

## COMPETITIVE PAPER

### COLLABORATIVE DEVELOPMENT FOR SUSTAINABLE SOLUTIONS IN TEXTILE INDUSTRY

#### Abstract

This paper investigates how sustainable initiatives are developed as a collaborative result of business-to-business solutions. Managers in firms need to understand the opportunities for cooperative value creation that their business ecosystems enable. Besides that, a solution can be understood as, in itself, a discourse on the market and its evolution, or as a market scripting. The paper takes together these approaches to describe how a manufacturing firm can develop sustainable solutions as a network-developed process. The concept of the network-based sustainable solution is presented as relational development among stakeholders in a business network. Qualitative and exploratory research is applied in the Brazilian textile industry as a case where sustainable products are increasingly relevant for competitiveness. The research was developed from identifying stakeholders of one of the largest textile manufacturers in the world. We developed in-depth interviews with managers from textile companies, garments and trade association. Extending conventional dyadic analysis, relationships developed for sustainable initiatives with network actors as local government, industry associations, unions and firms on financial system are analyzed. Findings highlight that managers need to focus not only on the product *per se* but on developing relationships with partners that enable providing sustainable solutions over time. The paper contributes to the discussion that sustainable initiatives are dynamically developed among actors in a business network.

**Keywords:** sustainability; business solution; sustainable solution; business network; textile industry.

#### INTRODUCTION

The potential for the Interaction and Network Approaches, known as the IMP approaches (Axelsson and Easton, 1992; Easton and Araújo, 1992) to underpin studies of sustainable purchasing and supply management is described by Johnsen et al. (2017). In order to contribute to this discussion, we present the idea of sustainable offerings as an embedded and network process. One of the greatest challenges for the world, for industry and purchasing and supply management is the need to embrace sustainability (Johnsen et al., 2017, p. 131).

We argue that sustainable initiatives and offers are not an isolated issue, but developed as a collaborative result of business-to-business solutions. Competitive development of sustainable offers requires collaboration among different actors intertwining in a business and service network. The understanding of how companies develop sustainable solutions, as a collaborative process, is still a challenge in the industry (Guyader et al., 2019). Additionally, and despite the work of Frostenson and Prenkert (2015) investigation considering and analyzing sustainability as an industrial network issue and the problem is scarce and justify this research. The paper contributes to this discussion by presenting the concept of a network-based sustainable solution as a relational development among stakeholders in a business network.

This investigation is exploratory research applied in the Brazilian textile industry. In this context, including environmental and social aspects, as part of the indigo denim production, is relevant for competitiveness and sustainability (Rocha and Abreu, 2018). We take one of the world's largest indigo-manufacturing company as a focal point at the Ceará

Brazilian business network. One of the three largest retail chains in Brazil is analyzed as a business customer and relationships required with stakeholders handling the issue of environmental and social aspects. The paper first discusses the contributions of Interaction and Network Approaches, and how collaborative action is pursued in order to find sustainable market solutions. The field of sustainability is presented and discussed in a long term process. The data are analyzed, and the results are described and discussed in order to reach the research aims.

## COLLABORATION IN BUSINESS NETWORKS

Business and industrial markets embrace networks based on long term relationships between customers and suppliers, and a multitude of actors, as business firms, research, political, government institutions and other community stakeholders (Axelsson and Easton, 1992; Håkansson and Snehota, 1995). Services are also connected with industrial companies (Ford, 2011), and they are considered essential to understanding the industrial network dynamics (Guyader, 2019; Ferreira et al., 2017). Then, interaction (of individuals acting on behalf of their organizations), connectedness, collaboration and conflict, adaptation, collective action, trust, and cooperation are characteristics and vital concepts to understand and describe the whole network picture.

IMP literature about business relationships and industrial networks considers that actors are embedded on interconnected relationships and indicates many antecedents that constrain or on the contrary allow the development of ties, links, and bonds between actors, resources, and activities (Håkansson and Snehota, 1995). Thus, long-term business relationships are ‘the result of a process of interaction where connections are developed between two parties that produce mutual orientation and commitment’ (Håkansson and Snehota, 1995, p. 26).

