

Role of Green Supply Chain Management on Operation of Small Business in Osogbo, Osun State, Nigeria

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Abstract: This study aimed at determines the impact of Green Supply Chain Management (GSCM) on operation of small business in Osogbo, Osun State. The objectives of this work includes to establish the extent of GSCM Practices among small business firms in Oshogbo; determine the drivers of GSCM adoption in small business firms in Oshogbo; determine the barriers to GSCM adoption in small business firms in Oshogbo and to establish the relationship between GSCM adoption and performance in small business firms in Oshogbo. Frequency distribution and Percentages, Correlation and T-Test were used for the analysis of data and hypothesis testing respectively. The results obtained identify barriers to GSCM practices which includes Cost of practicing GSCM, lack of law enforcing the practice of GSCM, poor Supplier commitment, Management of the company are not in support of GSCM, the consumers are not in support of GSCM and Consumers not ready to bear the cost of GSC. From the results, it was seen that GSCM has the potential to reduce air emission, reduce solid waste, and decrease frequency of work environmental accidents, decrease cost of waste management, decrease cost of energy consumption and access to government support for GSCM. It is reported that reduction of waste and reduction in cost of energy consumption is greatly felt on adoption of GSCM. The study concludes that GSCM practices can help firms enhance the overall business performance while maintaining product/service quality, saving energy, reducing costs and improving efficiency. The study also concludes that GSCM practices have a positive impact on Environmental Sustainability. This work recommends that it is important to engage suppliers that have ISO 14001 certification only, which ensures that these suppliers have a concern for the environment in their operations. Also, firm should endeavor to design products that reduce the consumption of materials and energy, and facilitate the reuse, recycling and recovery of materials.

Keywords: Green Supply Chain Management, Small business, performance, waste reduction, energy consumption

1. INTRODUCTION

Over the years, environmental issues have been increasing and traveling faster than forest fire, country to region, region to world level territory, which is a serious cause of climate change and global warming. While, the green supply chain concept occurs to mitigate environmental degradations and control air, water and waste pollution through the adoption of green practices in business operations. Undeniably, the basic ideology behind green concept is to enhanced environmental sustainability, but firms adopt green concept as “kill two enemies with one bullet”. Because green supply chain can reduce the environmental pollution and production costs and it also can spur economic growth, create competitive advantage in terms of greater customer satisfaction, positive image and reputation and provide better opportunity to export their products in pro-environmental countries.

In the World, as the environmental awareness is increasing, firms are facing heavy pressure from different stakeholders including government and customers to mitigate their harmful effect on the environment. Indeed, corporate sector needs to consider integrating their business practices in service and manufacturing industry with sustainability and reducing end-to-end supply chain costs to achieve competitive advantage. Since last couple of decades, growing impacts of global warming, climate change, waste and air pollution issues have involved increasing world-wide attention of experts to think more eco-friendly and find optimum possible solution towards “Green”. GSCM (Green Supply Chain Management) plays a part in motivating organizational sustainability (Rath, 2013). With continuous rising in the environmental pollution, GSCM deserves a persistent community concern in developed nations. Further, it has recently woken up the developing nations to the green movement.

Green supply chain management (GSCM) has gained popularity across the globe, mainly in advanced and developed countries but also in developing nations as well (Govindan et al., 2014). This interest in GSCM was as a result of the efforts of governments and other institutions to prevent or reduce the disastrous and hazardous effects of industry-related activities on the environment (Wong et al., 2015). Presently, most organizations worldwide have begun to show a high level of commitment to GSCM through the implementation of environmental practices that are intended to reduce and preserve the degradation of the environment (Tiwari et al., 2015). The traditional concept of supply chain management was extended by practice of GSCM by providing an improvement of products and services that are environmentally friendly across their complete life-cycle (Ahi & Searcy, 2015).

Green Supply Chain Management practices have become a policy tool for many organizations due to concerns of environmental sustainability (Onyinkwa & Ochiri, 2016). Hence, companies began to seriously consider implementing a mechanism by which the achievement of its main objectives of using supply chains in achieving profit and competitive advantage, and at the same time taking into account the reduction of environmental damage and the conservation of natural resources, which is called green supply chain management. GSCM has emerged as an important new archetype for organizations to increase profit and market share by minimizing their environmental risks and effects while raising their ecological efficiency (Shang et al., 2010). Jacobs et al. (2010) also suggested that proper implementation of green practices in supply chain can enhance operational, environmental and financial performances. Organizations have to enhance their capability on GSCM activities based on not only emerging environmental regulations but also enthusiastic politics of the companies about environmental practices (Uygun & Dede, 2016). It is a kind of modern management mode that examines the environmental impact and resource efficiency of the entire supply chain, and how to implement green supply chain management in industrial processes.

There is increase in both efficiency and overall performance of the firms through integration of green practices in organizational strategy (Srivastava, 2008). Despite the increased in popularity of GSCM in many countries, there are still several aspects that require further research, mainly as greening the supply chain has been identified as a key issue of sustainable supply chain management (Green et al., 2012). In particular, research on GSCM still has to be extended to small to medium enterprises (SMEs) as the majority of studies conducted have been confined to large organizations (Ahi and Searcy, 2015).

This study presupposes that assuming GSCM practices could be a solution in the bid to increase the performance of small business and hence prevent their inadvertent failure. Environmentalists across the world are working hard to help SMEs consider embracing and implementing GSCM to reap the benefits associated with it (Mohanty & Prakash 2014). Moreover, as put forward by several researchers (Ahi & Searcy 2013), the application of GSCM results in benefits such as high operational efficiency, satisfactory financial performance and a good reputation, amongst others. In view of this, beleaguered enterprises such as Nigerian small business and SMEs stand to realize the above benefits and hence the implementation of GSCM practices will improve their operational performance.

