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Integrated Green Supply Chain (GSC) Adoption Model, MENA Developing Countries Empirical Study

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ABSTRACT: Green supply chain management is attracting attention as a way to decrease the adverse environmental effects of industries worldwide. GSCM practices are considered as environmentally friendly practices, which include water efficiency, energy efficiency, waste management, environment conservation, recycling and reuse, toxic substance management and hazardous and optimization of transportation. However, considering the context of an emerging economy, green supply chain management is still in its inception and has not been widely embraced yet. In this research, the researcher demonstrated the important and the impact of Technology-Organization-Environment (TOE) dimensions, firm practices and supply chain practices on the supply chain practices and the green supply chain adoption and the Supplier Relationship Management and Customer Relationship Management. This research aims to develop and understand a framework for different drivers and barriers that affect the green supply chain adoption in the process as well as identifying the role of TOE dimensions in enhancing the process. In this research, the researcher tried to provide a critical review and identify gaps in the literature related to GSCM, its drivers and barriers, GSCM adoption, and the TOE dimensions, develop an appropriate research methodology to collect and analyze data to address the research question. Empirically examine how all of the variables of the research are statistically related which are Customer Relationship, Supplier Relationship, Supplier Selection, Internal collaboration, Top Management Support, Green Supply Chain Management, Coercive Pressure, Normative Pressure, Mimetic Pressure, Market Pressure, Green purchasing, Barrier for GSCM, and Drivers for GSCM using the statistical tools. Critically discuss findings of current research, compare them to prior findings within the literature, Highlight the theoretical contributions and practical implications of the study, and identify limitations and areas for future research. The deduction approach has been utilized in this research as well as the quantitative method using structured questionnaire has been collected from 405 respondents. The research indicated that there is significant relationship between the environmental, organizational, and Technological dimensions and firm practices and supply chain practices, there is significant relationship between drivers, barriers and firm practices and supply chain practices and the green supply chain adoption. There is significant relationship between Green Supply Chain Adoption and both Supplier Relationship Management and Customer Relationship Management.

KEYWORDS: TOE Dimensions, Green Supply Chain Management Practices, Green Supply Chain Adoption.

1. INTRODUCTION

The global industrialization has increased energy and material consumption, and ultimately led to various environmental concerns such as higher carbon emissions, toxic pollution and chemical spills. Due to the regulatory, competitive and community pressure, firms have to stabilize their environmental and economic performance. Nowadays, firms all over the world in various industries are becoming increasingly concerned about environmental degradation. They have realized that the adoption of green technology in business operations has greater benefits and affects suppliers and customers' relationships within firms [1]. To manage environmental pressures from a variety of stakeholders, several firms begin to implement green supply chain management (GSCM). GSCM practices are considered as environmentally friendly practices, which include water efficiency, energy efficiency, waste management, environment conservation, recycling and reuse, toxic substance management and hazardous and optimization of transportation [2].

GSCM practices can be implemented at the product design stage, sourcing and supplier selection, procurement stage, logistics control, manufacturing and production processes, during delivery of the product to the end user and finally during end-of-life product management [3]. GSCM has appeared as a way to associate elements of supply chain management and environmental management [4]. They also argued that the whole product life cycle has taken the design stage of the product to end-of-life management into consideration. GSCM is a relatively new topic in the manufacturing areas in the Asian Emerging Economies that has provided much attention towards regulatory institutions, academia, customers and industry [1].

Industries in developing countries, on the other hand, are not so responsive to the cause of environmental conservation, as they are in a competition for faster economic growth, and due to massive technological advancement in their economies are booming. This has created a scenario in which they will most probably emerge in the near future as the global top polluters; therefore, there is a larger need for developing countries to pay higher attention to environmental issues and GSCM activities [5]. So far, research in implementing GSCM is still insufficient and small in number in this area.

The research gap in the existing literature related to GSCM is massive and there is no broad range of studies to support the advancement of GSCM [6]. The research deals with studying several variables by examining the impact of environmental dimension, organizational dimension, technological dimensions, drivers and barriers, on firm practices and green supply chain adoption, as there is no combined model to study these variables together in previous studies. The field of application on experts of the industrial sector, where there is a study of a previous study studying the variables of the study (environmental dimension, organizational dimension, technological dimensions, drivers, barriers, firm practices and green supply chain adoption).

The research problem focuses on the drivers and barriers of adopting the GSCM, which raise the following research questions: what is the definition of Sustainable Supply Chain Management Process? What is the definition of Green Supply Chain Management Process? Do the TOE dimensions affect the firm practices and supply chain practices? What are the drivers and the barriers that affect the green supply chain adoption? Is there a relationship between green supply chain adoption and Supplier Relationship Management? Is there a relationship between green supply chain adoption and Customer Relationship Management? Therefore, the research aim is to develop and understand the role of TOE dimensions (organizational dimensions (government and market (Competitive pressure), organizational dimensions (top management support and centralization) and environmental dimensions (compatibility, complexity and IT infrastructure)), barriers and drivers on firm practices and green supply chain adoption in industrial sector. In order to achieve this aim, the main objectives in this research are presented as follows: provide a critical review and identify gaps in the literature related to GSCM, its drivers and barriers, GSCM adoption, and the TOE dimensions. Develop an appropriate research methodology to collect and analyze data to address the research question. Empirically examine how all of the variables of the research are statistically related which are Customer Relationship, Supplier Relationship, Supplier Selection, Internal collaboration, Top Management Support, Green Supply Chain Management, Coercive Pressure, Normative Pressure, Mimetic Pressure, Market Pressure, Green purchasing, Barrier for GSCM, and Drivers for GSCM using the statistical tools. Critically discuss findings of current research, compare them to prior findings within the literature, Highlight the theoretical contributions and practical implications of the study, and identify limitations and areas for future research.

2. LITERATURE REVIEW

In the past decades, the convergence of environmental issues and organizational efficiency has started to get attention. Developing countries greening the supply chain has been a corporate imperative. However, most of them are also late adopters when it applies to the Middle Eastern countries. Green supply chain is a term integrating green sourcing, manufacturing products resource management, sustainable distribution, marketing, and reverse logistics. The current section addresses the management of the supply chain network, its background and development to provide a green supply chain management network. Furthermore, another section is structured to illustrate how to implement and manage an integrated green supply chain. Additionally, a section for the green supply chain in the manufacturing sector is discussed, as it is the subject of current research, with some implementations and practices for the industrial sector. Afterwards, the research moves towards a new section, which illustrates the implementation of the green supply chain management in the developing countries with exhibiting examples from different developing countries, which ranges in its level of development as China, Jordan, Thailand and Malaysia to illustrate to what extent the green concept is prevailing in such countries. Moreover, the implementation of green supply chain management in the Middle East is discussed to clarify the way through which the organizations in this region deal with the green strategy with supporting this clarification with examples from Middle Eastern countries as United Arab Emirates and Kingdom of Saudi Arabia in different fields as manufacturing in Dubai and hoteling in Riyadh.

2.1. Supply Chain Management Process

Supply Chain Management Process can be defined as all activities related to the processing, extraction and manufacturing of goods from raw materials, till the final consumer, as well as related flows of information. Resources and information in the supply chain moves in both directions, up and down. SCM is known as a business process in this description. The "ecosystem" philosophy and environmental issues have been gradually incorporated into the concept of SCM as follows: The expression ' supply chain ' is used

to identify the manufacturer, distributor and customer network. It also involves transport between manufacturers and customers, as well as the final customer. The environmental impacts of product development, manufacture, processing, transport and use, and the treatment of product waste are considered [7].

Supply chain management (SCM) involves the integration and collaboration of business processes and alignment of strategy across the supply chain to please the supply chain's final customers [8]. Transforming from supply chain management (SCM) to Sustainable Supply Chain Management SSCM which involves integrating environmentally and financially viable practices into the complete supply chain lifecycle, from product design and development, to material selection, (including raw material extraction or agricultural production), manufacturing, packaging, transportation, warehousing, distribution, consumption, return and disposal. SSCM generates a significant pressure on organizations to modify their existing supply chains to meet sustainability needs as it provides better working conditions, fair compensation, equal human rights and cultural diversity [9]; [10]). Consequently, organizations advocate SSCM to guarantee "long-term benefits and competitiveness" by accounting environmentally and socially responsible activities in the supply chain ([11]; [12]). Similarly, sustainable supply chain management process has been developed by researchers to be called 'green' supply chain management process. The idea of sustainable supply chain management is very similar to green supply chain management; GSCM's scope depends on the investigator's goal. GSCM's meaning and context in the literature ranged from green purchases to integrated green supply chains that move from manufacturer to distributor to customer. GSCM is described as ' incorporating environmental awareness into supply chain management, including designing products, procurement and choice of resources, production processes, final goods distribution to consumers and end-of-life management of the commodity after its life span [13].

