An investigation about buyer-supplier relationship from the perspective of sustainable actions in Brazil

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Abstract
The aim of this paper is to analyze the buyer-supplier relationship from the perspective of sustainable actions in the Brazilian context. The theoretical background is the sustainable procurement literature (Kraljic’s model of supplier selection). The empirical method was multiple case studies and it was chosen two products: glycerin and coffee.

Keywords: Sustainable Supply Chain. Glycerin. Coffee. Kraljic’s model.

Introduction
The increasing incorporation of sustainable practices is visible in business, public and philanthropic circles (Senge et al. 2009). In a study disclosed in 2012 from Boston Consulting Group in tandem with Massachusetts Institute of Technology, involving a sample of more than 2,800 respondents, it was proved that such phenomena: 67% of all the organizations studied believed that sustainability has become a necessity in order to achieve competitive advantage (Kiron et al. 2012).

Focusing within an organization, empirical observations indicate that sustainability is not a concept that should be restricted to one department and/or one hierarchy. It covers all levels of strategy, tactical and operational (Carter and Rogers 2008, Pagell and Wu 2009, Seuring, 2011).
Furthermore, sustainability is not restricted to the organizational boundaries. Many actions need to be taken in partnership with the final user, suppliers or other participants in the supply chain (Bowen et al. 2001). Suppliers that are sensitive to the social and environmental questions, treating these in their organizations, positively contribute to their buyers due to the fact that it increases efficiency, reduces the probability of mistakes in the supply process and assures a good image, as much of the buyer organization as well as the supplier organization (Krause et al. 2009, Green et al. 1996).

Through this perspective, a function within any organization stands out: procurement, as it is the area that deals directly with suppliers, operating at the limits of the organization (Krause et al. 2009). Kraljic (1983) had already highlighted, at the beginning of the 80’s, the strategic importance of this function within the organization and which should be correctly managed in order to obtain the competitive advantage. With the introduction of this debate about sustainability in the business world, this function is once again at stake as requirements to achieve sustainability in the supply chain will depend on how procurement is managed (Krause et al. 2009).

Sustainable Procurement arises therefore as a theme of growing importance and numerous questions emerge, highlighting: Which criteria should one use at the moment of selecting suppliers, when adopting a perspective of sustainability? Understanding the relationship between buyers and suppliers when principles of sustainability are aggregated it is the object of this study. For such, the article is organized in five sections, besides this introduction. Section 2 brings the theoretical background of this paper. In section 3, the method used for the empirical study is explained: multiple-case studies. In section 4, an analysis of the results is developed and lastly, in section 5, the final considerations of this article are presented.

**Theoretical Background**

A systematic review of the bibliography was done about: (1) criteria for selecting suppliers, (2) Kraljic’s Model and (3) the incorporation of the concept of sustainability to these elements. A systematic bibliographical review may be understood as the adoption of criteria and technics that will result in a set of scientific production which includes a spectrum of relevant and comprehensive literature about the object of study (Presoto 2012). In the following subsections the results of this process are presented.

Procurement means the acquisition of goods and/or services, taking in consideration the imposed requirements (for instance, quality parameters, price, etc.) by the purchasing manager (Leenders and Fearon 1997). Dobler and Burt (1996) also emphasize that during the last few years procurement has become more proactive focusing on strategic problems and surpassing the classic limits of the concept of purchasing.

According to the definition adopted by Sustainable Procurement Task Force (Defra 2006) Sustainable Procurement, in turn, is the process by which organizations satisfy their need for goods, services and resources through the means that aggregate value for the money committed. The notion of value in this definition should takes in account not only the benefits to the organization but also to the society and the economy which surround them, while the damage to the environment is minimized.

