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# **Continuous Improvement Capability and Risk Perception in supplier's evaluation**

## **Abstract**

The objective of the paper is to identify the relation between supplier's continuous improvement capabilities and perception of supply risk from the supplier evaluation. The continuous improvement as a capability and the perception of supply risk can serve as an antecedent of the supplier development program by the evaluation process.

**Keywords:** Supplier development, Supplier Evaluation, Supply Risk, Continuous Improvement

## **1. Introduction**

Researchers in operations management has approached chain integration as a major area of study. The relation of the focal company with the actors around him has been studied in recent years as a factor that impacts the performance of companies (Flynn, Huo, Zao, 2010, Narasimahn, Kim, 2002, Frohlich, Westbrook, 2001). The search for integration is needed at the time that the market is also becoming more competitive and dynamic. In this environment, companies not only compete among themselves but also among its supply chain. In the broad view of the chain, integration is defined as the degree to which a manufacturer strategically collaborates with its partners in the supply chain management processes and collaboratively within and between organizations (Flynn, Huo, Zao, 2010). The idea of integration in the supply chain thus covers both ends of the chain, both suppliers and consumers.

One of the strategies within the supply chain presented in the literature specifically covers development of suppliers as a means to achieve integration in the chain (Krause

1999, Krause, 1997, Monczka and Trent, 1991). The search for the alignment from the focal company can be reached by the "focal company's efforts on improving supplier performance and/or the *capabilities* to meet the needs of short and/or long-term purchasing company" thus defining development supplier (Krause, 1999). The process seeks to impose practices for suppliers to improve the service requirements of the focal company, but also reduce risks in the supply (Choi, Hartley, 1996, Zsidisin, 2003, Chopra, Sodhi, 2004). Once set up the development program, the company's efforts focus is to ensure the continued progress of suppliers, as well a specific program development is the evaluation of suppliers (Prahinski, Benton, 2004, Purdy et al., 1994, Hald, Ellegaard, 2010), where the intention is to improve the performance and *capabilities* of suppliers. Thus the evaluation of suppliers can be a means of reducing variability in relation to the delivery, quality and reliability (Purdy et al., 1994).

Thus, the improvements made by suppliers are evaluated by the purchasing company to identify where suppliers are able to meet the requirements given, and, if suppliers meet the company's strategies. The supplier's ability to have good ratings in relation to other suppliers must have the factor of their ability to develop, or in other words, have the ability to improve continuously.

However there are different connotations in the way the term "continuous improvement" is used because it can provide a sense of the process and object (Bessant et al., 2001). The first meaning refers to the process in which a continuous stream of innovation emerges. Since the object refers to the process output, or the result of the process. Besides these two strands improvement comes as a dynamic *capability* inherent in the company (Anand et al., 2009) that is incorporated in the present work towards continuous improvement as a behavior (Bessant et al., 2001, Jorgensen, 2006). The

dynamic *capability* view of approaches the continuous improvement as a predecessor of both process and the object of improvement, since it presents as a stable standard that allows systematic changes in the organization (Zollo and Winter, 2002).

So the purpose of the research will be to try to understand from suppliers how does the relationship between continuous improvement as its *capability* and the evaluation by a focal company. From suppliers with distinct evaluations, among good and bad grades, the study will seek to identify specific *capabilities* of continuous improvement related to the degree of evaluation. In addition, to evaluate the perception of suppliers in relation to risks managed in the development program. It will be studied the relationship of risk perception evaluation of the supplier. Suppliers with good evaluations must have a clear perception of the risks managed, since they had the best evaluation regarding the ability to mitigate risks. In this way the continuous improvement would aim to reduce the risks regarding the relationship of the buyer/supplier and a better strategic alignment with respect to the focal company. So the work pretends to show an overview of the relationship of the behavior of continuous improvement and risk perception managed with the supplier evaluations. So the question regarding this study is:

## **2. Research Question**

In a development context of the question that providers want to study is:

**"How the focal company evaluation is related to the perception of risks managed and *capabilities* of continuous improvement of the suppliers?"**

### **3. General Objectives**

The overall objective will seek to answer the research question so it is expected to be achieved with the study:

**“Comprehend the relation between continuous improvement behavior and risk perception with the suppliers evaluation.”**

### **4. Specific Objectives**

- Characterize the development of suppliers from the focal company.
- Identify which *capabilities* of continuous improvement suppliers have.
- Identify how the perception of risks managed in development program by suppliers.