Industries in developing countries, on the other hand, are not so responsive to the cause of environmental conservation, as they are in a competition for faster economic growth, and due to massive technological advancement in their economies are booming. This has created a scenario in which they will most probably emerge in the near future as the global top polluters; therefore, there is a larger need for developing countries to pay higher attention to environmental issues and GSCM activities [5].

Green Supply Chain Management (GSCM) encompasses conventional supply chain management techniques that incorporate environmental requirements or issues into the purchasing decision of companies and long-term supplier relations. Green Supply Chain Management demands that the green concept be integrated through each process of the service or product in a supply chain [14].

Green Supply Chain Management (GSCM) is a strategy aimed at optimizing material and information flows across the value chain as a whole. The key aspect while making managerial decisions is a greater emphasis on ecological and sociological parts. In order to remain competitive and profitable, businesses should reconsider how they expect to do business in the future. In managerial decisions, keeping sustainability a priority is far more than struggling with risk and instability. Sustainability provides opportunities for businesses that save costs, improve efficiency and attract new customers and suppliers. It also provides the opportunity for achieving a competitive advantage and generating profits. This influences all aspects of a business but is particularly true for intense emissions and waste supply chains [15].

2.2. Developing Supply Chain Management to be Green

GSCM has been significant in growing environmental awareness during the last few years. Many organizations have responded to green issues by applying green values to their businesses, such as using environmentally friendly raw materials, decreasing the use of petroleum fuel, as well as using recycled materials for wrapping, and recycled electronic waste. Because of strategic driving forces and stress from multiple stakeholders, businesses are adopting green supply chain management (GSCM) activities to spread suppliers ' environmental sustainability targets [16]. In this section, the importance of GSCM is presented and its practices are explored with a focus on the main barriers and drivers for such practices.

2.2.1 Importance of Green Supply Chain Management to Industry

The integration of the supply chain is an attempt to elevate the interconnections within each element of the chain by promoting better decision-making and attempting to make all parts of the chain interact more efficiently by developing supply chain visibility and identifying bottlenecks. It can therefore be anticipated that incorporation within a supply chain will have a positive impact on collaborative activities related to environmental concerns [17].

A natural-resource-based view (NRBV) that proposed that businesses would adopt pollution reduction strategies with casual uncertainty and incorporate product management systems with socially complex characteristics to establish fundamental environmental sustainability competencies [18]. According to NRBV, GSCM can be grouped into intra- and inter-organizational environmental activities; the former represents the forms of casual ambiguous resources and the latter refers to socially complex resources.

Intra-organizational environmental practices, which represents the forms of casual ambiguous resources such as sustainable activities within organizations, like; total quality management of the environment, waste treatment and environmental management processes are emphasized on energy consumption, material usage, pollution and waste in linkage with in-house techniques. Such

activities, which include the acquisition of tacit skills and experiential learning, can be seen as the concrete steps of strategies for emission reduction and are intense in labor and information. They can therefore reflect an organization's casually ambiguous resources. On the opposite, for businesses, the best way to eliminate and avoid emissions is the issue of how to structure internal management processes, which facilitate broad employee participation and ongoing training and learning. At the other side, inter-organizational environmental activities such as environmental design, life cycle analysis, sustainable delivery and reverse logistics are generally referred to as product management systems that prioritize collaborations between manufacturers and consumers in order to deal with cross-company environmental issues. Such activities provide an interactive forum between supply chain partners and thus build trusting and dedicated social networks that foster information sharing and reciprocity. Consequently, inter-organizational environmental activities are socially complex and depend on close cooperation between companies and supply chain partners.

2.2.2 Towards Integrated Green Supply Chain Management

The supply chain conceptually encompasses the whole cycle from providing the raw materials that contain less hazardous environmental factors to the finished product, every supply chain comprises several different companies, and they are connected by the function of each company in meeting the consumer's desires. There is an influence across the supply chain from the manufacturers, consumers and management to make the production more viable for future collaboration. Their top management controls some businesses and others are influenced by external factors, such as stakeholder stress or consumer demands, so organizations may suffer from obstacles and drivers to sustainable supply chain management implementation. Each member of the organization is responsible for the sustainable supply chain, and many steps can be taken to ensure that businesses maintain sustainable supply chain management [19].

The product's lifespan is very essential in order to maintain continuous growth because if the change continues to happen and the market atmosphere is unpredictable then the lifespan will shorten and the successful manager will be able to make a lot of money by reusing or selling it in another region. Logistics refers to the process and strategy of supply chain management, which result in a reduction of the environmental footprint of carriage delivery. The main emphasis is on material processing, waste management, packaging and transportation, green logistics will include other areas relating to production planning, materials management and physical dispensing. The transportation industry has its own effectiveness if the cost of transportation were less than expected and distribution center utilized better than the green logistics strategy will be accomplished [20].

Green and non-green requirements are seen as part of the green supplier selection process in both multinational and conventional businesses, so we have to ask ourselves what the key drivers of green supplier selection are and then test it during the selection process. Both the environmental and company requirements are compiled in a hierarchical tree for the supplier selection process, which includes eight key criteria (cost, distribution, quality, operation, pollution control, strategic partnership, green product management). We can use it for analytic network technique and evaluation of the determinants of the green supplier selection with various criteria decision-making techniques. Thus, it could be argued that the fuzzy setting should be coupled with the evaluation technique of the green supplier selection determinants [21].

2.2.3 Green Supply Chain Practices

It was recognized that the common environmental practices related to GSCM are several companies' symbiosis in addition to, eco-design, life cycle analysis, product stewardship, extended producer responsibility, and environmental management systems (EMS). All of these activities seek to reduce and minimize the adverse impact of organizational processes on the environment. Additionally, the introduction of an environmental management system (EMS) such as ISO 14000 is part of a comprehensive effort to reduce the environmental effects of the supply chain. Companies, which have applied ISO 14001, must consider environmental impacts and assess the related impact not only of their internal processes but also of their supply chains [22].

One of the key reasons for implementing GSCM in the Chinese manufacturing industry is cost savings to aid in establishing cooperative relationships with suppliers and facilitating a life cycle. Although there is a growing awareness of the environment, there is a poor implementation of GSCM among organizations, and it takes time to turn this knowledge into action in the Chinese manufacturing industry [23]. Numerous investigators have examined the thirteen pressures and the frequency of drivers for the automobile industry and other sectors. Results showed that the pressures and drivers for the automobile industry are among the highest of any other sector. Regulatory compliance is one of the biggest pressures for the automobile sectors. The 11 drivers for the execution of GSCM activities was explained [24]. In addition to reducing energy consumption and the reuse and recycling of materials and packaging drivers, the top drivers listed in the research were green design, integrated quality environmental management into the planning and operation phase. While the findings were positive from the perspective of improving an organization's credibility and brand identity, it did not suggest that the secret to implementing GSCM activities is to strive for performance. Via an Indian, case study, using Interpretive Structure Modeling (ISM).

2.2.4 Drivers of GSCM Practices

It is widely noticed that many countries specially the developing countries are hardly giving attention to the environmental side of the manufacturing and do not highly consider the aspect of sustainability in the steps of their supply chain management, therefore, this section will be illustrating the different drivers of the green supply chain management. These drivers of green supply chain management are mainly tackling the environmental issues and how the resources can be utilized efficiently through each step of the supply chain to obtain extra advantages over those, which are obtained from the traditional supply chain management. Furthermore, the drivers of green supply chain management refer to the main factors that derive the different manufacturing industries to minimize the wastes and harmful emissions that are combined with different steps of their supply chain management [25].

Many types of harmful pollutions occur because of the activities that are associated with the massive economic development, therefore, in order to reduce the danger of such critical environmental conditions, several environmental legislations and governments to enforce manufacturers and businesses to obey these environmental-oriented procedures have adopted policies. The drivers of green supply chain management can be divided into six categories, which are external factors, internal factors, competition, suppliers, marketing and customers. Firstly, the internal factor refers to the drivers that are initiated by the organization itself and adopted by the founders, top management and employees as well. These drivers are represented in the organizational desire to cut the costs by using materials that are environment-friendly to reduce the cost of their products or services. On the other hand, the desire to involve and motivate employees as the increasing awareness of the organization's environmental concerns will improve the employee's productivity in adopting the green supply chain management practices [26].

