Impact of Organization Culture on Promoting Green Supply Chain

Subhani, Muhammad Imtiaz and Hasan, Syed Akif and Osman, Ms. Amber

Iqra University Research Center

2012

Published in
American Journal of Scientific Research (AJSR), 2012

Impact of Organization Culture on Promoting Green Supply Chain

Muhammad Imtiaz Subhani
Iqra University Research Centre- IURC, Iqra University-IU,
Defence View Shaheed-e-Millat Road (Ext.), Karachi-75500, Pakistan
E-mail: drsubhani@yahoo.co.uk
Tel: (92-21) 111-64-264 (Ext. 2010); Fax: (92-21) 35894806

Syed Akif Hasan
Iqra University Research Centre-IURC, Iqra University-IU,
Defence View Shaheed-e-Millat Road (Ext.), Karachi-7500, Pakistan
E-mail: drakifhasan@gmail.com
Tel: (92-21) 111-64-264 (Ext. 1513); Fax: (92-21) 35894806

Muhammad Khurram Amin
Iqra University Research Centre-IURC, Iqra University-IU,
Defence View Shaheed-e-Millat Road (Ext.), Karachi-7500, Pakistan
E-mail: khurram.amin@yahoo.com
Tel: (92-21) 111-64-264 (Ext. 2024)

Amber Osman
Iqra University Research Centre- IURC, Iqra University-IU,
Defence View Shaheed-e-Millat Road (Ext.), Karachi-75500, Pakistan
E-mail: amber.osman@yahoo.com
Tel: (92-21) 111-64-264 (Ext. 2024)

Abstract

This paper identifies factors that impede/promote the use of a green supply-chain approach in Small and Medium size organizations in Pakistan. Quantitative approach was used to evaluate the proposition of the paper i.e. impact of government rules and regulation, customer pressure and environmental awareness on promoting green supply chain management in organizations. The results of this study identified that presence of strong rules and regulations imposed by the government and the pressure exerted by the customer promotes the use of green supply chain in SMEs. Furthermore, lack of awareness regarding green supply and its advantages does impede the use of green supply chain in SMEs in Pakistan.

Keywords: Green Supply Chain, Environmental Awareness Small/Medium sized enterprises (SMEs).

1. Introduction

Sustainability regarding the supply chain activities in some organizations may not be up to the mark.

Un-supportive use of supply with no long-term plan and imperiled economic future prospects is said to be the unsustainable practices in Supply Chain, which reflects a bad view of the economy (Edwards, 2008).

For sustainable growth of organizations, particularly it endures leadership and updated supply chain practices of small and medium size enterprises (SME's) world-wide, which has been eminent in early 1990s'. As the world is progressing, on the other side there are certain entrants of SMEs' in the market, which are not obligating the proper function of organization leadership and its practice. It is universally known that green pastures, green land, green environment is extremely crucial and when the business setups use and function in an enormous way, it also in their corporate social responsibility that to develop eco-friendly setup. One of the prime competitive advantage of SME is to keep a strong hold on sustainable practices.
Specifically, firms which come in SME's fail mostly because 1- their operations are not sustainable
2- Lack of information sharing and education about sustainable practices organization wide (Edwards, 2008). Businesses globally have an edge to keep-up their profits by producing more than the planned and pressurizing oneself to adopt the green practices on the long-term basis.

2. Literature Review

With the planet population expected to grow from 7 billion today to 8 billion in 2020, utilization of different resources will naturally increase, increasing pressure to supply more services or goods and, therefore, building strain on the natural environment (Elkington, 2002). Satisfying this increase in demand for goods has the potential to further devastate already stressed ecosystems. With population growth and development seemingly inevitable, reducing the environmental impact of development is perhaps the most feasible course to sustainable development and the one that can be implemented most quickly (Kemp, 1993). And with resources scarcity becoming more common, it is also the most imperative. Therefore, environmental compliance and sustainability is one of the critical challenges faced by all manufacturing and service industries**.**

One consequence of this general awareness regarding the natural environment is the greater scrutiny of manufacturing organization's operation and supply chain practices by a number of stakeholder groups.

