

# Analysis of Sustainability Incorporation by Industrial Supply Chain in Rio Grande do Sul State (Brazil)

**Luíse Bispo da Costa Dalé**

Pontifícia Universidade Católica do RS – PUCRS  
luisedale@hotmail.com

**Lucas Bonacina Roldan**

Faculdade Dom Alberto  
lucas.rolدان@domalberto.edu.br

**Peter Bent Hansen**

Pontifícia Universidade Católica do RS – PUCRS  
peter.hansen@pucrs.br

**Abstract:** This research aims at analyzing how sustainability is being incorporated by industrial focal companies on supply chain practices within Rio Grande do Sul state, Brazil. An exploratory qualitative research was performed using a multiple case study strategy where four focal companies were investigated. These focal companies actuate with their supply chains in the electric-electronic, energy and footwear industries. Findings concluded that the economic pillar is still the most important for the investigated companies. It was also noted that the environmental pillar is becoming even more relevant, and the social one is still incipient within the practices of the industrial focal companies of the supply chains investigated.

**Keywords:** Industrial supply chains, sustainability, incorporation.

## 1. INTRODUCTION

With the increasing corporate competitiveness and higher consumers' demands as to product and service quality, fast delivery ability, more concern with environmental care and people's quality of life, companies are searching for new initiatives to meet their customers' wishes in a better way. Companies' participation in supply chains and the incorporation of sustainability to their management are initiatives being used by different organizations, from different corporate segments, in order to gain competitive differentials on their competitors, and conquer longevity in the market they operate.

Sustainability is defined as the respect for the interdependence of living beings on one another, and on their natural environment. Thus, sustainability means operating a company to cause no harm to living beings or to the natural environment (Savitz, 2007). In addition, it means accepting the interdepen-

dence of different aspects of human life. Therefore, economic growth and financial success are important and offer relevant benefits to individuals and to the society as a whole. However, other human values such as family life, intellectual growth, artistic expression, and moral and spiritual development are also fundamental. Sustainability could be then considered a business management, as it promotes growth and generates profits, recognizing and facilitating the accomplishment of economic and noneconomic aspirations of people inside and outside the company on whom it depends (Savitz, 2007).

On the other side, supply chains correspond to all the efforts made in the different business processes and activities, which create value to the final consumer by means of products and services (Ching, 2001). However, in order their members could have positive results with their structuring, the supply chain needs to be managed. Supply Chain Manage-

ment is the integrated way to plan and control the flow of goods, information and resources from the suppliers to the final customers, trying to manage the logistic chain relationships in a cooperative way to benefit all the involved parties (Ching, 2001).

Considering the relevance and actuality of sustainability and supply chain topics, this research general objective is analyzing how sustainability is being incorporated by industrial focal companies on supply chain practices within Rio Grande do Sul state, Brazil.

On the next sections sustainability and supply chains topics are approached. In Section three, the methodological procedures applied to the research will be presented, followed by Section four, where the results of the study will be exposed. Finally, Section Five presents the conclusions.

## 2. THEORETICAL GROUNDS

The topics supporting the research development are hereinafter presented. Sustainability context will be first approached, and then, supply chains will be discussed.

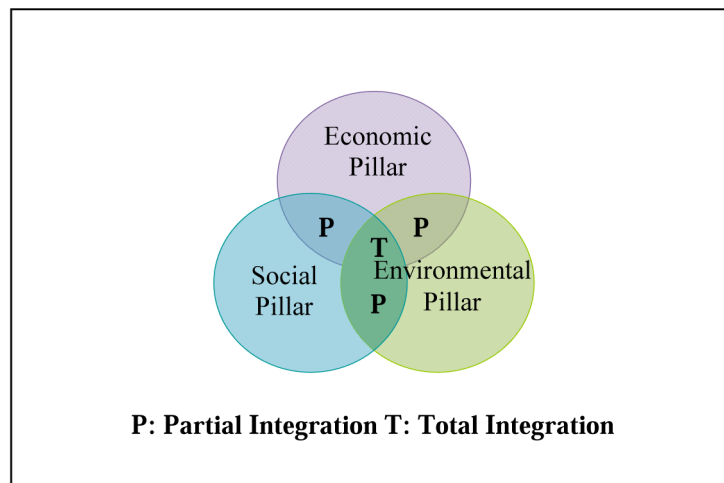
### 2.1. Sustainability

In face of the increasing concern with the future of the Planet, the Brundtland Report, also known as Our Common Future, was published by the World Commission on Environment and Development (WCED), in 1987, this report was responsible for the first concept of sustainable development (Almeida, 2007; Ferreira, 2007; Lozano, 2008).

According to this report, sustainable development is the development that meets the needs of the present, not compromising the ability of future generations to meet their own needs (CMMAD, 1991). The document has highlighted the main and possible environmental problems, which impaired the development of many countries, incisively stating environment as an international priority (Ferreira, 2007).

Among the sustainability different approaches, one of the most known is that considering sustainability based on three pillars: (i) economic pillar; (ii) environmental pillar; and (iii) social pillar, which are frequently referred as the Triple Bottom Line (TBL) (Lee & Kim, 2009; Nobre Filho, Simantob, & Barbieri, 2006), as shown on Figure 1.

Figure 1 – Sustainability pillars



Source: Adapted from Lozano (2008, p. 1839).