### **5. Contribution**

In today's globally competitive environment, many companies are turning to supply management as a *core* strategic competency that creates a competitive advantage (Handfield et al., 2009). For both issues involving supplier selection (Choi, Hartley, 1996, Verma, 1998) and the relationship with suppliers (Choi, Wu, 2009, Primo, Amundson, 2002) require a deep knowledge of suppliers. The contribution of this work is to study the *capabilities* of continuous improvement of suppliers that comprise an intra-organizational analysis, which could complement current evaluation indicators in the buyer-supplier relationships as well as broaden the scope of analysis of selecting new suppliers. Such behavior can be presented as predecessor to the presentation of continuous improvement, which can be evaluated independently of longitudinal results.

## **6. Literature review**

This chapter will cover the theories, concepts and definitions relevant and that will be used as a framework for research, in order to sustain the results from a confirmatory way or even contradictory.

To conduct the review, the chapter begins with a macro view of strategic alignment in the supply chain, its concepts and its importance in the operations strategy. As a way of seeking strategic alignment and as a focus of the research it will be presented the definition of supplier development, its importance and its variations. Inserted in this context is also addressed the issue of supply risk management, which appears as a factor in the supplier development. Finally it will be presented the behavior of continuous improvement, their conceptualization as *capability* and the patterns that represent their occurrence in companies.

### **6.1. Strategic Alignment in Supply Chain**

When Wheelwright (1984) presented in his work the need of alignment between business strategy with manufacturing strategy, the first steps in the quest for competitive advantage in the aspect of manufacturing were presented. Over the last decade, competition in the manufacturing sector has increased as globalization and the requirements of consumers have evolved. Now, organizations are competing not only for their internal *capabilities*, but also in their ability to develop the *capabilities* of their supply chain (Vachon, Halley, Beaulieu, 2009). Companies are increasingly relying on their suppliers to reduce costs, improve quality and develop new processes and products more quickly than its competitors (Liker, Choi, 2001). The most successful

manufacturers seem to be those that have carefully linked their internal processes with external suppliers and customers in unique supply chains (Frohlick, Westbrook, 2001).

For Watts et al. (1992), as a boundary of the firm, the purchasing function must interact with corporate strategy and manufacturing *capabilities* internally and with outside suppliers. Thus, according to Krause (1999), the purchasing function plays an important role in supporting the strategy of the firm's operations to ensure that the performance and *capabilities* of the supplier are aligned with the focal firm's competitive strategy. If performance and / or *capabilities* are deficient, the focal firm's competitive strategy can be difficult to achieve.

## **6.2. Supplier Development**

Suppliers are a critical resource for a firm, providing both direct materials, indirect and services that are inputs to the organizations (Modi, Mabert, 2006). As companies focus on their core competencies, they become more dependent on their suppliers. Thus companies must ensure that the performance and *capabilities* of suppliers are equal or better than the performance and *capabilities* of its competitors (Krause, 1997). Buying companies report the need for improvements in the areas of supplier quality, delivery, cost reduction, adoption of new technologies, financial health and product design (Monczka and Trent, 1991;). In a typical supply chain, coordination between manufacturers and suppliers are an important link in the distribution channel. The global competitive environment drives organizations to be highly dependent on the success of the vendor selection process (Chan, Kumar, 2005).

The term "Supplier Development" was first presented by Leenders (1966) to describe companies' efforts to increase the number of viable suppliers and improve their

performance. Increasing reliance on suppliers increases the need for business focus to effectively manage and develop their supply chains. Since Hahn et al. (1990) defined supplier development as "a systematic organizational effort to create and maintain a network of competent suppliers." They classify development activities in two perspectives:

- Close: The creation of new sources of supply when there are no suitable suppliers that meet business requirements.
- Wide: Striving for long-term cooperation between a buyer firm and its suppliers to improve their technical *capabilities*, quality, delivery and cost.

The focus of this study will be the broad relationship, where the focal firm does not seek to create new suppliers, but work together with existing suppliers to improve performance and thus get the alignment so that their needs are met. More specifically the development of suppliers can be interpreted as the firm's ability to transfer or replicate some of the aspects of their organizational *capabilities* beyond the limits of the company (Sako, 2004). The suppliers need to develop problems resulting from the supplier that threatened to delay or even halt production of the buyer firm (Krause, 1998).

According to Krause (1999) focal firms that find performance failures or incompatibilities of the *capabilities* of suppliers may (1) invest time and own resources to improve performance and/or *capabilities* of suppliers, (2) produce the material purchased internally (3) look for an alternative supplier and (4) seek a combination of the three previous. As the study by Krause (1999) this study will adopt the option (1) alone or in combination with other options.