Collective action is an interesting input to this research, to the extent that the object of this study is to understand and find collaborative development relationships in order to get sustainable offers and solutions at the Brazilian textile industry. Collective action was recently used and analyzed by Proença et al. (2018) in collaborative and managed networks to deal and solve social problems. These authors found relationships between nonprofit organizations involved in collective action to fight the problem of poverty and social exclusion for the local social development where networks emerge and develop with the recognition of a common problem among the various actors in the network, which perceive more advantages in joint efforts than in isolated action, often accomplishing the formalization of the network. Thus, networks based on collective action affect the strategies of organizations and influences processes, relationship structures and the balance of power within the networks, and therefore a network form of governance emerges, that is, a set of rules, norms and actions structured, sustained and regulated based on cooperation relationships, complexity, uncertainty, and frequency.

## Sustainability and the Concept of Business Solutions

Striving for sustainability in environmental, social and economic terms has become a vital issue for business organizations in many sectors. The sustainability practices of business-to-business (B2B) firms have been studied, including in the context of supply chains and networks (Johnsen et al., 2017 and 2014; Frostenson and Prenekert, 2015). Johnsen et al. (2017) have pointed out that the IMP perspective provides an opportunity for sustainability researchers to improve their understanding of interactions between firms in a network environment. In fact, given IMP’s strengths in interaction processes, customer-supplier relationship management and the concept of the embeddedness of actors in complex business

networks, sustainable purchasing and supply management research presents a mostly untapped opportunity.

Besides that, we understand that the concept of business solution (Spencer and Cova, 2012) and the servitization process of manufacturing firms (Grönroos, 2007; Oliva and Kallenberg, 2003) can contribute to the understanding about interactions between firms in a network environment. According to Grönroos (2007) and Oliva & Kallenberg (2003), market complexity is forcing traditional product-manufacturing companies to extend the service business dimension of their offer. The customized and integrated combination of goods and services to meet a customer's business needs takes the product-service dualism into the business solutions domain.

This notion is based on Hill's (1999) and Gadrey's (2000) studies on an institutional perspective of the service definition. According to Hill (1999), a necessary condition for an item to be a good or service is that it must be capable of being the subject of a transaction between two or more different economic units. To identify the characteristics of goods or services, the focus should be on the interaction between producers and users. Thus, Gadrey (2000) developed Hill's (1999) definition by positing that service activity is an operation intended to bring about a change in the status of a reality C that is owned by consumer B affected by service provider A at the request of B and independently of medium C.

For Spring and Araújo (2009, p. 4), "in summary, the distinction between products and services often depends more on economic factors that determine boundaries and areas of responsibility in a producer-user interaction than on technical factors concerning production process." According to Vargo (2009), the production, circulation, and use of products should not be separated, thereby forming a range of services usually associated with these activities.

In the case of sustainable products and offers, we can consider that the provision of sustainable products as indigo denim requires the combination of products (as organical inputs) and services (operations, processes related to recycling, reducing and reusing) in order to provide a business solution. From this idea, some research questions arise: How is the nature of producer-user interaction and the institutional structure of production and networks for a sustainable product or offer? How can firms develop sustainable solutions over time? What is the role of each stakeholder for this? The issue of the development of a sustainable solution is unclear. This research intends to find how manufacturing firms develop sustainable solutions as a network-developed process.

## METHODOLOGY

This research is exploratory, qualitative and uses the case study approach. (Yin, 2003). We aimed to understand how sustainable initiatives are developed as a collaborative result of business-to-business solutions. Empirical data is collected taking the Brazilian textile industry as the context for a case study. Weighing up the pros and cons of single versus multiple case approaches, we considered that a way to achieve this research would aim to combine the two approaches, as discussed below.

As the single case of the integrator serves as an umbrella for the relations with each stakeholder, we develop the case study approach considering two different levels of focus (Yin, 2003): 1) a specific textile manufacturer and its integrated solution approach studied as a single case, which has the advantage of providing an overview of the focal firm while at the same time supporting the development of managerial implications; and 2) a multiple case study considering all relationships and interactions across stakeholders around a focal dyad made up of the manufacturer and the retailer, as shown on table 1.