The definition of SCM, according to Hugos (2006), is "the management of production, inventory, location, and transportation among the players of the supply chain to accomplish the greatest mix of competent receptiveness for the market being serviced" (p. 4). The theory of Supply Chain Management (SCM) emerged in the 1980s. Before then, the approach was classified as a part of the operations and logistics portion of the organization. Among the founding theorists who formed the ideas incorporated in what is known as SCM, Porter (1985) stands out, having laid the foundation upon which all others have built. With the introduction of the theory of the value chain, Porter (1985) began a movement that would span three decades, transforming the method of using the supply chain to increase profits. SCM can be broken down into five key areas that the manager must understand and guide (Hugos, 2006).

In SCM, production breaks down into two areas-production design, which requires an understanding of the product method and the intended use of the product, and production scheduling, which requires the SCM team to have a clear understanding of supply and demand and order fulfillment (Hugos, 2006).

Inventory serves to establish a cushion of material needed in SCM to complete any section of the production procedure. The importance of inventory can lead to a sustained investment in raw materials, and requires a tracking method that preserves acceptable inventory levels. Recent SCM advances have focused on creating a lean approach to the practice (Vollmann, Berry, & Whybark, 2005).

Managers must focus on where production and supplies should be placed, using efficient models that lead to a high-performing SCM. The premier practice of the "just-in-time" or "build-to-order" supply chain was developed in the technology industry. In that model, supplies are ordered as needed from companies whose warehouses are near the manufacturing plant (Christensen, Germain, & Birou, 2005).

Playing an important role in SCM, according to Hugos (2006), transportation is the process by

which the product is sent from one production warehouse to another or is sent to a seller. To be successful in this area, one must provide the most efficient means of access possible while ensuring cost control and production efficiency.

With good, timely information, a leader can effectively coordinate product decisions based on supply-chain needs (Vollmann, Berry, & Whybark, 2005). Each of these key functions has helped develop SCM to the next level. Understanding each step of the supply chain allows leaders to decide upon production design. Leaders who follow Porter's (1985) values change can ensure expansion of the company's profit margin. These steps also help leaders fully direct the standard SCM approach toward a green supply-chain management approach.

2.1. Green Supply-Chain Management

As industries have moved to increase profits in an already tight market, they have increasingly focused on ways to control the costs associated with the supply chain. One way to accomplish that goal is to move from a standard supply chain to a green one.

Srivastava (2007) defined Green Supply Chain Management (GSCM) as "incorporating environmental thoughts into supply-chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the customer moreover, the end-of-life cycle" (pp. 54-55). GSCM emerged from environmental and supply-chain management and was founded on principles presented in Porter's (1985) value-chain model. Overwhelming pressures from consumers and regulatory agencies are key reasons for the growing demand for GSCM. Furthermore, Wilkerson (2005) postulated that GSCM is a value driver in today's market as an effective tool for cutting organizational costs. The literature has focused on three areas, centered on the significance of the role of GSCM design in the implementation of the GSCM approach.

2.2. Importance of Green Supply-Chain Management

As GSCM grew and gained increased attention from researchers, the early literature in the area focused on the significant impact of the approach on the well-being of the environments in which corporations work. Much of the work of early theorists focused directly on the green approach as an economic plan for survival. Porter and Van Der Linde (1995a, 1995b) discussed the rudiments behind the movement toward green practices, which were (a) increasing supply savings, (b) reducing waste, and (c) increasing productivity. According to Srivastava (2007), three advancements emerged in GSCM: the reactive, the proactive, and the value-seeking. Of these, the reactive approach requires the least supply investment, and usually involves updating product labeling and exploring ways to lower the impact of production on the environment. The proactive approach is a midlevel undertaking in which organizations invest modest capital in an attempt to self-regulate, and focus research and design on creating greener products while taking steps to create a recycling program. The last approach is value-seeking, through which companies focus on implementing ISO design and employing a green approach to purchasing.

Van Hoek (1999) postulated that once using GSCM, a company's attention turns to economic advantage. Sundin and Bras (2005); Sarkis (1995) both discussed methods of importance for environmentally friendly production. Hervani, Helms, and Sarkis (2005) argued that because of changing supply-chain requirements, environmental managers need to focus on a green approach in order to handle necessary supply-chain change. Beamon (1999) urged the need to set up new methods for gauging GSCM performance and proposed that traditional methods of measuring supply-chain performance be expanded to evaluate product recovery methods.