Despite the existence of important studies in this area (Bowen et al. 2001, Meehan and Bryden, 2011, Pagell et al. 2010), this is a fledgling theme. Studies that seek to determine how principles linked to sustainability can be integrated to Procurement Strategies are necessary (Meehan and Bryden 2011).
Various criteria can be used in the process of selecting suppliers: price, quality, delivery dates, post sales services, geographic location of supplier, capacity for a quick response when making changes to orders and financial status (Ting and Cho 2008). Therefore, the selection of suppliers can be characterized as a multi-criteria problem, of qualitative or quantitative nature, depending on the context (Ting and Cho 2008). From the literature analysis, it is possible to notice a prioritization on certain variables: price, quality and more recently, criteria that deal with rendering services, such as post-sale services (Baily and Farmer 1974, Dobler and Burt 1996).

With the rise of the concept of sustainable development such criteria were revisited by numerous authors, with the aim of somehow incorporating aspects of sustainability in the supplier selection process. In the study of Brammer and Walker (2011), environmental concerns, cultural diversity, labor safety cautions, human rights and philanthropy actions have been integrated. The insertion of small and medium local suppliers in production chains is pointed out as other concern. Humphreys et al. (2003) propose a framework enumerating environmental criteria to be used in the process of selecting suppliers, such as those called environmental costs.

The selection of suppliers models is a object of in-depth studies done by academics since the first publications about purchasing management (De Boer et al. 2001). Many structured models have been proposed (Sarkis et al. 2011; Weber et al. 1991; Degraeve et al., 2000; De Boer et al. 2001). In this paper, the Kraljic’s model is highlighted, due to two fact: its logics widely employed (Pagell et al. 2010, Police 2006; Presoto 2012) and, second, there exist scientific studies that have analyzed the incorporation of the principles called sustainable in this specific model.

The principles behind this model are similar to the theories of competitive strategy of Porter’s (1996) strategic positioning. The introduction to global suppliers, the largest competition among companies, challenging prices and the crisis of raw material availability were the main inducers of this model. The model proposed by Krajlic (1983) is based on two dimensions: (1) on the importance of the item being bought in terms of aggregated value, participations in the total cost and impact on profitability and (2) in the complexity of the supplier market, in terms of scarcity, technology domain, entrance barriers, logistical costs and conditions of oligopoly or monopoly. Evaluating these two variables, impact and risk, it is possible to allocate each item, to be compared, in a matrix quadrant that has become known as the Kraljic’s Matrix, as shown in Figure 1. The four quadrants are described next.

The items considered routine or not-critical are those that have a low impact on the results of the organization and low risk in terms of supply. They are products having a low unit cost and used in the routine of the organization, in other words, not any process or operation of the organization is fundamentally dependent on this item (for instance, office material). Referring to the bargaining power of the suppliers, Krajlic (1983) mentions that this is not necessarily inferior to that of the procurer of the organization. However, the non-dependence of the organization relative to these items allows it to adopt a posture of diversification and exploration of its supplier base. Finally, Krajlic (1983) points out that, for these items, the buyer organization should focus their inherent actions to the selection of suppliers, the negotiation costs and on the simplification of the buying process.

The second category defined by Kraljic (1983), scale items (or leverage items), refer to the items that present great importance to the organization (they can significantly impact the profitability of the organization), while the supply risk is low. They normally include products of the commodity type, where the prices of which are defined by the market and are not subject to great variations in the short-term. The focus of the organization should be in the search for better prices, using the volume as weight in favor of the negotiation.
The bottleneck items are those of low importance (low impact potential for the organization) nonetheless with a high risk of supply, which reduces the bargaining power of the buyer organization. For this situation, Kraljic (1983) proposes the adoption of safety stocks, contingency plans, control over the supplier and a search for substitutes. Hence, in order to maintain the risks controlled, there is a need in terms of diversify the set of options of suppliers, maintaining good relations with a reduced number of suppliers. However, limited, as these items are of great importance to the organization.

The last group of strategic items is that which demands greater attention. In this case, there is a combination of high supply risk with high potential to impact profitability of the organization. Kraljic (1983) emphasizes the importance of establishing a close relationship with suppliers, with collaboration in processes, sharing of information and long-term contracts. One should seek to develop a good relationship with a reduced number of suppliers, yet with high intensity.