In addition to the above, a literature search for studies on GSCM amongst Nigerian firms showed little or a lack of previous works. The major studies available (Mafini & Muposhi 2017; Van Rensburg 2015) disregarded the role Of Green Supply Chain Management and the relationship dimensions under consideration in the current study, thereby proving a research gap that still has to be filled. Still, the present study focuses on the role of Green Supply Chain Management on Operation of Small Business in Osogbo, Osun State.

1.1 Problem Statement

Small businesses are essential in economic development of a country. Also, they are considered as backbone of economic growth in all countries (Ghazilla et al., 2015). It has been reported that SMEs contribution to the nation's Gross Domestic Product (GDP) is 32.5 % in year 2011, and it can rise to 41% of the nation's GDP by year 2020.

The firms all over the world are presently shift from usual practices to adoption of green manufacturing practices, the driving force behind this is increase in environmental concerns and pollution and this has pushed manufacturing small business and SMEs to implement green practices in their operation (Ghazilla et al., 2015).

Environmental issues have become a priority for the government and the public (Eltayeb et al., 2011). The company across the universe have begin to realize that supply chains must be re-designed because as the population of the world increases and resource availability decreases (Carter and Jennings, 2002). As a result of this problem, scientists have now claimed that the future of supply chain management is sustainability (Murphy and Poist, 2002). Thus, the concept of green supply chain management (GSCM) is now widely accepted since it minimizes negative impact of the industrial processes and also enhances the competitive advantage of the firms (Rao, 2006).

Although remarkable research has been carried out to examine the impact of green practices on operational, environmental, and economic performance but there is little or no research does exist to investigate the impact of green practices on sustainability,

performance along with environmental and economic performance specifically. This study looks into the GSCM practices and their impact on performance of small business SMEs in Osogbo, Osun state.

1.2 Research Objective

The broad objective of this study is to examine the role of Green Supply Chain Management on Operation of Small Business in Osun State. This broad objective is broken down to the following specific objectives which are to:

- i. To assess the extent of GSCM Practices among small business firms in Osun State
- ii. To determine the drivers of GSCM adoption in small business firms in Osun State
- iii. To examine the barriers to GSCM adoption in small business firms in Osun State
- iv. To establish the relationship between GSCM adoption and performance in small business firms in Osun State

1.3 Research Questions

In order to achieve the intended objectives, this study will proffer answer to the following questions

- i. What is the extent of GSCM practices among small business firms in Osogbo, Osun State?
- ii. What is the relationship between GSCM practices and sustainability performance?
- iii. Does supply chain integration moderate the relationship between GSCM practices and sustainable performance?

1.4 Research Hypothesis

The following hypothetical propositions will be formulated to guide the study:

H₀₁ There is no significant relationship between GSCM adoption and performance in small business firms in Osogbo, Osun State

H₀₂ There is no significant difference between the different drivers of GSCM adoption in small business firms in Osogbo, Osun State.

2. LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Green supply chain management

Green supply chain management is a strategic capability consisting of strategies, practices and policies that concentrate on managing the environmental impact of supply chain operations (Rauer & Kaufmann 2015). Also, its refer to the integration of ecological thinking into supply chain management, including product design, material sourcing and selection, manufacturing process, delivery of the final product to the consumers as well as the end-of-life management of a product after its useful life (Srivastava 2007). For many firms, GSCM is a way to demonstrate their sincere commitment to sustainability (Bacallan, 2000).

Most research on GSCM focused on the functional areas of supply chain management such as purchasing and supply management (Mollenkopf et al. 2010). However, the integration of environmental issues and supply chain management has become a thriving subfield over the past few decades (Sarkis, 2012). The potential benefits associated with GSCM include enhanced reputation, increased efficiency, effectiveness, differentiation and revenue growth (Golicic & Smith, 2013). Furthermore, being 'green' is also important from a long-term economic perspective because without natural resources, both business and the consumption of goods are severely stifled (Bell, Mollenkopf & Stolze 2013). Golicic and Smith (2013) found evidence of positive tangible economic and ecological outcomes associated with GSCM practices.

2.1.2 Green purchasing

Green purchasing is the practice of cooperating with suppliers to develop products that are environmentally sustainable (Zhu, Sarkis & Lai 2008). According to Lee (2008), a buying organisation with a GSCM initiative will pay attention to green practices of their suppliers by deploying collaboration-based activities that include training, environmental information sharing and joint research. Other organizations may opt for a less collaborative approach by merely demanding that their suppliers make use of environmental systems such as ISO 14001. External motivators, particularly customer pressure, are key drivers of the adoption of ISO 14001 (HerasSaizarbitoria, Landin & Molina-Azorin 2011).

Other aspects of green purchasing include the facilitation of recycling, reuse and resource reduction (Diabat & Govindan 2011). There is also evidence that some organizations adopt compliance and evaluative approaches to the green purchasing practices of their suppliers (Large & Thomsen, 2011).

2.1.3 Eco-design

Eco-design involves the design of products that minimize the consumption of materials and energy, which facilitate the reuse, recycle and recovery of component materials and parts, and that avoid or reduce the use of hazardous products within the manufacturing process (Zhu et al. 2008). The importance of Eco Design was identified by Buyukozkan and Cifci (2012) when they revealed that about 80% of product-related effects on the environment emanate from the design.

