental performance in Punjab, Pakistan. Data were obtained from 238 textile companies using a convenience sampling technique. The findings show that GSCM activities (green production, green buying, eco-design, consumer collaboration, and green information systems) had a substantial direct effect on firms' financial efficiency, both directly and indirectly. Furthermore, structural constraints greatly tempered the relationship between GSCM activities and environmental performance, as well as the relationship between environmental performance and financial performance (Kalyar et al., 2019). According to the study, "textile companies should adopt GSCM practices not only to satisfy regulatory bodies but also to improve their environmental and financial efficiency." The government should also play a role in persuading organisations to follow GSCM practices, as it plays a critical role in environmental preservation. This is due to lower emissions, energy use, and waste, both of which have a positive impact on society. "The former study was focused on Punjab which is located in Pakistan. The level to which the findings can be generalized to the manufacturing industry in Kenya is thus hard to fathom without studies such as this one."

Song and Zhang (2017) carried out a study titled "GP, stakeholder satisfaction, and operational performance." The study was based on a descriptive survey design. Data was collected from 206 Chinese A-share firms. The findings show that although

both product-based and process-based GP have a positive impact on firm profitability, the Chinese firms are more concerned with the impact of product-based GP on operational efficiency and the moderating position of stakeholder satisfaction. The study was carried out in China. It may thus not show the prevailing state of issues in Kenya. However, “the fact that is was based on the descriptive survey design makes it relevant to this current study which also adopted the same design.”

Ndua (2018) conducted a study in Kenya to “determine the impact of green SCM activities on the performance of Kenyan universities.” The research employed a descriptive design. The research focused on six colleges at the University of Nairobi, with 143 members of staff in the administration department who contributed to the university's overall success. To cover the 143 respondents, the study used a census survey and a questionnaire to collect data. Descriptive statistics were used to interpret the data. The findings show that reverse logistics is positively related to the University of Nairobi's efficiency; GP is positively related to the University of Nairobi's performance; green packaging and waste management system are positively related to the University of Nairobi's performance (Ndua, 2018). According to the study, “the management of Kenyan universities should promote proper material use and recycling. Furthermore, Kenyan university administrators should purchase goods from manufacturers whose designs reduce material and energy usage, as well as those that promote the reuse, recycling, and recovery of component materials, as the study found that green packaging has a significant impact on supply chain efficiency.” Finally, they should invest more in waste management systems, according to the study, because waste management systems control post-combustion emissions, handle and recycle waste, and allow for the use of renewable fuels (Ndua, 2018). “The former study was focused on the education sector. The level to which the findings can be generalized to

the manufacturing industry is thus hard to fathom without studies such as this one. But since it was undertaken in Kenya, it is relevant in showing the situation in the country."

Njoroge (2019) in "Assessment of Factors Affecting Effective Implementation of GP in Manufacturing Firms in Nyeri County, Kenya," used multiple theories to conduct the study. Data was gathered from five separate organizations' three layers of management. A descriptive research design was used to select a subset of the respondents who were given questionnaires, as well as a stratified random sampling process. A total of 123 workers from five manufacturing companies made up the target population. Slovin's algorithm was used to select a sample of 94 respondents (Njoroge, 2019). To demonstrate the relationship between the dependent variable and the independent variables, the linear regression model was used. With a statistical confidence level of 95 percent, inferential statistics were used to measure the degree of relationship between the variables. The study's findings revealed that information communication, financial capital, eco-supplier selection, and procurement policies all had a positive and important impact on GP implementation. "Since the former study was also undertaken in Kenya using primary data, it is highly relevant to this current study." It is thus important to this current study.

2.3.4 Staff Training

Both manufacturing and process industries depend heavily on the capacity of their employees to undertake effective procurement processes. GP would thus only be tenable with the requisite employees' training. Gegovska, Koker, and Cakar (2020) carried out a survey "to raise awareness and address the need for green supplier selection, as well as to develop a case study using multiple-criteria decision-making models in a manufacturing company." The findings show that the dominant result was

obtained using the committee fuzzy MCDM and ANN to select the best green supplier. The study by Gegovska et al. (2020) was focused on "the use of technology to select the best green supplier which is only tenable if members of staff" are well trained on the use of these technologies as envisaged by this current study. "The study carried out a survey and relates to this current study which carried out a survey. But the fact that the former study was not focused on Kenya or Africa for that matter may not expressly relate to this current study."

Khalilzadeh and Derikvand (2018) in "A multi-objective supplier selection model for green supply chain network under uncertainty" sought to choose the best suppliers by developing a mathematical model for the supplier selection problem that took into account green factors and stochastic parameters. The study used stochastic programming to deal with uncertainty, and the multi-objective model was solved using the LP-metric approach as a single-objective model (Khalilzadeh & Derikvand, 2018). The findings show that as the demand and final product numbers grow, so does the overall objective function value and run time. If decision-makers want to deal with uncertainty more reliably, they should take into account all environmental factors as input parameters. Consequently, as the number of possibilities grows so does also the overall objective function value, (Khalilzadeh & Derikvand, 2018). Further research revealed that increasing the use of recyclable parts and implementing a recycling plan result in greater cost savings and lower costs. The study proposed a more detailed model for the supplier selection problem in a green supply chain under uncertainty based on real-world conditions which can only be effective if employees were well trained on supplier selection. "Since the former study was carried out in a different context, it may not expressly show in the Kenyan manufacturing context. It was also carried out in a

different country and continent and may not cast light on the situation in Kenya MFs. This study sets out to bridge this empirical gap."

Yazdani, Chatterjee, Pamucar, and Abad (2019) in "A risk-based integrated decision-making model for green supplier selection: A case study of a construction company in Spain" sought to create a decision-making model to evaluate green suppliers in Spain based on legislation and risk factors. The study used "the DEMATEL (decision-making trial and evaluation laboratory) approach to examine the various risk factors that affect the performance of green suppliers." The findings show how "risk factors are assessed and incorporated into the supplier selection model. Managers and procurement staff will use the proposed multi-criteria decision model to quantitatively assist them in choosing green suppliers when taking into account risk factors" (Yazdani et al., 2019). There is thus a need for training to enhance the capacity of staff to support the GP process. The former study was carried out in Spain and may thus not expressly relate to this current study which focuses on Kenya. As a result, testing the applicability of its finding may remain untenable in regards to the manufacturing industry without focused studies hence the need for this study. "However, the study is pertinent in explaining to this study since it provides a framework for analyzing data on GP procurement in Kenya."

Mutangili (2019) carried out a study titled "Influence of E-Procurement Practices on Supply Chain Performance: A Case Study of Kenya Airways." A desk analysis evaluation technique was used in the research. Previous e-procurement studies were objectively and thoughtfully examined, with the findings relating to the airline industry. To describe the study's key thematic themes, a critical analysis of empirical literature was performed. The findings showed that GP practices were critical to SCM efficiency. Procurement is one of the most important roles in the supply chain, so

adopting e-procurement practices is crucial (Mutangili, 2019). Finally, the study recommends that Kenya Airways should pay attention to developing an e-procurement platform to enhance supply chain performance because e-procurement practices have a very strong influence on supply chain performance. This needs thorough support from procurement staff. “This current study investigates the reality of these findings in the wider manufacturing industry sector in Kenya. This is particularly so since the study by Mutangili was focused on Kenya Airways which is manufacturing firm.”

