

PROJECT WORK

A study of Sustainable green supply chain
performance

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A dissertation submitted in partial fulfillment of the
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*****Student Name**

Chapter 1

Introduction

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Chapter 1: Introduction

Environmental management has become a vital topic of mutual concern for businesses, governments and customers as a result of increasing high levels of manufacture. The growing concern within the world marketplace for "green" problems and therefore the inadequacy of natural resources have forced executives to look at provide chain ways from an environmental perspective. High environmental risk industries, as well as chemical, plastic, automotive, and significant engineering, have perpetually thought-about enhancements in environmental performance united of the fundamental competitive priorities, aboard lower prices, producing lead-time, and quality. as an example, the European Union passed the Restriction of hazardous Substance and therefore the Waste Electrical and equipment rules exigent compliance with the relevant restrictive laws of product use and prohibiting the utilization of dangerous substances in merchandise purchasable within the market. During this development, the provision chain manager plays a vital role of choosing and developing acceptable inexperienced ways with the target of up environmental, economic, and social performance as well as gaining a competitive advantage.

Green supply chain management: A brief background

The term "green" is now widely used interchangeably on the more established "sustainability" concept, which points to a more holistic view of environmental, social and economic impact. Green supply chain management (GSCM) is an emerging field motivated by the need for environmental consciousness. Stranding out of the conventional supply chain view, GSCM was sparked by the "quality revolution" in

the 1980s and the supply chain revolution in the 1990s. Over the years, GSCM has attracted the attention of academics and practitioners, focusing on reducing waste and preserving the quality of product-life and natural resources. Eco-efficiency, which seeks to minimize ecological damage while maximizing production efficiency, and remanufacturing, have become key assets to achieve best practices. Customer demands and governmental pressures continue to push businesses to be more and more sustainable. Consequently, governmental legislations and public mandates for environmental accountability have brought up these issues on the drawing board of many strategic planners, bringing several green concepts into place.

Some of the key green concepts that have emerged in the literature over the years include green design, green operations, reverse logistics, waste management and green manufacturing. Navin-Chandra (1991) considered the need for green design to reduce the impact of product waste. A remarkable design framework arising from the green design concept is the life cycle analysis (LCA). The focus of LCA is on life cycle environmental effects of products and processes. Further, the concept of green operations, defined in terms of reverse logistics and related aspects, emerged from the literature. Waste management is another green practice that emerged in the early 90s, borrowing concepts from the recycling and remanufacturing concepts. Green manufacturing was conceptualised by Crainic, Gendreau and Dejax (1993), and later developed further by various researchers, providing green supply chain models and more green manufacturing concepts.

Following the green or ecological pressures from customers, stakeholders, and governments, a number of operational guidelines, standards and legislative frameworks have been put in place to

minimize environmental impact. Motivated by the need for companies to move towards ecologically sustainable business practices, the ISO14000 series standard was designed with the following objectives:

- encouraging an internationally common approach to environmental management;
- strengthening companies' abilities to measure and improve environmental performance, through continual system audits, and;
- improving international trade and removing trade barriers

Similar to ISO14000 standards, is the Occupation Health and Safety Assessment Series standards (OHSAS18000) whose focus is on international occupational health and safety management. Other global initiatives in the context of greening the environment include the Restriction of Hazardous Substance (RoHS) and the Waste Electrical and Electronic Equipment (WEEE) which enforce compliance with the relevant laws relating to product recycling and prohibit the use of hazardous substances in products for sale in the market. Other minor regulatory bodies exist in the literature.

In light of the above issues, it can be seen that GSCM is driven by the increased environmental deterioration such as depletion of raw materials, overflowing waste landfills, and pollution in general. Thus, GSCM primarily seeks to minimise the wastes within the industrial system, to prevent the dissipation of harmful materials into the environment, and to conserve energy resources. The objective, however, is not only about environmental friendliness, but also a good sense of business and higher profits (Wilkerson, 2005). Business organisations have realised the need to upgrade their supply chain management from a purely functional role to a strategic role to comply

with current environmental legislations and maintain an enduring competitive advantage, through technological innovation and improved eco-efficiency. Operations managers in earlier environmental management systems were involved only at arm's length where individual organizational units managed environmental performance in product and process design, logistics, marketing, compliance regulations, and waste management. Though it has long been realised that green strategies should meet the required order winning criteria in the market place, the idea needs to be extended to the entire supply chain. Best practices call for collaborative integration of environmental and operational performance. There is a growing need for integrating environmentally sound choices into supply chain management practice and research.