Table 1. Case studies

<b>Firm/ Organization</b>	<b>Description</b>	<b>Interviewees</b>	<b>Data Collection</b>
A	One of the largest textile manufacturers in the world. Responsible for 40% of the production of indigo jeans in Brazil.	Four interviews with managers being: <ul style="list-style-type: none"> <li>• Industrial Manager</li> <li>• TQM &amp; Lean Corporate Manager</li> <li>• Total Quality Manager</li> <li>• Environmental Manager</li> </ul>	Visit made to the company to conduct the research. Technical visit to the factory floor
B	A retail customer of firm A, one of the largest fashion companies in Ceará State and one of the three largest retail chains in Brazil.	Two interviews with managers being: <ul style="list-style-type: none"> <li>• General Manager</li> <li>• Industrial Manager</li> </ul>	Visit made to the company to conduct the research. Technical visit to the factory floor
C	Textile Local Union	One interview with the President	Visit made to the Union to conduct the research.
D	Textile National Industrial Association	Three interviews with managers being: <ul style="list-style-type: none"> <li>• President</li> <li>• Industrial Policy and Economy Manager</li> <li>• International Relationship Manager</li> </ul>	Visit made to the industrial association to conduct the research.

As a way to extend the dyadic approach (Spencer and Cova 2012; Vargo, 2009), the research was developed from identifying stakeholders of one of the largest textile manufacturers in the world, named here as firm A. The manufacturing firm A is taken as the focal point of a business network. It can be considered as a case of a solution integrator interacting with a retailer and other stakeholders involved in the provision of indigo denim as a sustainable offering. The unit of analysis is constituted by the relationships and interactions developed among stakeholders associated with indigo denim as a sustainable offering that requires social and environmental concerns. For social attitudes we consider social projects, including employees and the local community, recruiting disabled employees and reducing discrimination in the workplace. Environmental attitudes can be understood as eco-efficiency-based indicators such as water and power savings and solid waste reduction.

We developed in-depth interviews with managers representing stakeholders in this context. Interactions developed for sustainable initiatives are analyzed by considering stakeholders in Firm A business-to-business network as a retailer (a business customer that is the most significant fashion company and one of the three largest retailers in Brazilian market); the textile national industrial association and the union that represent the textile companies interviewed. Interviews were conducted during March and April 2016. Each interview lasted between 90 and 120 minutes and was entirely recorded and transcribed. Preliminary research using websites, news clippings, and other information was conducted for each company in advance of the interview.

## RESULTS

The general findings are presented showing how managers from textile manufacturing and retailer handle with business partners for the development of sustainable solutions.

## Describing the Context

During the last three decades, the local textile and garment sector in Fortaleza has prospered due to the presence of a productive labor force at lower costs than those that have to be met by firms in southeast Brazil. This context has become a very complex textile arena, with firms of all sizes and a rich variety of activities being represented. The Fortaleza textile industry brings together huge multinational textile producers – among the largest and most modern in the world – and garment factories of various sizes.

### Social and Environmental Attitudes

Most interviewees stressed the importance of having social projects, including employees and the local community. These projects involve education, motivation, life quality, and social inclusion. Based on legal requirements companies have developed social projects to provide professional development to low-income teenagers in their facilities. They are also committed to recruiting disabled employees and reducing discrimination in the workplace. Firms engage with the local community mainly to obtain a social license to operate and attract employees. In general, Brazilian textile firms represent a significant source of employment.

The industrial manager interviewee from one of the world largest Denim producer pointed out that in 2010, their firm modified its business model to become more flexible by investing in equipment, acquiring other companies and establishing links to the supply chain to increase productivity and the quality of its products. In the opinion of the environmental manager interviewee from one of the biggest Brazilian retailer, the Brazilian government should restrict imports of products produced by disregarding socio-environmental responsibilities, which in general have a lower price.

Most of the firms assess their environmental performance through general eco-efficiency-based indicators such as water and power savings and solid waste reduction. The quality manager interviewee from the larger denim producer pointed out that environmental and social attributes help them to compete in the international market. This strategy has forced incumbent producers to intensify their processes of innovation, improve quality and seek legal protection for their trademarks. Related to the operational process, interviewees reinforced its commitment to reduce water consumption by collecting and reusing rainwater.

