

**AN INVESTIGATION INTO SUSTAINABLE SUPPLY CHAIN
MANAGEMENT PRACTICES IN A DEVELOPING COUNTRY**

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—Abstract —

The purpose of this paper is to study current practices on sustainable supply chain management (SSCM) in a developing country. To this end, five research questions that focus on the motivations for implementing SSCM initiatives, the level of awareness on SSCM issues, obstacles to implementing SSCM, best practices in SSCM, and responsibilities in SSCM are proposed. The research questions were investigated through four case studies, including automotive, electronics, white goods, and furniture companies. All four companies were based in Turkey. The findings show that SSCM is still in its embryonic stages in the case companies. The findings also suggest that the case companies are somewhat hesitant to launch an initiative to implement full-fledged SSCM practices due to the costs associated with setting up a SSCM system. In addition to research specific to the Turkish context, the paper provides a needed reference point on the application of SSCM in developing nations.

Key Words: *Sustainable supply chain management, Turkey, Case study.*

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1. INTRODUCTION

Sustainable supply chain management (SSCM) has gradually become a significant subject for many organizations in recent years. Research in SSCM builds on the concepts of both sustainable development and supply chain management (SCM). Increasingly, traditional problem solving techniques in SCM are being modified or replaced by those that incorporate the concept of sustainable development (Wikström, 2010). The incorporation of sustainable development into SCM began with the shipping recyclable secondhand goods from the points of consumption to recycling collection points, evolved with the integration of recovery activities (such as reuse and remanufacturing), and ultimately evolved into the integrated approach that is now known as SSCM. For the purpose of this paper, SSCM is described as the effective and efficient organization of the sequences of events necessary for collecting a product from a consumer and either dispose of it or recover value (Prahinski and Kocabaşoglu, 2006). Many researchers argue that SSCM can be a crucial enabler of corporate sustainability if it is planned and implemented effectively (Seuring and Müller, 2008; Govindan et al., 2015).

Despite its importance, there is a lack of systematic reports on the implementation of SSCM in Turkey. Therefore, the purpose of this paper is to explore some of the current perspectives and practices on SSCM in the country. To achieve this aim, several research questions are proposed. The questions are addressed through a case study approach that focuses on four large Turkish companies. In addition to research specific to the Turkish context, note that this paper may provide a needed reference point on the application of SSCM in developing nations.

2. LITERATURE REVIEW

There is an extensive body of literature review, empirical and case studies focusing on SSCM besides the studies displayed above, such as Van Hoek, 1999; Guide and Van Wassenhove, 2003; Dekker *et al.*, 2003, Srivastava, 2007; Guide and Jayaraman, 2000; Rogers and Tibben-Lembke, 2001; Chan and Chan, 2008; Ansari and Kant, 2017; Bastas and Liyanage, 2018.

In addition, some of the existing literature focuses on the application of SSCM in developed countries. For example, Harms (2012) examines two SSCM strategic

methods in Germany's largest companies. The survey-based analysis uncovers that large German stock companies mainly apply risk-oriented, rather than business opportunity-oriented, SSCM strategies. Studies of SSCM focusing on organizations operating in developing countries are less common. Gopalakrishnan et al., (2012) scrutinizes the enablers of Sustainability and associated vital characteristics based on existing literature and a case study. A summary is provided about the British Aerospace (BAe) Systems' sustainability plans and actions. The authors suggest that two resultant frameworks exhibit the interdependence of the triple bottom line and the critical components necessary for a sustainable supply chain.

To the best of our knowledge, existing work on SSCM in developing countries has focused on several countries, such as China, Malaysia, Brazil, India, Thailand, Pakistan, Mexico, Indonesia, United Arab Emirates.

For example, empirical studies by Zhu and Sarkis (2006) and Zhu *et al.*, (2007) have investigated issues related to green SCM in China. Another key study was conducted by Lau and Wang (2009), who adopted a case study approach in a study of four major consumer electronic product manufacturers in China.

As another example, Li and Olorunniwo (2008) report on another case study that focuses the key characteristics of a generic RL process flow as well as the key strategic issues that a firm may use for competitive advantage. Zailani *et al.*, (2012) examines the application of sustainable supply chain management practices. The study also scrutinizes the results of these applications on sustainable supply chain performance. Bouzon et al., (2015) identify the drivers that facilitate reverse logistics implementations in a developing economy. Their findings suggest that the government and legislation was not a main influence on the case company. Shaharudin *et al.*, (2015) examined five case studies of manufacturers in the automotive, and electrical and electronics industry in Malaysia. Silvestre (2015a) displays a case study of the upstream oil and gas industry supply chain in Brazil to build propositions about supply chains. The author discusses two key outcomes: First, the case indicates that building an optimum sustainable supply chain is not an endpoint, but a never-ending process. Silvestre (2015b) investigates a representative case in a developing economy and constructs on stakeholder and contingency theories. The methodology employed

in this study is then detailed, followed by an exploratory in-depth illustrative case study in the oil and gas supply chain in Brazil. Silvestre et al., (2017) explored the port sustainability management system of a single oil and gas company in Brazil.