Green supply chain management (GSCM) is as a set of company practices that continuously monitor the environmental impact of a supply chain and improve its results (Godfrey, 1998). According to Johny (2009), it is a process that adds the green element to the existing supply chain management. Johny showed how a reverse supply chain, an organization, and innovative activity reconstruct a system. From the above definitions, it is obvious that the field of sustainable green supply chain goes beyond the pursuit of efficiency to include the pursuit of innovation in the supply chain with regard to expenses, profits, and the environment. In recent decades, Companies' interest in SCM has increased because of the growing global competition, strengthened environmental policies, outsourcing of companies' non-core activities and the shortening of product life cycles (Ortas, Moneva, Álvarez, 2014).

PROBLEM STATEMENT

Generally, an ideal corporation must be capable of balancing its social, economic and environmental development. However, this is a complex problem for most of the contemporary corporations that have culminated with loss of profits and abominable reputation. The corporations are having difficulties on how to work and make profit while being accountable towards the environment and people. Typically, companies have failed sustainability while value transporting goods and services from fact to point of consumption until the delivery. For that, the best approach firms should use to create sustainable practices, according to the studies, is the Green Supply chain management (GSCM), which responds for the management of the flow of goods and services. For practical purpose, supply chain management has been defined as the "design, planning, execution, control, and monitoring of supply chain activities. Under this scenario, sustainable management of supply chains has become a core strategic factor for companies worldwide (Seuring, 2012). This study collectively takes into consideration both the green supply chain management and sustainable supply chain literature that have a prime focus on environmental sustainability to assess the performance/applicability of the Sustainable Green Supply Chain at Woolworth/ Mozal in the supply of its goods within the country (Mozambique)

WHY IS PARTICULAR TOPIC CHOSEN?

A need for achieving sustainability through adoption of greener practices has been universally felt owing to an increasing environmental and ecological complexity. In addition, Companies have progressively broadened their approach to SCM by embracing social and environmental concerns (Svensson, 2007; Gimenez and

Tachizawa, 2012), giving rise to a new concept: sustainable supply chain management (SSCM) (Carter and Easton, 2011; Ashby et al., 2012). The review of the literature reveals that there is a need to address sustainability approaches while providing goods and services. Moreover, reverse logistics; closed loop supply chain management and waste management are areas that need special focus to achieve sustainability. Today, the world is moving towards greater environmental concern and awareness. The anti -environmental policies followed in the early stages of industrialization are no longer a viable option. Furthermore, modern thinking is that environment and industrialization must go hand in hand. Hence, the notion of today's world is sustainable development, and it is an integral part of it is Green Supply Chain Management or Sustainable Supply Chain Management.

The Mozambican government has recently strengthened its policies on the environmental management. The government has made it clear that the Sole aim of a company cannot only be improvement of its performance but its policies must be environmentally friendly as well (*MICOA, 2011*). This makes this topic a good choice for investigation. For this purpose, the performance will be looked on all three perspectives of sustainability: Design/methodology/approach.

CONTRIBUTION: TO WHOM IT WILL AFFECT:

This study is expected to impact the understanding of the importance of GSCM practices on various ambits of the supply chain management such as economic success of a business and benefic environmental effects. Furthermore, the outcome of this study will play a role in reducing greenhouse gases emissions, particularly carbon dioxide,

hence effecting on climate change. Additionally, this end of this study is expected to bring improvement on the supply chain processes and work quality of every stakeholder of the understudied company. Of the utmost importance is the expectation that the results of this work will be to manager's guidance to implementing a green management in the company. The results of this study will also have social impacts in while meeting its economic and environmental goals of the firm. That is expected to take place simultaneously with the emphasis on the stakeholder.

OBJECTIVES

Constitutes the prime objective of this study, to propose a model that will be capable of measuring the impact of GSCM on the performance of an organization

To achieve this global objective, this works aims the following:

1. To Identify key types of GSCM on the performance of sustainability of company-x. In addition to that, to understand the best GSCM practices using design/methodology/approach.
2. To give provide structured insight into the recently published literatures on sustainable SGSCM.
3. To establish a trend for future research based on the identified research issues through a thoroughly performed analysis on the previous researches in the area of SGSCM.

CHAPTER 2: LITERATURE REVIEW

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CHAPTER 2: LITERATURE REVIEW

Following our literature search process, perusal of selected publications indicated that a number of organizations have embarked on introducing green practices such as green procurement, green production or manufacturing processes, green distribution, recycling and remanufacturing. Wal-Mart adopted green procurement of biodegradable and/or recyclable packaging. Automotive companies such as Toyota and Ford require ISO 14000 certification for their suppliers. A number of firms have invested in recycling and reuse practices, for instance, Dell, Hewlett Packard, Toshiba and other electronics industries. In Western Europe, there is an obligation for 100% collection on "white goods". The general acceptance of green activities has led to increasing empirical studies on the external and internal factors leading to the uptake of green practices and their impact on organisational performance.