2.1.4 Environmental performance

Environmental performance is the measure of reduction of substances and emissions that reduce environmental impacts caused by business organizations (Kumar, Chattopadhyaya & Sharma 2012). Environmental performance is usually measured in terms of reduction in air emission, energy consumption, hazardous material, material usage and compliance to environmental standards (Zhu, Tian & Sarkis 2012). There has been an upsurge in the environmental awareness of consumers in general, together with a growing number of corporations developing company-wide environmental programmes and green products sourced from markets around the world (Zobel 2015).

2.1.5 Green supply chain management challenges in small and medium scale enterprises

In general, most SMEs are confronted with various challenges that prevent them from engaging in GSCM. Some of these challenges include the lack of financial and human resources, limited innovation capability and limited operational knowhow (Wang 2016). As observed by Chin et al. (2012), the majority of SMEs are financially constrained to implement GSCM initiatives and lack formalized organizational structures required to implement GSCM action programmes. A previous study by Preuss (2011) noted that some SMEs are of the view that a formalised corporate structure limits flexibility in decision-making.

2.2 Theoretical Review

2.2.1 Institutional Theory

DiMaggio and Powell (1983), presented institutional theory in the early 1980s, claiming that firms attempt to adapt to the surrounding environment by adhering to legitimacy rules and regulations from one side and through seeking social fitness from another side. These authors also claim that a firm's behavior may be driven by a strong social force motivating the organization to go in a certain direction. Such a force can be any form of social driver including; culture, law, or regulations. However, Zhu and Sarkis (2007) found that the implementation of green supply chain management practices is not always motivated by efficiency but rather that businesses endeavor to achieve social legitimacy and business sustainability.

Government regulations can be one of the main institutional factors that drive businesses to implement green supply chain practices. That is why within some regions, such as Europe and the USA, where environmental rules are strict; businesses adopt GSCM practices more frequently than businesses in other regions where they still lack stringent environmental legislation. Such adaptation might be costly especially if firms opt for cutting edge technologies to minimize environmental impacts (Groenewegen and Vergragt, 1991).

2.3 Empirical Review

Paulraj et al. (2015), investigated the motives of firm's engagement toward sustainable supply chain management, results of the research revealed relational and moral motives were responsible for implementation sustainable practices in German firms.

Choi et al. (2015), examined the impact of GSCM practices toward performance in Korean firms, findings of the study showed green practices caused improvement of environmental and financial performance.

Tachizawa et al. (2015), analyzed the complex interrelationships among environmental drivers, Green Supply Chain Management (GSCM) approaches and performance, results showed that firms needs to adopt collaborative practices with their supplier in order to improve their sustainability performance.

Lee et al. (2012), explored GSCM practices and their relationship with organizational performance, this study proved indirect relationship does exist between GSCM practices and business performance through mediating variables of operational and relational efficiency.

3. METHODOLOGY

3.1 RESEARCH DESIGN

A quantitative approach method was used in this study as a result of the fact that it facilitated the objective measurement of the variables of interest and determining the possible relationships between them (Leedy & Ormrod 2015). The needed data for

research objective, questions and hypotheses were obtained through the cross-sectional survey design. The questionnaires were administered to respondents once within a specific period.

3.2 Area of the study

This research work was conducted in Osogbo, Osun state located in southwestern Nigeria.. Osun state is regional commercial hub for both agricultural and industrial goods from different parts of the country. The area is amalgamation of urban and rural structures characterized by various businesses and industrial set-up. Its capital is Osogbo. It is bounded in the north by Kwara State, in the east partly by Ekiti State and partly by Ondo State, in the south by Ogun State and in the west by Oyo state.

3.3 Population of the Study

The population of the study consists of the manager or Owner of selected Small business enterprises in Osun State. Population of forty (40) small scale enterprises was considered and total number of forty questionnaires were administered and retrieved to the managers of the selected enterprises.

3.4 Sample and Sampling Technique

The sample used in this study was composed of 40 small scale businesses based in Osogbo, Osun State. There was no sampling frame in this study as it was difficult to obtain a single list of all Small business enterprises operating in Osun State. This method is a non-probability sampling technique and the researcher used knowledge and professional judgment to determine and selects units as well as quantity to be sampled and considered for the work among the small scale enterprises in Osun State. The convenience sampling technique considered respondents who were readily available, and who formed part of the target population. To determine the adequacy of the sample size (n = 40) used in this study, two considerations were made. The first was the historical reference technique, which gave reference to previous but similar studies in supply chain management (Huang, Boon & Xiaoming 2015; Mafini & Muposhi 2017; Younis et al. 2016). These studies used sample sizes ranging between 50 and 600 respondents. The second consideration was to use the standard put forward in a survey conducted by Wolf et al. (2013) that examined sample size requirements for common applied structural equation modelling (SEM). In that study, it was discovered that sample sizes ranging between 30 and 460 respondents produced meaningful patterns of association between parameters. Therefore, the total sample size of n = 40 cases was accepted for data analysis in this study. The profile of the small scale businesses that participated in the study is presented in Table 1.

TABLE 1: Profile of participating small scale enterprises in Osogbo, Osun State

S/N	Variable	Categories	n	%
	Firm Classification	Food Processing	15	37.5
		Agricultural Products	2	5
		Business services	3	7.5
		Supermarkets	3	7.5
		Retails	2	5
		Bottled and Sachets water	10	25
		Chemical products	5	12.5
			40	100

Source: Researcher’s Survey, 2020

An analysis of the statistics in Table 1 indicates that food processing were the majority in the sample (37.5%; n = 15), followed by SMEs in the Bottled and Sachets water (25%; n=10), Chemical products (12.5%; n=5), business services and Supermarkets had 7.5% (n=3) while Agricultural products and retails had 5% (n=2).

