Green Supply Chain Practices as Determinants of Achieving Green Performance of Extractive Industries in Jordan

Mohammed Saleem Khlif Alshura
Associate Professor
Management Department, Faculty of Money and Management
World Islamic Science University
P.O. Box 1101, Amman 11947
Jordan

Heba Ziad Yousef Awawdeh
Researcher
Management Department, Faculty of Money and Management
World Islamic Science University
P.O. Box 1101, Amman 11947
Jordan

Abstract

This study examined the effect of green supply chain practices (GSCP) on green performance (GP) of Extractive Industries in Jordan. The independent variable (GSCP) was grouped into six practices: green supplier selection, green purchasing, green production, green design, green distribution, and reverse logistics. The sample of the study consisted of 74 of top and middle level managers. Based on a questionnaire-based survey, responses of managers across management levels were investigated on both GSCP and green performance (GP) using SPSS. Results suggest that GSCP significantly and positively related to GP. The study recommends that more focus needs to be placed on implementing environmental standards when selecting suppliers, purchasing, manufacturing, distributing, and developing internal eco designs

Keywords: Green supply chain practices, green performance, Extractive Industries, Jordan.

1. Introduction

Environment-related demands are one of the biggest challenges that organizations faced with nowadays. Problem-solving initiatives suggested an implantation of environmental concepts using supply chain thinking. Interestingly, the new solution for threatening business activities is the same tree of supply chain management with iridescent practices. Hence, organizations seek to explants these practices to drive its fruits, i.e. success, performance as well as competitive position. In line with increasing importance and role of adopting green supply chain practices to boost organization's environmental performance, the present study was carried out in Extractive Industries in Jordan. The increasing attention have had paid to green practices of supply chains is attributed to the augmented environmental awareness of the public as well as organizations (Zhu et al., 2010 a).

According to Zhu et al. (2005), key drivers of green supply chain practices (GSCP) adoption include foreign market specifications and customers' preferences of green products. Perotti et al. (2012) added that government requirements and cumulative pollution levels are some drivers of GSC adoption. Younis et al. (2016) specified climate change, scarcity of resources and environmental pollution as three drivers of GSCP adoption. Several studies have been conducted to question the greening initiative of supply chain management practices. Rao (2007) explored the greening of supply chain practices amongst Philippine small and medium enterprises and observed a little level of adoption. Holt and Ghobadian (2009) studied GSCP amongst UK industrial companies. Their findings indicated that legislative pressures, internal drivers, competition, supply chain requirements, and social factors drive the adoption of GSCP and concluded that the eventual purpose of green supply chain management (GSCM) is to enhance environmental performance.

Kumar and Kant (2015) reviewed green supply chain literature from 1998 to 2013 and revealed that the most common variables studied within GSCM are related to performance, environmental topics, and organizational processes. Selecting a sample from manufacturing firms in United Arab Emirates, Younis et al. (2016) examined the impact of GSCM practices on firm performance (economic, operational, social, and environmental performance). Their results rejected the hypothesis that GSCM practices are related to environmental performance. According to Tachizawa et al. (2015), the mixed results of the relationship between GSCM practices and environmental performance can be attributed to the firm-related industry, research methods or GSCM practices itself. Koh et al. (2012) cautioned that the impact of GSCM practices on performance outcomes might vary in response to different settings. Beske-Janssen et al. (2015) argued that the current research within GSCM domain seeks to highlight the contribution of supply chains to sustainable development initiative by introducing environment-based measurements such as environmental performance.

Little research on the impact of GSCP on green performance of Jordanian settings. Subsequently, the main aim of this particular study is to enrich the literature on GSCP and its consequences on green performance of Extractive Industries in Jordan, through examining the impact of numerous dimensions of GSCP on green performance. This paper is outlined as follows: the next section presents literature review and hypotheses development. The theoretical model of the study is portrayed in section three. Section four highlighted research methodology, in which sample, measurements, validity and reliability of the study tool displayed. The results of the study is discussed in section five. Section six includes recommendations of the study.