Critical areas of GSCM focus

Some patterns can be observed from the perusal of the empirical case investigations in the literature. In order to identify the appropriate dimensions of GSCM strategies, critical areas of focus and the main driving forces behind the green strategy chosen were analyzed.

Stakeholder pressure from investors, shareholders, customers and nonprofits to push sustainability into the supply chain has significantly increased in recent years, with a record number of shareholder resolutions on supply chains issued during the past two proxy seasons. The recently launched Global Reporting Initiative (GRI) G4 Guidelines

also requires an increased focus on sustainability throughout the supply chain.

By managing and improving environmental, social and economic performance throughout supply chains, companies can conserve resources, optimize processes, uncover product innovations, save costs, increase productivity and promote corporate values. Research shows the business case for supply chain sustainability is growing.

While more companies expand their sustainability programs to include suppliers, they struggle with implementation. The UN Global Compact's 2013 Global Corporate Sustainability Report finds that companies are increasingly talking about supply chain sustainability and making solid progress on setting expectations for suppliers. However, they are not yet supporting expectations with concrete actions that drive sustainability performance in their supply chain. Incidents such as the factory collapse and fires in Bangladesh last year highlight the need for increased and urgent actions in this area.

Incorporating sustainability into a company's supply chain is complex but the failure to act may be the biggest risk of all. Companies can take several initial steps to move toward sustainable supply chains:

1. Map supply chain

Many companies do not have a comprehensive understanding of the sustainability impacts of their supply chain. An early step is to inventory suppliers, identify the most significant environmental and social challenges they have, and prioritize efforts with suppliers.

New Balance Athletic Shoe Inc. reduced the number of suppliers it does business with, in part based on performance against sustainability criteria. The company reduced its footwear supply chain by 65 percent and is focused on forming strong, positive partnerships with its suppliers. Some criteria that may be helpful for prioritizing suppliers include level of spending, importance to business continuity, and geography as a proxy for risk.

CH2M HILL established a supply chain sustainability strategy for evaluation and election of products, complete with procedures, tools, communications, training and metrics for reporting implementation progress. Since 2010, CH2M HILL has identified suppliers with strategic or preferred status based on volume and business impact. Tier 1 and Tier 2 suppliers are required to provide information about their sustainability programs and demonstrate continuous improvement. Suppliers are classified into four groups of environmental performance, with each incorporating specific key performance indicators (KPIs). CH2M HILL's direct procurement organization has begun incorporating sustainability into the design, procurement and construction of projects by promoting the selection of suppliers and subcontractors that value sustainability.

2. Communicate expectations

Focusing on sustainability within your supply chain is a great way to communicate corporate values and culture to your suppliers and customers. Establishing and communicating expectations through a supplier code of conduct is a critical step in involving suppliers in your sustainability efforts.

Many resources and tools have been created to assist companies with the development of a supplier code of conduct. For example, the United Nations Global Compact publication, "Supply Chain Sustainability — A Practical Guide for Continuous Improvement" [PDF], has guidelines and tips for writing and adopting a successful supplier code of conduct. A new tool developed by the Global Environmental Management Initiative (GEMI) helps companies prioritize where in their organization's value chain they may have opportunities to improve supply chain sustainability, and then provides case studies of companies that have leveraged these opportunities.

3. Baseline supplier performance

Once you know who your target suppliers are and have set compliance standards, collecting data from suppliers through a simple benchmarking questionnaire or self-assessment will provide you an understanding of your starting point.

Many organizations, such as retailers, major brands and the U.S. Federal Government, have started evaluating the performance of their suppliers through questionnaires and surveys. Increasingly, organizations incorporate all areas included in their code of conduct with special focus and weight in the self-assessments related to areas that are important to their business. Our client work shows that more companies are aligning the content of their assessments with the GRI guidelines and CDP questionnaires. Some sectors, such as the electronics (Electronics Industry Citizenship Coalition Self-Assessment Questionnaire) and pharmaceutical (Pharmaceutical Supply Chain Initiative Self-Assessment Questionnaire) industries, have developed

industrywide surveys to reduce the burden on suppliers of responding to multiple requests for information that varies in content and format.