Based on the economic dimension, sustainability concept considers the world concerning capital assets and flow. This vision, however is not limited to monetary or economic assets, but also considers other kinds of assets, such as environmental or natural,

human and social assets, including the development of the economy and the society, as well as the environmental economics and environmental management issues (Rogers, Jalal, & Boyd, 2008). The economic category involves the organization’s impacts

on the economic conditions of its stakeholders, and economic systems impacts on local, national and global levels. Economic indicators show the flow of assets among different stakeholders and the main economic impacts of the organization on the society as a whole (GRI, 2006).

The sustainability environmental pillar includes the preserve of natural resources in the production of renewable resources and its restraint in the production of nonrenewable resources, based upon the natural ecosystems self-cleaning ability and the reduction of waste and pollution by means of energy conservation and recycling (Elkington, 2001; Martins & Oliveira, 2005). The environmental category is related to the organization impacts on natural living and nonliving systems, including ecosystems, earth, air and water. Environmental indicators include the performance related to inputs, such as raw material, energy and water, and to the production (emissions, effluents and waste). They also involve the performance related to biodiversity, and environmental conformity, among other relevant information, such as environmental expenses and product and service impacts (GRI, 2006).

The social dimension, which added to the economic and environmental dimensions compose the sustainability tripod, is strongly related to the corporate social accountability concept, resulting from the interdependence and interconnectivity among stakeholders directly and indirectly related to companies (Ashley, 2002).

According to the Ethos Institute (2009), corporate social responsibility can be understood as a way of management defined by the company ethical and transparent relationship with its stakeholders and by the establishment of corporate goals encouraging the society sustainable development, preserving environmental and cultural resources for future generations, respecting diversity and promoting the reduction of social inequalities. Social performance indicators intend to identify fundamental performance aspects as to labor practices, human rights, society and responsibility for the product (GRI, 2006).

Due to the increasing competition and pressure to keep a socially and environmentally correct conduct within the business world, care for sustainability arises as a success alternative within the current context (Elkington, 2001; Savitz, 2007). Sustainability requires a preventive attitude from companies in order all positive actions could be maximize, and all

negative ones could be minimized. It also requires a non-immediatist attitude, searching for a short, medium and long-term view of planning and operations (Almeida, 2002).

According to Savitz (2007), a sustainable corporation is capable of simultaneously earn profits for its shareholders, protect the natural environment, and improve the life of those people interacting with it, and its activities promote the intersection among business interests, natural environment and society.

A sustainable organization needs to go beyond the traditional model of return on financial assets, and value creation for shareholders and customers, also involving the community and stakeholders' success (Holliday, Schmidheiny, & Watts, 2002). In the search for sustainable development, companies improved, not only in pollution control and prevention, but also in the integration with stakeholders (Hart & Milstein, 2003).

## 2.2. Supply Chains

A supply chain (SC) is formed when a group of companies joins to facilitate manufacturing process, improving the supply from a production line, either direct or indirectly. The objective of such structure is lowering costs, and also improving the price of the final product, aiming at higher competitiveness in the consumer market. SC refers to all the transforming activities and the flow of assets and services, including information flows, from raw material sources through the final users (Beamon, 1999; Bowersox & Closs, 2001).

According to Chopra and Meindl (2003), a supply chain consists of all the parties directly or indirectly involved in meeting customers' requirements. The supply chain includes manufacturers and suppliers, as well as forwarders, warehouses, retailers and consumers. Supply chains have arisen as an option for organizations to better face the highly competitive market, and create and deliver value to their customers (Christopher, 2007). When structuring in supply chains, companies intend to generate and sustain competitive advantages (Fawcett, Magnan, & McCarter, 2008; Weber, 2000), while meeting their customers' needs more satisfactorily than their competitors, thus getting profitable results for all the chain members (Chopra & Meindl, 2003; Fugate, Sahin, & Mentzer, 2006).

By the eighties, companies performed all the activities necessary to supply products to the consumer

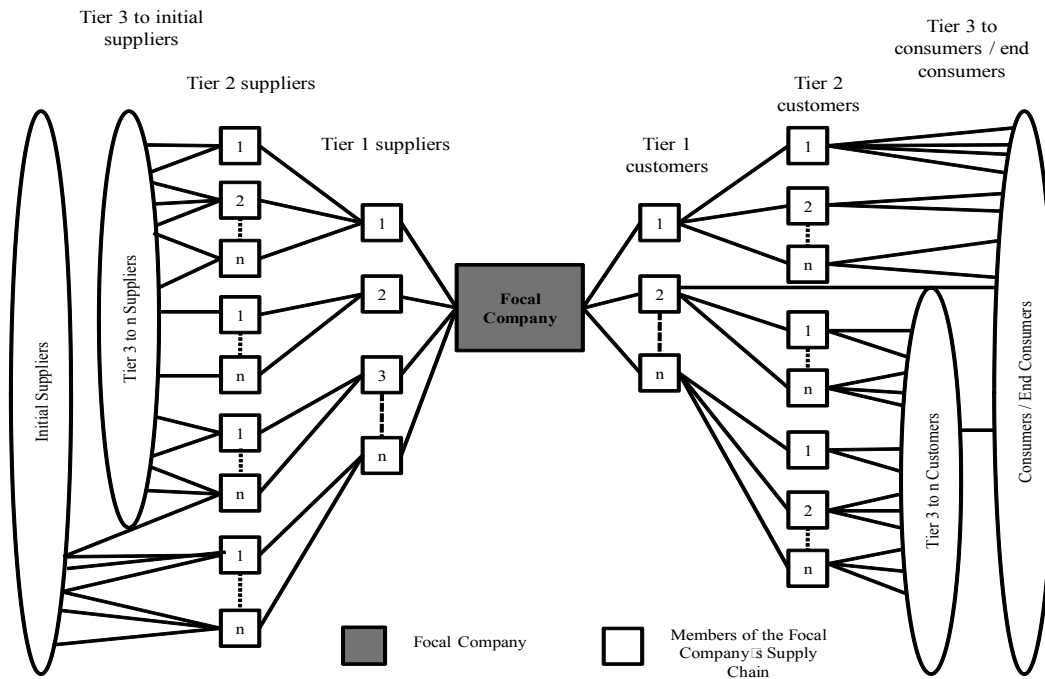
market internally. From there on, however, organizations progressively focus in more competitive activities, outsourcing other ones or assigning them to experts (Gasparetto, 2003; Novaes, 2001). Thus, to become a supply chain member, the participating company, which will be responsible for certain activity assigned by the chain focal (core) company, need to be excellent in terms of products and services, and also to be solid and economically stable (Jappur, 2004).

