

Sustainable Supply Chain Management

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Abstract:-Sustainable supply chain management is an emerging topic in the area of supply chain management like green supply chain management which needs further research. There are a large number of articles in the area of sustainable supply chain management. This review paper includes the literature review, theories, conceptual framework, the quantitative models ,core issues of sustainable supply chain management . This review paper is based on the various articles regarding sustainable supply chain management.

I. INTRODUCTION

Sustainable supply chain management is of large interest for academic and the industrial world because of the pressures from various stakeholders to adopt a commitment to sustainability practices. Sustainable supply chains is an important element of sustainable development in which the environmental and social criteria need to be fulfilled by members of supply chain to remain within the supply chain, and is expected to maintain competitiveness through meeting customer needs and related economic criteria. The definitions above implies that companies practicing SSCM have to satisfy various conflicting objectives like maximizing profits while reducing operating costs, maximizing the social well-being and minimizing the environmental impacts. Other challenges faced by supply chain managers are: dealing with multiple decision makers and environmental impacts assessment and social benefits in a multi-party supply chain based on an inter-organizations approach and concerning diverse processes for designing, sourcing, producing and distributing products in global markets (Taticchi, Tonelli and Pasqualino,2013).

II. LITERATURE REVIEW

The control of the supply chain operations, resources, information and funds in order to increase the supply chain profitability or surplus—the difference between the revenue generated from a customer’s order and all the costs incurred by the supply chain while satisfying that customer’s order is defined as supply chain management.

Companies issue periodic TBL reports to their stakeholders as a sign of their sustainability practices. The sustainable supply chain management can be unified defined as the management of supply chain operations, resources, information, and funds in order to minimizing the environmental impacts and maximizing the social well-

being and at the same time maximize supply chain profitability (Hassini,Surti and Searcy,2012).

Since the supply chain considers the product from initial processing of raw materials to delivery of products to customer, the broader adoption and development of sustainability is focused in supply chain. Sustainability must also integrate product design, by-products manufacturing, production of by-products during product use, product life extension, product end-of-life, and recovery processes at end-of-life which extend beyond the core of supply chain management (Linton,Klassen,Jayaraman,2007).

Sustainable supply chain management and will be on the agenda, for companies, consumers, NGOs and even governmental agencies. The challenges like climate change, energy provision and wealth creation for an increasing world population will rather broaden the need for sustainable supply chain management in the near future.

The different forms of sustainable supply chain management clarify two aspects i.e. varying forms of interaction, cooperation and compelling rules in the value chain are an instrument of competition, partly based on specific quality assets of the products and these forms of interaction and cooperation include other types of societal actor: consumer development and environmental NGOs also play diverse roles apart from newly created non-profit institutions (Vermeulen and Seuring, 2009)

III. TRIGGERS FOR SUSTAINABLE SUPPLY CHAIN MANAGEMENT

The external pressure and incentives set by different groups are the triggers for sustainable supply chain management. Stakeholders, customers and government are the three groups relevant in triggering the SSCM. The company passes its pressure to the suppliers. This leads to development of two strategies i.e. supplier management for risk and performance and supply chain management for sustainable products (Seuring and Muller, 2008).

IV. FRAMEWORK FOR SUSTAINABLE SUPPLY CHAIN MANAGEMENT

At broader level organizational sustainability consists of three components: the natural environment, society, and economic performance. Other aspects of sustainability that emerged from the sustainability literature review but which were not included in explicit definitions were risk

management, transparency, strategy, and culture (Carter and Roger, 2008).

Sustainable supply chain is envisaged as the wheels consisting of six spokes. Sourcing, transformation, delivery, value proposition, customers, and recycling represent the major relevant functions within the chain. The crucial functions in a sustainable supply chain are sourcing and transformation. Companies sourced from impoverished regions engage in fair trade practices. The broad term used for the operational process like choice of location, choice of transportation etc. is delivery. Many business tend to cost more for sustainable products. This cost is passed to customers in the form of high prices. Thus value proposition is not considered. The 3R's Recycle, Reuse and Return are the issues which are researched in reverse logistics. The products are disassembled into parts which are remanufactured, reused or recycled as a source of raw material (Hassini, Surti and Searcy, 2012).

V. SUSTAINABLE SUPPLY CHAIN MANAGEMENT THEORIES

Majority of the theories used in SSCM are macro theories as they don't take individual and behavioral perspective rather they take more organizational and strategic perspective. The macro theories used in SSCM have supported the prevalence of a large buyer firm perspective. Some of the theories used in SSCM are resource-based view (RBV), the NRBV, stakeholder theory, institutional theory and transaction cost theory (TCT) (Touboulic and walker, 2015).

VI. MODELING APPROACHES

The various models used in SSCM are equilibrium models, multi-criteria decision making (MCDM), and applications of the analytical hierarchy process (AHP), life-cycle assessment based models.

LCA is a product which is based on environmental assessment techniques and which is standardized in the ISO 14041.

Equilibrium models evaluate the overall equilibrium among a given set of market actors. It is a standard modelling technique.

MCDM helps in making respective decisions and it is linked to the equilibrium model.

AHP is a multi-objective decision making technique (Stefan Seuring, 2012)

VII. QUANTITATIVE MODELS

A simplified representation or abstraction of reality are called models. Conceptual models are defined as a set of concepts suitable to represent real-life objects or processes but not explain it. Quantitative models are models that are based on a set of variables and their causal relation. There are mainly two types of models based on purpose, descriptive and normative models. They can be further

divided into deterministic and stochastic. The various model types are Analytical, heuristics, hybrid, mathematical programming, simulation (Brandenburg, Govindan, Sarkis, Seuring, 2014).

VIII. MAJOR ISSUES IN SUSTAINABLE SUPPLY CHAIN MANAGEMENT

The various issues in sustainable supply chain management are:

Identifying and measuring social, economic and environmental impacts and performances; management of risk; vendor selection aspects and global sourcing; Supplier integration in sustainability especially towards SMEs; Supply chain-wide communication and corporation; social and environmental responsibility awareness; CSR; reverse logistics; implementation and development of international standards; Definition, understanding of sustainability, SSCM and SCM; Monitoring the supply chain; SC extended view; extending sustainability efforts; SC network; cooperation between private and public sector; role of international institutions; Closed loop SCM; Sustainable innovation; chain wide process integration; product life-cycle; Policy for SSCM; legal, government support; Lack of demand for sustainability e.g. due to higher prices for sustainable products; need for marketing for sustainability; stakeholder pressure; need for transparency; Labour conditions; SC financial perspective: allocating fairly the costs and benefits; win-win-situations realization; No awareness regarding economic advantages of SSCM; lack of proactive initiatives; Need for 'sustainability' of organizations with different actors and their management (Seuring and Muller, 2008).

IX. CONCLUSION

This review paper has its own limitations due to the fact that it based on other articles and literature review. This paper has provided only the overview of the topic sustainable supply chain management. The paper provides review of the theories, framework, core issues, triggers, quantitative models, modeling approaches of sustainable supply chain management. There is scope for further research on SSCM since the need for sustainable supply chain management will broaden in the future. Sustainable supply chain management has become an increasing concern across a wide range of industries and companies of all sizes. Minimum sustainability performance is reached by meeting environmental and social standards along all stages of the supply chain.

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