2. Literature review and hypotheses development

2.1 GSCP: definition and dimensions

Keivanpour et al. (2015) defined green supply chain in terms of the integration of the environmental thinking into supply chain management. For Hu and Hsu (2010), GSC refers to the reduction of environmental effects associated with supply chain practices. In their work on the relationship between GSCP and company performance, Perotti et al. (2012) regarded GSCP as activities adopted by organization in order to reduce their inimical environmental impacts. Younis et al. (2016) emphasized that those activities are directed towards the reduction of organizations' unfavorable influence on the surrounding environment over and above performance enrichment. On the ground of Cosimato and Troisi (2015) elaboration on main definitions of GSCP, it is assumed that GSCP refers to an organizational initiative introduced to elevate different aspects of organizational performance through going green with eco friendly materials, processes, products and practices in order to create constructive impact.

Concerning dimensions of GSCP, Chiou et al. (2011) classed GSCP into two categories related to internal and external environmental concerns. For them, internal concerns include management green light to support those practices plus adaptation of environmental management system requirements. Perotti et al. (2012) praised the work of Zhu and Sarkis (2004) for their categorization of GSCP. They termed five practices of GSC, which are green purchasing, eco-design, internal environmental management, cooperation with customers, and investment recovery. Keivanpour et al. (2015) whispered that GSCP include numerous aspects such as design of products, sourcing of raw materials, selection of suppliers, processes of manufacturing and delivery of goods and services. Kirchoff et al. (2016) indexed five dimensions of GSCM: green purchasing, eco-design, cooperation with customers, investment recovery, and internal environmental management. Hsu et al. (2016) recorded four dimensions of GSCP, which are green purchasing, green manufacturing, green packaging, and reverse logistics. Investigating the effects of GSCP on performance, Zhu et al. (2010 b) evaluated green purchasing, cooperation with customers in environmental concerns, reverse logistics, investment recovery, eco-design, and internal environmental management. Yu et al. (2014) analyzed the relationship between GSCM and operational performance using three dimensions of GSCM: internal practices of GSCM, GSCM practices with customers, and GSCM practices with suppliers. Examples of GSCP explored in the literature can be seen in Table 1.

Table 1: Practices of GSC cited in the literature

GSCP	Reference (s)
Green Purchasing	Zhu and Sarkis (2004), Zhu et al. (2005), Hervani (2005), Zhu et al. (2010a), Zhu et al. (2010b), Hu and Hsu (2010), Green Jr. et al. (2012), Diabat et al. (2013), Jayaraman (2006), Mutingi1 et al. (2014), Cosimato and Troisi (2015), Kirchoff et al. (2016), Hsu et al. (2016), Younis et al. (2016).
Green design	Zhu and Sarkis (2004), Zhu et al. (2005), Zhu et al. (2010a), Zhu et al. (2010b), Hu and Hsu (2010), Green Jr. et al. (2012), Jayaraman (2006), Diabat et al. (2013), Yu et al. (2014), China et al. (2015), Kirchoff et al. (2016), Younis et al. (2016).
Green production	Hervani (2005), Jayaraman (2006), Mutingi1 et al. (2014), Cosimato and Troisi (2015), Keivanpour et al. (2015), China et al. (2015), Hsu et al. (2016)
Green supplier selection	Chiou et al. (2011), Sarkis and Talluri (2002), Keivanpour et al. (2015)
Green packaging	Perotti et al. (2012), Yu et al. (2014), Cosimato and Troisi (2015), Hsu et al. (2016)
Green distribution	Hervani (2005), Hu and Hsu (2010), Perotti et al. (2012), Langella and Zanoni (2011), Mutingi1 et al. (2014), China et al. (2015), Cosimato and Troisi (2015), Keivanpour et al. (2015)
Reverse logistics	Hervani (2005), Tsoulfas and Pappis (2008), Zhu et al. (2010b), 2. Wang and Gupta (2011), Green Jr. et al. (2012), Perotti et al. (2012), Diabat et al. (2013), Mutingi1 et al. (2014), Hsu et al. (2016), Younis et al. (2016).
Investment recovery	Zhu and Sarkis (2004), Zhu et al. (2010b), Perotti et al. (2012), Diabat et al. (2013), Kirchoff et al. (2016)
Internal environmental management	Zhu and Sarkis (2004), Zhu et al. (2010b), Perotti et al. (2012), Green Jr. et al. (2012), Diabat et al. (2013), Kirchoff et al. (2016)
Cooperation with customers	Zhu and Sarkis (2004), Zhu et al. (2010b), Perotti et al. (2012), Green Jr. et al. (2012), Diabat et al. (2013), Kirchoff et al. (2016)
Source: authors' elaboration	