Focal companies better integrated in the supply network, in terms of objectives, strategies, processes and information exchange will create a significant competitive advantage for all the supply chain. They will also tend to produce an expressive value for their shareholders and customers (Rudzi et al., 2005), evidencing the relevance of the supply chain

management in the search of a competitive differential on their competitors and better meeting their customers' wishes.

The expression Supply Chain Management (SCM) was first used in 1982, by Booz, Allen & Hamilton Corporation, in an article published by the Financial Times magazine (Heckmann, Shorten, & Engel, 2003). In fact, the term has arisen in 1982, but it has begun to be used within the academic field little before 1990, the supply chain being defined from a focal company, also called "parent company". Thus, the chain is defined by the relationships of all the organizations with whom the focal company interacts: on one side, the supply channels, and, on the other one, the distribution channels and the customers (Lambert, Cooper, & Pagh, 1998), as shown on Figure 2.

Figure 2 – Supply chain structure



Source: Lambert, Cooper, & Pagh (1998, p. 3).

According to Santos (2008), the SCM refers to the management of the relationships among the companies, by means of their business processes, to create a system of value. This system allows maximizing potential efforts, reducing wastes, increasing efficiency and efficacy in business processes, aiming

to improve the supply chain competitiveness while adding value to customers and stakeholders. The SCM intends to integrate internal and external activities to the focal company by aligning the productive activities of all the productive chain links in a synchronized way, aiming to reduce costs, minimiz-

ing cycles, and maximizing the final customer's perceived value (Bowersox & Closs, 2001; Wood Jr. & Zuffo, 1998).

The concept of supply chain management is related to a set of approaches used to efficiently integrate and manage all these elements in order any product would be manufactured and distributed in the right amount to be rightly located within the right time, aiming to minimize the system global costs while reaching the desired service level (Simchi-Levi, Kaminsky, & Simchi-Levi, 2003).

### 2.3 Sustainable Supply Chains

Environmental and social pressures imposed to companies are not the sole responsibility of a single organization, but all the members of the supply chain, as all of them need to be involved in serving a sustainable supply chain aiming at satisfying its customers' needs (Seuring et al., 2008).

The world production capacity needs to be more efficient in the use of human and natural resources in order to contribute to the social and environmental development. Thus, industry is being challenged to reorganize its supply chains while preserving the natural environment and respecting local communities. One of the consequences resulting from the concern with the sustainable development is the increasing care of different stakeholders with the organizations productive practices (Vachon & Mao, 2008).

A key challenge for organizations is understanding the impact sustainability has on external and internal stakeholders. Therefore, organizations wishing to improve their supply chain sustainability will need to be more proactive and begin to monitor their suppliers as to a set of business functions (Keating et al., 2008).

The management of a sustainable supply chain represents the management of the flows of materials, information and assets besides the cooperation between the companies which compose the chain, while considering the objectives related to the economic, social and environmental dimensions of sustainability, which result from their customers' and stakeholders' demands. Within sustainable supply chains, environmental and social criteria need to be accomplished by the chain components in order they could remain as members, as competitiveness maintenance is expected by meeting customers' needs and accomplishing the economic criterion (Seuring et al., 2008; Seuring & Muller, 2008).

In other words, the management of a sustainable supply chain requires an expanded view of the supply chain management and should highlight the economic, environmental and social aspects of the business practices (SVENSSON, 2007). According to Koplin, Seuring and Mesterharm (2006), for a long-term oriented sustainable supply management, the decisive factor in creating a win-win situation for its members is the ability of developing a supply chain based on collective learning processes.

In a society increasingly devoting to sustainability, corporations that are able to solve problems together with the chain partners will have more significant competitive advantages (Young & Young, 2001).

### 3. RESEARCH METHOD

To comply with the research general objective, a qualitative method was used. According to Martins and Bicudo (1989), in qualitative research, data are collected from the subjects in the form of communications, and treated by means of interpretation.