According to the study, “Nyeri manufacturing companies should establish a ST strategy aimed at training key personnel on how to enforce GP practices” (Njoroge, 2019). Furthermore, management should have the requisite financial support for the introduction of GP practices, such as waste reduction, increased efficacy, increased sales, and increased global demand, among other benefits. However, the study did not look into the difficulties that manufacturing firms face when introducing GP. This creates a knowledge gap that is hard to bridge without studies such as this current one. Also, the former study was focused on Nyeri County which is located in another part of Kenya. The findings may thus not expressly relate to Nairobi County which does not border Nyeri. “The former study was also undertaken two years prior to this current study, it may thus not show the current situation of the research problem.”

2.3.5 Research Gaps

Various studies were reviewed on the study variables. Song and Zhang (2017) carried out their study in China and may not relate to Kenya. Al-Shboul, Garza-Reyes, and Kumar (2018) focused on Gulf manufacturing companies while Kalpande and Toke (2020) was focused on India. Anane (2020) focused on Ghana while Agyepong and Nhamo (2017) focused on South Africa and did not relate to the role of TM in the

implementation of the GP legislative provisions. Wambui (2017) carried out her study in Nairobi City Water and Sewerage Company Limited. The finding show that although various studies were carried out on the study variable, most of them were focused on other African countries and that none of them was focused on the all the study variables in totality. This creates a contextual gap since the findings may not expressly relate to this current study.

The study by Fernando et al. (2016) focused on Malaysia companies practicing green technology as opposed to this current study. Quyen (2020) study's scope was limited to the only manufacturing industry in Vietnam while a mono-method of the quantitative design was selected to carry out the study. It may thus not show the prevailing state of issues in Kenya hence, more research is needed to support these findings.

Sarhaye (2017) focused on "the Coca-Cola Company. The study was more generalized and covered one entity." The level to which the findings can be generalized to the manufacturing industry in Kenya is thus hard to fathom without studies such as this one. Makumba, (2017) focused on "Almasi Beverages in Kisii Town of Kenya." The study was however focused on a single entity without any wider focus on the Kenyan manufacturing industry. Nderitu and Ngugi's (2014) study was focused on "a single entity (EABL)," the findings may not relate to this study. Furthermore, the study did not investigate all the factors under investigation in this study. This means that it may not expressly answer all the questions under investigation in this study.

The study by Amoako et al. (2020) was based "on desk review of existing literature which differs with this study which is based on primary data." Al-Shboul et al. (2017) focused on "Jordanian manufacturing firms and may not relate to Kenya." The study by Kalyar, Shoukat, and Shafique, (2019) focused on "Punjab which is

located in Pakistan." The level to which the findings can be generalized to the manufacturing industry in Kenya is thus hard to fathom without studies such as this one. Ndua (2018) conducted a study in Kenya to "determine the impact of green SCM activities on the performance of Kenyan universities." The former study was focused on the education sector so the findings might not be generalized to the manufacturing industry.

Tthe study by Khalilzadeh and Derikvand (2018) was carried out in a different context, it may not expressly show in the Kenyan manufacturing context. Further, the study by Yazdani et al. (2019) was carried out in Spain and may thus not expressly relate to this current study which focuses on Kenya. Mutangili (2019) focused on Kenya Airways. "The findings may thus not expressly cast light on the wider manufacturing industry sector in Kenya."

As shown from the preceding discourse, most of the studies were focused on various parts of the world as well as Africa. Studies focused on Kenya tend to focus on other singular institutions. Those focused on multiple organizations are focused on other parts of Kenya or on part of the variables under investigation in this study. None of the studies directly resonates with the four variables focused by this study. The studies reviewed create apparent empirical gaps in terms of geographical scope, variables studied, research designs used and time dimension among others. This study sets out to bridge these empirical gaps.

2.4 Conceptual Framework

This study conceptualized that TM, ICTI, supplier selection, and SCMPs affect the adoption of GP in manufacturing industries in Kenya. TMS was indicated by policy formulation around GP, enhancement of staff knowledge, and incentivizing suppliers

on GP. ICTI level was indicated by the level of ICT adoption, training of personnel on the use of ICT, and innovations in leveraging the use of ICT in procurement processed. ST involves continuous training of procurement staff, mentoring of new employees and budget allocation for training on GP among others. SCMPs was indicated by elaborating planning for GP, ensuring that goods are only sourced from green suppliers, and prohibiting non-green procured goods/services. GP was measured by the level to which the procurement processes adhere to GP guidelines, prevents pollution, and ensures that recyclable goods are procured where applicable. The conceptual framework was presented in Figure 2.1.

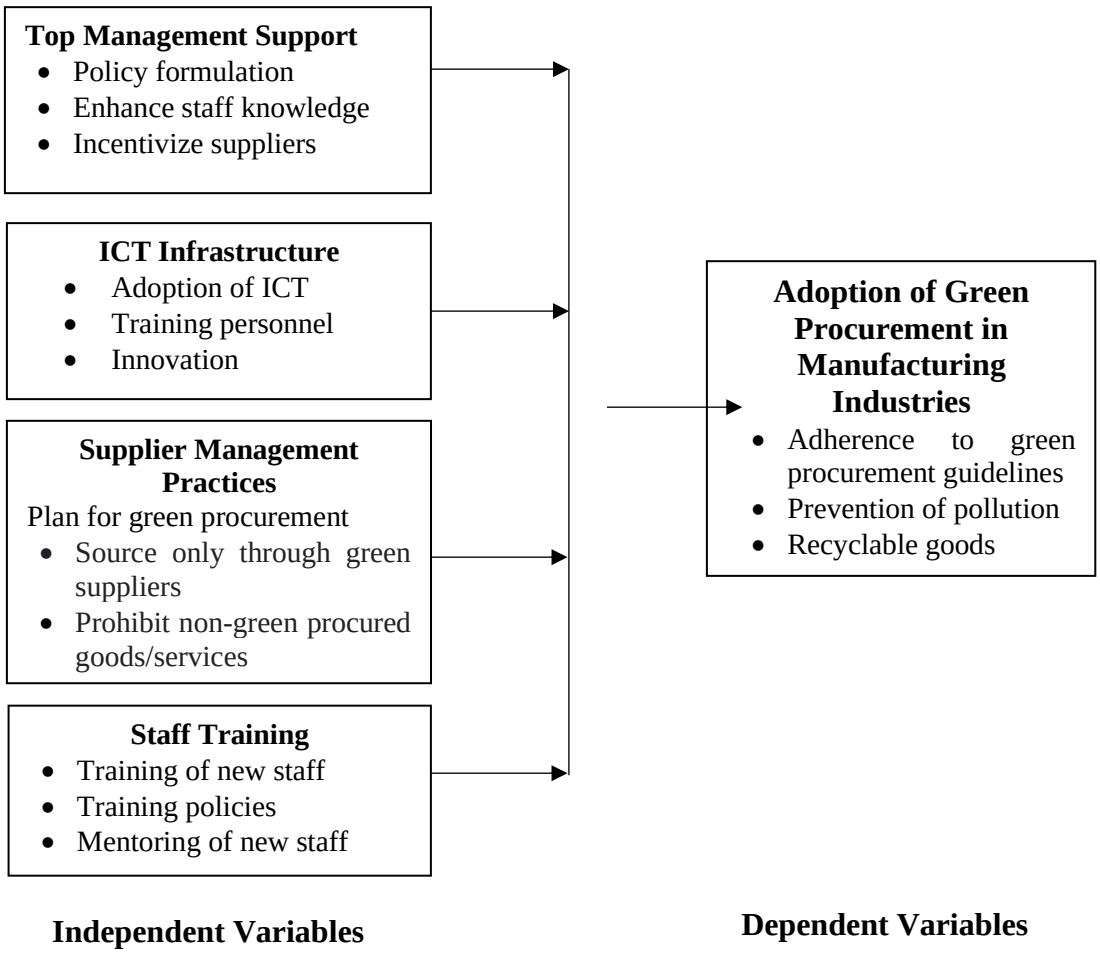


FIGURE 2.1

Factors Affecting Adoption of Green Procurement

Source: Researcher (2021)

2.5 Operationalization of Variables

Table 2.1 operationalizes the study variables. It also shows how they were measured. TMS is indicated by policy formulation around GP, enhancement of staff knowledge, and incentivizing suppliers on GP.

