

# **Contributions to the development of suppliers in competitive environments: A case study in Brazilian companies**

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## **Abstract**

The purpose of this paper was to identify through a systematic literature review the relevant supplier development (SD) practices and the supplier evolution concept in the last three decades. The literature review identified the relevant SD concepts, which figure out a proposed conceptual framework to depict the supplier development process in a holistic way, and its expanded version aims to help organizational managers develop their strategic suppliers. The method used was a systematic literature review ranged from 01/01/1999 until 30/06/2018. The obtained results show us that the supplier's development concepts presented an evolutionary process over time, undergoing a paradigm shift from a transaction-oriented way to a relation-oriented relationship. The proposed expanded framework resulting from this work aims to favor managers to direct their suppliers' practices better. The analysis of the results obtained indicates that the purchasing companies and their suppliers need to intensify the long-term relationships between them to face the challenges promoted by the intense use of new technologies induced by IIoT.

## **Keywords**

Development of strategic suppliers, Supplier development evolution, Relevant supplier development practices, Conceptual and expanded framework.

## **1. Introduction**

Manufacturing organizations face a huge challenge and are at an inflection point due novel technologies in their operational systems. Accordingly, Koren (2010), the operating companies' environmental is subjected to extreme pressures, which varied over time. The significant volatility promoted by a massive use of new technologies requires different competition levels, and one of them has been occurring within the supplier base of these companies. In order to become more responsive to the environmental threats, companies, according to Krause, Handfield and Scannell (1998a), have been promoting a reduction of their hierarchical organizational levels and, at the same time, seeking to concentrate on their central businesses, promoting the outsourcing of their no core processes and products/services. These strategic movements promoted greater dependence of the purchasing companies on their suppliers, requiring

them to synchronize their internal manufacturing process at a higher level of their supply chains. This integration, combined with higher automatization's production, is promoted by the tools associated with the Industrial Internet of Things (IIoT). The expected synchronism between the production lines of the purchasing companies and their suppliers' production lines, built up by IIoT, will reduce the distances and bottlenecks, which are still present in the delivery chain of many of them. These changes in the companies' operating environment should have been requiring them to take a differentiated approach related to their suppliers and how they intend to work together with them to place the organizations differently vis-à-vis their competitors. Therefore, the supplier development activities have been playing a significant role since the nineties, and they are perceived just as efforts made by purchasing firms together with their suppliers to ensure a competitive advantage for them and at the same time, to prepare the involved suppliers and the entire organizational supply chain for new challenges ahead.

### **1.1 Objectives**

This article paper's main objective is to identify and encompass a systematic literature review of the relevant supplier development practices and identify the supplier development concept's evolution over time, its critical success factors, barriers, and drivers. Besides that, it proposed a conceptual framework to depict the supplier's development processes. Also, it proposed a conceptual framework to depicts the supplier's development processes as a paper's academic contribution through a robust literature review to integrating relevant SD concepts in almost three decades. The expanded version of the supplier development process's conceptual framework aims to assist organizational managers in developing their strategic suppliers and corresponds to the practical contribution of this investigative work. At the same time, this paper aims to contribute to possible later investigations and collaborating to understand these organizations' practices to capacitate their supply chains.

## **2. Literature review**

The importance of the systematic literature review was emphasized by Saunders, Lewis and Thornhill (2000) to understand, summarize, evaluate and organize the main ideas and concepts already formulated by the former researchers in a structured way to generate knowledge and new approaches to the studied phenomena. Glock, Grosse and Ries (2017) reinforce the considerations of Saunders, Lewis and Thornhill (2000) by indicated that the systematization employed during the literature review allows readers and new researchers to reproduce and evaluate the studies performed, allowing a better interpretation of the obtained data. Furthermore, the literature review in scientific research becomes even more significative significant importance because the repeated studies carried out on the same subject and realized by diverse researchers have generated a quantity of knowledge dispersed and difficulties to be consolidated in a structured way (Cooper and Hedges, 2010).

### **2.1 Suppliers' development categories**

According to Krause and Ellram (1997), purchasing companies have been seeking to focus on their core competencies and, at the same time, to outsource part of their production process, which automatically makes them more dependent on their suppliers. When companies continue to focus on their core competencies and decentralize those considered non-core activities to external suppliers, supply chain management is seen as a source of competitive advantage (Krause, Handfield and Scannell, 1998b). Krause, Scannell and Calantone (2000) reinforce the considerations made in the sense that organizations promote strategic actions related to their supplier's development in order to ensure the increase of buying firm's core competencies, allowing them to improve their market share performance. Likewise, Lambert and Schwieterman (2012) point out that managing the relationship between buyer firms and their suppliers is a critical business process that establishes the necessary expertise to produce innovative products, which helping buying firms to quickly launch them into the markets. This strategic organizational movement is associated with intensive competition faced by the organizations, which are operating in dynamic environments, encouraging the buying firms to develop their suppliers and, at the same time, with a need to establish a long-term strategic partnership with them (Shahzad, Sillanpää and Imeri, 2016). The same authors stressed that companies require increasing responsibilities of their suppliers in order to produce innovative, high-quality products at competitive prices and at a reduced delivery time, what according to the above authors, are essential requirements to operate in highly competitive environments. The literature review conducted by this paper had identified distinct supplier development practices as indicated in Table 1. As it can be seen from Table 1, eleven practices were categorized from the literature review, and from this amount, four were taken into consideration in order to execute this bibliographic research: Barriers and critical success factors, Supplier development, Best development supplier's practices and Literature review on supplier development, which were complemented with articles of the most recurrent authors on the theme "efforts, strategy and competitive advantage's categorization of supplier development".