The strategy adopted in the development of this research was the multiple case study, and the units of analysis being four focal companies of industrial supply chains within Rio Grande do Sul state, Brazil. According to Yin (2001), such strategy aims at examining the current phenomenon within a real context. Gil (2002) also states that a case study is characterized by a deep and exhaustive research of the objects in order to allow a detailed knowledge on them.

The criteria to select the participating companies were: (i) industrial company; (ii) it is necessary to be the focal company of a supply chain; (iii) the company needs to develop sustainable practices; and (iv) the company should be available to the research.

As to its nature, the research has an exploratory approach. According to Acevedo and Nohara (2006), its objective is providing wide comprehension of the investigated phenomenon, allowing the researcher to accurately outline the problem.

To obtain the necessary data to perform the analysis, deep interviews were used to collect data. A guide including open and semi-structured questions based on the theoretical grounds contents aids the interviews. All interviews were recorded and then written out, and have lasted approximately 45 minutes each. Table 1 shows the summarized interviews and respondents' profile.

As shown on Table 1, the number of respondents varies according to each company, as there were in-

terviewed the professionals who were available and that knew about the analyzed topic.

**Table 1 – Summary of interviews and respondents’ profile**

Characterization		Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5
<b>Company A</b> <i>Electric-electronic industry</i>	<b>Position</b>	Input coordinator	Specialist in inputs and imports	Sales supervisor		
	<b>Time working at the company</b>	10 years	3 years	20 years		
<b>Company B</b> <i>Electric-electronic industry</i>	<b>Position</b>	Purchase supervisor	Sales assistant			
	<b>Time working at the company</b>	1 year, 6 months	4 years			
<b>Company C</b> <i>Energy industry</i>	<b>Position</b>	Purchase manager	-			
	<b>Time working at the company</b>	33 years				
<b>Company D</b> <i>Footwear Industry</i>	<b>Position</b>	Input manager	Sales negotiator	Product Development	Material Development	Material Development
	<b>Time working at the company</b>	20 years	18 years	5 years	12 years	1 year

Source: Prepared by the authors.

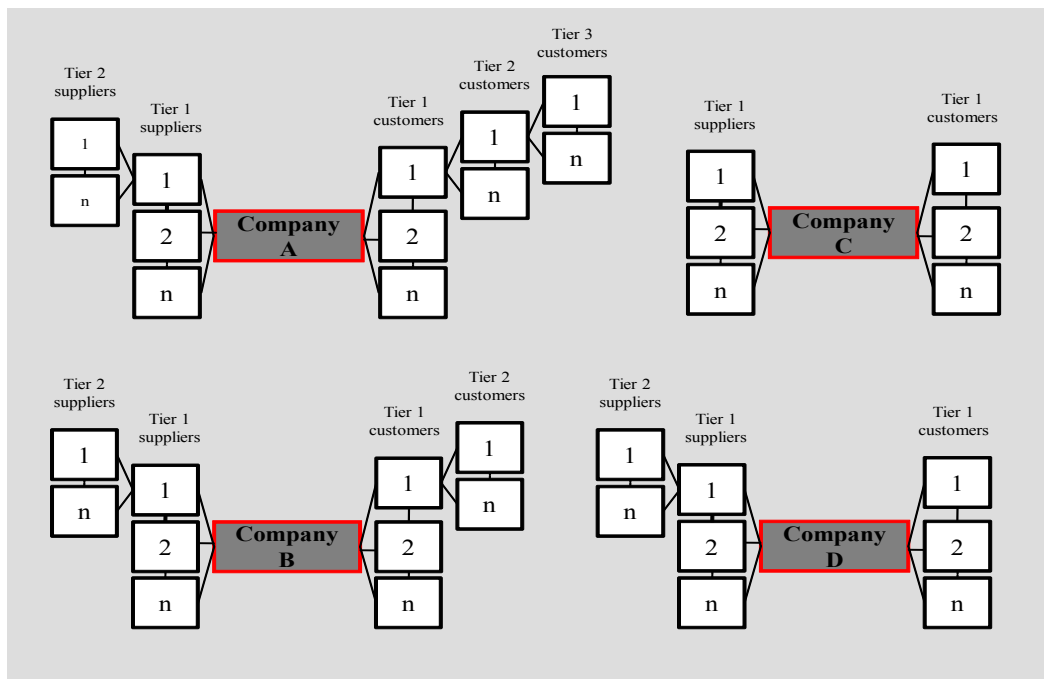
To analyze the data collected at the companies, a content thematic analysis was used, creating the following three major analysis categories based upon the three sustainability pillars: (i) economic category; (ii) environmental category; (iii) social category.

**4. RESULTS ANALYSIS**

The information obtained from the respondents brings the results of the research as to the analysis of the incorporation of sustainability within the supply chain practices of the four researched focal companies. The results will be presented below.

First, it was important to know the parties constituting the supply chain in each of the companies participating in the research, in order to better understand the extent of the respective supply chains and the context being analyzed. Company A supply chain has two supply levels and three customers’ levels. Company B supply chain includes two supply levels and two customer’s levels. In turn, company C supply chain has one supply level and one customers’ level. Finally, Company D supply chain includes two supply levels and one customers’ level, as shown on Figure 3.

**Figure 3 – Graphical view of the supply chains of the researched companies**



Source: Prepared by the authors.

As to the suppliers' selection, each company has a specific own procedure, considering the features of its operation field. The same happens with the suppliers and customers' requirements as to the indicators linked to sustainability, according to the following answers.