2.2 *GP*: definition and dimensions

According to Vanalle and Santos (2014), GP refers to two factors related to resource consumption of energy, water as well as raw materials, and pollution production in terms of hazardous products, waste and polluting agents. Zhu et al. (2005) and Perotti et al. (2012) assessed EP in terms of six dimensions to assess environmental performance: lessening of air emission, decreasing of waste and solid water, diminishing of energy consuming, reduction of using hazardous materials, and enhancement of organization's environmental situation. In their study on performance measurements in the greening of supply chains, Björklund et al. (2012) mentioned the following common measurements of EP: air emission, fuel and energy consumption, water use, and recycling. On the contrary, Nunes and Bennett (2007) adopted different indicators of EP in order to measure environmental benefits delivered rather than negative environmental actions perpetrated. In agreement with Younis et al. (2016), the present study adopts Zhu et al.'s, (2008) definition of EP, which refers to practices such as reduction of air emission, waste, hazardous materials, as well as environmental accidents.

2.3 Relationship of GSCP and GP

Results on the relationship between GSCP and GP are still mixed. Zhu et al. (2010 a) interjected that the evidence of the positive impact of GSC on EP is well developed in several studies. Perotti et al. (2012) tested the relationship between GSCP implemented by third party logistics in Italy and enterprise performance. Their findings reported little effects of GSCP adoption on business performance due to companies' limited levels of GSCP adoption. Kirchoff et al. (2016) looked into the impact of strategic organizational orientations on GSCM and company performance. Their findings acknowledged the valued role played by strategic orientations in implementing GSCP which succeeding firm performance. In their research paper on the relationship between GSCM practices and corporate performance of industrial firms in United Arab Emirates, Younis et al. (2016) sued four practices of GSCM: green purchasing, eco-design, reverse logistics, and environmental cooperation, and categorized corporate performance into four categories: economic, operational, social, and environmental performance. Based on their results, there is no statically significant relationship between GSCM practices and GP.

In order to eye the repercussion of GSCP on GP in Jordanian industrial settings, the present study scans six practices of GSC: green supplier selection, green purchasing, green production, green design, green distribution, and reverse logistics in order to investigate the impact of these constructs of green performance.

Green supplier selection

Akili (2009) defined green supplier selection as a process of selecting a supplier in accordance with specified criteria. According to Kuo et al., (2015), green supplier can be selected based on numerous criteria: quality, price/cost, green design, technology, and green image, and service, green cooperation with customers, environmental competences, and environmental performance. Chiou et al. (2011) investigated the impact of greening the suppliers on environmental performance and revealed that greening the supplier is positively related to environmental performance through green innovation. Examining a sample of organizations in South East Asia, Rao and Holt (2005) concluded that greening the overall phases of supply chain results in competitiveness and economic performance. Using a sample consisted of 300 manufacturing companies in Taiwan; Lee (2008) found that the involvement of supply chain suppliers in green practices is related to the enhancement of performance. Accordingly, the following hypothesis is presumed:

H01. There is a statistically significant impact of green supplier selection on green performance of Extractive Industries in Jordan

Green Purchasing

As reported by Younis et al. (2016), green purchasing refers to purchasing process carried out in compliance with environmental considerations at the side of ensuring declined wastes, recycled products together with reused materials. Zsidisin and Siferd (2001) translated green purchasing into a bundle of purchasing policies, procedures, and relationships adopted in different practices such as supplier selection, development and evaluation, materials procurement, reuse and recycling, in conjunction with product processing, packaging, and distributing in order to meet the standards of natural environment protection. In their case study on the impact of green purchasing practices on organizational performance in industrial companies, Nderitu and Ngugi (2014) pointed out an important contribution of green purchasing practices to company performance. In like manner, Carter et al. (2000) concluded that green purchasing is significantly correlated to company performance. Chin et al. (2015) found a positive relationship between GCSM practices, i.e., green purchasing, green production, green distribution as well as green logistics and sustainability performance (economic performance, social performance and environmental performance). Base on the above-mentioned literature, the following hypothesis is postulated:

H02. There is a statistically significant impact of green purchasing on green performance of Extractive Industries in Jordan

Green production

Baines et al. (2012) presented several definitions from which one can conclude that green production is an integrated system of product life cycle phases and environmental concerns to achieve couple objectives related to increase of resource utilization and decrease of negative environmental actions. Concerning the relationship between green production and environmental performance, the results revealed by Chen et al. (2013) confirmed the positive impact of green production on environmental performance of hi-tech companies in Taiwan. Yu and Ramanathan (2015) collected data from industrial firms in the UK in order to investigate the impact of green production on environmental performance. Their results revealed that green production operations are firmly related to green performance. As a result, the following hypothesis is established:

H03. There is a statistically significant impact of green production on green performance of Extractive Industries in Jordan

Green design

Eco-design is used interchangeably with green design. For Deshmukh and Vasudevan (2014), green design is a design approach appertains to the lifecycle of a product in which environmental priority is set to high. The ultimate aim of greening the design of products is to reduce the negative environmental impacts grown out of production, distribution and using products (Al Khattab et al., 2015). Utilizing a sample consisted of 150 companies in electronics industry; Singhal (2013) reported a significant relationship between green design and environmental performance. Beyene (2015) added that green design results in enhanced environmental performance.

In Jordan, Al Khattab et al. (2015) found a positive relationship between GSCP (green purchasing, cooperation with customers, inventory recovery, green information systems, internal environmental management, and green design) and green performance. Therefore, the following hypothesis is introduced:

H04. There is a statistically significant impact of green design on green performance of Extractive Industries in Jordan

Green distribution

Chin et al. (2015) identified that the main objectives of green distribution are to encourage using environment-friendly packaging raw materials and systems, standardizing packaging process in coordination with suppliers, using recycled materials along with producing recyclable packages, and reducing energy consumption in warehouses. Muma et al. (2014) investigated the effect of GSCM practices on environmental performance and found significant relationships between green purchasing, green production, green marketing, reverse logistics, and green distribution and environmental performance. The results of Chin et al. (2015) approved the significant and positive impact of green distribution as one of GSCP on environmental performance of industrial firms in Malaysia. Thus, the following hypothesis is supposed:

H05. There is a statistically significant impact of green distribution on green performance of Extractive Industries in Jordan

Reverse logistics

Fortes (2009) defined reverse logistics as recipient of shipped or distributed products for further manufacturing or recycling. Muma et al. (2014) identified sub-practices of reverse logistics: product return, material reuse, recycling, disposal of waste, and reproduction. According to Muma et al. (2014), reverse logistics is positively associated to environmental performance. Chin et al. (2015) repeat the same result as reverse logistics is positively related to environmental performance. On the other hand, Laosirihongthong et al. (2013) assured that reverse logistics have no significant relationship with performance.

H06. There is a statistically significant impact of reverse logistics on green performance of Extractive Industries in Jordan

3. Theoretical model

Figure 1 clarifies the potential relationships between study independent variables (green supplier selection, green purchasing, green production, green design, green distribution, and reverse logistics) and the dependent variable (GP).