3.5 Research Instrument

Primary data was used in this study and questionnaire was used as research instrument. This was designed to obtain vital information in line with the stated objectives, research questions and hypotheses of the work. The questionnaires were distributed to forty (40) respondents in forty selected small business firms in Osun state (Table 1). The completed (filled) questionnaires were retrieved back after some days they were giving to the respondents.

3.6 Validity and reliability of research Instrument

The constructed questionnaire was submitted to the experts for critical, analytical and logical appraisal and assessment of contents and statements in the instruments and this then made the instrument valid for the study. To ensure proper reliability of the instrument, the questions were not ambiguous to respondents in order to avoid the impression of different interpretation or

constructed in a way that give different meaning that could generate inaccurate and inconsistent responses when instrument is repeatedly objectivity with no leading question as to answer desired.

3.7 Method of data collection

The primary data was obtained using properly structured questionnaire administered to the respondents from selected small scale firms. The questionnaire contained multi –choice question so that the respondents can answer and fill it without much problem, and to know the opinions, ideas and experiences of the respondents.

3.8 Method of data analysis

Data collected was checked using simple percentages and frequency of respondent. One sample T-test was also used to achieve stated objectives while inferential statistics (Correlation analysis) was done using SPSS Statistics software.

4. RESULT AND DISCUSSION

4.1 Socio Demographics of Respondents

Table 2: Socio Demographics of the Respondents

S/N	CLASSIFICATION	ITEMS	FREQUENCY	PERCENTAGE	TOTAL
1	Gender	Male	22	55	100
		Female	16	45	
2	Age	20-30	8	20	100
		31-40	23	57	
		41 and above	9	22.5	
3	Religion	Christianity	19	47.5	100
		Islam	21	52.5	
		Other specify	-	-	
4	Marital Status	Single	13	32.5	100
		Married	27	67.5	
5	Educational Qualifications	WASC/G.C.E/HND /B.Sc	30	75	100
		M.Sc/Ph.D	10	25	

Source: Researcher’s Survey, 2020

Table 2 shows the demographic characteristics of the respondents. From the table, 22(55%) of the respondents are male, while 16(45%) of the respondents are female. The age of the respondents showed that 8(20%) lies between the age range of 20-30 years while 23(57.5%) lies within the age 31-40years and 9(22.5%) are 41 years and above. Also from the table, 19(47.5%) of the respondents are Christians while 21(52.5%) of the respondent are Muslims. The marital status of the respondents showed that 13(32.5%) are single while 27(67.5%) of the respondents are married. It is shown in the table that 30(75.0%) possess WASC/GCE /BSC/HND and 10(25.0%) has MSC/PhD.

4.2 Background of the Small Scale Enterprises

Table 3: Background of the Business

S/N	VARIABLE	ITEMS	FREQUENCY	PERCENTAGE	TOTAL
1	Type of Business Organization	Sole Proprietorship	30	75	100
		Partnership	10	25	
2	Number of firm branches	1-2	18	45	100
		3-4	12	30	
		5 and above	10	25	
3	Number of employees	1-2	-	-	100
		3-4	5	12.5	
		5 and above	35	87.5	

4	Number of years business has been in operation	3-4	10	25	100
		5 and above	30	75	
5	Type of service provided by business	Buying and Selling	16	40	100
		Service provider	24	60	

Source: Researcher’s Survey, 2020

Table 3 shows that 30(75%) of the respondents practice sole proprietorship business while 10(25%) of the respondents operate as a partnership. Also, 18 (45%) of the respondent has between 1-2 branches in Osun State, 12 (30%) of the respondents has between 3-4 branches while 10 (25%) has 5 and above braches of the firm in Osun State. The table above also revealed that 5 (12.5 %) respondents have between 3 and 4 employees while 35 (87.5%) have between 5 and above number of employees in their firm. Also, 10(25%) of respondents agreed that their business has been in operation between 3 to 4 years while 30(75%) of respondents established 5 and above years of experience in operation. Again, 16(40%) of the respondents provided buying and selling as service provider while 24(60%) aims at service provider.

4.3 Extent of GSCM Implementation

Table 4: Extent at which GSCM is being practiced among small business firms in Osun state

S/N	Statement	Never	Rarely	Sometimes	Always
1	The use of renewable energy sources (e.g Solar, Wind)	-	-	23 (55)	17 (45%)
2	The use of Eco Labeling of Products	-	28 (72.5%)	12 (27.5%)	-
3	The use of ISO 14001 Certification	-	-	13 (32.5%)	27 (67.5%)
4	The use of reduced packaging	4(10%)	24(60%)	6 (15%)	6 (15%)
5	Cooperation with suppliers for environmental objectives	11 (27.5%)	26 (65%)	3 (47.5%)	-
6	Providing design specification to suppliers that include environmental requirements for purchased items	21(52.5%)	19 (47.5%)	-	-
7	Suppliers ISO 14000 certification	-	-	28(70%)	12 (30%)

Source: Researcher’s Survey, 2020

Table 4 shows the extent to which the companies practices GSCM. From the result, 23(55%) of the respondents said their company uses renewable energy sources such as solar power to power their activities as a form of ensuring GSCM while 17(45%) said they always use alternative and renewable energy source.