According to the TQM & Lean Corporate Manager interviewed, as one of the largest textile manufacturers in the world, they have to comply with international market demand, which means respect to labor conditions and control environmental impacts. However, the interviewees from the National Textile Industry Association and the Local Textile Unions pointed out that environmental and social regulations from Vietnam, Indonesia or China could be more flexible than the Brazilian ones.

The environmental manager from the textile firm pointed out that sustainability is genuinely included in its business model. The environmental policy is firmly committed to reducing wastes. The company has also included sustainability in its organizational culture. The interviewee reinforced the role of government to transform the industrial district in an eco-industrial park.

### Collaboration Initiatives

The industrial manager from the retailer company pointed out that the logistical operations involved in bringing products from China make it difficult to follow the ever-changing demands of the fast-moving fashion market, thus constituting a barrier to imported products with better quality and higher prices. Brazilian producers are becoming traders in

basic Chinese clothing, leaving local firms to concentrate on higher value-added products at their production sites. Products made overseas need time to be delivered and are not able to meet fast-changing fashion demand. Thus, managers understand that commodities can be exported to meet low-cost demand. However, sustainable products can be developed nationally or through the importation of fashion products produced in countries with more restrictive environmental legislation.

In general, interviewees cited as necessary to have "open and honest communication," "coordination of tasks" and "maintain surveillance over the counterpart." Common sense among managers interviewed shows the importance to assume leadership to developing sustainable products because by personal contacts among companies to establish appropriate partnerships. There is necessary to have four elements: a possibility of having informal agreements, a behavior of trusting from each other, coordinated actions and open and accurate communication. The environmental manager from the textile firm had some examples of collaboration practices. They gather other companies to increase the number of bulbs to decontaminate and reduce costs. This is an spontaneous initiative without governmental support. There is a social and informal network than institutionalized and structured to develop coordinated actions to find the waste solution. Communication happens between companies but not formal. There are three essential connections in the textile industry that need to be reinforced: industry - university, retail - industry, designer - industry and chain integration.

## DISCUSSION

The paper contributes by applying the interaction and network approaches to studies of sustainable purchasing and supply management (Johnsen et al., 2017). Figure 1 describes the interactions and practices developed by stakeholders for sustainable solutions in textile industry over time.