2.2.5 Barriers of GSCM Practices

The world has been facing severe environmental concern since the industrial revolution after the World War 2. Manufacturing organizations frequently upgrade their supply chain processes to a green supply chain system for different operational synergies, but they certainly do not implement such advanced systems due to barriers that are responsible for internal and external environments. Studying GSCM has increased and grown over the past decade in terms of publications. Subsequently, firms have shown great interest in the theory of GSCM. Many researchers have discussed the importance of GSCM. They also compared the application of the green supply chain between organizations extensively. There are, however, different barriers to GSCM adoption that can be external or internal to the organization. Industries may recognize GSCM's importance, but it may not be practical to put it into practice most of the time. While searching the way for Green practices, the firms may face different problems. There may be different barriers or obstacles, such as absence of government legislation, infrastructure, organizational factors, high costs, etc.

The factors that discourage the successful application of GSCM activities are known as "barriers." There are varieties of obstacles to the implementation of GSCM. Applying GSCM activities effectively necessitates proper knowledge and understanding of these barriers. Many researchers were very concerned with GSCM and its barriers that may hinder its implementations. They were discussed in various research papers, environmental issues have been discussed by lots of researchers such as; ([27]; [28]; [29]; [30]; [31]; [32]; [33]; [34]).

The barriers to the adoption and application of GSCM was assessed in the field of construction of the United Arab Emirates [28]. A total number of 32 obstacles to GSCM adoption were extracted from extensive review of literature and interviews with academics and industry experts. These obstacles were; lack of GSCM practices in firm vision, absence of GSCM activities in business project, lack of support from top management to GSCM implementation, lack of commitment and leadership from middle and senior executives, unawareness and lack of information among supply chain stakeholders in GSCM and lack of experience between stakeholders in GSCM implementation.

2.3 GSCM Adoption

Through the last decades, many major producers and manufacturers have adopted more comprehensive way to manage their supply chain in order to improve their practices, which lead to various environmental implications. This adapted way refers directly to the green concept within the management of supply chain. Organizations implement this green concept by integrating the internal activities of environmental management with the external factors, which are mainly related to the interaction with the market mechanism, suppliers and competitors and the customers indeed. The implementation of the green supply chain management involves mainly the practices of reducing the emissions that result of the processes of manufacturing. In addition, the practices, which have positive influence on the energy usage. Besides the full utilization of the resources which are included in production in order to achieve the best output out of them with minimum amount of wastes that cause harm to the environment on the one hand and on the other hand cause extra burden over the organizational resources and capabilities [35].

2.3.1 Supplier Relationship Management

GSCM with suppliers is defined as a joint environmental effort between a local company and its suppliers to implement environmental and ecological management activities [36]. It focuses on the inbound or Supplier Relationship Management portion

of the supply chain of an item and of institution. For insight on the use of ecologically and environmentally sustainable methods in terms of purchasing processes and resource handling procedures, companies will consider their suppliers. Institutions are gradually dealing with the environmental performance of their suppliers to ensure that the materials and forms they are using are naturally well disposed and are produced through environmentally friendly procedures. With respect to the Chinese automotive sector, global vehicle manufacturers (such as Ford, General Motors (GM) and Toyota) have obliged their Chinese suppliers to obtain the accreditation ISO 14001.

Suppliers are known as the main accomplices in supply chains, because they can be in a position to support the companies ' natural practices and help boost the supply chain's environmental efficiency. According to [36], GSCM assumes an indispensable role in the choice of a green supplier. It is seen that providers can assist with giving significant thoughts utilized in the acknowledgment of environmental projects. Supplier Relationship Management variables incorporate such inbound logistics (materials management) activities as green purchasing and vendor management [15]. For instance, things incorporate giving provider's structure determinations fusing natural necessities for acquired things, participation with providers for ecological targets; green purchasing and vendor management. Researching the determinants of External GSCM relationship factors in the US, organizational size (number of workers), regulatory pressures, source reduction policies and high environmental costs played a significant role in the adoption of green purchasing practices [37].

2.3.2 Customer Relationship Management

GSCM with customers is defined as a natural partnership between a local business and its customers that aims to meet the environmental requirements of the customers [36]. It focuses on the supply chain's Customer Relationship Management side. Past studies have identified numerous open doors for producers to make concerted efforts with their customers for the environment. For the successful use of GSCM activities, building close and long-term working entities with Customer Relationship Management is important. Chinese research has shown that consumer pressure is an important force of Chinese projects to enhance their environmental image and activities. In addition, knowing the needs of the end user is part of GSCM, as it serves as an integral angle of appreciation and value development. Given the increasing environmental demands of consumers, it is important for businesses to cooperate with green packaging consumers on the environment, achieve ecological goals as a whole and establish joint environmental planning ([38]; [39]).

2.3.3 Adoption of GSCM in Developed and Emerging Markets

Emerging economy represents a country's growth of economy because of quick growth of industrialization and expanded business with different nations. Developing countries with emerging market economy have become a hub for international business Because of low assembling cost numerous monster organizations have moved their manufacturing plants in such nations. Accordingly, those nations appreciate cross fringe exchange and reclassified worldwide guidelines and regulations. Such countries are encountering a compelling role in world economy. Nevertheless, not at all like developed nations where the market is developed, many emerging market economies are unstable and are dependent upon uncertainty [35]. In addition, emerging economies have absence of environmental awareness, and, henceforth, are slacking to embrace green practices in the supply chain. Subsequently, emerging markets represents a higher danger to nature and the environment [40], be that as it may, adoption of GSCMP can correct the threat ([41]; [42]).

2.3.4 Adoption of GSCM in Developing Countries

GSCM is thought to reflect the environmentally friendly picture of goods, procedures, structures, and technology and business behavior. In developing countries, many organizations have implemented green approaches to minimize the negative influences on the environment rather than following a proactive approach to decrease waste or pollution sources. Such environmental approaches embraced remain conventional "command-and-control" solutions or "end-of - the-pipe" [43].

Discussing GSCM in developing countries is not abundant since literature have given little concern to non-developed countries. The GSCM notion is relatively new in the South East Asian area and is likely to be implemented by only a few companies. Nevertheless, as [44] reported in his research on the green supply chain in the South-East Asian area (Indonesia, Philippines, Singapore, Malaysia and Thailand), GSCM practices began to take place. Thereby, results from such research in the Asian region can be beneficial for production in developing countries to develop the suitable GSCM procedures and help alleviate environmental issues.

2.3.5 Adoption of GSCM in the Middle East Countries Despite the increasing attention that is focused on the green concept of the supply chain management, little attention is directed to the green concept in developing regions as the Middle East. Therefore, this section is concerned with illustrating the current situation of the green concept in countries of the Middle East. Dubai, United Arab Emirates is considered as good case to study as it is considered as a very fast-growing economy and has great capability to attract multinational investments into the Middle East region. Dubai has transformed within the last decades from depending on the nomadic ways of economy to the modern ways, which are based on services. Accordingly, seeking the fast-growing economic development has a considerable impact over the environmental issue in Dubai. In other words, setting the economic development

as the top priority of Dubai may push the attention towards the environment-unfriendly projects and away from the environmental concerns [45].

2.4. TOE Dimensions

It is one of the models developed for technology adoption, which consists of three main dimensions; Technology, Organization and Environment. The following subsections discusses each of these dimensions in details.