*Out of the three sustainability pillars, we focus the financial part, based upon the Serasa report, monthly invoicing of the potential supplier, its dependence degree on our company, among other elements. We also examine the environmental issue, such as effluents treatment they use, and operation license, and aspects related to health and occupational safety, which would be more related to the social part (RESPONDENT 1, COMPANY A).*

*Before beginning the supply, we consult Serasa, which can consult some credit-list services, showing something about the supplier's financial life and health; in the economic analysis, we examine the supplier's economic dependence on our company. After direct suppliers were selected respecting criteria related to the economic category, and after their product has been technically approved, we forwarded a check-list including three major categories to them: social,*

*technical and environmental accountability. This check-list includes issues related to ISO prerogatives, plant outlining, environmental license, employees legally recorded, child work, overtime payment, etc. (RESPONDENT 1, COMPANY B).*

*Our industry has not many supply options and most of our suppliers are multinationals. As the products we need sometimes are produced by a single supplier, we have no choices, and then, it is difficult to select suppliers. In case of minor suppliers, we consider economic aspects and technical specifications of the material to be supplied (RESPONDENT 1, COMPANY C).*

*To select suppliers we rely upon an evaluation sheet, and we consider criteria related to economic, technical development and environmental indicators (RESPONDENT 2, COMPANY D).*

As to the selection of downstream partners in the supply chain, such as distributors, retailers, and so on, all companies consider only economic criteria, as per the following comment:

*We analyze more the economic part and what we currently examine is the customer's segment,*

*its operation field and the market niche. In this sense, the sales department has a quite rigorous criterion, standardized by the company for customer's record. In terms of sustainability, as to the environmental standards and social issues, we don't have criterions, as we normally serve distributors and resellers, which typically are companies already incorporated, which already have their own structure, their own policy, and thus we do not touch on this point. The company has no procedure meeting that in the sales department (RESPONDENT 2, COMPANY B).*

As to the treatment of the different suppliers within the researched supply chains, Company A has the same treatment for all its critical suppliers, and the same treatment is applied by all the companies of its group. Company B has not an equal treatment with its critical suppliers, as, depending on the supplier's product and size, requirements vary, as shown in the following comment:

*The treatment given to the partners of each chain is different, based upon the kind of product supplied... it is impossible to take a supplier leading with chemical and toxic waste without submitting it to a treatment more focused on ISO 14000. For multinational suppliers, for example, it is difficult to advice a company having excellence to do something, we only inform when some problem occurs and it tries to solve it. It is different the way we deal with minor companies to which, based on our experience, we manage to show some paths (RESPONDENT 1, COMPANY B).*

For Company C, the treatment of the most important suppliers is directly linked to their size, and it can demand more from smaller suppliers. On turn, Company D also has a differentiated treatment with its critical suppliers, being those working with chemicals generally more demanded than the others do.

As to the treatment of the downstream partners of the supply chains, treatment given by companies A, B and D depends on the partner's position within the chain. Company A has four different distribution channels, and its interaction degree with the partners depends on the distribution channel they belong. On the other side, Company C has the same treatment to all its customers, especially because it has a single sales channel.

As to the control on suppliers' operations, most of the companies use control tools, but only for those

suppliers considered critical, that is, those having major impact on their own operations (those of the focal companies). Company A suppliers representing over 0.4% of the sales are annually monitored by means of three analysis groups: (i) negotiation and supply chain, including more economic indicators; (ii) planning, considering indicators linked to the supply; and (iii) quality, considering the product quality itself; and, every two years, based on the check-list, which considers the same aspects analyzed to qualify its suppliers, in general. In addition, to critical suppliers classified within the warning level, the company offers an action plan, following up its settlement. Company B monitors its critical suppliers annually, based upon a checklist considering issues related to the natural environment, but also supply, negotiation, quality, etc. Company B also co-operates with its critical suppliers having restrictions to be completely homologated, offering an action plan, according to the following comment:

*When any critical supplier is approved with restrictions, we offer an action plan called target agreement, previously agreed with the supplier. The suggested plan control is based upon a schedule. The schedule is delivered to the supplier, which decides whether to follow it or not, but they normally perform it, as they will always want to improve the company; it is everyone's interest. After ending the schedule, they are evaluated again and they will not have an action plan to follow only after approved without restrictions. Evaluation is annual (RESPONDENT 1, COMPANY B).*

Company C develops several sustainable initiatives. However, such initiatives are not required from its suppliers; thus, it does not control or monitor their practices, it only encourages its smaller suppliers to develop similar initiatives. Company D controls its critical suppliers based upon an evaluation list and has considerable requirements from them as to reuse of resources, as mentioned by Company D Respondents 2 and 5.

*Our chain suppliers' control depends on the product supplied by them; chemicals suppliers are normally most demanded, as the environmental impact is quite more significant. We have evaluation sheets from our suppliers; however, they have much more tools to facilitate purchase control. Chemicals suppliers have a much more detailed check (RESPONDENT 2, COMPANY D).*



*We have high demands on reuse of resources from our suppliers. Our company separates residues into containers we rent, then we send them to the supplier to be reused or to companies licensed and specialized in material recovery on order they could be used again (RESPONDENT 5, COMPANY D).*

As to the customers’ control, the links downstream the supply chain, companies A, B, C and D develops control based upon economic indicators on the sales volume, payment capacity, among other aspects. Company A has its own retail stores, and they need to follow the same requirements of all companies inside the corporation’s group, thus respecting economic, environmental and social criteria.