The baseline assessments form the starting point for future programs to improve supply chain sustainability and help assess where the greatest need for improvement exists. For example, Pacific Gas and Electric (PG&E) uses response from the Electric Utility Industry Sustainable Supply Chain Alliance survey to gauge performance of its top tier suppliers on important aspects of environmental performance, including greenhouse gas emissions, energy and water usage, and waste generation. The information is used to compile the environmental metric in the annual scorecards for top tier suppliers and to identify opportunities to partner with suppliers to advance business practices in target areas

Communicating back to suppliers in a constructive way is critical for future engagement and provides encouragement for improvement.

4. Develop training and capacity building programs

This is an important step in improving sustainability and driving behavioral changes throughout your supply chain. Many external resources are available to support these efforts and some are tailored to specific sector needs.

In our experience, one effective way to transfer knowledge across the supply chain is to leverage the best practices and case studies from top performing suppliers at annual vendor conferences, via online training modules and through capacity building campaigns. By showcasing the success stories of selected suppliers, companies not

only recognize their efforts but also demonstrate the practical benefits of sustainability initiatives to others in the supply chain. For example, HP has established supplier- and peer educator-run programs that have provided training to a large number of workers. Since the start of their capacity building program in 2006, HP has carried out 22 training programs in 12 countries on topics such as antidiscrimination, energy efficiency, labor rights and women's health. Through programs conducted jointly with its first-tier suppliers, HP has already trained 155 second-tier suppliers, leveraging the investment and knowledge-sharing efforts dedicated to Tier 1 supplier capacity building.

5. Drive performance improvement

Once supplier baseline performance is understood, an audit program can measure performance improvement over time. While in many cases, the self-assessments are completed by a corporate group, such as EHS, procurement or marketing, onsite audits can reveal local practices, behavioral challenges and practical opportunities for improvement that are difficult to identify through questionnaires alone.

Once your organization implements an audit program, be prepared to act on the findings by developing and executing corrective action plans by clearly communicating the results and your expectations to suppliers, developing a capacity-building program and, if necessary, terminating suppliers if non-compliance persists.

Assessments and audits paired with incentive programs that reward sustainability efforts have a greater ability to drive sustainability performance. Encouraging transparency and selecting or awarding more business to suppliers with stronger sustainability performance

can be very effective in driving improvement. Where this is not possible, incentives — greater access to your value chain, such as access to customers or clients — also can be effective.

In an effort to avoid audit fatigue and to provide a common framework for evaluation, some industries have developed common auditing and assessment tools. For example, the Sustainable Apparel Coalition developed the Higg Index, a performance assessment tool for the apparel and footwear industries. The Electronic Industry Citizenship Coalition has developed the validated audit process that covers both social and environmental performance and includes an auditor certification program to drive for further consistency in audits. Chemical companies have formed a joint initiative called Together for Sustainability (TfS), with the mission of developing and implementing a global supplier engagement program that assesses and improves sustainability sourcing practices.

6. Join industry collaboration

Many companies recognize that complex supply chain challenges cannot be solved by individual efforts and that industry wide collaboration is required. Working in a pre-competitive environment, peer companies that share similar supply chains can set common standards and best practices for sustainability performance and allow suppliers to be evaluated on the same metrics. These collaborations help prevent audit fatigue, training redundancy and mountains of paperwork for suppliers working to meet similar requirements from their customers. Working with your industry peers is a great way to share knowledge about the sustainability performance of your suppliers.

The Zero Discharge of Hazardous Chemicals Programme (ZDHC), the Sustainable Apparel Coalition, the Outdoor Industry Association and the American Apparel and Footwear Association are a few examples of industry collaborations in the apparel and footwear sector. CH2M HILL is the program manager for the highly ambitious ZDHC Joint Roadmap, which has grown from six founding brands (adidas Group, C&A, H&M, LiNing, Nike Inc., and Puma SE) into a coalition that includes Esprit, G-Star Raw, Gap Inc., Inditex, Jack Wolfskin, Levi Strauss & Co., Limited Brands, Li Ning, M&S, New Balance Athletic Shoe, Inc., PVH Corp. and United Colors of Benetton. These brands are working together to integrate higher standards of environmental and business practices for their industry by eliminating the use of 11 classes of hazardous chemicals from textile production by 2020.