The response on the use of Eco Labeling is reported in table 4. of the total respondents, a mild response is reported in which 28(72.55%) of the respondents said they rarely use eco-labeling, while 12 making up of 27.5% of the respondents said their company sometimes makes use of eco labeling. The result shows that none of the respondents works in a company that always uses eco labeling for their product.

The use of ISO 140001 certification is reported in table 4. For the respondents, 13(32.5%) of the respondents said their company sometimes uses ISO 140001 while 27(67.5%) works in a company that always uses ISO 140001. None of the respondents works in a company that never uses the ISO 140001 in their day to day operation.

The response on the use of reduced packaging as a form of GSCM is reported in table 4 of the total respondents 4(10%) said they never use reduced packaging, 24(60%) said they rarely used it, 6(15%) said sometimes and 6(15%) said they always use reduced packaging to ensure less waste generation and as a means of GSCM.

The respondents were asked question of their view whether the suppliers cooperate their company in ensuring GSCM practices, 11(27.5%) said the suppliers never show any cooperation, 26(65%) rarely and 3(47.5%) sometimes show their cooperation.

The result shown in table 4 shows whether the companies of the respondents provides design specification to the suppliers on the environmental requirements for the kind of items to supply to them, 21(52.5%) said never, 19(47.5%) said rarely.

The use of ISO 14000 certifications is reported in table 4. For the respondents, 28(70.0%) of the respondents said their company sometimes uses ISO 14000 while 12(30.0%) works in a company that always uses ISO 14000. None of the respondents works in a company that never uses the ISO 14000 in their day to day operation.

Table 5: Mean Value indicating the level of commitment to GSCM Practice among small business firms in Osun State

Statement	Mean	Standard Deviation
Increase Use of Renewable Energy Sources	3.45	0.50
Eco labeling	2.27	0.45
The use of ISO 14001 of Certification	3.67	0.47
Reduced Packaging	3.25	0.43
Cooperation with suppliers for environmental objectives	1.80	0.56
Supplier ISO 14000 Certification	3.3	0.464

Source: Researcher’s Survey, 2020

From the values obtained in table 5, it can be seen that the use of ISO 140001 has the highest mean, indicating that majority of the companies has shown higher level of compliance to this particular aspect of GSCM than the other indicators while the cooperation from the suppliers is the least practiced form of GSCM practice in small and medium business in Osun state.

4.4 Drivers of GSCM Adoption

Table 6: Drivers of GSCM Adoption among small business firms in Osun State

S/N	Statement	Never	Rarely	Sometimes	Always
1	Management of the company is in full support of GSCM	9 (22.5%)	22 (55%)	9 (22.5%)	-
2	Is sustainability important for your company	-	11 (27.5%)	24 (60%)	5 (12.5%)
3	Logistics companies are fully committed to their green obligation	22 (55%)	16 (40%)	2 (5%)	-
4	Is there any governmental regulation	11 (27.5%)	26 (65%)	3 (7.5%)	-
5	Is there any regional environmental regulation on GSCM	22 (55%)	17 (42.5%)	1(2.5%)	-
6	Is there competitors green strategies on GSCM	1 (2.5%)	32 (80%)	7 (17.5%)	-
7	Sales to foreign customers	13 (13.5%)	27 (67.5%)	-	-
8	Green movement activism by NGOs	6 (15%)	19 (47.5%)	14 (35%)	1 (2.5%)
9	Financial support from Institutions (e.g Loans and grants to green activities)	-	24 (60%)	16 (40%)	-

Source: Researcher’s Survey, 2020

The response on who are the driving force behind the use and implementation of GSCM is reported. From table 6 it is shown that 9(22.5%) of the respondents never has their management support, 22(55%) rarely have their management support and 9(22.5%) sometimes have their support of their management in their quest for GSCM practice. The question as to whether sustainability is

important to the company of the respondents is answered in table 6. 11(27.5%) of the respondents rarely puts sustainability as important in their company set up, 24(60%) rare and only 5 making up of 12.5% of the total respondents answered that their company are always putting sustainability as important in their daily company activity. From table 6, the respondents of 22(55.0%) said logistic companies are never committed to their green obligation, 16(40.0%) said rarely and only 2(5%) of the respondents said logistic companies are sometimes committed to their green obligation. Table 6 shows if there are any government regulation enforcing or supporting their company compliance with GSCM. From the result, 11(27.5%) said the government has never enforced any regulation concerning GSCM, 26(65.5%) rarely and 3(7.5%) said the government always put forward regulations concerning GSCM practice. Table 6 shows if there are any regional environmental regulation enforcing or supporting their company compliance with GSCM. From the result, 22(55.0%) said they never heard of any regional regulation on GSCM, 17(42.5%) rarely and 1(2.5%) said the government always put forward regulations concerning GSCM practice. Table 6 shows if there are competitor companies driving a competitive GSCM with their companies. 1(2.5%) said never, 32(80%) said rarely and 7(17.5%) sometimes. A table 6 show if companies of the respondents have foreign customers they deals with that specifically drives the use of GSCM practices. 13(13.5%) said never, 27(67.5%) said rarely.

Table 6 shows response on the green movement push by NGOs. From the result, 6(15.0%) never had any support from any NGO, 19(47.5%) rarely had the support, 14(35%) sometimes and 1(2.5%) always have support from NGOs in the practice of GSCM. The report on Financial support from Institutions (e.g Loans and grants to green activities) is reported in table 6. 24(60%) rarely gets any kind of financial support and 16(40%) sometimes gets financial support.