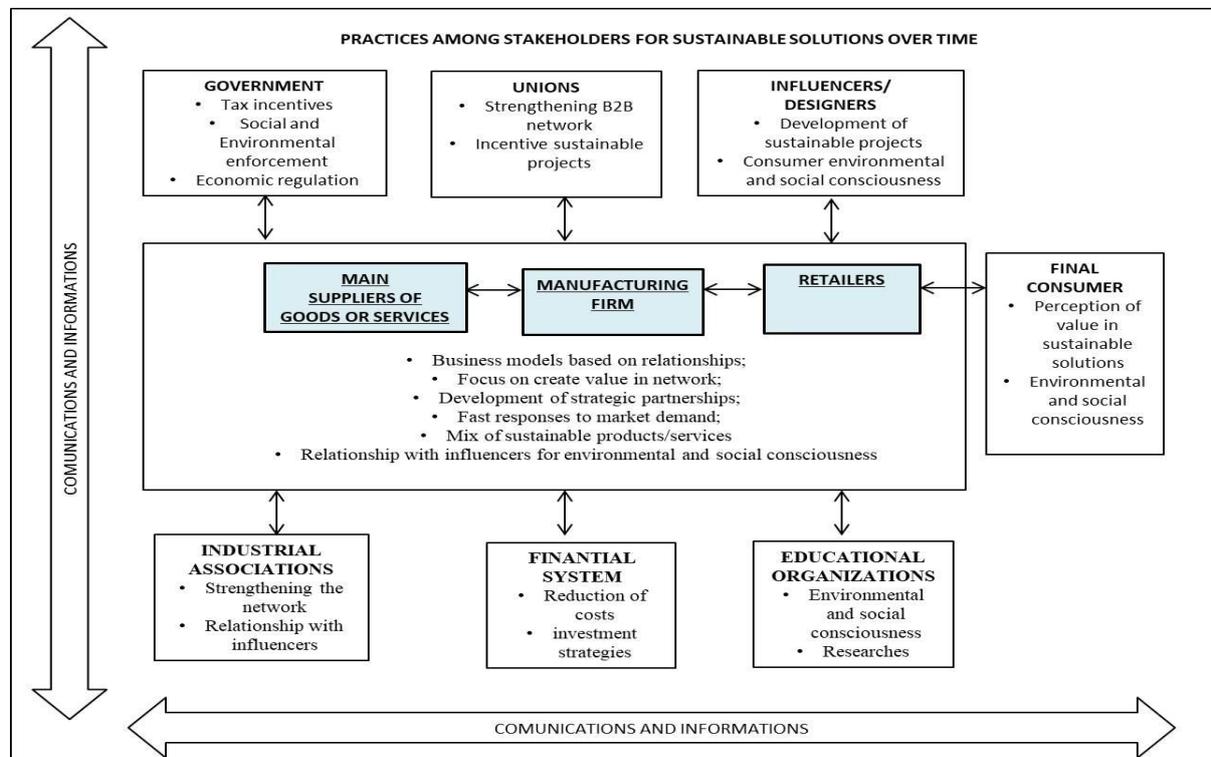


Figure 1. Practices among stakeholders for sustainable solutions over time

We can begin by examining Figure 1 concerning how consumers decide to purchase a sustainable product (right of Figure 1). The demand for sustainable products will depend on the perceived values of consumers. Moving to the middle of Figure 1, we can see the focal relationships between manufacturing firm, retailers and other parties in the textile business network. The manufacturer of indigo jeans needs to develop relationships in its business network over time, including actors such as suppliers of goods and services, financial entities, unions, industrial associations, government. In this respect, our findings lend support to work by Mason and Spring (2011), Nenonen and Storbacka (2010) and Spring and Araújo (2009), but advance considering now the sustainability concerns.

This idea describes what we call a network-based sustainable solution, illustrated in Figure 3. A network-based sustainable solution requires a collaborative activity that involves physical goods and also business-to-business services developed among stakeholders. There is not an optimal solution provided by the manufacturing firm but indeed a combination of goods and services developed among partners in order to provide sustainable solutions over time.

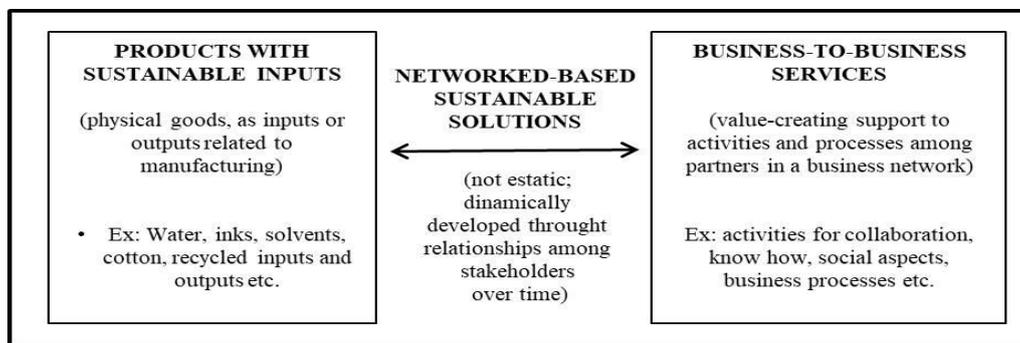


Figure 2. Development of a network-based sustainable solution over time

## CONCLUSION, LIMITATIONS AND FURTHER RESEARCH

Collaborative development for sustainable solutions requires interaction among actors of the network. The concept of a sustainable network-based sustainable solution presented highlights that providing sustainable products is not a simple issue of unilateral or bilateral adjustments between the manufacturing firm and the retailer, but a relational development among the partners in the network. The paper contributes by applying the IMP interaction and network approaches to studies of sustainable purchasing and supply management (Johnsen et al., 2017). The research has limitations related to its application to a state in the northwest of Brazil and to the network actors chosen to be part of the research and for the data collection. In another context, a different attribute might be indicated for investigation. Further research might be undertaken in other regions or countries, such as Europa, China or the United States, possibly for analysis in different contexts. For a deeper understanding of how collective action develop to find (more) sustainable solutions and how collective action can be more consequent new research should be developed.

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