If you have a more mature supplier sustainability program, your company can do even more:

- Develop and/or deploy robust tracking tools, including software solutions, to monitor supplier performance and improvement over time
- Perform a logistics assessment to determine where sustainability improvements can be made
- Integrate supply chain sustainability criteria into the procurement process
- Create a shift towards supply chain sustainability by leveraging your buying power and influence
- Expand your sustainability goals beyond your direct operations across your supply chain
- Encourage innovation

CHAPTER 4
RESEARCH
METHODOLOGY

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CHAPTER 3: RESEARCH METHODOLOGY

In this research, we made a wide search in academic studies, databases, and bibliographical list to compile the relevant information on green supply chain practices. The first and most important task was to carry out a literature search survey of real-world case studies on GSCM practices and their implementation. Due to huge volumes of publications and publication sources that have tried to address green issues, our literature research was centred on the Business Source Complete Database, which offers access to relevant scholarly publications of interest. This involved searching for empirical case studies from published work in reputable journals concerned with GSCM practices, including Journal of Cleaner Production, Long Range Planning, Business Strategy and the Environment, the Journal of Environmental Management, Ecological Economics, Greener Management International, and International Journal of Sustainable Engineering. In addition, the search included business publications, such as those from Harvard Business Review, the International Journal of Production Economics, the International Journal of Operations and Production Management, and the International Journal of Production Research. The search criteria used included keywords such as "green practices", "green strategies", "green supply chain", "environmental issues", "ecological", "eco-efficient", and "sustainability". The second task was to highlight the main green strategic focus of each case study. The aim was to determine the major driving elements behind the choice and the final implementation of specific green strategies. This would assist in answering managerial questions as to why certain strategies are suitable for specific industrial contexts. As such, the third task was to highlight those elements or dimensions that led to

the selection and implementation of the chosen (suitable) green strategies. The analysis of the contexts in which specific strategies were chosen provides foundational building blocks or dimensions for the development of a taxonomic framework to guide decision makers in selecting appropriate green strategies, given specific industrial situations. The fourth and final task was to develop a taxonomic framework, based on the identified dimensions, for the purpose of selecting or developing appropriate GSCM strategies.

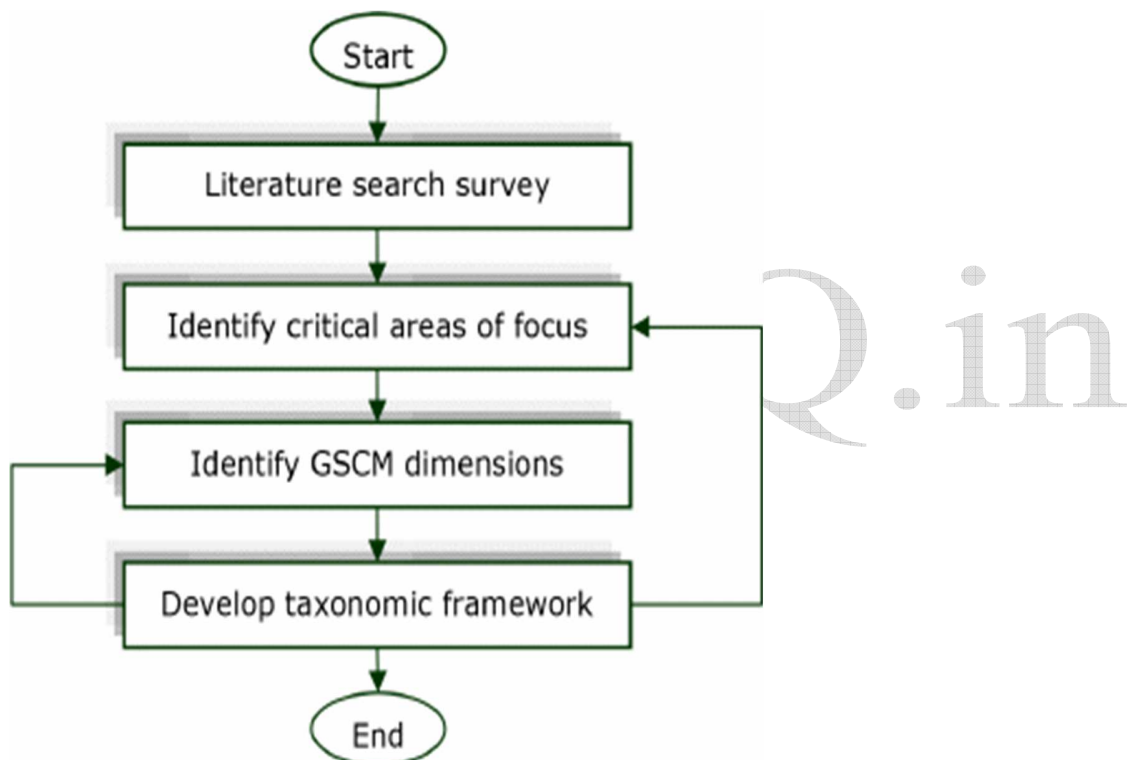


Figure 1: Research Approach

Above figure summarises the research approach used in this project report.