Finally, Jia *et al.*, (2018) present an analysis of the academic literature addressing SSCM practices in developing countries. The paper discusses research opportunities in the literature that needs additional study on this subject, mainly for the context of emerging countries. Mathivathanan *et al.*, (2018) is aimed at exploring interconnected effects among SSCM practices in the automotive industry.

2. RESEARCH QUESTIONS

Research on SSCM in Turkey is in its infancy. Therefore, it is necessary to conduct exploratory research that will lay the groundwork for future empirical studies. Based on a review of the literature, five key research questions have been identified.

Research Question 1: What are the motivations for pursuing SSCM initiatives in Turkey?

Motivations for pursuing SSCM initiatives, particularly product returns, have been studied by a number of authors in other countries (Rogers and Tibben-Lembke, 2001; Sahay et al., 2006; Lee, 2008; Zhu et al., 2007; Zhu and Sarkis, 2006; Li and Olorunniwo, 2008; Lau and Wang, 2009; Shaharudin, 2015; Bouzon *et al.*, 2015). However, there is a need to better understand how the published motivations are similar to those of organizations in a developing country, such as Turkey. Therefore, the first research question focuses on why the companies have an interest in SSCM practices.

Research Question 2: What is the level of awareness among decision makers in Turkey with respect to SSCM-related legislation?

Studying existing level of awareness among decision makers towards policies, legislation and measures of related subjects such as waste prevention, recycling, and product recovery may provide insight into the associated benefits, barriers and

incentives to implementing SSCM strategies (Prahinski and Kocabaşoğlu, 2006; Blumberg, 1999; Lau and Wang, 2009; Shaharudin, 2015; Bouzon et al., 2015). As a result, the positive impact of RL activities is believed to be short-term and temporary (Yacop et al., 2012).

That's being said, the goal of the second research question is to evaluate the level of awareness of companies on SSCM-related regulations and legislation in Turkey.

Research Question 3: What are the obstacles to implementing SSCM initiatives in Turkey?

Investigating the struggles associated with executing forward and reverse supply chain management strategies has also attracted several researchers (Rogers and Tibben-Lembke, 2001; Fawcett et al., 2008; Lau and Wang, 2009; Shaharudin, 2015; Bouzon et al., 2015; Movahedipour et al., 2017).

Therefore, this paper explores the obstacles to implementing SSCM. Particular attention is devoted to exploring the relationship between multiple barriers and how they can collectively inhibit progress towards SSCM.

Research Question 4: What are the current practices of Turkish companies on SSCM?

As Guide and Jayaraman (2000) have explained, SSCM may include a number of activities, such as: Product collection, point(s) of disposition, testing, sorting and disposition to identify the product's condition and the most economically attractive reuse option and refurbishing to enable the most economically optimum choices.

Diverse industries in various countries may have changing levels of initiatives in SSCM and environmental practices (Zhu et al., 2007; Lau and Wang, 2009; Li and Olorunniwo, 2008). However, little is known about the SSCM practices employed by organizations based in Turkey and how these overlap or differ from the practices employed in other nations.

Research Question 5: How should the basic responsibilities for SSCM be assigned in Turkey?

Several authors have argued that logistic activities will be gradually subcontracted in forthcoming years (Efendigil *et al.*, 2008). The most important issue is to define whether the firm contemplates RL activities as part of its fundamental functions. When this is not the case, outsourcing might be a decent choice to allow the firm to focus on its core activities (Wu *et al.*, 2005). Therefore, this paper analyzes the types of reverse supply chain activities that could be outsourced to third party service providers in Turkey.

3. RESEARCH METHODOLOGY

In this research, we chose a case study approach for multiple reasons based on Yin (2003). First, an investigative case study aims to identify the research questions of a successive study (not necessarily a case study) or to determine the feasibility of the preferred research method. Second, an illustrative case study demonstrates a comprehensive depiction of a phenomenon within its perspective. This is particularly useful when little is known about the phenomenon in that context, as is the case with the application of SSCM practices in Turkey.

Our research methodology consists of five stages: Identifying research questions, developing an instrument, data gathering (semi structured interviews), data analysis and dissemination (follow-up inquiries).

The coding of the companies taken into account is as follows: Company W (Automotive Industry, 500-1000 employees), Company X (White Goods Industry, 1000-1500 employees), Company Y (Electronics Industry, 2000-3000 employees, Company Z (Furniture Industry, more than 3000 employees).

4. FINDINGS

4.1 Motivation

All of the responses focused on the product returns aspect of SSCM. Five main motivations were identified from the interviews. Company X and Z report that customers' eagerness for returning their used products create a suitable

environment to implement SSCM. They also report that the main motivation for customer willingness to return a used product was the promotional effort employed by the companies. For example, Company X promoted these efforts through a campaign called “bring the old one, take the new”. By motivating customers to return used products, these campaigns also help the organizations fulfill their sustainability and corporate social responsibility (CSR) strategies. Companies W and Z state that their involvement in product returns is mainly based on “competitive reasons with respect to sustainability and CSR” for promoting their corporate images.