Pagell et al. (2010), through empirical studies, have found that the Kraljic’s model is not being adopted in the way he had conceived when aspects of sustainability are incorporated in the buyer strategy. Concerns from sustainability, such as the impact on the environment and on society, are beginning to be adopted in parallel to economic considerations. Furthermore, Pagell et al. (2010) stress that items considered commodities, according to the Kraljic’s model, began to be treated as strategic and buyers are beginning to pay a premium for that which they acquire.
Continuity of the supplier base is pointed out as fundamental element (Pagell et al. 2010). Practices such as the establishment of long-term contracts eyeing the development of the suppliers, the use of a small group of suppliers, the development of suppliers and transparency are emphasized. Empirical data has shown that modifying the way suppliers are managed makes the purchasing organization more profitable (Seuring 2011).

Pagell et al. (2010) have proposed a revised model of portfolio management of suppliers (shown in Figure 2). This model is not in contrast to the model proposed by Kraljic (1983) but rather an adaptation aiming to meet the needs of sustainability in terms of supplier selection. The way of classifying the items does not greatly change: in the considerations about the impact that the item represents to the organization should consider the economic impact together with the social and environmental. In the Kraljic (1983) model the transaction costs (basically price) were the central elements, this model differs because of the possibility of adopting other criteria, such as environmental impact. There is also a new division of the items considered as leverage items with the creation of three sub-classes, a slightly change of structure. These items acquire particular characteristics with the incorporation of sustainability principles.

The first group, true commodity, which groups together most of the items previously classified as leverage and refers to the items in which the risk of supply is low and has the potential to impact on only one of the three TBL (triple bottom line) components. In this case, the suppliers are replaceable and the selection normally occurs based on one criterium. The second subcategory is a transitional commodity which, according to Pagell et al. (2010) is more difficult to manage due to the fact that the supply risk is high, motivated by the short-term asymmetry of information between the supplier and buyer. Authors suggest that the purchasing organization invests in the relationship with the suppliers. The last subcategory, strategic commodity refers to the items with greater risk of supply in terms of sustainability. However, if well-managed, they can bring benefits in the long-terms in non-economic aspects of sustainability.

The fundamental objective of the Kraljic’s model – to completely exploit the capacity and the strength of bargaining power with the objective of reducing costs, risks and to obtain adequate availability was equally analyzed by Krause et al. (2009) in the case where managers had in mind to build a sustainable supply chain. To analyze the incorporation of sustainable aspects, the authors made use of the theory of competitive priorities. They suggested that sustainable development could be a new competitive priority considered together with other traditional competitive priorities: quality, cost, trustworthiness, punctuality, flexibility and innovation. The proposal is to include sustainability as a key criterium of performance in the four quadrants of the Kraljic (1983)
model. Therefore, the proposal of these authors differs from the proposal of Pagell et al. (2010) as it focuses on the sustainability results of the choice while the latter establish sustainability in the form of criteria.

- For the items considered strategic, it is important to focus on the aspects linked to innovation to guarantee that their suppliers consider sustainable aspects in the development of their products. Collaboration and sharing of know-how in this case are important to assure a minimum of social and environmental impact on new products.
  - For the items considered leverage, an emphasis on the reduced consumption of input and the use of recycled raw materials, for example, gain importance;
  - For the bottleneck items, the adoption of sustainable practices is more difficult, as the buying organization is in a situation of dependence. In these cases, the buying organization can encourage the adoption of standardization and certification in the supplying organizations;
  - Lastly, for the non-critical products, the authors propose the adoption of simple qualifying criteria for suppliers, such as the demand for some type of certification.

Seuring (2011) points out as a key element of the theory around the sustainable supply chains the role and responsibility that a company assumes in its supply chain when implementing sustainable practices, the so-called company focal. It is a member of a value chain that incorporates internally with sustainable criteria, just as much in the perspective of products as well as procedures and also assumes a role of engaging in the adoption of sustainable practices by their partners, helping them to improve their negotiation practices from the point of view of sustainability. In these cases, the company focal adopts environmental and social conditions, defined from the pre-established standards, or by itself that reverberate throughout all the chain (Seuring 2011, Johnson 1991). Many times, one can count on the help of assistants or other stakeholders, such as nonprofit organization, the State and even the consumers/clients (Lund-Thomsen and Nadvi 2010).