When inquired about the most relevant sustainability pillar for the chain as a whole, the four companies have unanimously said that in face of the reality and requirements of current market, the economic pillar is still the most significant. Respondent 1 of Company A said “we work in an extremely emergent country and the price is still very important. If we do not consider the economic side, we do not sell”. According to the Respondent 1, Company B, “the economic pillar is a pre-requirement; without it, we could not reach the other ones”. The opinion of Respondent 1, Company C has the same logics,

and is shown on the following comment: “without the economic pillar you have none of the two others; to have the other two pillars, the economic pillar needs to be very well sustained”. Company D also considers the economic pillar as the most important for the chain, a characteristic shown on the following statement:

*Today, the economic pillar is the most important, both for suppliers and the chain sales. In fact, what happens is that society is still not prepared for sustainability. In Europe, such initiatives are valued, but not yet in Brazil... generally, when speaking about sustainability, there is also the cost issue, as it can also increase. Thus, I believe that everything needs to go side by side, a culture needs to be created, and a demand is needed for such initiatives (RESPONDENT 2, COMPANY D).*

Another relevant issue, which was clear during the interviews, is that focal companies within the researched chains already develop several sustainable initiatives. The requirements connected to such issues however are being progressively incorporated in their supply chains, and over the years, will tend to be increasingly important and equally necessary for the success of a supply chain as a whole. Table 2 shows a summary of the study main results.

**Table 2 – Summary of the research results**

Investigated topics	Company A Electric-electronic industry	Company B Electric-electronic industry	Company C Energetic industry	Company D Footwear industry
Supplier selection criteria	Economic, environmental and social	Initially economic and then environmental and social	Economic	Economic and environmental
Customer selection criteria (distributors and retailers)	Economic	Economic	Economic	Economic
Equivalent treatment for different suppliers?	Yes	No, depending on the raw material nature and size	No, depending on size	No, depending on the product
Equivalent treatment for different customers?	No, depending on the position within the chain	No, depending on the chain position	Yes	No, depending on the chain position
How supplier control is performed?	Check-list with performance indicators	Check-list with performance indicators	None	Supplier evaluation sheet

<b>How customers' control is performed?</b>	Economic indicators; in own stores economic, environmental and social criteria	Economic indicators	Economic indicators	Economic indicators
<b>Sustainability most important pillar</b>	Economic	Economic	Economic	Economic
<b>Required criteria</b>	Economic, environmental and social (less)	Economic, environmental and social	Just encouraged	Economic and environmental

Source: prepared by the authors.

Once the research main results were presented, the next section will show the conclusions and suggestions for future researches.

### 5. CONCLUSIONS AND SUGGESTIONS

The research results and the respondents' comments have evidenced that sustainability is increasingly earning relevance within the industrial field. According to Respondent 1, Company B, "sustainability is very important and will remain increasingly highlighted; those who were more advanced will certainly have better results". However, it is perceptible that to increase companies investments in sustainable initiatives, the demand for such initiatives should increase, according to the approach of Respondent 1, Company D:

*There is something that is very clear, globalizations has brought a war, and being theoretical and then die is useless. Today, we live within a market which experiences an intense fight with Chinese products... so, imagine if I sophisticate my products with many requirements and technologies, we will die even faster. Unfortunately in this area, we cannot contribute much as it represents death. We must be ahead – I have no doubts on that – but it is also useless to be too ahead and do not meet the market demand (RESPONDENT 1, COMPANY D).*

Concerning the supply side of the mapped chains, Company A considers the economic, and environmental pillars and, in a less expressive way, the social one in its relationships with its critical suppliers. Company B, in turn, considers the economic, environmental and social pillars of its critical suppliers. Company C performs sustainable practices; however, it only encourages its smaller suppliers to develop similar initiatives. Finally, Company D

considers the economic and environmental pillars in managing its critical suppliers.

As to the customers' side (distributors and retailers), all the studied companies consider and evaluate only economic criteria, showing that sustainability is more developed within the inputs context and has to evolve too much in the downstream part of the supply chains.

Another issue that should be noted was the fact of the level of requirement as to the criteria connected to sustainability is directly related to the field of activity of the industry and to the type of product it manufactures, as depending on these aspects, the requirement of sustainable attitudes may be higher or lower.

All the interviewed companies consider the sustainability economic pillar the most significant within their supply chains. However, the environmental pillar is conquering great relevance and the social pillar is developing little by little. Such consideration can be observed in the interviews and stays clearly reported in the following opinion of Respondent 1, Company A.

*Sustainability is a word still quite new. When talking about sustainability as a whole, economic, environmental and social aspects are included, but not everybody thinks in that way. It is not a common term in people's day-by-day, thus is the reason why most of them have an economical view. Environmental aspect began to be required a little time ago and the social aspect is still more incipient (RESPONDENT 1, COMPANY A).*

However, it is important to remember the non-conclusive nature of the current conditions found in this study, because of the little number of focal companies in the supply chains investigated, something is

one of the limitations of this research. In a similar way, another limitation of the research is connected to the relatively low number of respondents per focal company, due to the need of knowing the researched topic.