4.5 Barriers to GSCM Adoption

Table 7: Barriers to GSCM Adoption among small business firms in Osun State

S/N	Statement	Never	Rarely	Sometimes	Always
1	GSCM is costly to practice	-	-	15 (37.5%)	25 (62.5%)
2	There is no law enforcing the practice of GSCM	-	-	4 (10%)	36(90%)
3	Poor Supplier commitment	-	-	2 (5%)	38(95%)
4	Management of the company are not in support of GSCM	18 (45%)	13 (32.5%)	9(22%)	-
5	Consumers are not in support of GSCM	20(50%)	20 (50%)	-	-
6	Consumers are not ready to bear the cost of GSCM	-	-	7(17.5%)	33(82.5%)

Source: Researcher’s Survey, 2020

The barriers to GSCM adoption among small scale business in Oshogbo are discussed. From Table 7, 15(37.5%) of the respondents answered that GSCM is sometimes costly to practice and 25(62.5%) said it is always costly to adopt GSCM practice. Table 7 revealed the response about the law enforcing the practice of GSCM, 4(10.0%) reports that there is sometimes no law enforcing the practice of GSCM while 36(90.0%) said there is always no law enforcing the practice of GSCM. Table 7 revealed the responses of the respondent about the state of the supplier commitment. 2(5%) of the respondents agree that there is sometimes poor supplier commitment while 38(95%) of the respondent agree that there is always poor supplier commitment. Table 7 shows that 18(45%) of the respondent said the management of the company never support GSCM while 13(32.5%) said that the management of the company rarely support GSCM. Also, 9(22%) said that the management of the company sometimes support GSCM. Table 7 shows that 20(50%) of the respondents said consumers are never in support of GSCM while 20(50%) also said that the consumers are not rarely in support of GSCM. Table 7 shows that 7(17.5%) of the respondents said that consumers sometimes are not ready to bear the cost of GSCM while 33(82.5%) said the consumers are not always ready to bear the cost of GSCM.

4.6 Relationship between GSCM Adoption and performance

Table 8: Relationship between GSCM adoption and performance in small business firms in Osun State

S/N	Statement	Never	Rarely	Sometimes	Always
1	GSCM helps in reduction of air emission	-	-	17(42.5%)	23(57.5%)
2	GSCM helps in reduction of waste water	-	-	23 (57.5%)	17(42.5%)

3	GSCM helps in reduction of solid waste	-	-	31(77.5%)	9(22.5%)
4	Decrease of frequency of work environmental accident	25 (62.5%)	14(35%)	1 (2.5%)	-
5	GSCM can decrease the cost fee for waste management	-	14(35%)	26 (65%)	-
6	Decrease in cost of energy consumption	3 (7.5%)	19 (47.5%)	12(30%)	6(15%)
7	Increase of operational cost	-	-	23(57.5%)	17 (42.5%)
8	Increase in cost of purchase of environmentally friendly materials	-	16(40%)	24(60%)	-

Source: Researcher’s Survey, 2020

Table 8 shows the response of the respondents on how GSCM helps in the reduction of air emission, 17(42.5%) are of the opinion that GSCM sometimes help in reduction of air emission while 23(57.5%) said GSCM always helps in reduction of air emission.

Table 8 shows the response of the respondents on how GSCM helps in the reduction of waste water, 23(57.5%) said that GSCM sometimes helps in reduction of waste water while 17(42.5%) said that GSCM always helps in the reduction of waste water.

Table 8 shows the response of the respondents on how GSCM helps in the reduction of solid waste,31(77.5%) said that GSCM sometimes helps in the reduction of solid waste while 9(22.5%) said that GSCM always helps in the reduction of solid waste.

Table 8 shows the response of respondents on their view as to whether GSCM decreases environmental accident. 25(62.5%) said never, 14(35%) said rarely and 1(2.5%) said sometimes. The answer to whether GSCM decreases the cost fee for waste management is reported in table 8. 14(35%) believes GSCM rarely decreases the cost fee for waste management and 26(65%) believes that sometimes, GSCM has help their company decrease the cost incurred in waste management.

The answer to whether GSCM decreases the cost of energy consumption is reported in table 8. 3(7.5%) believes GSCM rarely decreases the cost of energy consumption, 19(47.5%) said rarely, 12(30%) said sometimes and 6(65%) believes that GSCM has help their company decrease the cost of energy consumption always.

From table 8, 23(57.5%) said GSCM sometimes increase the cost of production in their company while 17(42.5%) said GSCM always increase their company cost of production. Table 8 shows the opinion of the respondents to whether there is an increase in the cost of purchasing environmentally friendly materials. 16(40%) said the cost is rarely costly while 24(60%) said sometimes, the cost of purchasing environmentally friendly materials is on a high side.

4.7 Hypothesis Testing

4.7.1 Hypothesis 1:H0₁

There is no significant relationship between GSCM adoption and performance in small business firms in Osun State. From the result of the correlation analysis for GSCM adoption and performance in small business firms in Osun State as shown in table 9. It can be seen that different relationship exists between the different variable.

