

The modern Supply Chain towards new ‘sustainable’ practices

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Abstract— Academic and corporate interest in Sustainable Supply Chain Management has risen considerably in recent years. This can be seen by the number of papers published and in particular by journal special issues.

Sustainable Supply Chains Management (SSCM) extends the scope of Supply Chain Management (SCM) by environmental and social issues and it attempts to consider all the dimensions of sustainability in optimizing supply chain.

Indeed, suppliers, focal companies and customers are linked by information, material and capital flows. In line with the value of the product comes the environmental and social burden incurred during different stages of production. With regard to this, companies are asked to consider the environmental and social problems present in their entire supply chain.

Studies linking environmental and social sustainability to firm performance have been increasing as more companies are contemplating the implementation of sustainable practices internally and in coordination with other firms along their supply chains.

The integration of sustainability practices in supply chains is relatively new but growing for over a decade and the concept is receiving global acceptance

In this context, the purpose of this paper is to study the practices used to develop a SCM and make it ‘sustainable’. Thereby, we will carry out a review of the literature on the SSCM, then we will study the practices used to make a SCM sustainable, finally we will try to study the impact of a sustainable Supply Chain on the competitiveness of the organization.

Keywords— Sustainable- Supply Chain – Sustainable Supply Chain Management – Competitiveness – environment – social.

I. INTRODUCTION

Supply Chain Management is considered as one of the main ways to control costs within the company, and thus improve its performance in an increasingly competitive market. But given the new challenges such as environmental problems, the need to respect social rights as well as security problems, the company is confronted with expanding its performance, from an economic performance to a respectful entity of environment and social equity.

The interest oriented towards the ecological and sustainable aspect of the Supply Chain has appeared for more than a decade [1]. This interest was born following the concern of the actors of the Supply Chain to achieve a better optimization of their chain. The goal in optimizing the supply chain is to deploy the minimum cost in order to maximize profit. However, it should be noted that in the optimization of the Supply Chain environmental and social requirements must be taken into consideration. Indeed, companies are obliged to respect the requirements of sustainable development in the management of their supply chain, because it covers all the stages from the acquisition of the raw material until the delivery of the finished product to the customer, through the supply, production, and transportation. These steps are very critical, it is essential to ensure respectful working conditions of the environment and people in their implementation.

However, an imbalance has been noted in publications supporting the environmental aspect of sustainable development. Indeed, we found an abundance of information around the green management of the supply chain. The latter is defined as an approach aimed at minimizing the ecological footprint of a product throughout its life cycle, through the extraction of raw materials, design, purchasing, production, logistics and end-of-life treatment [2]. On the social responsibility side, studies are scarce, and focus mainly on key issues such as the management of the supplier relationship on the basis of ethical contracts stipulating: the prohibition of child labor, the respect of the duration of weekly work not exceeding 60 hours, non-discrimination, health ... Similarly, one study highlighted three key areas for a socially

responsible supply chain: responsible purchasing, transportation and warehousing [3].

In another work anchored on a problem of human resources, the importance of the social management of the Supply Chain is declined. This importance is reflected in the internal human resources perceived by the employees, (organizational identification, organizational involvement and job satisfaction) and external human resources (attractiveness of the company, reputation and image, support of the unions and external partners in case of social problems) [4]. Thus, several authors have examined the link between sustainable development and supply chain management. However, the authors still have to deal with the fundamental problems of showing companies how to make their logistics chain sustainable. Because most of the work already done focuses on the benefits that can be gained by a sustainable Supply Chain, without dwelling on the appropriate method to achieve this goal.

It is for this reason that we will take a look around the notion of SSCM to then go on to study the practices that makes a Sustainable Supply Chain.

II. SUSTAINABLE SUPPLY CHAIN MANAGEMENT (SSCM): EVOLUTION OF THE CONCEPT OVER TIME

SSCM is based on the combination of theories of sustainable development and supply chain management[5]. Respect for sustainable development in a society depends to some extent on integrating the requirements of sustainable development into the management of a supply chain. It is for this reason that we will concentrate in this part on the effective understanding of the notion of SSCM, to be able to know its characteristics and therefore the best way to reach it.