TABLE 2.1

Operationalization of Variables

Variable	Definition	Indicator	Measure
TMS	This is the level to which the TM of a firm supports GP	• Policy formulation • Enhance staff knowledge • Incentivize suppliers	Ordinal
ICTI	This is the level to which the firm uses ICT to support GP	• Adoption of ICT • Training personnel • Innovation	Ordinal
SCMPs	This entails the management of the supply chain such that GP is integrated at every level	• Plan for GP • Source only through green suppliers • Prohibit non-green procured goods/services	Ordinal
ST	This entails the training of the employees of a firm to adopt GP	• Training of new staff • Training policies • Mentoring of new staff	Ordinal

Source: Researcher (2021)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The methodologies and approaches used to carry out the research were highlighted in this chapter. The research design, study population, sample and sampling technique, piloting, and data analysis are all included in this. The type and sources of data, data gathering procedures, and reliability and validity assessments were also discussed. Variable measurements and data analysis methods were also discussed.

3.2 Research Design

A research design, according to Blumberg, Cooper, and Schindler (2011), is "the plan and structure devised to find answers to research questions." The study used the descriptive survey research design to gather data on the utilization of GP in Nairobi's manufacturing industries. A descriptive research design is appropriate for fact-finding and provides a lot of reliable information (Mugenda & Mugenda, 2008). Its goal is to describe a phenomenon (Orodho & Kombo, 2002). Based on the definitions and descriptions provided, the optimal research design for this study was descriptive.

3.3 Target Population

A target population, according to Cox (2010), "is the full collection of units for which the study data was utilized to make conclusions." This study targets manufacturing industries in Nairobi City County. There are approximately 2050 Small and Medium Size manufacturing firms in Nairobi County According to Baariu, Gathungu, and Ndemo (2021) citing Nairobi City County Licensing Office (2021). Further, there are over 250 major manufacturing firms in Nairobi City County Licensing Office (2021).

This made up to 2300 manufacturing industries in Nairobi City County. The study targeted at least 1 procurement officer from 2198 industries that had such officers.

Table 3.1 shows the sample size.

TABLE 3.1

Target Population

Category	**Number**
Procurement Officers	2198
Total	**2198**

Source: Baariu et al. (2021); Nairobi City County Licensing Office (2021)

3.4 Sample and Sampling Technique

Orodho and Kothari (2002) describe sampling as "the process of picking a selection of cases to make conclusions about the full set." Sampling is significant because it can save time and money by learning something about a big group by studying just a few of its members. According to Lavrakas (2008), “a sampling frame is a list of the target population from which the sample is drawn.” For this study, all manufacturing firms in Nairobi that have been in operation for at least five years were included in the sampling frame (2016-2021). The procurement staffs were the focus of this investigation. The study used simple random sampling to obtain the study sample. The simplified formula put forward by Yamane's (1967) was used in calculating the study sample. The formula is:

$$n = \frac{N}{1 + Ne^2}$$

Where

N=Target Population

n= Sample Size

e= level of precision set at 10%

When formula was fitted to the target population, the sample size was 96 as shown in Table 3.2.

TABLE 3.2

Sample Size

Category	**Target Population**	**Sample size**
Procurement Officers	2198	96
Total	**2198**	**96**

Source: Field Data, 2021

3.5 Research Instruments

Questionnaires were used to collect quantitative data for the study. A questionnaire, according to Mugenda and Mugenda (2008), "is a document that has a group of questions printed or written in a specific order on a form or set of structures." The questionnaire employed in this study contained closed-ended questionnaires. One open-ended question was included in each section to allow the respondents to respond further (Dawson, 2002). In light of the areas of interest and the need for more data, questionnaires was distributed to staff in the procurement function's three cadres to obtain their thoughts on the impact of green supply chain practices on firm performance.

3.6 Validity and Reliability of the Instrument

A pilot study was undertaken for purposes of pretesting the research instrument. According to Kothari (2004), “a pilot study entails doing early research to determine a project's cost-effectiveness, study events, and reliability and validity with the goal of forecasting an appropriate sample size for analysis.” The study used a sample of 9 randomly selected respondents to engage in the pilot study. The feedback from the respondents was utilized to eliminate any signs of the researcher's imprecise questions and prejudices (Creswel, 2014).

According to Sekaran (2010), validity refers to “the degree to which the research result accurately reflects the phenomenon under investigation.” To improve content validity, the questionnaires were created in accordance with the study's objectives. Face and construct validity were enhanced by presenting the questionnaires to the university supervisors to assess them. Their input was included in the study. The ease with the respondent to the study questions was also assessed and any ambiguous questions promptly corrected to enhance face validity.

According to Creswel (2014), “Reliability measures the research instrument's consistency over numerous trials without influencing the study outcome.” The Cronbach alpha (α) was used to evaluate the surveys' reliability. This is a confidence index that ranges from 0 to 10. 0.7 (optimum value acceptable). Any valuables below that are considered unacceptably low and suspect. If any questions in the questionnaire do not reach the cutoff, they should be changed as soon as possible. As indicated in Table 3.3, values ranging from 0.753 to 0.921 were found in this investigation. As a result, the questionnaires were judged trustworthy for data collection.

TABLE 3.3

Reliability Test

Item	No. of Items	Cronbach Alpha (α)
TMS	5	0.921
ICTI Level	5	0.817
SCMPs	5	0.896
ST	5	0.753
Adoption of GP in Manufacturing Industries	5	0.844

3.7 Data Collection Procedure

The researcher secured the relevant documentation, including introduction letter and research permission, before beginning data collecting. The goal of the study was explained to the study participants. The use of questionnaires sped up the data gathering process by ensuring that all of the targeted respondents were reached on time. The goal of the study was told to the respondents during the distribution of the instruments. The questionnaires was then collected after 1 week.

3.8 Data Processing and Analysis

All surveys were reviewed for reliability and verification after data collection. Editing, coding, and tabulation were all completed. Content analysis was used to assess qualitative data gathered from open-ended questions. For ease of interpretation and visualization of the varied responses from the respondents, the findings were summarized in frequency tables. Statistical Packages for Social Sciences (SPSS) software was used to analyze quantitative data received from closed-ended questions. Various statistical tests were undertaken on the data being analyzed. These included means, percentages, frequencies, correlation analysis, and multivariate regression analysis. The study carried out various diagnostic tests such as linearity, normality,

autocorrelation, multicollinearity test, and heteroskedasticity tests before the regression analysis.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This study aimed at investigating the factors influencing the adoption of GP in manufacturing industries in Nairobi, Kenya. The specific objectives of the study was to examine the influence of TMS on the adoption of GP in manufacturing industries in Nairobi, Kenya; assess the influence of ICTI on the adoption of GP in manufacturing industries in Nairobi, Kenya; determine the influence of supplier management practices (SMP) on the adoption of GP in manufacturing industries in Nairobi, Kenya and; explore the influence of ST on the adoption of GP in manufacturing industries in Nairobi, Kenya. Data was collected using questionnaires. This chapter presents the study findings.