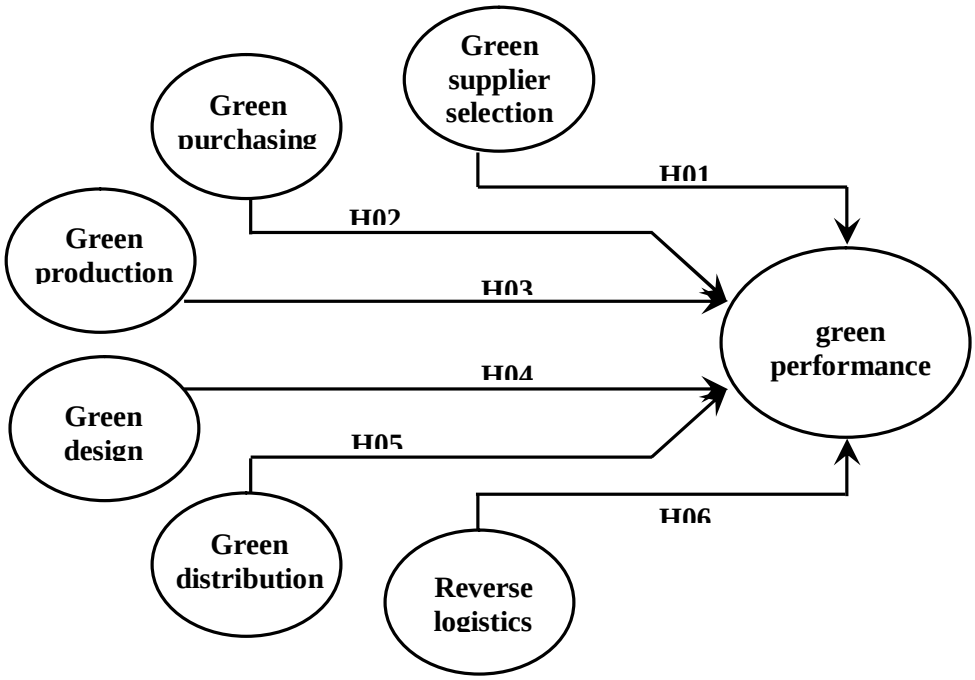

Figure 1: Study theoretical model

Methodology

3.1 Sample and data collection

The population of the study encompassed three companies in extractive industry (Jordan Phosphates Mines Company Ltd (JPMC), Jordan's cement factories, Arab Potash Company). A representative sample covers the whole population consisted of 78 of top and middle level managers were used to collect data. Out of the distributed questionnaires, 75 questionnaires were returned; out of them 1 was excluded. The final number of questionnaires is 74. Table 2 shows the characteristics of the sample.

Table 2: Sample characteristics

Variable		Frequency	%
Gender	Male	61	82.4
	Female	13	17.6
Education	Bachelor	53	71.6
	postgraduate	21	28.4

3.2 Measurements

A survey questionnaire was utilized to measure GSCP and GP. Green supplier selection measured based on Kuo et al. (2015) and Lee (2008) using items embraced five criteria: quality, price, green image, green cooperation with customers, and green performance. Green purchasing is assessed based on Zsidisin and Siferd (2001), Cosimato and Troisi (2015) and Holt and Ghobadian (2009) using items related to recycled products, reused materials, green packaging, reduced waste, and existence of formal policy on green purchasing. Green production evaluated on the basis of Baines et al. (2012) and Soubihia et al. (2015) through items cover resources utilization, waste generation, and material and energy consumption. Measures of green design are adopted from Deshmukh and Vasudevan (2014) and Al Khattab et al. (2015). Green distribution is measured based on Chin et al. (2015). Finally, reverse logistics are evaluated based on Fortes (2009) and Muma et al. (2014). Environmental performance, on the other hand, rated based on Vanalle and Santos (2014), Zhu et al. (2005), Perotti et al. (2012), Björklund et al. (2012), Zhu et al. (2008), and Younis et al. (2016). Table 3 shows indicators used to measures GSCPs in this study.

Table 3: Indicators used to measure GSCPs in the study

Practice	Indicators	References
Green supplier selection	Quality, price, green image, green cooperation with customers, and environmental performance.	Kuo et al. (2015) and Lee (2008).
Green purchasing	Recycled products, reused materials, green packaging, reduced waste, and existence of formal policy on green purchasing.	Zsidisin and Siferd (2001), Cosimato and Troisi (2015), and Holt and Ghobadian (2009).
Green production	Resources utilization, waste generation, material and energy consumption.	Baines et al. (2012) and Soubihia et al. (2015).
Green design	Reduce consumption of materials, energy, toxic materials, and materials reuse and recycle.	Zhu et al. (2008).
Green distribution	Use green packaging and recyclable materials, reducing the consumption of energy, air emissions, and transportation cost.	Mutingi et al. (2014), Chin et al. (2015), and Seroka-Stolka (2014)
Reverse logistics	Waste and parts collection, inspection and processing, redistribution and disposal.	Mutingi et al. (2014), Muma et al. (2014), and Laosirihongthong et al. (2013).
GP	Lessening of air emission, decreasing of waste and solid water, diminishing of energy consuming, reduction of using hazardous materials and recycling.	Vanalle and Santos (2014), Perotti et al. (2012), Zhu et al. (2008), Younis et al. (2016), and Chiu and Hsieh (2016).