Framework and Research Hypothesis:

Research Framework

The proposed framework for this research is illustrated in Figure 1. The framework shows the impact of Green supply chain management practices on the Organizational Performance.

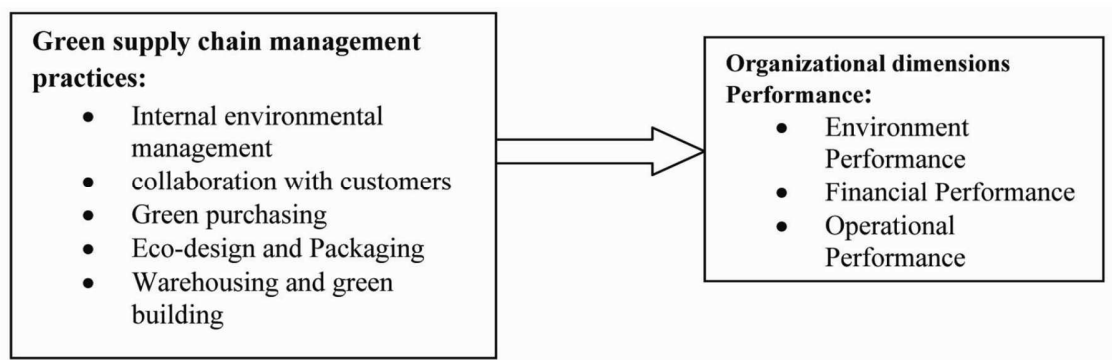


Figure 2: Research framework (study model)

Research Hypothesis

Ho: there is no significant impact of green supply chain management practices (combined); (internal environmental management, collaboration with customers, green purchasing, eco-design and packaging, and warehousing and green) on organizational performance (combined) (environment performance, financial performance, and operational performance).

Ho: there is no significant impact of green supply chain management practices (combined) (internal environmental management, collaboration with customers, green purchasing, eco-design and packaging, and warehousing and green) on organizational environment performance.

Ho: there is no significant impact of green supply chain management practices (combined) (internal environmental management, collaboration with customers, green purchasing, eco-design and packaging, and warehousing and green) on organizational financial performance.

Ho: there is no significant impact of green supply chain management practices (combined) (internal environmental management, collaboration with customers, green purchasing, eco-design and packaging, and warehousing and green) organizational operational performance.

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CHAPTER 4

PRESENTATION OF DATA

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CHAPTER 4: PRESENTATION OF DATA

The researchers choose (6) firms specialized in industrial food sector and it was chosen based on the size and profitability. The sample represented by the firms which specific in food industry in Jordan, and the sample has been chosen from (6) firms, which firms that apply green manufacturing concepts and which got the ISO 14001 related to environment.

Data Collection Method

Primary Data: the researcher used the questionnaires as a primary data, while secondary data has been used as literature, books, articles, case studies, and website in order to help preparing the theoretical framework and the whole study.

Validity and Reliability

Validity for the questionnaire was evaluated from four members of Applied Science University. Study reliability were calculated by using test pre-test, in which the researcher applies the study tool on a sample of 50 customers of the sample, after three weeks the sample was tested again, the consistency percentage was 85%; and to make sure of the results the researcher computed Cranach's alpha for all the domains and the whole tool, the value (0.89). The following table 1 showed the Cronbach alpha for each dimensions of green supply chain management practices, and also the dimensions of organizational performance, and also the table showed the factors loadings value for

each dimensions of the study. While the factor loadings' value ranging between moderate and high, which indicated that the questions were effectively fit for the dimensions and variables of the study.

Table 1: Results of measure validation

Items	Factor loadings	Cronbach alpha
Internal Environmental Management (IEM)	0.568-0.900	0.658
Collaboration with Customers (CWC)	0.785-0.895	0.758
Green Purchasing (GP)	0.695-0.987	0.612
Eco-design and Packaging (EDP)	0.568-0.892	0.712
Warehousing and Green Building (WGB)	0.695-0.854	0.711
Environmental Performance (EP)	0.561-0.758	0.825
Financial Performance (FP)	0.717-0.895	0.698
Operational Performance (OP)	0.698-0.784	0.794
All items		0.894

CHAPTER 5

ANALYSIS OF DATA

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CHAPTER 5: ANALYSIS OF DATA

There was been used the descriptive method for this study, and the matrix of relationship between the variables of the study as shown table 2, as shown the value of the means were higher than the median for all dimensions, and partnership building were the highest (4.001), and operational performance was the lowest (3.001), as the correlation matrix showed that there were a high group of positive relationship between the variables of the study, and this confirms the availability of a high degree of internal consistency between the variables and expresses sincerity of building contents.