The product life cycle has presented an increasingly important issue, especially when appropriation of material is involved, as well as the specific impact on product supplier relations in selecting materials for product development (Stonebraker & Liao, 2006). Seuring (2004) argued that performance and economic indicators control which approach is used to address waste management and packing requirements as well as government regulations. White, Masanet, Rosen, and Beckman (2003) explored ways GSCM affects environmental management and the consequences associated with the environmental outcomes of reverse manufacturing.

The link between operational management and superior performance practices was explored abundantly during earlier implementations of the GCSM approach (Zhu & Sarkis, 2004). Bowen, Cousins, Lamming, and Farauk (2001) addressed the inconsistency that faced leaders in early attempts

to implement GSCM and Chouinard, D'Amours, and Ait-Kadi (2005) concentrated on issues indirectly connected to the incorporation of reverse logistics (RL) in the supply chain. The expansion by Nagurney and Toyasaki (2005) of the framework that encompassed a multitier design helped to define the network equilibrium, leading Sheu, Chou, and Hu (2005) to focus on a logistical operations model for setting up and incorporating GSCM. Several alternative methods exist to address the need for RL (Ravi, Shankar, & Tiwari, 2005). Those methods foster guidelines, according to Mukhopadhyay and Setoputro (2005), which focus on return procedures of manufacturers when ordering merchandise. Srivastava and Srivastava (2005) asserted that the range in which the supply-chain works must include ways to incorporate the use and recycling of return and end-of-market life-cycle production. The approach was proposed to include the use of the multiple utility theory, which helped create an approach for the assessment of the GSCM.

3. Research Methodology

3.1. Method of Data Collection

Primary data i.e. questionnaire survey instrument was used to conduct this research study. The data collection process included the distribution of questionnaires, which were self-administered to different industrial companies in Karachi.

3.2. Sampling Technique

The sample population was Karachi and its manufacturing organizations. The technique was restricted non-probability technique in this research scenario as those organizations were chosen, which already encourage green supply chain management.

3.3. Sample Size

The respondents were the employees of manufacturing organizations endorsing green supply chain, knowing the fact that there are not much firms in green SC practices. A total of 100 respondents were handed over the questionnaire with prompt instructions and assistance.

3.4. Instrument of Data Collection

Questionnaire survey was used for the purpose and keeping in view the information grabbed from the related extant research studies. The measurement scale used was likert scale ranging options from 1- strongly disagree to 5- strong agree

3.5. Statistical Technique

The econometric technique of Censored Normal (TOBIT) (Quadratic hill) climbing was used to explore the Impact of independent variables which are government rules and regulation, customer pressure and environmental awareness on organizational practices.

In this research, the impact of organization culture on promoting green supply chain management is crucial for organizations for the reason that one can ensure that whether the organizations in this region and in today's times impede or promote the green supply chain management practices according to their current organizational ideology.

4. Results and Findings

Table: 4.1:

Dependent Variable: NEW_OP

Method: ML - Censored Normal (TOBIT) (Quadratic hill climbing)

Date: 06/25/12 Time: 17:49

Sample: 1 100

Included observations: 100
Left censoring (value) at zero
Convergence achieved after 3 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
NEW_GR	0.229609	0.088485	2.594908	0.0095
NEW_CP	0.234686	0.084999	2.761023	0.0058
NEW_EA	0.121627	0.125820	0.966669	0.3337
C	1.635346	0.447858	3.651484	0.0003
	Error Distribution			
SCALE:C(5)	0.677430	0.047901	14.14224	0.0000

Mean dependent var	3.572000	S.D. dependent var	0.786256
S.E. of regression	0.695032	Akaike info criterion	2.158978
Sum squared resid	45.89159	Schwarz criterion	2.289236
Log likelihood	-102.9489	Hannan-Quinn criter.	2.211696
Avg. log likelihood	-1.029489		

Left censored obs	0	Right censored obs	0
Uncensored obs	100	Total obs	100

Censored Normal (TOBIT) (Quadratic hill climbing) was carried out. Three variables were used as the independent variables and one variable was used as the dependent variable in this research. That Censored Normal (TOBIT) produced Z-statistics of government's rules and regulation 2.4594 with an significance value of 0.0095 because it is less than 0.05. Furthermore, Coefficient of government rules and regulation also reported significant and positive results the value of coefficient 0.2296 which highlighted that since government rules and regulation was the primary motivator of implementing on green supply chain practices.