4.2 Response Rate

This study had sampled 96 procurement officers from manufacturing firms in Nairobi County. Out of these, 85 responded. This made a response rate of 88.5% which was considered sufficient for analysis.

TABLE 4.1

Response Rate

Sample	Responded	Percentage
96	85	88.5%

4.3 Demographic Information

The study sought to establish selected demographic information regarding the respondents. To begin with the study sought to find the gender of the respondents. The findings show that most of them (61.2%) were male while 38.8% of the respondents were female (Table 4.2). The analysis implies that manufacturing sector is male dominated indicating gender imbalance in the sector. According to Stamarski and Hing (2015), "gender inequality in organizations is a complex phenomenon that can be seen in organizational structures, processes, and practices."

TABLE 4.2

Sex of Respondents

Sex	Frequency	Percent
Male	52	61.2
Female	33	38.8
Total	**93**	**100.0**

The study sought to find out how long the respondents worked at the firms. The findings show that majority of the respondents (24.7%) had worked at the same firm for 10-20 years. Those who had worked for between 6-10 years were 23.5%. They were followed by those who worked for 2-5 years at 23.5%. A paltry 7.1 % had worked for more than twenty years while 21.2% had worked for less than 2 years as shown in Table 4.3. Experts agree that an employee should stay at their place of employment for a minimum of two years (Indeed Editorial Team, 2021). It is enough time to learn new skills. The findings signals to the fact that the respondents had been in their organizations long enough to understand the practice of GP in their firms. They could thus make informed contributions to the study.

TABLE 4.3

Duration of Working in Current Firm

Years	Frequency	Percent
Below 2 years	18	21.2
2-5 years	20	23.5
6-10 years	20	23.5
10-20 years	21	24.7
20 years and above	6	7.1
Total	85	100.0

Table 4.3 indicates the highest level of education of the respondents who participated in the study. The analysis shows that majority of the respondents at 42.4% were degree holders, followed by 28.2% who were diploma holders and 10.6% who had certificates. These were followed by those who had masters and post graduate diploma qualifications each at 9.4%. Based on the analysis, it is evident that majority of the respondents were well educated indicating an enlightened workforce. They were thus well positioned to make informed contributions to the subject under investigation in this study. These findings support the view that "formal education increases the use of technologies that require or enable workers to carry out higher-order tasks" (Riddell, 2017).

TABLE 4.4

Highest Academic Qualification

Qualification	Frequency	Percent
Certificate	9	10.6
Diploma	24	28.2
Degree	36	42.4
Post-Graduate Diploma	8	9.4
Masters and above	8	9.4
Total	85	100.0

4.4 Study Variables

This section presents the findings of the study. This is done in line with the study objectives.

4.4.1 Top Management Support

The first objective of the study was to "examine the influence of TMS on the adoption of GP in manufacturing industries in Nairobi, Kenya." The respondents were presented with a 5-point Likert-Scale Type Statements on the following scale: 1-to a very low extent; 2-to a low extent; 3- to a moderate extent; 4-to a high extent and; 5-to a very high extent. The findings are presented in Table 4.5.

TABLE 4.5

Top Management Support

Descriptive Statistics					
	N	Min.	Max.	Mean	Std. Dev.
The management of our firm has put in place policies for enhancing green procurement	85	3.00	5.00	4.73	0.54
The management ensures that the firm purchases recycled goods	85	3.00	5.00	4.67	0.56
The company employees staff who understand green procurement	85	3.00	5.00	4.68	0.56
Sufficient budgets are allocated by the management to ensure that green procurement is practiced irrespective of costs	85	3.00	5.00	4.66	0.57
The management supports partnerships with suppliers to streamline green procurement processes	85	3.00	5.00	4.64	0.57

Table 4.5 shows TMS for GP practices. When asked whether the management of their firm had put in place policies for enhancing GP, the respondents agreed to very high extent (mean=4.73). On whether the management ensured that the firm purchases recycled goods the mean was 4.67 (to very high extent). The staff also agreed to very

high extent (mean=4.68) that the companies employed staff who understood GP practices and that there was sufficient budgets allocated by the management to ensure that GP was practiced irrespective of costs (mean=4.66). Finally, the respondents agreed to very high extent that management supported partnerships with suppliers to streamline GP processes (4.64). The findings imply that policy framework plays a significant role towards determinants of adoption of GP in the manufacturing sector. These finding are in general agreement with Walker et al. (2008), a study which found that internal barriers which included cost and lack of legitimacy and external barriers which included regulation, poor supplier commitment and industry specific barriers were of significance in GP practices. The findings are also in agreement with the study by Song & Zhang (2017). The authors argued that effectiveness of GP could be predicted by TMS. The findings also corroborate the study by Al-Shboul et al. (2018) that show that the management of firms in Gulf countries used numerous interventions aimed at spurring GP practices. Some of the practices included supplier cooperation, flexibility with partners, lean production among others which were strongly integrated into all aspects of the firm and enjoyed TMS.

TM, according to the respondents, had a significant influence in encouraging businesses' adoption of GP practices. Commitment to new legal standards, consumer pressure, and suppliers' opportunity to implement new green buying criteria are just a few examples. This finding is comparable to that of Meehan & Bryde (2011), who discovered that consumer pressure drove hotel management to embrace green buying methods in order to care for the environment. For GP practices to be implemented, management commitment and support are necessary. This is due to internal hurdles such as cost and a lack of understanding about how to use the information supplied by suppliers to adopt green purchasing practices, and employees may not perceive them as

a necessary part of the procurement process (Appolloni et al., 2014). Laws and regulations, as well as a lack of commitment from suppliers, might be external impediments. As a result, senior management must be proactive in addressing internal barriers to GP, such as costs and a lack of supplier knowledge (Song & Zhang, 2017). It is thus apparent that the firms studied were playing pivotal roles in enhancing the adoption of GP in their firms.

4.4.2 ICT Infrastructure

The second objective of the study was to assess the influence of ICTI on the adoption of GP in manufacturing industries in Nairobi, Kenya. The findings are presented in Table 4.6.