Table 9: Correlation result for the relationship between GSCM adoption and performance in small business firms in Osun State

		Increase use of renewable energy sources(e.g solar, wind)	Eco-labeling of products	The use of ISO 14001 of certification	Reduced Packaging	Cooperation with suppliers for environmental objectives
Decrease in Cost of Energy Consumption	Pearson Correlation	.333*	-.052	.180	.052	.011
	Sig. (2-tailed)	.035	.751	.266	.751	.948
	N	40	40	40	40	40
GSCM can Decrease the Cost fee for waste management	Pearson Correlation	-.074	-.018	.162	.261	.219
	Sig. (2-tailed)	.651	.914	.017	.011	.048
	N	40	40	40	40	40

Decrease of frequency of work environmental accident	Pearson Correlation	-0.299	-0.042	.119	-.107	.017
	Sig. (2-tailed)	.061	.799	.465	.510	.919
	N	40	40	40	40	40
GSCM helps in reduction of solid waste	Pearson Correlation	-.367*	-.064	-.137	.311	.194
	Sig. (2-tailed)	.020	.696	.398	.051	.231
	N	40	40	40	40	40
GSCM helps in Reduction of waste water	Pearson Correlation	-.168	-.190	-.267	.263	-.054
	Sig. (2-tailed)	.301	.241	.096	.101	.738
	N	40	40	40	40	40
GSCM helps in reduction of air emission	Pearson Correlation	.168	.190	-.273	-.321*	-.127
	Sig. (2-tailed)	.301	.241	.089	.043	.434
	N	40	40	40	40	40

Source: Researcher’s Survey, 2020

From table 9 the result the relationship between increase use of renewable Energy sources (e.g Solar, Wind) is reported. There is positive correlation between increase use of renewable energy sources and the decrease in cost of energy consumption with a correlation coefficient of 0.333 and the result is significant 0.035.Reduced packaging has a positive correlation (0.261) with decrease in the cost of waste management; also a positive correlation of 0.311 occurs for reduced packaging and reduction of solid waste the result was statistically significant 0.11. Also cooperating with suppliers for environmental objectives has a positive correlation 0.11 with decrease in cost of energy consumption, and a stronger correlation 0.219 decrease in the cost fee for waste management The result showed that the use of ISO 14001 has a positive correlation 0.119 with decrease frequency of work environmental accident, decrease in the cost fee for waste management 0.162, decrease in cost of energy consumption 0.180.

4.7.2 Hypothesis 2

H0₂ There is no significant difference between the different drivers of GSCM adoption in small business firms in Oshogbo.

Table 10: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
The management of the company is in full support of GSCM	40	2.0000	.67937	.10742
Is sustainability important for your company	40	2.8500	.62224	.09838
Logistics companies are fully committed to their green obligation	40	1.5000	.59914	.09473
Is there any governmental regulation	40	1.8000	.56387	.08916
Is there any regional environmental regulation on GSCM	40	1.4750	.55412	.08761

Is there competitors green strategies on GSCM	40	2.1500	.42667	.06746
Sales to foreign customers	40	1.6750	.47434	.07500
Green movement activism by NGOs	40	2.2500	.74248	.11740
Financial support from Institutions (e.g Loans and grants to green activities)	40	2.4000	.49614	.07845

Source: Researcher’s Survey, 2020

Table 11: One-Sample Test

	Test Value = 0					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
The management of the company is in full support of GSCM	18.619	39	.000	2.00000	1.7827	2.2173
Is sustainability important for your company	28.968	39	.000	2.85000	2.6510	3.0490
Logistics companies are fully committed to their green obligation	15.834	39	.000	1.50000	1.3084	1.6916
Is there any governmental regulation	20.189	39	.000	1.80000	1.6197	1.9803
Is there any regional environmental regulation on GSCM	16.835	39	.000	1.47500	1.2978	1.6522
Is there competitors green strategies on GSCM	31.869	39	.000	2.15000	2.0135	2.2865
Sales to foreign customers	22.333	39	.000	1.67500	1.5233	1.8267
Green movement activism by NGOs	19.166	39	.000	2.25000	2.0125	2.4875
Financial support from Institutions (e.g Loans and grants to green activities)	30.594	39	.000	2.40000	2.2413	2.5587

Source: Researcher’s Survey, 2020

Table 11 shows if there is difference between the different drivers of GSCM adoption in small business firms in Osun State. From the result, variation occurs in t-value, indicating difference exists between the sample sets. The smaller the t-value the more similarity existing between the samples sets. Therefore from the result in table 11 shows that there is significant difference between the different drivers of GSCM adoption in small business firms in Osun State.

4.8 Discussion

This study contributes to the GSCM theory which is a relatively new area of research. The study seeks to understand the variables involved in GSCM practices and performance. Important variable such as green manufacturing, green logistics and green production was investigated in order to enable to managers, companies and the society to strengthen the performance areas that need improvement.

The background of the business shows that the businesses is a small medium enterprise and have been in operation for more than three years with over five numbers of employees. The business operates both buying and selling and service providers. The business background suits the description of several other reports as a business whose personnel numbers fall within certain limit.

The extent to which GSCM is practiced is examined. From the result, it is reported that the most common GSCM practiced by the respondents firms includes; use of renewable energy sources, eco labeling, use of ISO 140001 certification, use of reduced packaging, cooperation with suppliers for environmental objectives, providing design specification to suppliers that include environmental requirements for purchased items and suppliers ISO 14000 certification. From the results, it is shown that the adoption of GSCM practices is still at its infancy period. However, the use of renewable energy source is more pronounced with the companies. The result is in accordance with the work of several other works such as Seuring (2004) and Gottberg *et al.*(2006).