Other papers also approached the incorporation of sustainability into the supply chains context. As showed on the studies of Koplin, Seuring and Mesterharm (2006) about the automotive industry and of Andersen and Skjoett-Larsen (2009) regarding a Swedish home furnishing retail chain, the incorporation of the sustainability is gaining even more importance into the supply chain practices, requiring more investigation about this issue.

As to future researches, it is suggested to apply a similar study to other companies from different industries in order to prepare a more accurate diagnosis of to the national industrial sector as to the sustainability incorporation within its supply chain practices. Other interesting researches, which could be developed are related to the analysis of sustainability incorporation, not only through interviews to the chain focal companies, but also to the critical partners of the supply chains to be investigated.

Similar studies in different fields of operation are also very important to know their reality as to those aspects related to sustainability.

## REFERENCES

- Acevedo, C.; Nohara, J. (2006). *Monografia no Curso de Administração: guia completo de conteúdo e forma*. 2ª edição. São Paulo: Atlas, 181 p.
- Almeida, F. (2002). *O Bom Negócio da Sustentabilidade*. Rio de Janeiro: Nova Fronteira, 191 p.
- Almeida, F. (2007). *Os Desafios da Sustentabilidade: uma ruptura urgente*. Rio de Janeiro: Elsevier, 280 p.
- Andersen, M.; Skjoett-Larsen, T. (2009). Corporate social responsibility in global supply chains. *Supply Chain Management: An International Journal*, v. 14, n. 2, p. 75-86.
- Ashley, P. (2002). *Ética e Responsabilidade Social nos Negócios*. São Paulo: Saraiva, 205 p.
- Beamon, B. M. (1999). Designing the green supply chain. *Logistics Information Management*, v.12, n.4, p.332-342,
- Bowersox, D. & Closs, D. (2001). *Logística Empresarial: o processo de integração da cadeia de suprimentos*. São Paulo: Atlas, 594 p.
- Ching, H. Y. (2001). *Gestão de estoques na cadeia de logística integrada: supply chain*. São Paulo: Atlas, 194 p.
- Chopra, S. & Meindl, P. (2003). *Gerenciamento da cadeia de suprimentos: estratégia, planejamento e operação*. São Paulo: Prentice Hall, 465 p.
- Christopher, M. (2007). *Logística e gerenciamento da cadeia de suprimentos: criando redes que agregam valor*. 2ª edição. São Paulo: Thomson Learning, 308 p.
- CMMAD (Comissão Mundial sobre Meio Ambiente e Desenvolvimento). (1991). *Nosso Futuro Comum*. 2ª edição. Rio de Janeiro: Fundação Getúlio Vargas, 430 p.
- Elkington, J. (2001). *Canibais com Garfo e Faca*. São Paulo: Makron Books, 444 p.
- Fawcett, S., Magnan, G. & McCarter, M. (2008). Benefits, barriers, and bridges to effective supply chain management. *Supply Chain Management: An International Journal*, v. 13, n. 1, p. 35-48.
- Ferreira, C. (2007). Sustentabilidade de sistemas de produção de grãos: caso do arroz de terras altas. 2007. 318 f. Tese (Doutorado em Desenvolvimento Sustentável - Centro de Desenvolvimento Sustentável, Universidade de Brasília, Brasília, DF, 2007). *Dissertation Abstracts International*.
- Fugate, B., Sahin, F., & Mentzer, J. (2006). Supply Chain Management Coordination Mechanisms. *Journal of Business Logistics*, v. 27, n. 2, p. 129-162.
- Gasparetto, V. (2003). Proposta de uma sistemática para avaliação de desempenho em cadeias de suprimentos. 2003. 196 f. Tese (Doutorado em Engenharia de Produção - Universidade Federal de Santa Catarina, Florianópolis, 2003). *Dissertation Abstracts International*.
- Gil, A. (2002). *Técnicas de Pesquisa em Economia e Elaboração de Monografias*. 4ª edição. São Paulo: Atlas, 221p.
- GRI (Global Report Initiative). (2006). *Diretrizes para Relatório de Sustentabilidade*. Amsterdam: GRI, 50 p.
- Hart, S. & Milstein, M. (2003). Creating Sustainable Value. *Academy of Management Executive*, v. 17, n. 2, p. 56-67.
- Heckmann, P., Shorten, D., & Engel, H. (2003). Capturing the Value of Supply Chain Management. *Purchasing and Supply Management*, v. 6, p. 67-83.
- Holliday, C., Schmidheiny, S., & Watts, P. (2002). *Cumprindo o prometido: casos de sucesso de desenvolvimento sustentável*. Rio de Janeiro: Campus, 405 p.
- Instituto ETHOS. (2009, April 24). Found in <http://www.ethos.org.br/>.
- Jappur, R. (2004). A sustentabilidade corporativa frente às diversas formações de cadeias produtivas segundo a percepção de especialistas. 2004. 161 f. Dissertação (Mestrado em Engenharia de Produção - Programa de Pós-Graduação em Engenharia de Produção, Universidade Federal de Santa Catarina, Florianópolis, 2004). *Dissertation Abstracts International*.
- Keating, B., Quazi, A., Kriz, A., & Coltman, T. (2008). In pursuit of a sustainable supply chain: insights from Westpac Banking Corporation. *Supply Chain Management: An International Journal*, v. 13, n.3, p. 175-179.
- Koplin, J., Seuring, S., Mesterharm, M. (2007). Incorporating sustainability into supply management in the automotive in-