Seuring (2011) also emphasizes the importance of constructing the means that favor communication and cooperation during the whole chain of suppliers. The importance of collaboration is equally highlighted in other studies (Carter and Rogers 2008, Gold et al. 2010, Pagell and Wu 2009, Seuring and Muller 2008, Sharfman et al. 2009). Klassen and Vachon (2003) mention three practices developed in a relationship of collaboration: (a) visits between organizations (buyers visiting suppliers and vice-versa); (b) promotion of training and graduating – which suggests that the focal organizations need to educate their suppliers and these need to educate their own suppliers and so forth and so on; (c) offer technical assistance to them.

Numerous authors highlight two consequences of adopting Sustainable Procurement. The first talks about the incorporation of local small and medium producers on the value chain. A series of authors (Brammer and Walker 2011, Carter and Easton 2011, Green and New 1998, Moore and Manring, 2009, Pagell and Wu 2009, Rao 2002, Reuter et al. 2010, Seuring, 2011) approach this same question. This first consequence shows to have a greater participation of small and medium suppliers and, in this way, it will be observed an increase on the number of agents participating in this value chain. Nevertheless, Pagell et al. (2010) point to one consequence - despite not being directly related to the question of small and medium suppliers – in the opposite sense. According to these authors with the adoption of sustainable principles in the selection process, a smaller number of suppliers is used. Closer relationships – with longer contracts – for items previously treated as simple commodities are being adopted which has this reduction as a consequence.

**Empirical Study**
For empirical research, a qualitative approach has been chose (Bryman 1989). As method, it was adopted the study of multiple cases, which proposes the investigation of data phenomena within a real contemporary context through a deep analysis of various objects (Miguel 2010, Yin 2010). The leading phases of the case studies followed during the research were obtained from the union of propositions of Miguel (2010), Miles and Huberman (1994) and Yin (2010), going onto the phases of planning, pilot tests, data collection and analysis.

It was undertaken face-to-face interviews with buyers and suppliers in the glycerin and coffee chains as well as documental analysis. Insights from Presoto (2010) about nondurable products chain were also incorporated in our analysis. Three questionnaires (buyers, industry supplier and producer supplier) with 10 questions each were elaborated. The buyer in the glycerin chain is one of 10 biggest in Brazil. It was interviewed the person responsible for procurement in the company and two of the main glycerin suppliers. According to ABIQUIIM, the capacity of Brazilian market of glycerin is around 25 thousands of metric tons per year. In 2011, Brazilian production of biodiesel was estimated at 2,365 thousand metric tons, yielding 236 of crude glycerin. The glycerin Brazilian consumption is triggered mainly by personal care market, around 65% of total glycerin goes to personal care markets. The main point is that glycerin supports another kind of sustainable industry which is biodiesel. Biodiesel be competitive or not is a function between oil market prices and oil seeds market price. Glycerin sales represents capital generated with glycerin is used by biodiesel producers cover its costs of biodiesel production.

Regarding coffee chain, it was interviewed one of the five biggest coffee manufacturers in Brazil. The person responsible for the coffee procurement was interviewed as well as two of coffee suppliers. Brazil is one of the biggest coffee producers in the world. Coffee production represents about 7% of total agricultural production, which means more than 25% in GNP (IBGE 2012).

Analysis of the results

The data collected clearly show changes in the way the supplier selection is managed. The new practices adopted by the organizations laying out how the relationship between buyer and supplier is modified. Nonetheless, it is equally unblemished that such practices do not include the entirety of the businesses of the organizations investigated. These findings are in accord with Presto (2012) empirical results, when he has researched the retail chain.

The glycerin may have an animal or a vegetable origin. In the case of vegetable origin, the source is biodiesel which is made of soybeans. The chemical industry investigated has both suppliers of animal and vegetable glycerin. The results indicate that the organization plays the role of the focal company in respect of the sustainability. This fact can be evidenced from certain actions. One proof is the establishment of the School of Sustainability for suppliers. The goal is to spread sustainability-oriented practices with suppliers. Among the elements highlighted in terms of environmental and social concerns include the issue of energy sources, waste generation, environmental impacts of transporting products and raw materials, fair working conditions where there is no use of child or forced labor.