Table 2: Descriptive statistics and correlation matrix

Variables	IEM	CWC	GP	EDP	WGB	EP	FP	OP
Mean	3.251	4.001	3.547	3.612	3.335	3.910	3.427	3.001
S.D	0.532	0.624	0.421	0.529	0.781	0.9201	0.804	0.621
IEM	1							
CWC	.356**	1						
GP	.458**	.658**	1					
EDP	.365**	.614**	.821**	1				
WGB	.412**	.502**	.723**	.736**	1			
EP	.398**	.710**	.621**	.670**	.782**	1		
FP	.403**	.451**	.389**	.487**	.821**	.509**	1	
OP	.311**	.394**	.614**	.502**	.638**	.704**	.754**	1

**P<0.05.

The table 3 showed the demographic characteristics for respondents, and most sample were males (89.3%), and also (30.1%) were average ages of (41-50) years, and the number of years in working (9-12) years which represented by (28.5%), and (39.8%) of the sample were from the supervisors and (14.2%) of head of department in the firms, and (85%) of them were from the managers.

Table 3: Respondents' demographic characteristics

Gender:		
male		89.3%
female		10.7%
Age:		
-	Less than 25	10.3%
-	25-30	15.3%
-	31-40	23.7%
-	41-50	30.1%
-	51-60	
-	more than 60	20.6%
No. of years working in the company:		
-	3years and less	12.3%
-	4-8	11.9%
-	9-12	28.5%
-	13-17	22.3%
-	18 and more	25%
Education:		
	High School	16.6%
	After H. School	25.3%
	Bachelor	58.1%
Job Title:		
	General Managerial	8.5%
	Assistance General Managerial	15.2%
	Head of Department	14.2%
	Assistance Head of Department	22.3%
	Supervisor	39.8%
No. of respondents: (143)		

Hypothesis Testing

The study was deal with four hypothesis, for testing the first hypothesis, there was used the simple regression shown in table 4, which indicated that there were positive impact for the practices of green supply chain management (combined) on the dimensions of organizational performance(combined), the value of beta was (55.2%) with (0.000) significant. while R2 was (.658) which means (65.8) of the variables in the organizational performance were because of the practices of green supply chain management. That mean rejected the null hypotheses and accepted the alternative hypotheses :there is an impact of green supply chain management

practices(combined);(internal environmental management, collaboration with customers, green purchasing, eco-design and packaging, and warehousing and green) on organizational performance (combined) (environment performance, financial performance, and operational performance).

Table 4: Simple regression results: green supply chain management practices on organizational performance

Variables	Beta	t	Sig.*
Green supply chain management Practices (R=.552; R ² = .658; F=9.324) * p≤ 0.05	.552	2.073	.000*

While the other three hypotheses shown in table 5, that the second hypothesis indicated that (IEM, WGB, GP, CWC) were the highest effect in organizational performance related to the environment, while (EDP) had no effect in the environment. The third hypothesis showed that (IEM, CWC, GB, WGB, and EDP) got affect on the organizational performance that related to the financial aspects, while the forth hypothesis that (IEM, GP) were only the factors that affect on the organizational performance that related to the operational aspects.

Table 5: Results of stepwise regression analyses for the sub hypotheses

Independent Variables	Dependent Variables		
	EP Beta (sig)	FP Beta (sig)	OP Beta (sig)
IEM	.293 (.000*)	.325 (.000*)	.445 (.000*)
CWC	.335 (.002*)	.425 (.002*)	.067 (.098)
GP	.235 (.001*)	.356 (.000*)	.389 (.000*)
EDP	.102 (.064)	.225 (.004*)	.015 .156
WGB	.243 (.007*)	.286 (.000*)	.098 (.136)
	R=.482; R ² = .382	R=.336; R ² = .293	R=.197; R²= .289

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CHAPTER 6
DISCUSSION AND
INTERPRETATION OF
FINDINGS

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CHAPTER 6: DISCUSSION AND INTERPRETATION OF FINDINGS

Finding 1: Four main areas of focus are environmental performance standards, eco-efficiency, green technology innovations, and collaborative supply chain with remanufacturing and recycling practices

One important observation from these empirical research activities is their remarkable focus on operations that influence environmental performance, as opposed to conventional supply chains which focus on customer satisfaction, service quality, responsiveness, and the supply chain cost. The central goals of the green supply chain are primarily centered on those process operations that influence environmental performance.