2.3.6 Technological Dimensions

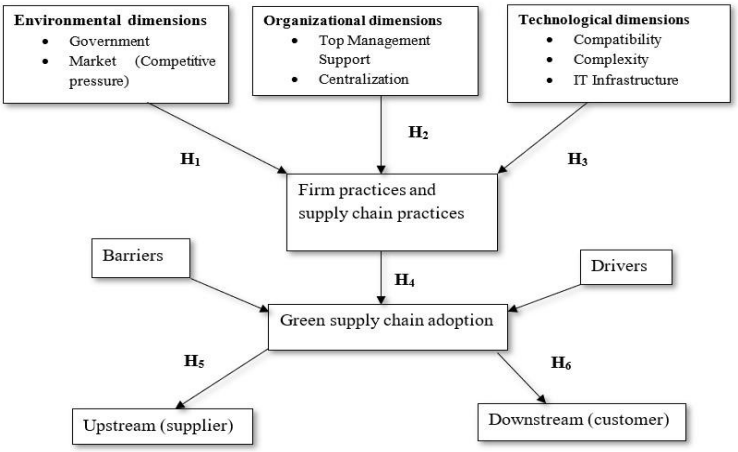
Relative Advantage: Relative advantage is how much an innovation is seen to be more worthwhile than its substitute thought [46]. The apparent advantages can be estimated in monetary or social terms, for example, performance, satisfaction, reputation, and convenience. Organizations are bound to adopt an innovation and technology which can give better performance and higher economic gains than other technologies. Relative advantage is positively identified with the adoption of innovation [47].
Compatibility: As per [36] How the latest invention fits in with the organizational information and expertise that a company currently has is a major factor influencing technological innovation. Compatibility is how much an innovation is viewed as steady with the institutions ' present qualities and values, experiences and requirements [47]. Complexity: An organization is adept to advance technical innovation when information is shared effectively inside the organization [46]. Productive information sharing can prompt innovative capabilities in terms of higher order learning and, consequently, improve organizational performance including environmental management effectiveness. Complexity is how complex an invention is to grasp and exploit. It will widen the trouble in information and knowledge transfer and propagation of innovation [47], which is generally theorized as being negatively linked to acceptance of innovation.

2.3.7 Organizational Dimensions

Organizational support: The degree to which a company uses a particular product and technology or system to help employees can affect technological innovation. Giving motives and incentives for innovation and ensuring that financial and technical resources are available for innovation have positive impacts on the implementation of technical innovations ([48]; [49]).
Quality of human resources: cap Technological advances must be implemented by professional members with experienced learning and creative skills [46]. Adopting green practices is somewhat a confused procedure requiring cross-disciplinary coordination and huge changes in the current activity process. It is escalated in HR and relies upon the improvement and preparing of implied abilities through the employees' inclusion.
Company size: The effect of company size was examined on technological progress [46] and environmental practices has generally been investigated in the literature ([50]; [51]; [52]).

2.3.8 Environmental Dimensions

Customer and Regulatory pressure: Stakeholders are people or groups who influence an organization's practices and are likewise influenced by the organization's practices [46]. They play a significant role in organizational environment and are broadly engaged with research on environmental issues. Stakeholder pressure is viewed as the most unmistakable factor affecting an organization's environmental strategy.
Governmental Support: Technical innovation depends somewhat on the availability of external resources [46]. Researches have recommended that governmental support is an applicable and relevant environmental factor affecting technical innovation. The governments can propel technical innovation through empowering strategies [53], for example, giving budgetary motivating force, technical resources, pilot projects, and training programs.



Environmental Uncertainty: Environmental instability was seen as the most significant environmental aspect affecting a firm's decision-making process [46]. This alludes to the frequent and unpredictable changes experienced by the executives in consumer tastes, technical growth and competitive behavior.

3. RESEARCH METHODOLOGY

This paper is based on the quantitative design using the deductive approach. Primary data was collected in the form of questionnaire survey. Data collected from 405 employees of the industrial sector represented in the academic and non-academic staff in universities. The paper framework is illustrated in Figure 1.

According to the above research framework, the main hypotheses are stated as follow:

H1: There is significant relationship between environmental dimensions and firm practices and supply chain practices

H2: There is significant relationship between organizational dimensions and the firm and supply chain practices

H3: There is significant relationship between technological dimensions and the firm and supply chain practices

H4: There is significant relationship between drivers, barriers and firm practices and supply chain practices and the green supply chain adoption

H5: There is significant relationship between green supply chain adoption and supplier relationship management.

H6: There is significant relationship between green supply chain adoption and customer relationship management

4. RESULTS AND FINDINGS

Validity and reliability are used for data testing to prove that the data collected is good enough for testing the research hypotheses. Table 2 shows the validity and reliability test of the research variables; Competitive Pressure, Government Regulations and Support, Top Management Support, Centralization, Perceived Compatibility, Perceived Complexity, IT Infrastructure, GSCM Practices Factors, Green Supply Chain Adoption, Supplier Relationship Management, Customer Relationship Management, Barriers, and Drivers. It could be noticed that the data showed Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) greater than 0.5, which was considered to be good, and a significant Bartlett's Sphericity test. The average variance extracted (AVE) was found to be more than 50%. In addition, all Cronbach's alpha values are greater than 0.7. The values obtained implied an adequate convergent validity as well as an adequate reliability.

Table 1. Validity and Reliability Test

Variable	KMO*	AVE%	Cronbach's Alpha	Item	Factor Loading
Competitive Pressure	0.760	54.930	0.833	CP1	0.468
				CP2	0.408
				CP3	0.614
				CP4	0.520
				CP5	0.625
				CP6	0.661
Government Regulations and Support	0.500	82.811	0.792	GRS1	0.828
				GRS2	0.828
Top Management Support	0.719	78.157	0.860	TMS1	0.819
				TMS2	0.718
				TMS3	0.807
Centralization	0.715	77.765	0.847	Ce1	0.747
				Ce2	0.831
				Ce3	0.754
Perceived Compatibility	0.746	66.621	0.831	PCm1	0.521
				PCm2	0.774
				PCm3	0.679
				PCm4	0.691
Perceived Complexity	0.618	64.186	0.813	PCx1	0.646
				PCx2	0.560
				PCx3	0.720
				PCx4	0.642
	722	61.693	0.789	ITI1	0.653

IT Infrastructure				ITI2	0.470
				ITI3	0.708
Variable	**KMO***	**AVE%**	**Cronbach's Alpha**	**Item**	**Factor Loading**
				ITI4	0.637
GSCM Practices Factors	0.895	64.173	0.942	GSCMP1	Deleted
				GSCMP2	Deleted
				GSCMP3	0.425
				GSCMP4	Deleted
				GSCMP5	Deleted
				GSCMP6	0.757
				GSCMP7	0.725
				GSCMP8	0.676
				GSCMP9	0.657
				GSCMP10	0.757
				GSCMP11	0.491
				GSCMP12	Deleted
				GSCMP13	Deleted
				GSCMP14	0.562
				GSCMP15	0.713
				GSCMP16	0.604
				GSCMP17	0.693
				GSCMP18	Deleted
Green Supply Chain Adoption	0.500	77.721	0.713	Ado1	0.777
				Ado2	0.777
Supplier Relationship Management	0.908	66.910	0.944	UpS1	0.765
				UpS2	0.845
				UpS3	0.678
				UpS4	0.630
				UpS5	0.688
				UpS6	0.646
				UpS7	0.700
				UpS8	0.571
				UpS9	0.563
				UpS10	0.604
Customer Relationship Management	0.851	65.903	0.935	DsC1	Deleted
				DsC2	Deleted
				DsC3	0.729
				DsC4	0.635
				DsC5	0.551
				DsC6	0.641
				DsC7	0.596
				DsC8	0.689
				DsC9	0.672
				DsC10	0.695
				DsC11	0.723
Barriers	0.740	53.505	0.780	Ba1	0.476
				Ba2	0.513
				Ba3	0.449
				Ba4	0.715
				Ba5	0.523
Drivers	0.890	58.700	0.939	Drv1	Deleted

				Drv2	0.561
				Drv3	0.466
				Drv4	0.608
Variable	**KMO***	**AVE%**	**Cronbach's Alpha**	**Item**	**Factor Loading**
				Drv5	0.514
				Drv6	0.454
				Drv7	0.553
				Drv8	0.782
				Drv9	0.650
				Drv10	0.656
				Drv11	0.618
				Drv12	0.736
				Drv13	.450
				Drv14	.584
*KMO: Kaiser-Meyer-Olkin measure of sampling adequacy					

4.1. Descriptive Analysis

Table 2 shows the Mean and Standard Deviation for Research variables. It could be observed that the mean and the frequencies of most responses are in the agreement zone, as the mean values for the research variables. The research variables are; Competitive Pressure, Government Regulations and Support, Top Management Support, Centralization, Perceived Compatibility, Perceived Complexity, IT Infrastructure, GSCM Practices Factors, Green Supply Chain Adoption, Supplier Relationship Management, Customer Relationship Management, Barriers and Drivers are 3.4815, 3.5012, 3.6247, 3.9259, 4.1160, 3.3926, 2.7852, 4.0000, 4.0988, 3.8025, 3.5951, 3.6025 and 3.9235 respectively.