There are two views that may have relation to the process of development, strategically or reactivity (Krause, 1998). On the one hand companies address the development of suppliers strategically, focusing on the identification of critical commodities and requirements for the development of suppliers in order to create a supply base capable of providing sustainable competitive advantage. In contrast, companies that adopt a reactive posture are motivated by the "lack" of suppliers' performance, which became apparent through the systems of performance evaluation of suppliers. In this sense Choi and Hartley (1996) argue that the decision should be the strategic development rather than a reactive simple decision.

### **6.3. Supplier Evaluation**

When a vendor is unable to meet the expectations of the acquiring company, the manager of the focal company must determine the most appropriate action to resolve the issue. To maintain a working relationship, the manager must find a way to communicate the problem and motivate the provider to change your results. So the acquiring company should develop the evaluation of suppliers, and communicate the results of their suppliers with the hope and expectation that they will work on the perceived deficiencies (Morgan, 2001;. Purdy et al, 1994).

The supplier evaluation within a supplier development program is defined as the activities taken by the acquiring company in its efforts to measure and better products and services from their suppliers (Prahinski and Benton, 2004).

Based on the evaluation process, companies can determine whether the supplier is able to meet current and future business needs. The buyer needs to quantify and communicate the goals and measures for the supplier that the supplier is aware of the

discrepancy between their current performance and expectations of the acquiring company. Without an effective system of measurement and communication, coordination and inter-organizational improvement initiatives would be ineffective (Prahinski and Benton, 2004).

#### **6.4. Supply Risk Management**

Companies face many risks along the chain, and the shopping environment has become one of the most important components to generate value and profitability to ensure survival (Matook, Lasch, Tamaschke, 2008). Zsidisin (2003) defines supply risk as "... the likelihood of an incident associated with the failure of individual supply or suppliers of the supply market, where deliveries result in the inability of the buyer of the firm to meet customer demands or cause threats to life and safety of consumers .." In this sense the misalignment of strategic supplier to the focal company can be characterized as a risk, since the consumer has the expectation of finding the products and / or services of the focal company promised deliveries. For many firms, the value of shares purchased is a large proportion of product value. The purchasing department focuses on acquiring these shares in the right quality in right quantity at the right time and price from the best source (Matook, Lasch, Tamaschke, 2008). The goal is to develop long term relationships with suppliers of low risk because it can prevent the firm to suffer from the dynamic environment of business (Choi, Hartley, 1996).

For Chopra, Sodhi (2004) perhaps the biggest challenge facing companies is to mitigate the risks of supply chain without an effect on profits. The question we face is to achieve the highest profits possible for various levels of risk in an efficient manner. In this context the authors present the development of suppliers based on microeconomic theory of the frontier of performance. Following are the concepts that underlie the use

of the theory of the border in the study of performance in operations within the discussion of tradeoffs (Skinner, 1969) and the cumulative capabilities (Ferdows and De Meyer, 1970).

Assuming the law of trade-offs is reflected in the comparisons between plants at a given point in time, and considering that the law of cumulative capabilities is reflected in improvement in individual plants over time, the two laws would not be in conflict (Schmenner , & Swink, 1998). TFP explain why the two sides at the same time.

Boundaries are formed by investment choices and design of the plant, as well as choices in the operation of the plant. There are therefore two borders. A boundary called active boundary and the other operational. The active border is only changed by the kinds of investments that typically appear on the balance of fixed assets, while operating the border is altered by changes in the choices can be made, given the set of assets that plant management has (Schmenner, & Swink, 1998).

In this way, Chopra and Sodhi (2004) represent the choices of the risks in the supply chain. We can say that the supplier development moves the boarder to a higher level of efficiency where there is the reduction of risk and an increased reward, or when it remains in the same border, there the need for a choice of a greater rewards and a higher risk or as opposed a lower reward with less risk.

The limit appears in the boundary when it reaches or overlaps the operating border of assets, i.e., the situation of the supplier at the limit where it is unable to reduce risk without reducing any competitive element. In an attempt to mitigate the risk, the rewards become smaller and smaller, and when you seek larger rewards the risks increase. The only way to "escape" this tradeoff is that the supplier will be developed to

create a new frontier. In the new frontier both the risk and the reward would be better than the previous situation. In this context, the supplier development becomes relevant, both as a mediator to reduce supply risks, but also as a generator of rewards.