Thus, the end goals of GSCM are categorised as follows:

- Waste (of all types): minimization of waste;
- Energy usage: minimize energy consumption; and
- Resource usage or material consumption: optimize resource usage.

Finding 2: The main goals of GSCM practices are minimal waste, minimal energy usage, and optimized resource usage

Fisher presented examples from a diverse range of consumer products such as food, fashion apparel and automobiles, demonstrating why different supply chain strategies were appropriate depending on whether products were functional or innovative. Functional products tend to have stable demand with long lifecycles. Since the characteristics of products have a direct influence on the choice of production process, their production systems tend to be functional as

well. On the other hand, innovative products generally have unpredictable demand with short lifecycles. Consequently, their production processes are often innovative in nature. Therefore, product/process characteristics have a great influence on the choice of supply chain strategies. As in conventional supply chain management, the choice of GSCM green strategies is directly affected by product characteristics. The success of GSCM goals, that is, waste reduction, minimal energy usage and optimal resource consumption, are strongly dependent on the green operations or processes chosen. On the one hand, processes can be eco-efficient by focusing on operations-based efficient targets which provide secondary environmental benefits. On the other hand, processes can be more environmentally specific, with more product-life cycle considerations (Hart, 1995). Such processes tend to be more focused on green efficiency. It is important to note that the green process operations are directly related to the inherent product characteristics.

Finding 3: GSCM goals are influenced by the green product (process) chosen; a green product (or process) can either be innovative or functional, while a process operation can be centered on eco-efficiency or green efficiency.

One other important observation in this study is that the above empirical research activities show that green supply chains tend to improve their performance by developing specific green capabilities and by building collaborative supply chain relationships. According to Modi and Mabert (2007) supply chain improvement towards the green practices is enhanced through competitive pressure from the market or customers, regulatory certification schemes, incentives, and direct involvement. Supply chain relationships are often developed based on two different climates, namely, (a) coercive climate, where contractual

clauses are enforced between suppliers and customers (Zhu & Sarkis, 2007), and (b) collaborative climate, which calls for increased mutual involvement for customers and suppliers. These climates act as determinants of the success of green strategies chosen. Because the coercive approach demands a prescribed minimal level of compliance to standards, it lacks capacity to encourage advanced performance management. On the other hand, collaboration encourages new knowledge, technologies and innovation. However, a higher level of inter-organisation involvement and collaboration is required, if green supply chain goals are to be achieved (Christopher, 2000). In this regard, we draw on the influence of supply chain collaboration on the success of GSCM strategies to define a framework for selecting appropriate green strategies. But how does the nature of process or product influence the success of the green supply chain?

Finding 4: GSCM goals are enhanced by two types of green supply chain relationships, that is, coercive or collaborative relationships

From our literature search survey, a question arises as to what might be the most appropriate green supply chain strategy given a specific context, with a particular product, a specific process, and/or a particular supply chain relationship. What are the underlying GSCM dimensions upon which the right choice of green strategies can be made? In this study, we draw on the critical issues of supply chain relationship, product and process types to establish a taxonomic methodology for the selection of appropriate green supply chain strategies. The next section identifies the relevant dimensions of GSCM strategies together with their specific gradations.

Finding 5: The selection of GSCM strategies is influenced by three main dimensions; supply chain relationship, product, and process technology.

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CHAPTER 8
CONCLUSIONS,
IMPLICATIONS AND
RECOMMENDATIONS

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CHAPTER 7: CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

Conclusion

The research tries to figure out the impact of green supply chain management practices on organizational performance. The researcher built the model and hypothesis based on the dimensions of green supply chain management practices. The researcher collected the data based on the secondary and primary data which built with surveys. The researchers choose (6) firms specialized in industrial food sector and which the firms that applied the concept of green manufacturing. Also the results showed that green supply chain management practices and its elements on organizational performance, (positive impact for the practices of green supply chain management on the organizational performance).

Implications and Recommendations

Academic Implications

For academic implications: In this research the researchers study a new factors include environmental performance and financial performance beside the other factor (Operational Performance), in addition to make a new model & a new study for future research

Managerial Implications

This study will play important role for managers and firms, also this study is contributing in increasing the sales through understanding the green supply chain management and got the highest benefits from it.

Recommendations

The researchers suggested some recommendations, which are Continuing coordination between the different administrative levels to implement the green supply chain, in order to achieving the highest level of quality in this area, trying to find the most friendly for environmental raw materials which its used in the food industry. And continuing in Safety environmental design and packaging, create an annual training plan according to the workers training needs related to the green supply chain, increased the budget allocated for scientific research in the field of green supply chain, and finally activated the governmental rules and regulations to be more careful about the safety of the environment.

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