Table 2. Descriptive Analysis for the Research Variables

Research Variables	**N**	**Mean**	**Std. Deviation**	**Frequency**				
				1	2	3	4	5
Competitive Pressure	405	3.4815	.79776	0	38	174	153	40
Government Regulations and Support	405	3.5012	1.14888	5	97	97	102	104
Top Management Support	405	3.6247	1.01347	8	54	102	159	82
Centralization	405	3.9259	1.01447	0	52	68	143	142
Perceived Compatibility	405	4.1160	.92483	0	21	89	117	178
Perceived Complexity	405	3.3926	.88242	3	56	169	133	44
IT Infrastructure	405	2.7852	.82701	15	142	167	77	4
GSCM Practices Factors	405	4.0000	.86173	0	22	84	171	128
Green Supply Chain Adoption	405	4.0988	.62941	0	0	62	241	102
Supplier Relationship Management	405	3.8025	.90679	0	27	133	138	107
Customer Relationship Management	405	3.5951	.89220	12	15	159	158	61

Barriers	405	3.6025	.85740	0	41	138	167	59
Drivers	405	3.9235	.73226	0	8	101	210	86
*N: Number of respondents valid for the questionnaire analysis								

4.2. Normality Testing for the Research Variables

In order to check the normality for the data, two types of tests are conducted; formal and informal. Table 4 shows the formal testing of normality assumption for the research variables using the Kolmogorov-Smirnov test of normality. It could be observed that the research variables are not normally distributed, as the corresponding P-values are all less than 0.05.

Table 3. Formal Testing of Normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Competitive Pressure	.250	405	.000	.861	405	.000
Government Regulations and Support	.177	405	.000	.873	405	.000
Top Management Support	.239	405	.000	.888	405	.000
Centralization	.233	405	.000	.835	405	.000
Perceived Compatibility	.270	405	.000	.811	405	.000
Perceived Complexity	.235	405	.000	.886	405	.000
IT Infrastructure	.216	405	.000	.870	405	.000
GSCM Practices Factors	.238	405	.000	.845	405	.000
Green Supply Chain Adoption	.310	405	.000	.780	405	.000
Supplier Relationship Management	.207	405	.000	.863	405	.000
Customer Relationship Management	.216	405	.000	.862	405	.000
Barriers	.237	405	.000	.873	405	.000
Drivers	.272	405	.000	.834	405	.000

As the formal test shows that the values are not normally distributed, an informal test is used to detect the approximate normality. Table 4 shows the informal test of normality, where it could be shown that some of the skewness and kurtosis values are above the accepted level of ±1, which means that the data under study are not normal. Conse-quently, Spearman's correlations are used to describe the relationships between the research variables.

Table 4. Informal Testing of Normality

Research Variables	**N**	**Skewness**		**Kurtosis**	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Competitive Pressure	405	.090	.121	-.441	.242
Government Regulations and Support	405	-.092	.121	-1.255	.242
Top Management Support	405	-.429	.121	-.479	.242
Centralization	405	-.594	.121	-.759	.242

Perceived Compatibility	405	-.629	.121	-.729	.242
Perceived Complexity	405	.036	.121	-.434	.242
IT Infrastructure	405	.128	.121	-.495	.242
GSCM Practices Factors	405	-.513	.121	-.453	.242
Green Supply Chain Adoption	405	-.078	.121	-.498	.242
Supplier Relationship Management	405	-.140	.121	-.940	.242
Customer Relationship Management	405	-.436	.121	.558	.242
Barriers	405	-.108	.121	-.615	.242
Drivers	405	-.184	.121	-.414	.242

4.3. Testing Regressions Assumptions

This section investigates and verifies the regression assumptions for the above conducted models. The problems of multicollinearity, autocorrelation and heteroscedasticity are discussed below. Multicollinearity: By testing VIFs, it could be observed that the VIFs of the Research Variables are less than 5, implying that there is no problem of multicollinearity between the independent variables.

Table 5. VIF Values for the Research Variables

Research Variables	**VIF***
Competitive Pressure	2.085
Government Regulations and Support	1.283
Top Management Support	1.993
Centralization	1.377
Perceived Compatibility	2.424
Perceived Complexity	1.660
IT Infrastructure	1.145
Barriers	1.132
Drivers	1.734

Autocorrelation: The Durbin-Watson test will be applied on the model, as it is one of the statistic tests examining the null hypothesis that the residuals are not autocorrelated against the alternative that the residuals follow an autocorrelation process. By observing the Durbin Watson tables for lower and upper values at K=5 regressors, it could be noticed that dL = 1.623 and dU = 1.725. Since the model test results are greater than 1.725 in all stated models, the null hypothesis of no autocorrelation is supported. This implies that there is no problem of autocorrelation.

Durbin Watson Value = 1.838

Heteroscedasticity Assumption: With respect to this, the scatter plot of the standardized residuals against the unstandardized predicted values is used to check this assumption visually. The results indicate that the relationships among variables are homoscedastic, as shown in

Figure 1.

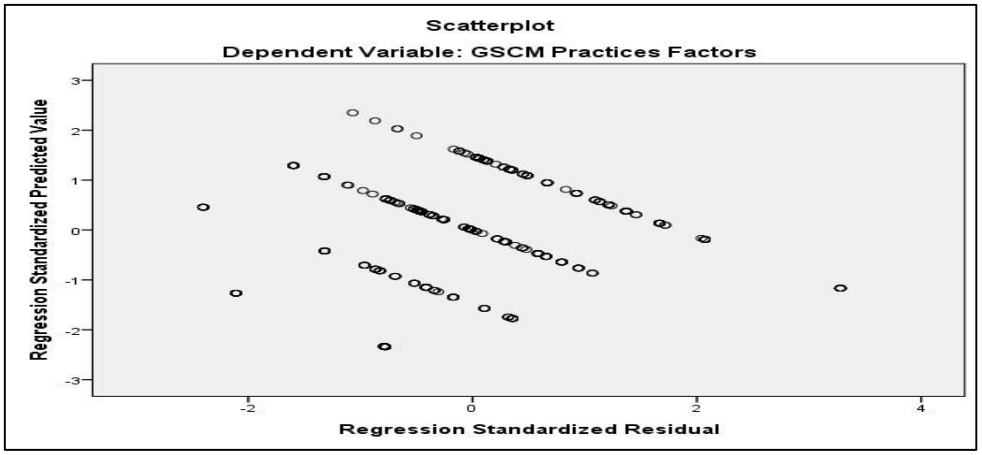


Figure 1 . Scatter Plot for Heteroscedasticity

Residual Normality Table 7 shows that it could be claimed that the residuals obtained from the regression analysis are approximately normally distributed, as the corresponding skewness and kurtosis values are between -1 and 1, which means that the data obtained is almost normally distributed.

Table 6. Testing of Residual Normality

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Unstandardized Residual	405	.450	.121	1.273	.242

Figure 2 shows Histogram chart for the research variable, which reveals that the data is almost normal as there is no skewness, yet, there is a small kurtosis deviation.

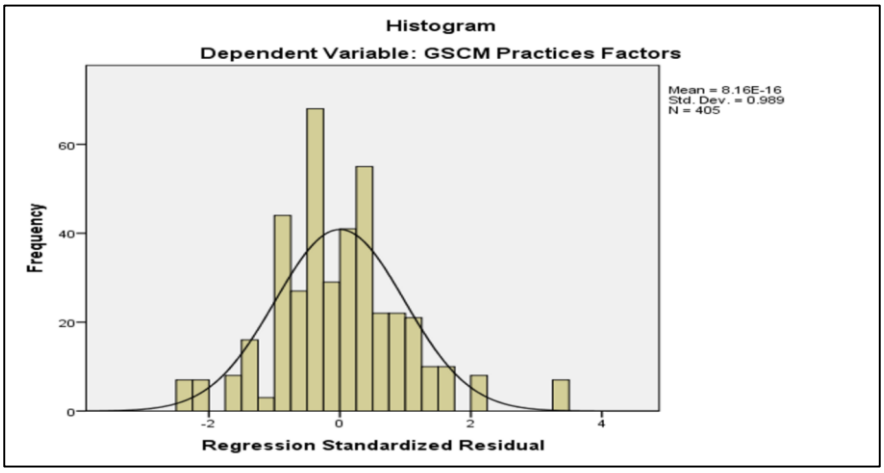


Figure 2. Histogram Chart

4.4. Testing Hypotheses

Table 7 shows the Structural equation modeling (SEM) analysis of the impact of Environmental Dimensions on Firm Practices and Supply Chain Practices. It could be observed that there is a positive significant impact of Competitive Pressure, and Government Regulations and Support on Firm Practices and Supply Chain Practices as the estimates are 0.689, and 0.167 respectively, as well as the P-value is less than 0.05. Moreover, the R square is 0.535, which means the Environmental Dimensions can explain 53.5% of the variation of the Firm Practices and Supply Chain Practices together.