TABLE 4.6

ICT Infrastructure

Descriptive Statistics					
	N	Min	Max	Mean	Std. Dev.
The firm has invested in various technologies to strengthen green procurement	85	3.00	5.00	4.69	0.56
Our firm has allocated sufficient budgets to procure technologies for supporting green procurement	85	3.00	5.00	4.60	0.58
The firm regularly shares information with partner firms on technologies to use in strengthening green procurement	85	3.00	5.00	4.65	0.57
The use of suitable ICT has strengthened the adoption of green procurement in the firm	85	3.00	5.00	4.64	0.57
The firm has employed employees who understand the use of technology in green procurement processes and this has enhanced the adoption of green procurement in the firm	85	3.00	5.00	4.59	0.58

The findings are presented in Table 4.6 show the influence of ICTI on the adoption of GP in manufacturing industries in Nairobi using the mean scores and standard deviations. As shown, it is noted that most of the organizations were already implementing GP practices. The most adopted GP practice was; investment in various technologies to strengthen GP which had the highest mean score of 4.69 (to very high extent) followed closely regular sharing of information with partner firms on technologies to use in strengthening GP with a mean score of 4.65 (to very high extent), use of suitable ICT to strengthen the adoption of GP in the firm with a mean score of 4.64 (agree to very high extent), while the least score was that the firm had employed employees who understand the use of technology in GP processes and this has enhanced the adoption of GP in the firm with a mean score of 4.59 (to very great extent). These findings are in line with findings by Fernando et al. (2016) and Kumar et al. (2020) who studied the nexus between ICTI and the adoption of GP adoption. The findings also echo the findings of Makumba, (2017) as well as Nderitu and Ngugi (2014) in Kenya. These studies underscore "the pertinent role played by ICTI on the adoption of GP."

The study went on to ask the respondents to indicate other ways in which ICTI influenced the adoption of GP in manufacturing industries in Nairobi. The respondents observed that ICT technology was essential in the adoption of GP practices especially in information-sharing with key suppliers. This finding is similar to the study by Kumar, Singh, and Modgil (2020) who established that "ICT and SCM activities (logistics integration and supplier relationships)" had a significant relationship. Moreover, SCM activities (information sharing, supplier relationships, and logistics integration) had an important and positive effect on the organization's success (Kumar et al., 2020). Overall, the study findings show that ICTI was an important factor that influenced the

level to which firms adopted GP. The more firms adopted ICTI, the more GP was likely to succeed in their firms.

4.4.3 Supplier Management Practices

The third objective of the study was to determine the influence of supplier management practices on the adoption of GP in manufacturing industries in Nairobi, Kenya. The findings are presented in Table 4.7.

TABLE 4.7

Supplier Management Practices

Descriptive Statistics					
	N	Min	Max	Mean	Std. Dev.
The firm enters into partnerships with suppliers to ensure that green procurement is practiced	85	3.00	5.00	4.55	0.59
Procurement officials visit suppliers to explore the possibility of enhancing green procurement	85	3.00	5.00	4.68	0.56
Preference is given to suppliers who supply goods that can be recycled	85	3.00	5.00	4.62	0.58
Our procurement management systems keep a database of list of partner green suppliers	85	3.00	5.00	4.53	0.59
Some suppliers come back to collect used products for recycling	85	3.00	5.00	4.60	0.58

The mean scores and standard deviations in Table 4.7 illustrate the impact of SMP on the adoption of GP in Nairobi's manufacturing sector. With a mean score of

4.68 (to very high extent), procurement authorities visiting suppliers to examine the prospect of increasing GP was found to be the most widely used technique. Following that, with an average score of 4.62, preference was given to vendors that provided recyclable items. The respondents agreed to very high extent (mean =4.55) that companies should form relationships with suppliers to achieve GP. A database of partner green suppliers with a mean score of 4.53 (to very high extent) is maintained by procurement management systems.

The findings indicate that supplier management techniques have a significant impact on the adoption of GP in manufacturing industries as posited by Thakker and Rane (2018) that strategies must be put in place by a firm to ensure those suppliers relationships with the firm are positively kept. These findings are further supported by the work of Kalyar, Shoukat, and Shafique, (2019). The authors showed GSCM activities (green production, green buying, eco-design, consumer collaboration, and green information systems) had a substantial direct effect on firms' financial efficiency, both directly and indirectly and thus was pursued as a strategy.

The respondents were asked to indicate other ways in which SMP influence the adoption of GP in manufacturing industries in Nairobi**.** The participants pointed out that SCMPs in manufacturing industries can pose a threat to the effectiveness of GP. As a result, it necessitates close collaboration between company departments and businesses, resulting in a harmonious integration of environmental protection into the supply chain. This finding is similar to the finding by Amoako, Bonsu, Caesar, and Osei-Tete (2020) demonstrated the connection between green supply chain practices (GSCPs) and long-term business advantage from the perspective of emerging markets, with a focus on developing countries. This study was further buttressed by Song & Zhang (2017) posited that both product-based and process-based GP have a positive impact on firm

profitability. Overall, it is evident that SCMPs were thus crucial to the adoption of GP among the firms studied. Firms that "had excellent SCMPs were more likely to adopt GP more and vice versa."

4.4.4 Staff Training

The fourth objective of the study was to explore the influence of ST on the adoption of GP in manufacturing industries in Nairobi, Kenya. The findings are presented in Table 4.8.

TABLE 4.8

Staff Training

Descriptive Statistics					
	N	Min	Max	Mean	Std. Dev.
The firm regularly trains procurement employees on green procurement	85	3.00	5.00	4.60	0.58
There is a budget for training employees on the policies and new procurement opportunities in the firm	85	3.00	5.00	4.54	0.59
Training workshops are regularly put in place in cooperation with other firms on green procurement processes in our industry	85	3.00	5.00	4.62	0.58
Procurement staff are involved in training new employees on the procurement practices in our firm	85	3.00	5.00	4.59	0.58
There are firm-wide training campaigns aimed at ensuring that employees from all departments understand and request goods that can be recycled.	85	3.00	5.00	4.59	0.58

Table 4.12 indicates the influence of ST on the adoption of GP in manufacturing industries. The analysis shows that the firms regularly trains procurement employees on GP (mean=4.60). Concurrently, there is a budget for training employees on the policies and new procurement opportunities in the firm (mean=4.54). In terms of

capacity building training workshops were regularly put in place in cooperation with other firms on GP processes in our industry (mean=4.62).on their part, procurement staff were involved in training new employees on the procurement practices in their firms (mean=4.59). And finally, majority of firms have firm-wide training campaigns aimed at ensuring that employees from all departments understand and request goods that can be recycled (mean=4.59). These findings show that most manufacturing firms in Nairobi are actively training their staff on the adoption of GP. These findings are in line with Geng & Doberstein (2008) who found that noted that most developing countries were developing capacity-building solutions, in order to facilitate the adoption of GP. Similar findings were established by Gegovska, Koker, & Cakar (2020). They concluded that ST entailed training initiatives aimed at ensuring that members of staff were equipped with the right knowledge to undertake GP activities.

To point out other ways in which ST influence the adoption of GP in manufacturing industries in Nairobi. The respondents agreed capacity of the staff influenced adoption of GP in manufacturing industries. They pointed out that ST involved continuous training of procurement staff, mentoring of new employees and budget allocation for training on GP among others. Furthermore, they emphasized that management should have the requisite financial support for the introduction of GP practices. These findings are in line with the finding by Njoroge (2019) who posited that “companies should establish a ST strategy aimed at training key personnel on how to enforce GP practices.” The findings point to “the importance of enhancing staff training since it was pivotal to the adoption of GP in the country.”

4.4.5 Adoption of Green Procurement

The findings on the dependent variable of the study which was adoption of GP are presented in Table 4.9.