Second Censored Normal (TOBIT) was carried out by setting customer pressure as an independent variable. The most answered reason for why a promoting green practices at organization had been implemented was because the customer wanted it. Z-statistics value of customer pressure 2.761 with an significance value of .0058 because it is less than 0.05 and the coefficient value of customer pressure also reported significant and positive results which is 0.2346.

Last independent variable which is environmental awareness Z-statistic value is 0.966 with an insignificant value of 0.3337 because it is greater than 0.05.

In the coefficient table the intercept coefficient is estimated .001. And the environmental awareness coefficient value is 0.1216 and this predictor is insignificant. So there is no affect of environmental awareness on promoting of green supply chain at organizational,

However, when the one insignificant predictors (Environmental Awareness) was no affect on promoting green supply chain at organization but on the other hand that clearly show that two predictors which are (Government Rules and Regulation and Customer Pressure) explained if any amount of government pressure on organization regarding green supply chain performance then they

will definitely implement on organization or opt as an organizational practices and similarly customer pressure has significant impact on organizational practices, if customer demands will towards green supply practices they go with it or customers instruction will be followed.

5. Conclusion and Discussion

The goal of this quantitative research study was to identify factors that hinder/promote the exercise of a green supply-chain approach in Small and Medium size organizations in Pakistan. The research involved the participation of 100 respondents including CEOs, general managers, supply chain managers, operations managers, and supply chain practitioners. Results of this study identified that presence of strong rules and regulations imposed by the government and the pressure exerted by the market/customer would promote the use of green supply chain in SMEs. Furthermore, lack of awareness regarding green supply and its advantages does impede the use of green supply chain in SMEs in Pakistan. The results of the study increase the body of knowledge on green supply-chain management in small and medium enterprises in Pakistan. This research provides SMEs in Pakistan with information concerning what factors impede or promote successful implementation of the green supply-chain approach and thus improve results in their organizations.

The results of this study have identified various factors that either impede or promote the implementation of Green supply chain in SMEs in Pakistan. Lack of environmental awareness was found to be the main factor that can impede green initiates in SMEs in Pakistan. Previous research has also identified that small-sized companies were less ready to implement green initiatives because of lack of awareness (Walker, Di Sisto, & McBain, 2008). Companies that have been aware of environmental concerns were more ready to implement green projects. The findings also point out that the most of the companies or their representatives participated in this study were not aware of potential advantages that can be gained by green implementation. The majority of respondents believed that the cost of implementing green supply chain would out weight its benefits.

This study identified that the drivers of a company to implement “green” include governmental rules/regulations, customers and suppliers pressure. The results indicated that government rules and regulation and market/customer pressure would promote the implementation of green supply chain initiatives in SMEs. The findings of this study were consistent with previous studies. Market/customer and government pressures through regulation influenced them to get better ecological l performance. Furthermore, Seuring and Muller (2008) collected 191 papers published from 1994 to 2007 and proposed a model for the drivers of sustainable supply chain management. External drivers were from the government, customers, and stakeholders. The company was pressured by these drivers and then passed these pressures to suppliers, which also influenced the company. They also categorized existing studies of pressures and incentives to the sustainable supply chains into 6 groups: legal stress/regulation, customer requirements, response to stakeholders, competitive advantage, ecological and social pressure, and status loss.

References

[1] Beamon, B. M. (1999). Designing the green supply chain. *Logistics Information Management*, 12: 332-342.

[2] Bowen, F. E., Cousins, P. D., Lamming, R. C., & Faruk, A. C. (2001). Horses for courses. *Greener Management International*, 35: 41-60.

[3] Chouinard, M., D'Amours, S. & Ait-Kadi, D. (2005). Integration of reverse logistics activities in a supply chain information system. *Computers in Industry*, 56(1): 105-124. doi: 10.1016/j.compind.2004.07.005.

[4] Christensen, W.J., Germain, R. & Birou, L. (2005). Build-to-order and just-in-time as predictors of applied supply chain knowledge and market performance. *Journal of Operations*, 23: 470-81.