The risk is not presented only as one variable. The study of Zsidisin (2003) on perceptions of risk presented the risk in three levels: market, items and supplier. Zsidisin (2003) presents the three levels as the item being purchased, each of the current suppliers, and the general market. As a focus of the present work, market characteristics and the items will be controlled in order to study the perception of the level of supplier. The study seeks to relate the perception with the ability to manage the program of development imposed by the purchasing company. Understanding the characteristics of supply risk by the professionals of supply allows a better implementation of strategies to manage risk (Zsidisin, 2003). Thus a proposition that is going to be studied is:

**Proposition 1: Within the context of supplier development, the perception of risk managed is clearer in suppliers well evaluated.**

### **6.5. Continuous Improvement**

Kaizen, a Japanese word meaning continuous or gradual improvement, was a pioneer process in manufacturing companies in Japan, mainly in response to introduction of just-in-time (JIT), which facilitates a continuous reduction of waste. For Kaizen ideology all could be improved, if only minimally over time results would arise. In this concept, continuous improvement within a JIT environment was one of the pillars of the success of Japanese manufacturing (Imai, 1996).

Continuous improvement is well defined as a systematic effort to search and apply new ways of doing work, actively and repeatedly making improvements in the process (Anand et al., 2009). Similarly continuous improvement can be described as a form of incremental innovation (Jorgensen, 2006).

The constant problem of the study of capabilities because of its ambiguity and confusion of definition led Peng, Schroeder and Shah (2008) to review the literature on the concept. In the literature it is noted that operational capabilities are related to the operational capabilities of the firm. The operationalization of a capability is represented in the demonstration of competence in the performance of the company translated as cost, quality, time, flexibility, reliability and speed (Ferdows, De Meyer, 1990, Boyer, Lewis, 2002, Flynn, Flynn 2004).

In the management literature, organizational routines have become the central focus of capabilities (Peng et al., 2008). When specific assets of the company are used together as clusters, including individuals and groups to enable them to perform different activities, these activities constitute organizational routines and processes (Teece, 1997).

In this sense Eisenhardt, Martin (2000) defines a dynamic capability as:

"The process of the firm that uses resources - specifically the processes to integrate, reconfigure, gain and release resources - to match and even create a change in the market. The Dynamic Capabilities are therefore the strategies and organizational routines by which firms achieve new resource configurations as markets grow, collide, split, evolve and die. "

To conceptualize the continuous improvement as a dynamic capability, Anand et al. (2009) adopted the premise that this relationship occurs in a context of organizational learning. As discussed by Lyles (1985), organizational learning involves "improving actions through better awareness and understanding." In firms that emphasize continuous improvement, the performance of existing products and processes are seen as a moving target that constantly presents opportunities for improvement in (Peng et al., 2008). Bessant et al. (2001), argues that creating and embedding routines is an extended process of learning involves a gradual process of accumulation. Much of the literature on continuous improvement does not address the behavioral aspects of the process.

The behavior described by Bessant et al. (2001), were incorporated into a maturity model of continuous improvement. The model assumes that the successive implementation of continuous improvement involves the accumulation of certain behavioral routines that represent organizational skills. The model involves five stages of maturity shown is described as a linear model, ie, the organization shall perform all the behaviors associated with a level of capability before it can be at a higher level of maturity. In this model all the capabilities are treated with the same weight and with the same importance in relation to the maturity model. Rijnders (2002), Savolainen (1999), Jorgensen (2003) and Jorgensen (2006), described situations in which the maturity model of continuous improvement followed a random pattern, not linear. For Jorgensen et al. (2006) the explanation for the mismatch between the maturity model of continuous improvement and the results of the studies cited above is that the model is normative, while the publications were based on case studies of what actually happened

in companies that have implemented continuous improvements. Thus in the present work the model of maturity at first will not be used as a basis for the analysis of case data, but the framework itself can be used to present results in a holistic view of the conclusions made. Therefore the second proposition that is going to be studied is:

**Proposition 2: There are specific behaviors that appear only on suppliers well evaluated.**

In the study by Savolainen (1999), the results showed that there is a better way to implement continuous improvement, but there are emerging patterns of behavior that are specific to each company. These standards are formulated by a set of organizational and environmental forces, and a series of managerial choices that are likely to affect and be adopted by organizations stronger and more effective than others. However, the study did not cover the view of suppliers well evaluated for their improvements and suppliers with bad evaluations.

## **7. METHODOLOGY**

Given the research gap identified, it is not clear how the capability of continuous improvement, as well as the perception of risk may be related to the evaluation of a supplier development program as a strategic alignment within the chain. The concern with competitiveness through strategic alignment in the chain and the importance and methodology of evaluation as supplier development will be addressed through the case study as research methodology. This choice is due to the fact that the case study provides an excellent method of studying emerging practices (Voss et al., 2002) and

needed to be analyzed forcefully. The starting point for the case study is the gap identified in the literature broadcasted to the research question. So the question of the work is "**How the focal company evaluation is related to the perception of risks managed and *capabilities* of continuous improvement of the suppliers?**" analyzed through the methodology of case study becomes relevant, since it has been recognized as being particularly interesting to study questions of why and how (Yin, 2009).