TABLE 4.9

Adoption of Green Procurement

Descriptive Statistics					
	N	Min	Max	Mean	Std. Dev.
Green procurement accounts for most of our purchases	85	3.00	5.00	4.59	0.58
The firm ensures that green procurement is practiced where possible	85	3.00	5.00	4.55	0.59
Most of the items used in our production processes are recycled after use	85	3.00	5.00	4.71	0.55
Our firms have seen increases in sales especially by customers who support the environment	85	3.00	5.00	4.68	0.56
Our firm has seen increase lead times in our green procurement processes due to its support by policy	85	3.00	5.00	4.60	0.58

Table 4.6 shows the extent to which the respondents agreed with various strategies affecting GP adoption in manufacturing firms in Nairobi. The results show that the main strategy was use of recycled materials with a mean of 4.71 (to a great extent). This was followed by targeting of environmentally conscious customers with a mean of 4.68, others of significance included; GP policy support, GP purchase accounts, and GP practicing with means of 4.59, 4.59 and 4.55 respectively. This is an indication that most manufacturing firms in Nairobi have internal policy on adoption GP. These findings are in line with Gachukia, (2018) who found that "internal GP regulations play a significant role in GP adoption."

The study also sought to point out other ways in which the adoption of GP in manufacturing industries in Nairobi could be enhanced. According to the findings, companies must adhere to the policy framework. This is because policy establishes

guidelines for how a company works in a certain market or area. This is due to the fact that most businesses require clearance from the relevant agency in order to create or manufacture items that are not environmentally hazardous. Government laws and standards are the primary drivers of change in the realm of environmental management when it comes to GP. Organizations that fail to follow environmental rules face a charge in the form of a penalty. This finding is in line with the finding by Nasiche and Ngugi (2014) who observed that in many countries, policies are being employed to safeguard the environmental challenges. According to Gatari & Were (2014), the regulatory environment has a significant impact on the implementation of GP strategies in most businesses. This is due to the lack of regulations governing the manufacture of certain items, which discourages businesses from adopting green buying efforts. The findings show high levels of adoption of GP by manufacturing firms in Kenya. In this regard, the study went on to examine if "there were significant relationships between factors under investigation in this study and the adoption of GP in the country as shown in the following section."

4.5 Diagnostic Tests

Prior to regression analysis, this study ran a number of diagnostic tests. Normality tests, heteroskedasticity tests, autocorrelation tests, and multicollinearity tests were among them.

4.5.1 Normality Test

The normal tests Kolmogorov-Smirnov and Shapiro-Wilk were used. Tables 4.8 demonstrate that the data substantially deviated from normal for all variables against

the dependent variable (Adoption of GP in MFs) since the significance value of the Shapiro-Wilk Test was <0.05.

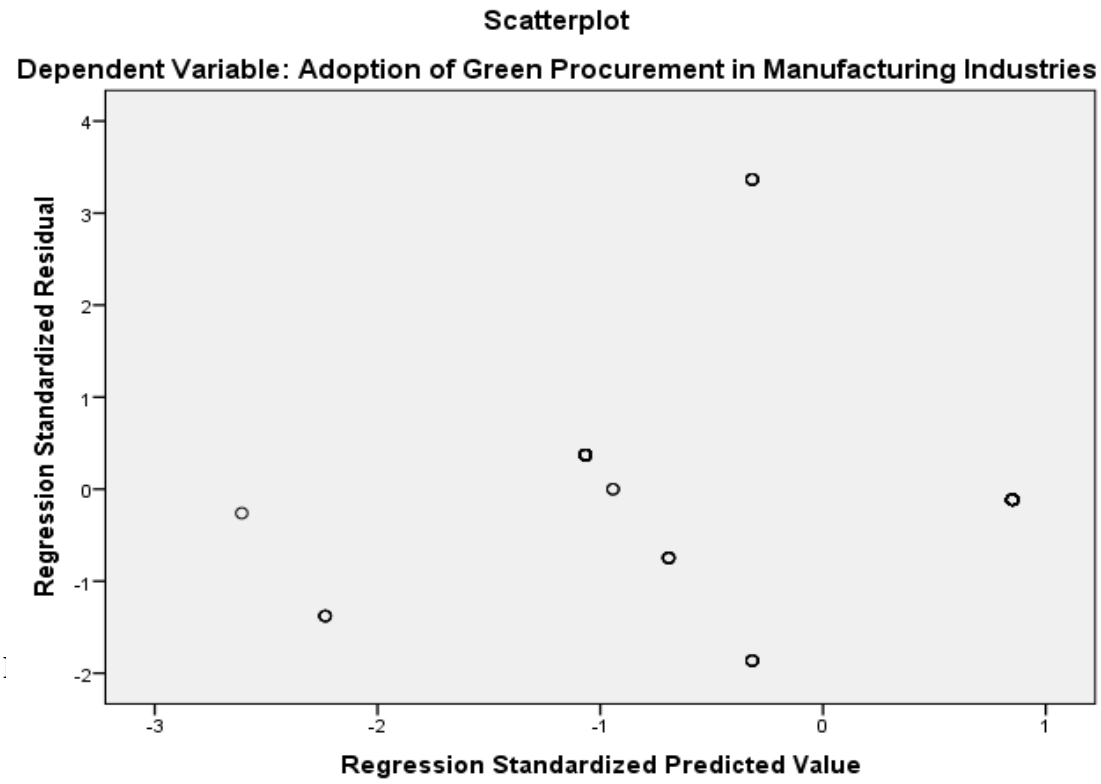
TABLE 4.10

Normality Test

Tests of Normality[a]							
	ST	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Adoption of GP in Manufacturing Industries	4.00	.517	30	.000	.406	30	.000
	5.00	.536	51	.000	.124	51	.000
a. Adoption of GP in Manufacturing Industries is constant when ST = 3.00. It has been omitted.							
b. Lilliefors Significance Correction							

4.5.2 Heteroskedasticity

The lack of a discernible pattern in the scatter plot in Figure 4.1 indicates that there was no heteroskedasticity problem. As a result, regression analysis may be performed.



4.5.3 Durbin-Watson Test for Autocorrelation

The Durbin Watson statistic yielded a result of 0.304. This is due to the fact that the dependent variable (Adoption of GP in manufacturing Industries) and the independent variables had a positive autocorrelation, as seen in Table 4.11.

TABLE 4.11

Durbin-Watson Test for Autocorrelation

Model	Durbin-Watson
1	.463
a. Predictors: (Constant), ST, TMS, ICTI Level, SCMPs	
b. Dependent Variable: Adoption of GP in Manufacturing Industries	

4.5.4 Test for Multicollinearity

The Variance Inflation Factor (VIF) values obtained were all less than 10. As a result, there was no difficulty with Multicollinearity. Consequently, inferential statistics may be used to further evaluate the connections between the research variables as shown in table 4.12.

TABLE 4.12

Test for Multicollinearity

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	TMS	.372	2.688
	ICTI	.230	3.873
	SCMPs	.314	4.784
	ST	.230	3.873
a. Dependent Variable: Adoption of GP in Manufacturing Industries			

4.5.5 Pearson Correlation

To see if there were any significant connections between the dependent and independent variables, a Pearson correlation analysis was used. All of the independent factors exhibited significant associations with GP adoption in manufacturing industries, according to the findings: TMS, r=0.796; ICTI Level, r=0.854; SCMPs, r=0.826; and ST, r=0.854. The researcher next carried out regression analysis to determine the extent to which the independent factors might predict the dependent variable as shown in Table 4.13.