Table 7. SEM Analysis the Effect of Environmental Dimensions on Firm Practices and Supply Chain Practices

			Estimate	P	R^2
GSCM Practices Factors	<--	Competitive Pressure	.689	***	.535
GSCM Practices Factors	<--	Government Regulations and Support	.167	***	

The model fit indices; CMIN/DF = 5.356, GFI = 0.914, CFI = 0.930, AGFI= 0.858, and RMSEA = 0.104 are all within their acceptable levels. The SEM model conducted for the effect of Environmental Dimensions on Firm Practices and Supply Chain Practices is illus- trated in Figure 3.

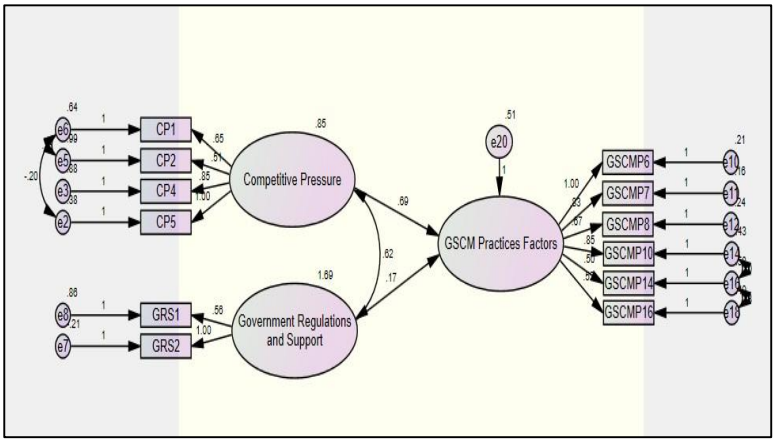


Figure 3. SEM for the Effect of Environmental Dimensions on Firm Practices and Supply Chain Practices

Table 8 shows the SEM analysis of the impact of Organizational Dimensions on Firm Practices and Supply Chain Practices. It could be observed that there is a positive significant impact of Top Management Support, and Centralization on Firm Practices and Supply Chain Practices as the estimates are 0.706, and 0.321 respectively, as well as the P-value is less than 0.05. Moreover, the R square is 0.423, which means the Organizational Dimensions can explain 42.3% of the variation of the Firm Practices and Supply Chain Practices together.

Table 8. SEM Analysis the Effect of Organizational Dimensions on Firm Practices and Supply Chain Practices

			Estimate	P	R^2
GSCM Practices Factors	<---	Top Management Support	.706	***	.423
GSCM Practices Factors	<---	Centralization	.321	***	

The model fit indices; CMIN/DF = 4.494, GFI = 0.940, CFI = 0.962, AGFI= 0.889, and RMSEA = 0.093 are all within their acceptable levels. The SEM model conducted for the effect of Organizational Dimensions on Firm Practices and Supply Chain Practices is illustrated in Figure 4.

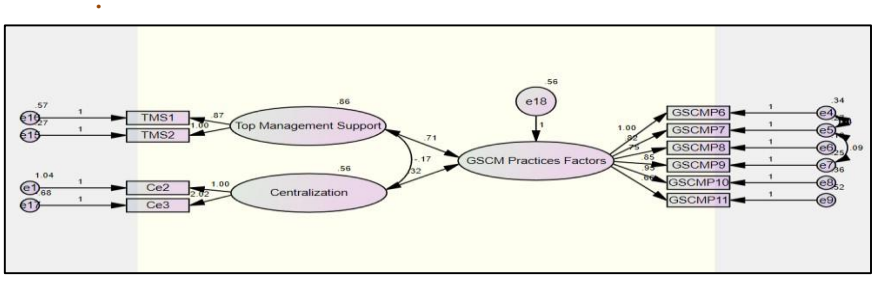


Figure 4. SEM for the Effect of Organizational Dimensions on Firm Practices and Supply Chain Practices

Table 9 shows the SEM analysis of the impact of Technological Dimensions on Firm Practices and Supply Chain Practices. It could be observed that there is a positive significant impact of Perceived Compatibility, Perceived Complexity, and IT Infrastructure on Firm Practices and Supply Chain Practices as the estimates are 0.483, 0.098, and 0.141 respectively, as well as the P-value is less than 0.05. Moreover, the R square is 0.459 which means 45.9% of the variation of the Firm Practices and Supply Chain Practices can be explained by the Technological Dimensions together.

Table 9. SEM Analysis the Effect of Technological Dimensions on Firm Practices and Supply Chain Practices

				Estimate	P	R^2
GSCM Practices Factors	<---	Perceived Compatibility	.483	***	.459	
GSCM Practices Factors	<---	Perceived Complexity	.098	.002		
GSCM Practices Factors	<---	IT Infrastructure	.141	***		

The model fit indices; CMIN/DF = 7.401, GFI = 0.857, CFI = 0.882, AGFI= 0.775, and RMSEA = 0.126 are all within their acceptable levels. The SEM model conducted for the effect of Technological Dimensions on Firm Practices and Supply Chain Practices is illus- trated in Figure 5.

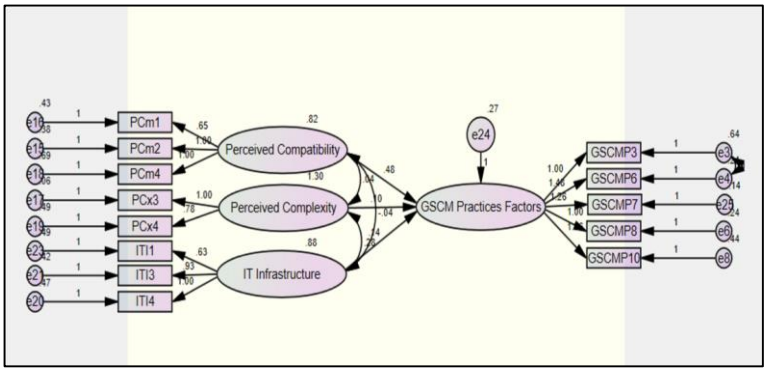


Figure 5. SEM for the Effect of Technological Dimensions on Firm Practices and Supply Chain Practices

Table 10 shows the SEM analysis of the impact of Drivers, Barriers, and Firm Practices and Supply Chain Practices on the Green Supply Chain Adoption. It could be observed that there is a positive significant impact of Drivers, and Firm Practices and Supply Chain Practices on the Green Supply Chain Adoption as the estimates are 0.104, and 0.222 respectively, as well as the P-value is less than 0.05, while, there is an insignificant effect of Barriers on the Green Supply Chain Adoption as the P-value is more than 0.05. Moreover, the R square is 0.226, which means the Drivers and Firm Practices and Supply Chain Practices can explain 22.6% of the variation of the Green Supply Chain Adoption together.

Table 10. SEM Analysis the Effect of Drivers, Barriers, and Firm Practices and Supply Chain Practices on the Green Supply Chain Adoption

			Estimate	P	R^2
Green Supply Chain Adoption	<---	Barriers	.014	.385	.226
Green Supply Chain Adoption	<---	Drivers	.104	.003	
Green Supply Chain Adoption	<---	GSCM Practices Factors	.222	***	

The model fit indices; CMIN/DF = 4.727, GFI = 0.889, CFI = 0.899, AGFI= 0.843, and RMSEA = 0.096 are all within their acceptable levels. The SEM model conducted for the effect of Drivers, Barriers, and Firm Practices and Supply Chain Practices on the Green Supply Chain Adoption is illustrated in Figure 6.