[5] Edwards, M. (2008). Biowar1: Ethanol leads to hunger. Tempe, AZ: Talent DNA Press.

[6] Elkington, J. (2002). Cannibals with forks: The triple bottom line of 21st century business Oxford: Capstone.

[7] Hervani, A. A., Helms, M. A. & Sarkis, J. (2005). Performance measurement for green supply chain management. *Benchmarking: An International Journal*, 12(4): 330353.

[8] Hugos, M. (2006). Essentials of supply chain management (2nd ed.). New York, NY: John Wiley.
[9] Kemp, R. (1993). An economic analysis of cleaner technology: Theory and evidence, Washington DC.
[10] Mukhopadhyay, S. K. & Setoputro, R. (2005). Optimal return policy and modular design for build-to-order products. *Journal of Operations Management*, 23, 496-506.
[11] Nagurney, A. & Toyasaki, F. (2005). Reverse supply chain management and electronic waste recycling: A multi-tiered network equilibrium framework for e-cycling. *Transportation Research Part E: Logistics and Transportation Review*, 41, 1-28.
[13] Porter, M. (1985). Competitive advantage. New York, NY: Free Press.
[14] Porter, M. E. & Van Der Linde, C. (1995a). Green and competitive. *Harvard Business Review*, 73(5), 120-34.
[15] Porter, M. E. & Van Der Linde, C. (1995b). Toward a new conception of the environment-competitiveness relationship. *Journal of Economic Perspectives*, 9(4), 97-118.
[16] Ravi, V., Shankar, R. & Tiwari, M. K. (2005). Productivity improvement of a computer hardware supply chain. *International Journal of Productivity and Performance Management*, 54,239-255.
[17] Sarkis, J. (1995). Supply chain management and environmentally conscious design and manufacturing. *International Journal of Environmentally Conscious Design and Manufacturing*, 4, 43-52.
[18] Seuring S. (2004). Industrial ecology, life cycles, supply chains: Differences and interrelations. *Business Strategy and the Environment*, 13, 306-319.
[19] Seuring, S. & Muller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16. 1699-1710.
[20] Sheu, J. B., Chou, Y.H. & Hu, C.C. (2005). An integrated logistics operational model for green supply chain management. *Transportation Research Part E*, 41, 287- 313.
[21] Srivastava, S. K. (2007). Green supply-chain management: A state-of-the-art literature review. *International Journal of Management Reviews*, 9(1),53-80.
[22] Srivastava, S. K. & Srivastava, R. K. (2005). Profit driven reverse logistics. *International Journal of Business Research*, 4, 53-61.
[23] Stonebraker, P. W. & Liao, J. (2006). Supply chain integration: Exploring product and environmental contingencies. *Supply Chain Management: An International Journal*, 11(1), 34-43.
[24] Sundin, E. & Bras, B. (2005). Making functional sales environmentally and economically beneficial through product remanufacturing. *Journal of Cleaner Production*, 13, 913-925.
[25] Tisdell, C. A. (2000). Globalisation and the WTO: Attitudes expressed by pressure groups and by less developed countries. Brisbane, Queensland, Australia: University of Queensland, Dept. of Economics.
[26] Van Hoek, R. I. (1999). From reversed logistics to green supply chains. *Supply Chain Management*, 4(3), 129-135.
[27] Vollmann, T. E., Berry, W. L. & Whybark, D. C. (2005). Manufacturing planning and control systems. New York: Irwin/McGraw-Hill.
[28] Walker, H., Di Sisto, L. & McBain D. (2008). Drivers and barriers to environmental supply chain management practices: Lessons from the public and private sectors. *Journal of Purchasing and Supply Management*, 14(1). 69-85.
[29] White, C. D., Masanet, E., Rosen, C. M. & Beckman, S. L. (2003). Product recovery with some byte: an overview of management challenges and environmental consequences in reverse manufacturing for the computer industry. *Journal of Cleaner Production*, 11, 445-458.
[30] Wilkerson, T. (2005). Can one green deliver another? Boston: Harvard Business School.
[31] Zhu, Q. & Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises. *Journal of Operations Management*, 22, 26S289. doi:10.1016/j.jom.2004.01.00S.