Thus, companies have an obligation to fulfill their social responsibilities and not limit themselves to profit maximization objectives. Social responsibility encourages the company to act in the best interest of both their environment and society as a whole. By introducing environmental and social obligations into traditional supply chain management, SSCM extends the traditional chain domain by taking into consideration the sustainability of the economy, environment and society in the design process and for supply chain optimization [6].

Many researchers have tried to define the term SSCM, and the most prominent response is that SSCM is considered to be a SCM that focuses on maintaining environmental, economic and social stability for long-term sustainable growth [7].

According to Jennings and Zandbergen, the Sustainable Supply Chain is a chain that works well on both traditional profit and loss measures and the triple Bottom Line [8].

Other authors have preferred to adopt a global approach in the context of social and environmental responsibility to promote value creation, so according to them: "SSCM can be defined as the means by which companies manage their responsibilities through disruptive production processes across organizational and geographic boundaries. [...] (It) can be understood as a form of governance of the value chain

because Supply Chain Management is demanding in terms of environmental standards and work organization" [9].

SSCM has also been defined as the management of material, information and capital flows as well as the co-operation of enterprises throughout the supply chain, while pursuing established objectives in all three dimensions of sustainable development [10].

Similarly, the SSCM is considered to be a strategic and transparent integration, it is also the achievement of the social, environmental and economic objectives of an organization in the systemic coordination of key inter-organizational operational processes, to improve the economic performance to long-term business and its Supply Chain [11].

And taking inspiration from the general definition of Supply Chain Management issued by the Council of Supply Chain Management for Professionals, another definition has been proposed stating that: sustainable management of the supply chain includes planning and management all purchasing, supply, processing and logistics activities as well as managing relationships with chain actors (suppliers, logistics service providers, customers) with a view to respect the environment and social standards to create sustainable value for different stakeholders. This sustainable management requires a global approach and process to track waste and improve the environmental, social and economic efficiency of the company [12].

In addition, the SSCM is the set of specific management measures that are being taken to make the supply chain more sustainable in order to create a truly sustainable chain[13].

This is why it has been seen as the integration and coordination of economic, environmental and social practices throughout the supply chain to improve the economic, environmental and social performance of companies throughout their supply chain [14].

This last definition corresponds most to the scope of our work, since it is based on the integration of the requirements of sustainable development in the management of a Supply Chain, by the use of a set of practices that we will try to list later.

III. APPROPRIATE PRACTICES FOR ACHIEVING A SUSTAINABLE AND EFFICIENT MANAGEMENT OF THE SUPPLY CHAIN:

A sustainable and efficient supply chain should cover the main quality management practices, supplier quality management, environmental management practices, green procurement management, customer relationship management, sustainability of human resources and the code of conduct [14].

SSCM's practices include a company's internal and external practices, adapted to make its supply chain respectful of the three dimensions of sustainable development. Businesses with sustainable supply chain practices are guided by a policy and values to improve their sustainable efficiency. Companies do this by taking measures to promote sustainable development in the management of their supply chains.

Researchers have done extensive research on SCM practices. However, little work has been done on SSCM practices [15]. Existing literatures primarily use case studies to discuss practices from a variety of industry sectors and national contexts. For example, there is a study that emerged sustainable practices in the Supply Chain of hotel sector [16], others have been studied in the gas and oil industry [17]. Other authors have used qualitative analysis methods based on a literature review to explore the composition of SSCM practices and best practices [18].

Among them, we cite Beske et al. [19], who summarize SSCM practices into five types: strategic direction, supply chain continuity, collaboration, risk management, and sustainability promotion. Paulraj et al. identify four underlying dimensions of SSCM practices integrating sustainable product design, process design and integrating sustainability into collaboration with suppliers and customers [20]. Similarly, Esfahbodi et al. Focus on four areas in SSCM's practices: sustainable production, sustainable design, sustainable distribution, and investment recovery [18].

Among the practices proposed to achieve a SSCM, a structuring and global approach has been proposed:

- working with suppliers and customers and all stakeholders in a collaborative approach (exchange of knowledge and skills),
- analyze the internal operations and the different processes of design, purchasing, manufacturing and distribution,
- consider environmental issues in the product manufacturing process,
- analyze product life cycles [21].