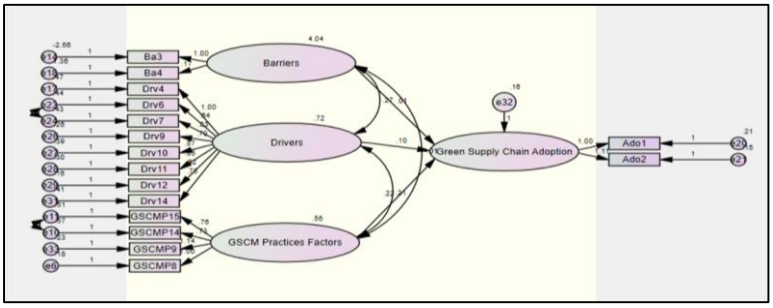


Figure 6. SEM for the Effect of Drivers, Barriers, and Firm Practices and Supply Chain Practices on the Green Supply Chain Adoption

Table 11 shows the SEM analysis of the impact of Green Supply Chain Adoption on Supplier Relationship Management. It could be observed that there is a positive significant impact of Green Supply Chain Adoption on Supplier Relationship Management as

the estimate is 0.823, as well as the P-value is less than 0.05. Moreover, the R square is 0.178, which means the Green Supply Chain Adoption can explain 17.8% of the variation of the Supplier Relationship Management.

Table 11. SEM Analysis the Effect of Green Supply Chain Adoption on Supplier Relationship Management

			Estimate	P	R^2
Supplier Relationship Management	<--	Green Supply Chain Adoption	.823	***	.178

The model fit indices; CMIN/DF = 3.680, GFI = 0.947, CFI = 0.973, AGFI= 0.892, and RMSEA = 0.081 are all within their acceptable levels. The SEM model conducted for the effect of Green Supply Chain Adoption on Supplier Relationship Management is illustrated in Figure 7.

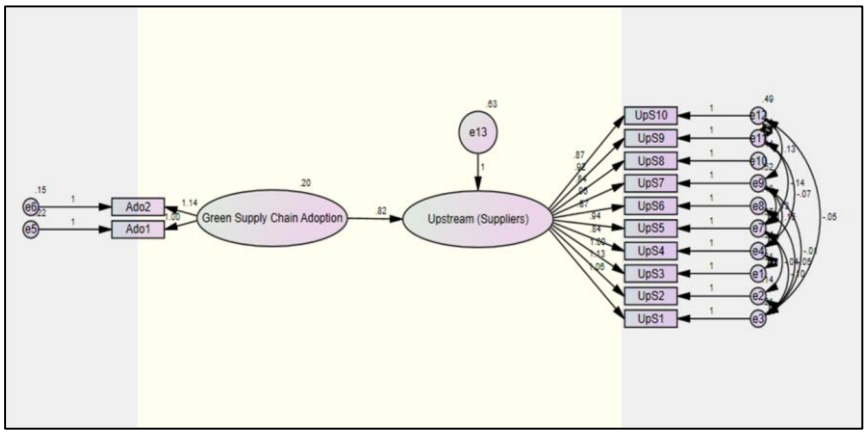


Figure 7. SEM for the Effect of Green Supply Chain Adoption on Supplier Relationship Management

Table 12 shows the SEM analysis of the impact of Green Supply Chain Adoption on Consumer Relationship Management. It could be observed that there is a positive significant impact of Green Supply Chain Adoption on Consumer Relationship Management as the estimate is 0.722, as well as the P-value is less than 0.05. Moreover, the R square is 0.738, which means the Green Supply Chain Adoption can explain 13.8% of the variation of the Consumer Relationship Management.

Table 12. SEM Analysis the Effect of Green Supply Chain Adoption on Consumer Relationship Management

			Estimate	P	R^2
Consumer Relationship Management	<--	Green Supply Chain Adoption	.722	***	.138

The model fit indices; CMIN/DF = 3.717, GFI = 0.957, CFI = 0.978, AGFI= 0.898, and RMSEA = 0.082 are all within their acceptable levels. The SEM model conducted for the effect of Green Supply Chain Adoption on Consumer Relationship Management is illustrated in Figure 8.

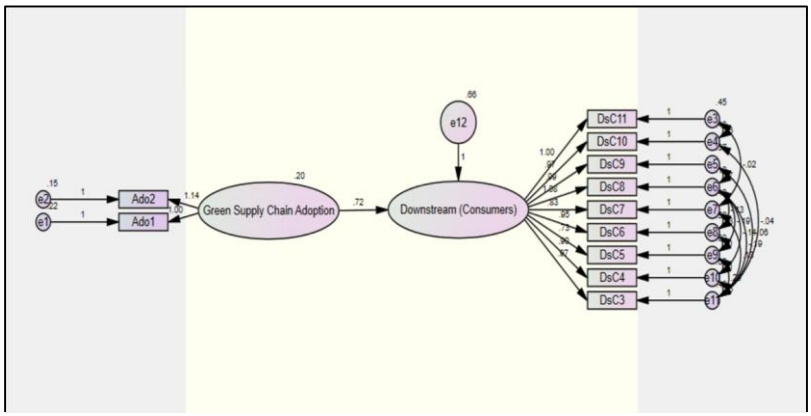


Figure 8. SEM for the Effect of Green Supply Chain Adoption on Consumer Relationship Management

5. DISCUSSION

The data is analyzed empirically to test the research hypotheses by measuring the variables concluded from the literature review through a descriptive, regression analysis and structural equation modeling (SEM). Testing the research hypothesis for the relationship between Environmental Dimensions; Competitive Pressure, Government Regulations and Support, and Firm Practices and Supply Chain Practices, it is found that there is a significant positive relationship between Competitive Pressure, Government Regulations and Support and Firm Practices and Supply Chain Practices, as the corresponding P-values are less than 0.05. This is consistent with previous studies as ([54]; [55]; [25]) as, the environmental dimensions which are government regulations and market (competition) pressure are related to and effected on the supply chain practices. Government take responsibility to observe the environmental performance of firms' SC practice to maintain social benefits in the process of production and supply chain. The relationship between Organizational Dimensions; Top Management Support, Centralization, and Firm Practices and Supply Chain Practices, it was found that there is a significant positive effect of Top Management Support, Centralization on Firm Practices and Supply Chain Practices, as the corresponding P-values are less than 0.05. This is consistent with previous studies as studies ([56]; [57]; [58]) as, the organizational dimensions which are top management support and centralization are related to and effected on the supply chain practices. Thus, it is very critical to notice that importance of top management to support the development of the SC practices. This upgrading of the coordination between a specific firm and with its associated partners such as, its suppliers and consumers needs a wise and professional management to incorporate the practices of its SC in the production system efficiently and effectively. It has been improved that coordination mechanism of SC is more efficient and effective in case of decentralization control and the centralization decisions for practices and functions of SC management would not be realistic in most cases [57].

The relationship between relationship between Technological Dimensions; Perceived Compatibility, Perceived Complexity, IT Infrastructure, and Firm Practices and Supply Chain Practices, it was found that there is a significant positive effect of Perceived Compatibility, Perceived Complexity, and IT Infrastructure on Firm Practices and Supply Chain Practices, as the corresponding P-values are less than 0.05. This is consistent with previous studies as studies ([59]; [28]; [60]; [27]; [61]; [25]) as, the technological dimensions which are Complexity, Compatibility and IT Infrastructure are related to and effected on the supply chain practices. It is found that compatibility of the technological capabilities in the SC practices enhance the competitive advantage and usage of those practices. Moreover, the reduction of complexity to increase the efficiency of supply chain practices could be done by incorporating appropriate technology in the SCM. In addition, it is noticed that with a good solid technology infrastructure creates an increasing of the capacity of the partners of the supply chain, a firm with existing good of technology infrastructure has the ability to enhance the process and the strategy of its Supply chain. The relationship between Drivers, Barriers, Firm Practices and Supply Chain Practices, and the Green Supply Chain Adoption, it was found that there is a significant positive effect of Drivers, Barriers and Firm Practices and Supply Chain Practices and the Green Supply Chain Adoption, as the corresponding P-values are less than 0.05. This is consistent with previous studies as studies ([62]; [8]; [35]; [63]) as, drivers and barriers are related to and effected on the supply chain practices. The adoption of GSC consists of factors that derive the different manufacturing industries to minimize the wastes and harmful emissions that are combined with different steps of their SC management. Thus, a good firm and SC practices create an efficient adoption of GSC [25].

The relationship between Green Supply Chain Adoption and Supplier Relationship Management, it was found that there is a significant positive effect of Green Supply Chain Adoption on Supplier Relationship Management, as the corresponding P-values are less than 0.05. This is consistent with previous studies as studies ([38]; [36]). As, the empirical analysis thus shows that there is a strong, multi-faceted connection between the characteristics of the Supplier Relationship Management and the GSC practices. While the relationship between Customer Relationship Management characteristics and GSC practices appears to be confined to a single significant variable which is technological integration [38]. Suppliers are recognized as the main group in supply chains, since they can promote environmental policies of companies and help strengthen the environmental standards of the supply chain [36].