Further, Companies X and W state that the national legal obligations may help Turkish industries to evolve from product return initiatives into organizational and social awareness of product recovery. The final primary motivation cited by the participants was the issue of customer complaints. Company Y noted that this is a driver in their business.

4.2 Awareness of SSCM Regulations:

All four companies were found to be aware of the draft product recovery regulations such as Waste Electrical and Electronic Equipment Directive (WEEE), End of Life Vehicles Directive (ELV) and the Waste Management Directive. However, there was some skepticism expressed as to the future effectiveness of these directives. The responses received indicate the need to accompany any regulatory directives with initiatives that put in place the infrastructure needed to support SSCM.

4.3 Barriers

For Company W, the lack of space and high inventory costs were cited as the two key obstacles. Company X considers legislative issues, the lack of markets, inadequate supplier support and competition the most important barriers. They believe that, currently, dealing with product recovery is not cost effective. The supply chain manager of Company X stressed the need for supplier support in developing any successful sustainability initiative. Without their assistant, the manager emphasized that the sustainability movement is destined to fail. Company Y reports that system inadequacies, inexistence of economic incentives,

company policy and legal issues are its most important barriers to executing a SSCM system.

4.4 Current Practices

Although Company W reports that they currently have SSCM systems based on repair, this system also appears to work ineffectively. Company W's supply chain manager states that repair activities are mostly conducted by their service network.

As Company X states that their SSCM initiatives have been inefficient, Company Y also reports that they have an ineffective SSCM system. As one of the company managers explained, they basically refurbish returned products for the use of the company personnel. Company Z reports that they deal with collecting the old products and selling them to the recyclers. However, their supply chain manager states that delivering the old products from the dealers to the company warehouse sometimes can be a real burden.

4.5 Responsibilities

There is a consensus among the case companies on the fact that the collection process has to be either outsourced or handled by municipalities. They also believe that recycling and third party recyclers should fulfill transportation. Company X states that third parties should fulfill all SSCM activities due to the fact that product recovery activities are specified as a major cost driver and are not their core competencies under the current legislative and economic environment.

Company Y reports that if remanufacturing turns out to be profitable, and then it would be plausible to implement their own remanufacturing system instead of incurring disposing costs (demolishing, consignment). Company W claims that the company itself should perform the repair activities whereas it would be rational for other initiatives to be outsourced to third party companies.

4. DISCUSSION AND IMPLICATIONS

A brief discussion of the overall findings follows: The participants provided a number of motivations for their involvement in product returns.

For example, “competitive reasons based on sustainability and CSR” and the role of this in improving their corporate image were cited by companies X and Z. This is consistent with motivations cited by several authors, including for example, Zhu et al. (2007), Zhu and Sarkis (2006), Li and Olorunniwo (2008), Lau and Wang (2009).

As another example, national and international legal obligations were cited by companies W and X. The rationale provided for these motivations was consistent with Prahinski and Kocabaşoğlu (2006) and Shaharudin *et al.*, (2015), who argued that legislation has been used as an incentive for founding reverse supply chain networks to avert used product from the waste stream and lengthen its beneficial lifespan.

The interviews highlighted that all of the participating companies were broadly aware of SSCM-related regulations, particularly directives related to waste management and product recovery. However, there was broad agreement on the fact that Turkey currently has unsatisfactory detection and punishment mechanisms for lack of compliance. These statements are consistent with the findings of Lau and Wang (2009) and Blumberg (1999).

A number of barriers to SSCM in Turkey were identified by the participants, including customer unwillingness to contribute, the lack of legislation, the lack of markets, inexistence of economic incentives, high inventory costs, and an overall lack of awareness among customers with respect to product recovery. Sharma et al., (2011), Rogers and Tibben-Lembke (2001), Fawcett et al., (2008), Wycherley (1999), Lau and Wang (2009), Silvestre, (2015a) and Movahedipour et al., (2016) published similar findings.

Finally, the case companies also shared their preferences on responsibilities for SSCM going forward. The participants reported that they were primarily interested in outsourcing their collection and recycling practices to the third party companies. There is support for this in the literature. For example, Efendigil *et al.*, (2008) and Min and Ko (2008) concluded that activities would be increasingly outsourced in upcoming years.

Reflecting on the findings overall, it is clear that SSCM is still in its infancy in Turkey. There is a recognized need for improved enforcement mechanisms of existing legislation, enhanced industrial collaboration and coordination on product recovery, and to improve market incentives for participating in SSCM activities.

5. CONCLUSION

We argue that the findings of this research help lay the groundwork for future empirical studies. However, the key limitation of the paper is based on the fact that it is conducted with only four companies. Therefore, though several of the key lessons may have relevance for others, caution must be exercised in generalizing the results to other developing nations.

Finally, there are also several opportunities for further research. Although this research provides insight into the current perspectives and best practices on SSCM in Turkey, additional empirical research is required to further investigate many of the issues that were raised in the study. This research could provide a basis for enhanced research and practice on SSCM issues in developing countries.

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