TABLE 4.13

Pearson Correlation

Correlations						
		TMS	ICTI	SCMPs	ST	Adoption of GP in Manufacturing Industries
Adoption of GP in Manufacturing Industries	Pearson Correlation	.796**	.854**	.826**	.854**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	85	85	85	85	85
**. Correlation is significant at the 0.01 level (2-tailed).						

4.6 Model Fitting

To find out the level to which GP could be predicted by the dependent variables, regression analysis was undertaken. This multivariate regression analysis results are presented in this section.

4.5.6.1 Coefficient of Determination

Table 4.12 show that the population from which the study sample was obtained could explain 85.8% variance in the adoption of GP in manufacturing industries in Nairobi.

TABLE 4.14

Coefficient of Determination

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.926[a]	.858	.851	.18580
a. Predictors: (Constant), ST, TMS, ICTI, SCMPs				
b. Dependent Variable: Adoption of GP in Manufacturing Industries				

4.5.6.2 Analysis of Variance

Table 4.15 shows that the combined influence of the independent variables could statistically and significantly predict the Adoption of GP in Manufacturing Industries ($F= 120.582$, $p<0.05$).

TABLE 4.15

Analysis of Variance

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.650	4	4.163	120.582	.000[b]
	Residual	2.762	80	.035		
	Total	19.412	84			
a. Dependent Variable: Adoption of GP in Manufacturing Industries						
b. Predictors: (Constant), ST, TMS, ICTI, SCMPs						

4.5.6.3 Regression Coefficients

The regression coefficient shows that all the independent variables could statistically predict Adoption of GP in Manufacturing Industries (P values <0.05). Standardized Beta Coefficients were also obtained as follows: TMS, β=0.409, t=6.550, p<0.05; ICTI Level, β=1.025, t=5.329, p<0.05; SCMPs, β= -1.476, t= -5.365, p<0.05; ST, β=1.025, t=5.329, p<0.05). These findings indicate that an increase in TMS by 0.409; ICTI Level by 1.025; SCMPs by -1.476 and; ST by 1.025 would lead to increase in Adoption of GP in Manufacturing Industries by 1 unit each.

Using the unstandardized coefficients, the fitted regression model was as follows:

Adoption of GP in Manufacturing Industries = 1.047 + 0.238 TMS + 1.000*ICTI* - 1.448** SCMPs + 1.000* ST +0.198.*

TABLE 4.16

Regression Coefficients

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.047	.198		5.289	.000
	TMS	.238	.036	.409	6.550	.000
	ICT infrastructure	1.000	.188	1.025	5.329	.000
	SCMPs	-1.448	.270	-1.476	-5.365	.000
	ST	1.000	.188	1.025	5.329	.000
a. Dependent Variable: Adoption of GP in Manufacturing Industries						

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This part provides a summary of the study findings. It also presents the conclusion as well as recommendations arising from such conclusions.

5.2 Summary of the findings

This section presents the summary of the study. This is done in line with the objectives of the study.

5.2.1 Top Management Support

The first objective of the study was to examine the influence of TMS on the adoption of GP in manufacturing industries in Nairobi, Kenya. The findings show that the management had put in place policies for enhancing GP (mean score of 4.73). On whether the management ensured that the firm purchases recycled goods the mean score was 4.67. When asked whether the companies employed staff who understood GP practices and that there was sufficient budgets allocated by the management to ensure that GP was practiced irrespective of costs the mean score was 4.66. Finally, the respondents agreed to very high extent that management supported partnerships with suppliers to streamline GP processes (mean=4.65). When asked to point out other ways in which TMS the adoption of GP in manufacturing industries in Nairobi, the respondents indicated that commitment and support from the TM was important. The participants also pointed out that TM had to address internal hurdles such as cost and a lack of understanding about how to use the information supplied by suppliers to adopt green purchasing practices. The findings imply that policy framework plays a

significant role towards determinants of adoption of GP in the manufacturing sector. It is thus evident that "TMS had important influences on GP in the firms under investigation in this study."

5.2.2 ICT Infrastructure

The second objective was to assess the influence of ICTI on the adoption of GP in manufacturing industries in Nairobi, Kenya. The most respondents were of the view that companies were already adopting GP practice was such as investment in various technologies to strengthen GP with mean score of 4.69. This was followed closely by regular sharing of information with partner firms on technologies to use in strengthening GP with a mean score of 4.65. Use of suitable ICT to strengthen the adoption of GP in the firm came third with a mean score of 4.64, while the least score was that the firm had employed employees who understand the use of technology in GP processes and this had enhanced the adoption of GP in the firm with a mean score of 4.59. The findings show that ICTI is a major component in adoption of GP. Regarding other ways in which ICTI influenced the adoption of GP in manufacturing industries in Nairobi, the respondents observed that ICT technology was essential in the adoption of GP practices especially in information-sharing with key suppliers. This is indicative of "the fact that ICT adoption had a direct influence on the adoption of GP."

5.2.3 Supplier Management Practices

The third objective of the study was to determine the influence of SMP on the adoption of GP in manufacturing industries in Nairobi, Kenya. The participants pointed out that the most widely used technique to examine the prospect of increasing GP was the one whereby procurement authorities visited suppliers with a mean score of 4.68.

Preference was given to vendors who provided recyclable items (mean = 4.62). Furthermore, the respondents agreed to very high extent (mean =4.55) that companies should form relationships with suppliers to achieve GP. Finally, procurement management systems must maintain a database of partner green suppliers (mean = 4.53). The findings indicate that supplier management techniques have a significant impact on the adoption of GP in manufacturing industries specifically GSCM activities such as green production, green buying, eco-design, consumer collaboration, and green information systems among others.

When asked to point out other ways in which SMP influenced the adoption of GP in manufacturing industries in Nairobi, the participants pointed out that SCMPs in manufacturing industries can pose a threat to the effectiveness of GP. As a result, it necessitates close collaboration between company departments and businesses, resulting in a harmonious integration of environmental protection into the supply chain.

5.2.4 Staff Training

The last objective of the study was to explore the influence of ST on the adoption of GP in manufacturing industries in Nairobi, Kenya. The respondents were in agreement that firms regularly trains procurement employees on GP (mean=4.60). Concurrently, there is a budget for training employees on the policies and new procurement opportunities in the firm (mean=4.54). In terms of capacity building, training workshops were regularly put in place in cooperation with other firms on GP processes (mean=4.62).On their part, procurement staff were involved in training new employees on the procurement practices in their firms (mean=4.59). And finally, majority of firms had firm-wide training campaigns aimed at ensuring that employees from all departments understood and requested goods that could be recycled (mean=4.59).

These findings show that most manufacturing firms in Nairobi are actively training their staff on the adoption of GP.

The respondents were asked to point out other ways in which ST influence the adoption of GP in manufacturing industries in Nairobi. They pointed out that capacity of the staff influenced adoption of GP in manufacturing industries. They observed that continuous training of procurement staff, mentoring of new employees and budget allocation for training on GP were areas that firms could enhanced. It is thus clear that "staff training plays an important role in the adoption of GP."

5.2.5 Adoption of Green Procurement

The dependent variable in the study was Adoption of GP. The results show that the main strategy used for the adoption of GP was use of recycled materials with a mean of 4.71. This was followed by targeting of environmentally conscious customers (mean of 4.68). Others of significance included; GP policy support, GP purchase accounts, and GP practicing with means of 4.59, 4.59 and 4.55 respectively. This is an indication that most manufacturing firms in Nairobi have internal policy on adoption of GP.