- dustry – the case of the Volkswagen AG. Elsevier: *Journal of Cleaner Production*, v. 15, n. 11/12, p. 1053-62.
- Lambert, D., Cooper, M., & Pagh, J. (1998). Supply Chain Management: Implementation Issues and Research Opportunities. *The International Journal of Logistics Management*, v. 9, n. 2, p. 1-19.
- Lee, K. & Kim, J. (2009). Current status of CSR in the realm of supply management: the case of the Korean electronics industry. *Supply Chain Management: An International Journal*, v. 14, n. 2, p. 138-148.
- Lozano, R. (2008). Envisioning sustainability three-dimensionally. Elsevier: *Journal of Cleaner Production*, v. 16, n. 17, p. 1838-1846, nov. 2008.
- Martins, C. & Oliveira, N. (2005). *Indicadores econômico-ambientais na perspectiva da sustentabilidade*. Porto Alegre: FEE; FEPAM, 122 p.
- Martins, J. Bicudo, M. A. V. (1989). *A pesquisa qualitativa em Psicologia: fundamentos e recursos básicos*. São Paulo: Moraes, 110 p.
- Nobre Filho, W., Simantob, M., & Barbieri, J. (2006). Em busca da sustentabilidade sócio-ambiental: O caso Copesul. Anais do SIMPOI FGV-EAESP: IX SIMPOI – *Proceedings of Simpósio de Administração da Produção, Logística e Operações Internacionais*, 2006.
- Novaes, A. (2001). *Logística e Gerenciamento da cadeia de distribuição: estratégia, operação e avaliação*. Rio de Janeiro: Editora Campus, 409 p.
- Rogers, P., Jalal, K., & Boyd, J. (2008). *An introduction to sustainable development*. Londres: Earthscan, 416 p.
- Rudzki, R. A., Smock, D. A., Katzorke, M., & Stewart Jr., S. (2005). Supply Management: How are You Really Doing? *Supply Chain Management Review*, dec. 2005.
- Santos, A. (2008). Modelo de Referência para o Processo de Desenvolvimento de Produtos em um Ambiente de SCM. 2008. 408 f. Tese (Doutorado em Engenharia Mecânica -Universidade Federal De Santa Catarina, Florianópolis, 2008). *Dissertation Abstracts International*.
- Savitz, A. (2007). *A Empresa Sustentável: O verdadeiro sucesso é o lucro com responsabilidade social e ambiental*. Rio de Janeiro: Elsevier, 288p.
- Seuring, S. & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. Elsevier: *Journal of Cleaner Production*, v. 16, p. 1699-1710.
- Seuring, S., Sarkis, J., Muller, M., Rao, P. (2008). Sustainability and supply chain management – an introduction to the special issue. Elsevier: *Journal of Cleaner Production*, v. 16, n.15, p. 1545-1551.
- Svensson, G. (2007). Aspects of sustainable supply chain management (SSCM): conceptual framework and empirical example. *Supply Chain Management: an International Journal*, v. 12, n. 4, p. 262-266.
- Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2003). *Cadeia de suprimentos: projeto e gestão - Conceitos, estratégias e estudo de casos*. Porto Alegre: Bookman, 328 p.
- Vachon, S. & Mao, Z. (2008). Linking supply chain strength to sustainable development: a country-level analysis. Elsevier: *Journal of Cleaner Production*, v.16, p.1552-1560.
- Weber, M. (2000). Calculating the Cost of Variances in the Supply Chain: Determining Supplier and Buyer Effect on Inventory Performance. Elsevier: *Industrial marketing management: an international journal of industrial marketing and marketing research*, v. 29, n. 1, jan.2000.
- Wood Jr., T & Zuffo, P. (1998). Supply Chain Management. *RAE - Revista de Administração de Empresas*, São Paulo, v. 38, p. 55-63.
- Yin, R. K. (2001). *Estudo de Caso: planejamento e método*. 2ª ed. Porto Alegre: Bookman, 205p.
- Young, A. & Young, K. (2001). Sustainable Supply Network Management. Elsevier: *Corporate Environmental Strategy*, v. 8, n. 3, p. 260-268.

## AUTHOR'S BIOGRAPHY

**Luíse Bispo da Costa Dalé** - She is graduated in business administration focused on international business and has master degree in business administration, obtained at the Catholic University of Rio Grande do Sul State (PUCRS) – Brazil. Currently, she is dedicated to the administration area, especially on the research of the incorporation of sustainability in supply chains.

**Lucas Bonacina Roldan** - He is graduated and has master degree in business administration, obtained at the Catholic University of Rio Grande do Sul State (PUCRS) - Brazil. He is currently professor of business management and owns SocialTec, an advisory and consulting firm. Currently, he is dedicated to the management area, where he focuses mainly on the following themes: entrepreneurship, strategy, inter-firm relations, production management and logistics.

**Peter Bent Hansen** - He is graduated in mechanical engineering and has master and doctorate degrees in production engineering, obtained at the Federal University of Rio Grande do Sul State - Brazil. He is currently professor and researcher of the business management postgraduate program at the Catholic University of Rio Grande do Sul State – PUCRS, and professor at the administration and production engineering faculties of the same university. Currently, he is dedicated to the management area, where he focuses mainly on the following themes: strategy and decision making, competitiveness and performance measurement, inter-firm relations, production management and logistics.