The relationship between Green Supply Chain Adoption and Customer Relationship Management, it was found that there is a significant positive effect of Green Supply Chain Adoption on Customer Relationship Management, as the corresponding P-values are less than 0 s consistent with previous studies as studies ([64]; [62]; [8]; [36]; [16]; [65]). As, GSCM with Customer Relationship Management is defined as environmentally sustainable collaboration between a company and its customers to meet customers ' environmental requirements. It concentrates on Customer Relationship Management side of the SC. Past research set out specific avenues for producers to collaborate on the environmental side with their consumers. For successful implementation of GSCM practices, it is necessary to establish close and long-term relationships with Customer Relationship Management
[64]. In addition, the suppliers and customers are main parties at both Supplier Relationship Management and Consumer Relationship Management. Such parties have given the SC an important process particularly for companies with a strategic plan. Since each focal organization acts as a buyer to its suppliers and as a supplier to its customers, environmental engagement and monitoring in the SC will occur both Supplier Relationship Management and Consumer Relationship Management [16].

Table 13. Summary of Research Hypotheses

Description	Results
H1: There is significant relationship between environmental dimensions and firm practices and [0] supply chain practices	Fully Supported
H2: There is significant relationship between organizational 5 dimensions and the firm and supply chain practices.	Fully Supported
H3: There is significant relationship between Technological dimensions and the firm and supply chain practices	Fully Supported
H4: There is significant relationship between drivers, barri[T] ers h and firm practices and supply chain practices and the green supply chain adoptioni	Fully Supported
H5: There is significant relationship between Green Supply s Chain Adoption and Supplier Relationship Management	Fully Supported
H6: There is significant relationship between green supply chain adoption and i Consumer Relationship Management	Fully Supported

6. CONCLUSION

The research concluded that the hypothesis, which stated that there is significant relationship between environmental dimensions and firm practices and supply chain practices, is fully supported. The second hypothesis, which stated that there is significant relationship between organizational dimensions and the firm and supply chain practices, is fully supported. The third hypothesis, which stated that there is significant relationship between Technological dimensions and the firm and supply chain practices, is fully supported. The fourth hypothesis, which stated that there is significant relationship between drivers, barriers and firm practices and supply chain practices and the green supply chain adoption, is fully supported. The fifth hypothesis, which stated that there is significant relationship between Green Supply Chain Adoption and Supplier Relationship Management, is fully supported. The sixth hypothesis, which stated that there is significant relationship between green supply chain adoption and Customer Relationship Management, is fully supported.

In this research, the researcher demonstrated the important and the impact of Technology-Organization-Environment (TOE) dimensions, firm practices and supply chain practices on the supply chain practices and the green supply chain adoption and Supplier Relationship Management and Customer Relationship Management. This research aims to develop and understand a framework for different drivers and barriers that affect the green supply chain adoption in the process as well as identifying the role of TOE dimensions in enhancing the process. In this research, the researcher tried to provide a critical review and identify gaps in the literature related to GSCM, its drivers and barriers, GSCM adoption.

In addition, the TOE dimensions, develop an appropriate research methodology to collect and analyze data to address the research question, empirically examine how all of the variables of the research are statistically related, which are; Customer Relationship, Supplier Relationship, Supplier Selection, Internal collaboration, Top Management Support, Green Supply Chain Management, Coercive Pressure, Normative Pressure, Mimetic Pressure, Market Pressure, Green purchasing. Barrier for GSCM, and Drivers for GSCM using the statistical tools, and critically discuss findings of current research. Then compare them to prior findings within the literature, Highlight the theoretical contributions and practical implications of the study, and identify limitations and areas for future research.

The deduction approach has been utilized in this research as well as the quantitative method using structured questionnaire has been collected from 405 respondents. The researcher has obtained a triangulation method to validate the dimensions of the research through qualitative data obtained through interviews was then analyzed through making extracts of the interviews that can help in making overall assessment of the responses and help in comparing the responses obtained from the parents and the management. In addition, the researcher has obtained focus group to validate the proposed conceptual framework. The research indicated that there is significant relationship between the environmental, organizational, and Technological dimensions and firm practices and supply chain practices. There is significant relationship between drivers, barriers and firm practices and supply chain practices and the green supply chain adoption, and There is significant relationship between Green Supply Chain Adoption and both Supplier Relationship Management and Customer Relationship Management. In this research, the researcher put on his consideration the academic implication. As the research aims to develop and understand a framework for different drivers and barriers that affect the green supply chain adoption in the process as well as identifying the role of TOE dimensions in enhancing the process. Therefore, other researcher should develop their framework with other factors that could influence the relation between different drivers and barriers that affect the green supply chain adoption in the process as well as identifying the role of TOE dimensions in enhancing the process. In addition, the adoption of block chain technology in green supply chain management is at a nascent stage and more research studies are necessary to extend the knowledge base. The study findings have several implications for decision makers. Therefore, the decision makers have to focus on increasing the impact of Awareness of the green supply chain adoption

in the process. Managers need to eliminate the barriers and extend the block chain technology application in green supply chain management. Managers need to develop the mission and vision of the company by doing proper alignment of block chain technology with green supply chain management goals. In addition, managers need to make strong collaborations and remove the hesitation and workforce obsolescence barrier by providing the right education and pieces of training.

Based on the results of the current research, it is recommended that firms adopt the concept of GSCM as the global industrialization has increased energy and material consumption, and ultimately led to various environmental concerns such as; higher carbon emissions, toxic pollution and chemical spills. Due to the regulatory, competitive and community pressure, firms have to stabilize their environmental and economic performance. Nowadays, firms all over the world in various industries are becoming increasingly concerned about environmental degradation. They have realized that the adoption of green technology in business operations has greater benefits and affects suppliers and customers' relationships within firms [1]. To manage environmental pressures from a variety of stakeholders, several firms begin to implement green supply chain management (GSCM). GSCM practices are considered as environmentally friendly practices, which include water efficiency, energy efficiency, waste management, environment conservation, recycling and reuse, toxic substance management and hazardous and optimization of transportation [2].

Furthermore, based on the research finding, it can be recommended that policymakers and regulators should put more prominence on raising awareness of green supply chain management practices and the benefits of adopting them. In addition, policy makers in developing countries should build strong environmental institutions and strategies to impel the increasingly importance of green environmental practices, and bring a positive impact to domestic environmental management.

Moreover, the researcher focuses on the Drivers and the Barriers that mainly affect Green Supply Chain adoption process. In addition, the TOE dimensions that have an impact on the firm practices and supply chain practices. Hence, it is expected that the outcomes of this research and results from testing the proposed conceptual model, can strongly contribute to the academic body of knowledge and fill research gaps in the GSCM practices research, Management literature, and extend the theories in use (TOE). Future researchers could investigate the relationship of the research in construction or other sectors. As they could utilize the theoretical understanding either directly in their research contexts or as a basis for cumulative theory building and testing. This is important, as theory building and testing is an ongoing process, and can only be strengthened through a series of further refinement and tests across different populations and settings. Researchers in the future could utilize the multi methodology pragmatic approach for conducting a comprehensive investigation in the respective settings in construction or other sectors. In addition, researcher could utilize the pre tested and validated survey instrument for empirical investigation in their respective settings. Future researcher could require further refinement and validation of the supply chain practices themes/sub-themes across different countries.

Finally, the conceptual framework proposed by this study further clarifies the key factors that influence GSCM, Supplier Relationship Management and Customer Relationship Management which in turn would aid managers and policymakers in the design and execution the best green supply chain practices to help to enhance green performance, minimize waste and achieve cost savings.

As all researches, this research has several limitations through the study handled. The current research was conducted on companies adopting GSCM in the MENA region without including other countries, accordingly future research on the phenomenon should include different countries. Moreover, the time limitation to finish the research, which was a constraint for collecting larger sample size to represent the data under study. In addition, another suggestion is to perform a comparative study between a developed and developing country. Then see if the same set of dimensions (Customer Relationship, Supplier Relationship, Supplier Selection, Internal collaboration, Top Management Support, Green Supply Chain Management, Coecive Pressure, Normative Pressure,

Mimetic Pressure, Market Pressure, Green purchasing, Barrier for GSCM, and Drivers for GSCM) have significant impact on GSCM.

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