Although this policy from the Organization, regarding to the criteria for purchase of glycerin it was noticed that the price is still a key element along with the quality of the product. In this respect, it is worth noting that plant-based glycerin improves the operational performance of the process developed by the Organization. Thus, despite being a more expensive product, compared to animal-based glycerin, but still is bought with a view to operational efficiency. Another argument which comes out from field research is that the demand for sustainable products is still low, which makes sustainable inputs more expensive. Then, it is argued that it is important
to make a risk and cost analysis combined. In the case of vegetable glycerin, the risk of loss of operational efficiency is high enough that the Organization buy the most expensive material.

Regarding coffee, the industry studied (the roaster company) has demanded a sustainable certification from some coffee producers in order to produce a sustainable coffee: UTZ Kapeh. Despite the fact that producers could get a premium price for the product in meeting UTZ requirements, they still could have problems with the quality of the product. Quality problems could decrease the price paid by buyers. There are indications that producer could lose up to 75% of the full market price because of quality problems. Besides, the premium percentage is a fixed figure, the price of the product does not.

According data obtained at interviews, Kraljic’s (1983) principles are still valid, the main analyzes done is a balance between economic impact and risk. Survey shows that the main sourcing criteria analyzed are: price and product quality. Price of source product is still the main driven for purchasing decision. Even in source sustainability discussion, cost is still an important criteria. Thus, implement sustainable purchasing requires appropriate economic evaluation approach. It suggests that sustainable procurement requires appropriate practices of costs control; the acquisition cost should be inside wide approach.

Finally, sustainable implementation requires professionals enabled to bring innovative solutions and with skills to conduct deeper analysis that goes besides costs. In the sourcing studied, soybean glycerin acquisition is more expensive that tallow glycerin, but soybean glycerin higher quality allows improvements in production final product process that brings savings and justifies glycerin soybean based sourcing with premium price.

**Final Considerations**

The objective of this article was to understand how the incorporations of sustainability principles has impacted the relationship between buyers and suppliers. For such, Kraljic’s model of supplier selection was particularly analyzed as well as a revision about the elements that should be added to the selection criteria when dealing with sustainable procurement was conducted. Some elements stand out in the characterization of sustainable procurement. These are: the question of a focal company; the importance of small and medium local producers; a reduced number of suppliers; adherence or not to the Kraljic’s model; practices of collaboration between suppliers and buyers.

The data contained here clearly show changes in the manner that the supplier selection is managed. However, such practices do not include the entirety of the business of the three organizations. They are specific and marginal actions to the business of each organization. Attention is centered on the cattle, agriculture and textile branches when retail chain is observed.

Across the different supply chains investigated in this research, the evidences indicate that buyers organization have a driver position in the ideas of sustainability process incorporation. According Seuring’s perspective, it is clear their role of focal companies. The buyer-oriented chains has already discussed in other contexts. It seems that this orientation is highlighted when sustainability become a keystone concept.

The data obtained equally depicted that the Kraljic’s model of supplier selection continues to be valid. Despite the fact that traditional criteria continue to be used to manage the greater number of suppliers, in the cases where principles of sustainability have been incorporated, it is not observed modifications regarding the logic behind the Kraljic’s structured model. In fact, it is noticed attributes that are added in the classification of products in terms of risk and impact. In this case, a modification has not been observed as that in the very inclusive Pagell et al.’s model who proposed a restricted modification to the way in which Kraljic’s model are structured. The
empirical evidences are more aligned with Krause et al.’s perspective, which focus is in way that items can impact performance indicators, involving, for instance, question from trust field of research.

The coverage, in terms of sustainable aspects which aims to cover, showed to be less than that found in the literature. However, there is evidence that indicate an evolutionary process, with the proposition of indicators being closer to the definition of sustainability, as well as, partnerships that have been established, aspects that could be investigated on further researches.

Acknowledgments

This project was financially supported by National Council for Scientific and Technological Development (CNPq-Brazil).

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