Further, the respondents were asked to point out other ways in which the adoption of GP in manufacturing industries in Nairobi could be enhanced. According to the findings, companies must adhere to the policy framework. This is because policy establishes guidelines on how a company works in a certain market or area. This is due to the fact that most businesses require clearance from the relevant agency in order to create or manufacture items that are not environmentally hazardous. Government laws and standards are the primary drivers of change in the realm of environmental management when it comes to GP. Organizations that fail to follow environmental rules face a charge in the form of a penalty.

5.3 Conclusions

The findings show that there were significant relationships between the Adoption of GP and independent variables as follows: TMS, $r=0.796$ $p<0.05$; ICTI, $r=0.854$, $p<0.05$; SCMPs, $r=0.826$, $p<0.05$; and ST, $r=0.854$, $p<0.05$). Analysis of Variance (ANOVA) shows that TMS, ICTI, SCMPs and ST could statistically and significantly predict the adoption of GP ($F= 120.582$, $p<0.05$). In this light thus, the study concludes that TMS, ICTI, SCMPs, and ST influenced the adoption of GP. There was thus the need for focused strategies aimed at strengthening interventions around these factors to enhance the adoption of GP practices.

5.4 Recommendations

Based on the findings of the study, the following recommendations were made in accordance with the study respondents.

5.4.1 Top Management Support

For GP practices to be implemented, management commitment and support are necessary. TM must be proactive in addressing internal barriers to GP, such as costs and a lack of supplier knowledge.

5.4.2 ICT Infrastructure

ICT technology was essential in the adoption of GP practices especially in information-sharing with key suppliers. It is thus important for manufacturing firms to roll out and sustain modern ICT technologies in areas such as logistics integration, supplier management, and information sharing among others.

5.4.3 Supplier Management Practices

Supplier management techniques have a significant impact on the adoption of GP in manufacturing industries. As a result, strategies must be put in place by firms to ensure those suppliers relationships with the firm are positively kept. In addition, SCMPs can pose a threat to the effectiveness of GP. As a result, it necessitates close collaboration between company departments and businesses, resulting in a harmonious integration of GP practices into the supply chain.

5.4.4 Staff Training

Most manufacturing firms in Nairobi are actively training their staff on the adoption of GP. The firms should put in place strategies for continuous training of procurement staff and mentoring of new employees. Sufficient budgets should be put in place to support training interventions.

5.5 Recommendations for Future Research

This study was focused on manufacturing firms in Nairobi. The study recommends related studies in other manufacturing firms in Thika, Mombasa and Kisumu for correlation purposes. Longitudinal studies to examine the changes in the influences of the study variables over time should also be undertaken.

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APPENDIX I: QUESTIONNAIRE

Dear respondent,

I am a master's student varying out a study on "the factors influencing the adoption of green procurement in manufacturing industries in Nairobi, Kenya." I request you to take part in the study by responding to the questions presented in this questionnaire. The study is for academic purposes only and no information linking you with the responses provided will be required. No identifying information shall be presented in the research findings.

SECTION A: GENERAL INFORMATION

1. Sex: Male [ ] Female [ ]

2. Duration of working for your current firm: Below 2 years [ ] 2-5 [ ] 6-10 [ ] 10-20 [ ] 20 years and above [ ]

3. Highest academic qualification: Certificate [ ] Diploma [ ] Degree [ ] Post Graduate Diploma [ ] Masters and above [ ] other [ ] indicate …….

SECTION B: TOP MANAGEMENT SUPPORT AND THE ADOPTION OF GREEN PROCUREMENT

6. On a scale of "1-5 where 1-to a very low extent; 2-to a low extent; 3- to a moderate extent; 4-to a high extent and; 5-to a very high extent, kindly tick (√) indicating your level of agreement with the following statements."

Statements	**1**	**2**	**3**	**4**	**5**
The management of our firm has put in place policies for enhancing green procurement					
The management ensures that the firm purchases recycled goods					
The staff employee staff who understand green procurement					
Sufficient budgets are allocated by the management to ensure that green procurement is practiced irrespective of costs					
The management supports partnerships with suppliers to streamline green procurement processes					

7. In which other ways does top management support influence the adoption of green procurement in your firm? …….

…….....

…….....

SECTION C: ICT INFRASTRUCTURE AND THE ADOPTION OF GREEN PROCUREMENT

8. On a scale of |1-5 where 1-to a very low extent; 2-to a low extent; 3- to a moderate extent; 4-to a high extent and; 5-to a very high extent, kindly (√) indicating your level of agreement with the following statements."

Statements	**1**	**2**	**3**	**4**	**5**
The firm has invested in various technologies to strengthen green procurement					
Our firm has allocated sufficient budgets to procure technologies for supporting green procurement					
The firm regularly shares information with partner firms on technologies to use in strengthening green procurement					
The use of suitable ICT has strengthened the adoption of green procurement in the firm					
The firm has employed employees who understand the use of technology in green procurement processes and this has enhanced the adoption of green procurement in the firm					

9. In which other ways does ICT infrastructure influence the adoption of green procurement in your firm? ……..

…….....

…….....

SECTION D: SUPPLIER MANAGEMENT PRACTICES AND THE ADOPTION OF GREEN PROCUREMENT

10. On a scale of "1-5 where 1-to a very low extent; 2-to a low extent; 3- to a moderate extent; 4-to a high extent and; 5-to a very high extent, kindly tick (√) indicating your level of agreement with the following statements."

Statements	**1**	**2**	**3**	**4**	**5**
The firm enters into partnerships with suppliers to ensure that green procurement is practiced					
Procurement officials visit suppliers to explore the possibility of enhancing green procurement					

Preference is given to suppliers who supply goods that can be recycled					
Our procurement management systems keep a database of list of partner green suppliers					
Some suppliers come back to collect used products for recycling					

11. In other ways do supplier management practices influence the adoption of green procurement in your firm? …….

…….....

…….....

SECTION E: STAFF TRAINING AND THE ADOPTION OF GREEN PROCUREMENT

10. On a scale of "1-5 where 1-to a very low extent; 2-to a low extent; 3- to a moderate extent; 4-to a high extent and; 5-to a very high extent, kindly (√) indicating your level of agreement with the following statements"

Statements	**1**	**2**	**3**	**4**	**5**
The firm regularly trains procurement employees on green procurement					
There is a budget for training employees on the policies and new procurement opportunities in the firm					
Training workshops are regularly put in place in cooperation with other firms on green procurement processes in our industry					
Procurement staff are involved in training new employees on the procurement practices in our firm					
There are firm-wide training campaigns aimed at ensuring that employees from all departments understand and request goods that can be recycled.					

11. In other ways does staff training influence the adoption of green procurement in your firm? ……..…..

…….....

…….....

SECTION F: ADOPTION OF GREEN PROCUREMENT

12. On a scale of "1-5 where 1-to a very low extent; 2-to a low extent; 3- to a moderate extent; 4-to a high extent and; 5-to a very high extent, kindly (√) indicating your level of agreement with the following statements regarding the adoption of green procurement in your firm."

Statements	**1**	**2**	**3**	**4**	**5**
Green procurement accounts for most of our purchases					
The firm ensures that green procurement is practiced where possible					
Most of the items used in our production processes are recycled after use					
Our firms have seen increases in sales especially by customers who support the environment					
Our firm has seen increase lead times in our green procurement processes due to its support by policy					

Thank You