The drivers of GSCM were also analyzed. From the result, the management of the company, company sustainability policy, efforts of logistic companies, government regulation, regional environmental regulations, green competition from fellow competitive companies, green movement activisms by NGOs and financial support from institutions were the identified drivers of GSCM. From the result, it is identified that Financial institution are important drivers of GSCM providing funding support to the companies, this is in accordance with the works (Zhu and Sarkis, 2006; Lee and Klassen, 2008; Walker *et al.*,2008; Argeron *et al.* 2012)

Companies often find it difficult to change the strategic and organization approach in general, this applies to sustainability practices. Therefore it is important to understand the barriers that mitigates against the adoption of GSCM. The report identifies some key barriers to GSCM practices which includes Cost of practicing GSCM, lack of law enforcing the practice of GSCM, poor Supplier commitment, Management of the company are not in support of GSCM, the consumers are not in support of GSCM and Consumers not ready to bear the cost of GSC. Several reports has also identified barriers to GSCM practice. As suggested by Walker *et al.*(2008) there are both internal and external barriers. The former costs and lack of legitimacy while the latter include regulations, poor suppliers commitment and industry specific barriers.

The research reports the relationship between the adoption of GSCM and performance in small business firm in Osun State. From the results it is seen that GSCM has the potential to reduce air emission, reduce solid waste, decrease frequency of work environmental accidents, decrease cost of waste management, decrease cost of energy consumption and access to government support for GSCM. It is reported that reduction of waste and reduction in cost of energy consumption is greatly felt on adoption of GSCM. This was in accordance with the work of Zhu *et al.* (2010).

From the result of hypothesis testing, From table 4.9 the result the relationship between increase use of renewable Energy sources (e.g Solar, Wind) is reported. There is positive correlation between increase use of renewable energy sources and the decrease in cost of energy consumption with a correlation coefficient of 0.333 and the result is significant 0.035.

Reduced packaging has a positive correlation (0.261) with decrease in the cost of waste management; also a positive correlation of 0.311 occurs for reduced packaging and reduction of solid waste the result was statistically significant 0.11.

Also cooperating with suppliers for environmental objectives has a positive correlation 0.11 with decrease in cost of energy consumption, and a stronger correlation 0.219 decrease in the cost fee for waste management

The result showed that the use of ISO 14001 has a positive correlation 0.119 with decrease frequency of work environmental accident, decrease in the cost fee for waste management 0.162, and decrease in cost of energy consumption 0.180. Zhu and Sarkis. (2004) find a positive relationship between the adoption of green supply practices and improvement in environmental and financial performance.

5. Conclusion, Summary and Recommendation

This chapter presents the summary, conclusions and recommendations from the findings. The overall purpose of the study was to survey the role of green supply management on the operation of small business in Osun State it is seen that the firms have to some degree adopted GSCM.

5.2 Summary

In the preceding section researcher presented the result of both quantitative and qualitative data and discuss some findings that are peculiar to this study with the aim of extending frontier of the study.

The synopsis of findings is highlighted as follows:

- i. the most common GSCM practiced by the firm includes; use of renewable energy sources, eco labeling, use of ISO 14001 certification, use of reduced packaging, cooperation with suppliers for environmental objectives, providing design specification to suppliers that include environmental requirements for purchased items and suppliers ISO 14000 certification.
- ii. The management of the company, company sustainability policy, efforts of logistic companies, government regulation, and regional environmental regulations, green competition from fellow competitive companies, green movement activisms by NGOs and financial support from institutions were the identified drivers of GSCM.
- iii. It is identified that financial institution are important drivers of GSCM providing funding support to the companies.
- iv. The identified barriers to GSCM practices which includes Cost of practicing GSCM, lack of law enforcing the practice of GSCM, poor Supplier commitment, Management of the company are not in support of GSCM, the consumers are not in support of GSCM and Consumers not ready to bear the cost of GSC.
- v. There is relationship between the adoption of GSCM and performance in selected small scale business in Oshogbo.
- vi. GSCM has the potential to reduce air emission, reduce solid waste, and decrease frequency of work environmental accidents, decrease cost of waste management, decrease cost of energy consumption and access to government support for GSCM.
- vii. Reduction of waste and reduction in cost of energy consumption is greatly felt on adoption of GSCM.
- viii. Firm that practicing GSCM can improve company reputation and result in higher loyalty and improved sales, and therefore augmented profit

5.3 Conclusion

The study concludes that although literature confirms the positive contribution of GSCM to environmental performance, the reality is that in SME supply chains it is necessary to ascertain the exact relationship between specific GSCM sub-dimensions and the intended performance outcome. The study also concludes that GSCM practices can help firms enhance the overall business performance while maintaining product/service quality, saving energy, reducing costs and improving efficiency. This study indicates that the SMEs that have implemented GSCM practices in one way or the other will enjoy the performance benefits in longer term. After researching the relationship between Green Supply Chain Managerial practices and Environmental Sustainability, it is seen that overall, GSCM practices has a positive impact on Environmental Sustainability

5.4 Recommendation

To ensure an effective and efficient GSCM practice in small medium enterprise in Oshogbo, collaboration among stake holders involved must be highly encouraged. The following recommendations is suggested

- The present study has managerial implications, which are focused on how GSCM practices can be harnessed for the improvement of performance in firms.
- Businesses within the small scale sector should evaluate their suppliers based on environmental criteria and encourage them to develop and maintain some form of the EMS.
- In this regard, it is important to engage those suppliers that have ISO 14001 certification only, which ensures that these suppliers have a concern for the environment in their operations.
- Moreover, firm should still endeavor to design products that reduce the consumption of materials and energy, and facilitate the reuse, recycling and recovery of materials and parts.
- Investments in innovative RL technology should be encouraged amongst small scale business and they should consider outsourcing where there is lack of competency.
- It is further essential that SMEs create synergy with customers to recover all used products for recycling.
- Effective green regulation programmes can be developed by firms, which should also apply effort in complying with relevant public policies. Environmental and social issues should be addressed proactively in advance of regulation.

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