In another study, a set of practices was proposed for achieving sustainable logistics. At this level, the programs concern more specifically the training of drivers in eco-driving, the use of hybrid propulsion modes, the pooling of warehouses and transport or the development of multimodal transport combining the road, the railway, the fluvial, the air and the sea to reduce energy consumption, greenhouse gas emissions and road congestion. Limiting packaging and increasing the rate of recyclability of products are also concrete measures to reduce the environmental footprint of goods [22].

IV. THE SSCM AND THE COMPETITIVENESS OF THE ORGANIZATION

The competitive advantage is the economic value created by the organizations [23]. Competitiveness is the organizational condition of the superior performance that occurs when a company competes successfully either over the price or by charging a premium for differentiation. It develops from the customer value of what a company creates and aims to establish a profitable and sustainable position against the forces that determine the competition of the industry [24]. The link between the sustainable management of a Supply Chain and the competitiveness of the company has been studied in about fifty companies, and causal relationships have been established between the development of upstream logistics, "green" production and downstream logistics and the

improvement of the competitiveness and economic performance of these enterprises [25]. Indeed, "green" upstream logistics, which is based on the integration of suppliers into a "green" supply chain, leads them to improve the environmental performance of their production and to reduce waste through the use of environmental standards for example [26].

Indeed, the impacts of sustainable development on the value chain of companies and their competitiveness can be important [27]. Because if climate change affects companies, they can turn a threat or constraint into an opportunity: "Companies that manage and reduce their exposure to climate change risks while seeking new profit opportunities will create a competitive advantage in a future constrained by carbon emissions" [28].

Also, a survey study on the implementation of sustainable development strategies revealed that sustainability leads to increased profitability and competitiveness of the company [29]. Another case study revealed that the implementation of sustainability in manufacturing companies, lead to increased financial performance of enterprises [30]. Another study conducted by a survey of sustainability measures adopted by UK oil companies, revealed significant correlations between the implementation of sustainability and the competitiveness of companies [30].

The SSCM is therefore a vast field of reflection and analysis, with contours that are sometimes still poorly defined. It appears as an issue (for companies that have perceived the potential economic impacts of such management) or as a constraint (for those who have not yet integrated in their modes of reflection and action) [12].

The potential economic benefits on economic intersections with environmental and social performance are as follows [31]:

- Organizations could save money by reducing packaging waste and developing their design capacity for reuse and dismantling of waste [32].
- Organizations operating safe warehouses / transport with better working conditions would reduce health and safety costs and reduce the costs of recruitment and turnover of the workforce. These will reduce their costs and improve their incomes [11].
- Improved working conditions can increase motivation and productivity and thus reduce absenteeism of supply chain personnel. This helps organizations get labor at a lower cost and increase business productivity. Increased productivity will increase revenue and profitability [33].
- Proactively shaping future regulation: Companies that proactively address environmental and social concerns can influence government regulation. When this regulation is modeled on a company's production and supply chain processes, it creates competitive advantages that are difficult for companies and their suppliers to duplicate [34].

- Reduced costs: shorter lead times and better quality of products related to the implementation of ISO 14000 standards, which is a model for environmental management systems [35].
- Achieve an improved reputation: engaging in sustainable behavior can make an organization more attractive to suppliers and customers, thereby becoming accepted by the local community, potential workers and shareholders [36].
- Coupling with economic goals to develop a clear, long-term strategy: Integrating sustainability into a company's supply chain management activities can create a more sustainable procedures and less imitable [11].

All the studies carried out by the previous authors propose diverse practices. They will make it possible to reach the objectives of a management which has as concerns the achievement of sustainability in their Supply Chain. However, it should be noted that this diversity can be considered as an obstacle for companies wishing to refer to it.

Indeed, the abundance of proposed practices requires to be reclassified according to a specific typology to allow organizations to find themselves in a context appropriate to theirs.

CONCLUSION

The importance given to the SSCM is growing. This importance is reflected in the role played by a sustainable SCM, on the company's performance and thus on its competitiveness in the market.

This is why we focused on a review of literature summarizing the practices proposed by the authors.

However, we noted the heterogeneous nature of the results collected. For this reason, this work must be followed by a field study that can highlight all the practices and ways of using them.

We propose in this sense to carry out this study by category: either by choosing the size of the company as a criterion, or the sector, or the nature of the activity ... As a result, models can be developed by category, which can be adopted in company strategies around the world.

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