For this research, it will be used the single case study as the research context, but with multiple units of analysis allowing for greater external validity because of comparative results. It will also be carried out the analysis of each individual case and analysis between cases, thus using replication logic (Yin, 2009). The aspect of reliability will be driven by procedures during the design phase, the data collection and analysis. Primarily during the design phase of the data, a detailed study protocol will be created to allow a systematic data. Then each interview will be conducted face to face with the voice recording (unless not permitted by the interviewee), and finally transcribed. Thus, a high degree of reliability can be guaranteed (Meredith, McCutcheon, 1993).

## **8. Selection of Cases**

The study will be conducted in six suppliers of cosmetics company Natura, located in the city of Cajamar, São Paulo in Brazil. The amount is a recommendation from Eisenhardt (1989) that case studies should be from 4 to 10 cases. The reason for the choice of Natura is due to the fact that there are few companies that have consolidated programs of supplier development and relationship. Natura is a case of excellence, which has a network of 4,900 partners where about 5% works with finished goods and

production inputs (biodiversity assets, raw materials and packaging materials) and other services that deliver indirect materials assets for business processes. Since 2009 the company operates in five fronts to improving the relationship: awareness of employees about critical aspects that affect the relationship, closeness to their strategic suppliers, improvement of the funnel process of product innovation, improvement of the payment process, and the extent of corporate development program providers to other categories of supplies and services. More specifically, Natura has a unique program called supplier development QLICAR which promotes a closer and a co-continuous structure with its partners (Natura 2010). Although the context research in a single company, multiple cases will emerge from the set of six suppliers that operate within the same segment.

It will be used multiple information sources, gathering responses from multiple respondents helping mitigate potential sources of bias. For example, interview two or more employees in different functional levels present multiple perspectives of the same construct. So there is no dependency from the perspective of a single respondent. This "triangulation" will allow greater confidence and the inconsistencies between the sources will be accompanied by additional data collection (i.e., ask more questions, use of additional sources, etc...) emerge until consistencies. Finally, if there is a possibility of the presence of the researcher at meetings and informal conversations within organizations, there may be more accurate results. Thus, even with bias reflected in these data, the methods employed should help to mitigate these concerns while providing the necessary explanations in qualitative research. This approach is appropriate given the exploratory nature of research (Pagell, 2004).

## **Interview Protocol**

Eisenhardt (1989) suggests that before entering the field the researcher should have a protocol developed for the sights of study. A structured interview protocol will used at first pilot interview. In order to facilitate the process, the study of each case will be treated as a replication through a variety of internal sources (Yin, 2009). By collecting data this way, improvements in the protocol can be made between repetitions. Important issues that are raised in early cases may be included in subsequent repetitions. This ability to refine and improve the protocol between cases is a significant advantage of this type of research (Pagell, 2004). Even with some modifications, the protocol must be updated and improved with each replication.

### **8.1. Review**

Data analysis should have two main components: an analysis of each case and review of cases. The analysis of each case helps us to examine the problem in one context, while the analysis of cases serves as a form of replication (Yin, 2009), where the constructs of interest in an environment are tested in other environments.

### **8.2. Analysis of individual cases**

The purpose of this investigation will be to try to characterize the behavior of continuous improvement and risk perception of individual suppliers. The general idea is to become intimately familiar with each particular case and allow the unique patterns of

each case to appear before seeking to generalize from cases (Eisenhardt, 1989). At first the study will present the capabilities of suppliers and perceptions of individual risk. The analysis in each case will aim to reduce bias in the study, but clearly still incur in relation to income limitations.

### **8.3. Analysis of cases**

The analyses of cases have in order to identify patterns between suppliers and will also seek internal validity of the findings. The use of multiple sources or triangulation is important in the case study (Voss et al., 2002). As suggested by Eisenhardt (1989) it will be used the tactic of arrays or tables to compare several categories at once. In general the idea of the analysis of cases will be to go beyond their initial impressions, specifically through the use of several lenses in the data (Eisenhardt, 1989). The cases will be compared with each other and analyzed in order to seek understanding of the results related to the context in general. The generic issues of analysis will follow the example: "Why the case X has the following result and the other not?" The behavior displayed in the holistic view should present the capabilities and relationship with the degree of risk assessment submitted by the suppliers. By this method the initial questions should be answered.

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