4. Reliability of research instrument and measurement scales

After the survey had been completed the reliability of the scales was used to examine the internal consistency of degree of green supply chain scale between various factors influencing green performance for validity by computing their coefficient alpha (Cronbach alpha). After analyzing the total scale and respective, a higher a value indicated a higher internal consistency within the questionnaire as a whole (Wang, 2005). According to Sekaran (2000) mention, it is a low and acceptable standard if the Cronbach Alpha is 0.6. All scales were found to exceed a minimum threshold of 0.6. Convergent validity is also suggested when the individual variable scores are combined into a single scale to give a Cronbach alpha of 0.89.

Factors of green supply chain include green supplier selection, green purchasing, green production, green design, green distribution, and reverse logistics. Cronbach's a were .86, .78, .86,.89, .73,.88, respectively. Green performance. Cronbach alpha was .864. It has shown that the reliability between green supply chain, and green performance was good and it was in accordance with the internal factors. The actual results of the scale reliability analysis are reported in Tables (4) and (5).

Table 4: Scale Reliability of the green supply chain dimensions

Construct and item	**Item to total correlation**	**Scale alpha if item deleted**	**Reliability**
Green supplier selection **(GSS)**			0.86
GSS1	0.38	0.39	
GSS2	0.31	0.54	
GSS3	0.33	0.49	
GSS4	0.28	0.38	
Green purchasing **(GP)**			0. 78
GP1	0.54	0.59	
GP2	0.39	0.56	
GP3	0.45	0.58	
GP4	0.44	0.64	
GP5	0.32	0.42	
Green production **(GPR)**			0.86
GPR1	0.22	0.33	
GPR2	0.39	0.51	
GPR3	0.30	0.39	
Green design		0.89	
GD1	0.33	0.38	
GD2	0.32	0.43	
GD3	0.31	0.40	
GD4	0.39	0.48	
Green distribution		0.73	
GDI1	0.23	0.38	
GDI2	0.30	0.43	
GDI3	0.41	0.53	
GDI4	0.39	0.48	
Reverse logistics		0.88	
RL1	0.23	0.38	
RL2	0.32	0.54	
RL3	0.31	0.54	

Table 5: Scale Reliability of the Green performance

Construct and item	Item to total correlation	Scale alpha if item deleted	Reliability
Green performance **(GP)**			0.864
GP1	0.32	0.56	
GP2	0.39	0.54	
GP3	0.30	0.43	
GP4	0.33	0.49	

5. Correlation analysis

The correlation matrix was calculated to identify bivariate links among the variables of the study. The results of these correlations can be viewed in Table (6).

Table 6: Summary of correlations

Variables	Mean	S.D	GSS	GP	GPR	GD	GDI	RL	GP
GSS	3.48	0.79	1	0.45**	0.26**	0.46**	0.36**	0.33**	0.52**
GP	3.57	0.66		1	0.33**	0.71**	0.44**	0.52**	0.65**
GPR	3.66	0.85			1	0.62**	0.76**	0.44**	0.49**
GD	3.48	0.88				1	0.52**	0.49**	0.62**
GDI	3.86	0.93					1	0.76**	0.71**
RL	3.01	0.77						1	0.64**
GP	3.40	0.78							1

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

The correlation matrix illustrated in table (6) highlighted that the correlation coefficients were ranging from (0.26) to (0.76). According to the table, dimensions of green supply chain (green supplier selection, green purchasing, green production, green design, green distribution, and reverse logistics) were positively correlated to green performance. The highest value of correlation coefficient between independent variables was (0.76), which indicated that the model of the study is free of multi co linearity (Hair et al., 1998).

6. Descriptive statistics analysis

The statistical description of green supply chain dimensions and green performance, shown in table (6), indicated that Green distribution is most prevalent dimension of green supply chain (M = 3.86, SD = 0.93), then green production (M = 3.66, SD = 0.85) , green purchasing(M = 3.57, SD = 0.66) , green supplier selection(M = 3.48, SD = 0.79) , green design(M = 3.48, SD = 0.88) , followed by reverse logistics (M = 3.01, SD = 0.78).

7. Multiple regression analysis.

The influence of green supply chain on green performance was analyzed using multiple regression analysis. According Hair et al. (1998), it is a constructive statistical technique used to examine the relationship between a single response and several predictors. Particularly, simultaneous regression analysis was conducted, so all study constructs were entered together. Regression results are shown in Table (7). The tolerance values were more than 0.10 and the values of variance inflation factor (VIF) were less than ten. Hence, the model is free of any serious multi co linearity problem (Hair et al., 1998). On the basis of the analysis, one can concluded that the model of multiple regression used in this study met the assumptions required to ensure validity of its significance test (Ooi et al., 2007b). Accordingly, there was a significant link between green supply chain dimensions and green performance.

Table 7: Regression Summary of green supply chain to Green performance (N=74)

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. error	ß			Tolerance	VIF
1	Constant	1.138	0.056		7.417	0.000		
	Green supplier selection	.541	.095	.463	5.709	0.000	.208	4.798
	Green purchasing	0.116	0.036	0.135	3.246	0.001	0.775	1.290
	Green production	0.135	0.031	0.145	3.278	0.002	0.656	1.525
	Green design	.192	.048	.190	3.986	0.000	.405	2.467
	Green distribution	.262	.066	.273	4.002	0.000	.212	4.725
	Reverse logistics	.261	.058	.260	4.540	0.000	.247	4.048
Notes: R 2 = 0.273; Adj. R 2 = 0.268; Sig. F = 0.000; F-value = 56.666; dependent variable, Green performance p < 0.01								

The correlation of green supply chain and green performance was positive (r=0.531, p< .01). Table 7 shows the regression analysis for green supply chain and green performance.. About 26.8% of the variance in green performance can be explained by the three dimensions of green supply chain ($R^2 = 0.268$). The proposed model was adequate as the F-statistic = 56.666 were significant ($p < 0.01$). This indicates that the overall model was reasonable fit and there was a significant correlation between green supply chain dimensions and green performance. The individual model variables revealed that dimensions of green supply chain were revealed to have a positive influence on green performance. So that green supplier selection, green purchasing, green production, green design, green distribution, and reverse logistics have high contributions in the research model.

8. Discussion and conclusion

The aim of this study was to explore the impact of GSCP (green supplier selection, green purchasing, green production, green design, green distribution, and reverse logistics) on green performance of Extractive Industries in Jordan. The empirical results of the study provided evidence of a significant impact of GSCPs on green performance. The results revealed that Extractive Industries in Jordan select their suppliers based on criteria such as quality, price, green image, green cooperation with customers and green performance. Rao and Holt (2005) and Lee (2008) found similar results.

According to a study by Khaksar et al. (2016), green supplier was negatively associated with green performance. The results also suggest that green purchasing as evaluated by purchasing recycled products with reused materials in green packaging in order to reduce waste besides the existence of formal policy on green purchasing increased green performance. This result is similar to result the reported by Nderitu and Ngugi (2014), Carter et al. (2000) and Chin et al. (2015).

Moreover, there is a statistical significant impact of green production measured by resource utilization, waste generation, along with material and energy consumption. Similar to this study, Chen et al. (2013) found a positive impact of green production on environmental performance. Chien and Shih (2007) added that the adoption of green production standards has a significant impact on environmental and financial performance of electrical and electronic firms in Taiwan. As approved by Green Jr et al. (2012), Singhal (2013), Beyene (2015), and Al Khattab et al. (2015) green design is positively related to environmental performance of manufacturing companies. Like Muma et al. (2014), Chin et al. (2015), and Seroka-Stolka (2014), the current study confirmed that green distribution has a significant impact on environmental performance. Finally, the results of the study emphasized a significant impact of reverse logistics on environmental performance. Similar results were reached by Muma et al. (2014), Chin et al. (2015), Laosirihongthong et al. (2013), and Tan (2002). Appropriately, the study concluded that GSCP contribute positively to environmental performance of Extractive Industries in Jordan. The impact of GSCP occurs in terms of minimization of air emission, waste and solid water, energy consumption, hazardous materials, and recycling.

9. Implications and Recommendations

The findings of this study contribute to the literature on the relationship between green supply chain practices and green performance of Extractive Industries in Jordan. Jordanian industrial firms instruct that the adoption of GSCP is not only meets external pressures but also enhance their performance. Further studies are needed to examine the impact of GSCP on green performance of industrial companies from different industries in order to ensure generalizability of the results. Constructs such as operational and economic performance should be examined in relation to GSCP in Jordanian settings.

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