Table 1: Supplier Development Categorization [developed by researcher]

Supplier Development Categories	Related Articles
Efforts, strategy and competitive advantage	184
Integration and involvement of supplier on new products	72
Impact on buyer-supplier performance and Trust	40
Supplier development	37
Social capital	32
Barriers and critical success factors	29
Quality tools	24
Risk, FUZZY/AHP	21
Knowledge shared among/by Suppliers	14
Best development supplier's practices	13
Literature review on supplier development	12

As it can be seen from Table 1, the largest article distribution was concentrated in the categories Efforts, strategy and competitive advantage, and Integration and supplier involvement on new products development. Efforts were concentrated on 91 articles, corresponding to 19.0 % of the total identified by Google Search to perform this research. Figure 1 shows how the development of suppliers has generated a progressive interest both in academia and in organizational environments, as can be seen from the increasing number of publications on the subject in the analyzed periods of time.

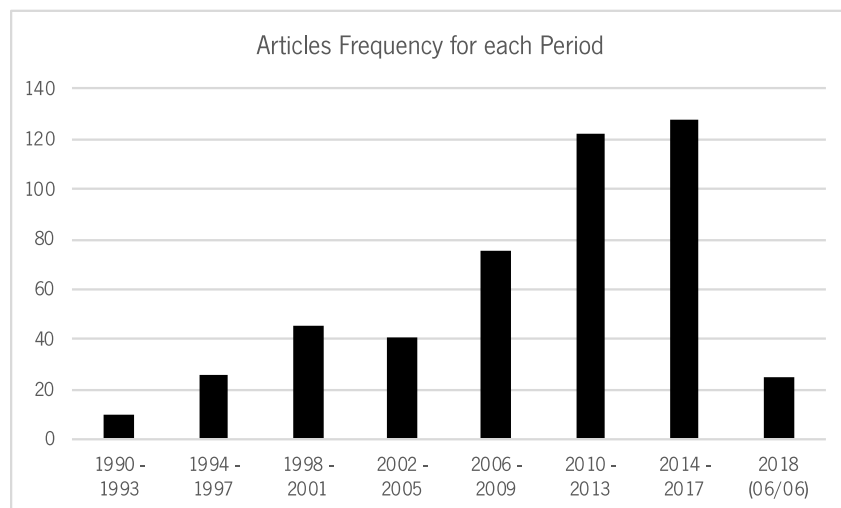


Figure 1: Number of papers published per period [developed by researcher]

The growing number of articles published on the theme reveals the academic's concern to understand the supplier's development process, used by manufacturing companies, with the objective to further develop and integrate their supplier base into their supply chains. The importance of the supplier development subject in the current business environment reflects the purchasing firm's concern to create a competent and committed supplier base and so to release its efforts to achieve its strategic objectives. Thereby, and based on the statements previously mentioned, the major objective of this paper is to outline the results of a literature review concerning supplier's development as used by purchasing firms in a competitive environment as well as to provide a framework to capture and understand the related results of this bibliographic research.

## 2.2 Supplier development's concept, its evolution, practices and future challenges

The large organizations have their operational manufacturing's process fragmented and dispersed around the world, and this requires the presence of local suppliers so that they need have the desired production capacity and, in this way, the development of suppliers by these companies becomes a preponderant factor in the achievement of the organizational strategic objectives (Glock, Grosse and Ries, 2017). Dalvi and Kant (2015) pointed out that there is great acceptance among academics and practitioners that supplier development activities, when properly applied, promote significant results on supply chain management, the purchased product's quality, the services provided, and the performance of the distribution's channels.

Table 2 sought to consolidate the main supplier development concepts that were identified by the author's articles which were collected by the literature review.

Table 2: Supplier Development Evolution [developed by researcher]

Authors/Year	Evolution of Supplier Development Concept
Hahn, Watts and Kim (1990)	Any systematic organizational effort to create and maintain a competent supplier network; in a narrow sense, it involves creating new sources of supply and, in a broader perspective, involves activities designed to increase supplier capabilities.
Watts and Hahn (1993)	Long-term cooperation effort between the purchasing firm and its suppliers to increase technical capacity, quality, delivery and costs, with the adoption of continuous improvement.
Hartley and Choi (1996)	Practice of working with suppliers to increase both performance and capabilities.
Krause and Ellram (1998a)	Effort of firms to increase performance and / or capabilities to meet the firm's short - and/or long - term supply needs.
Krause and Ellram (1998b)	Supplier development may range from limited efforts, such as informal supplier evaluation and request for improvement performance to extensive efforts, such as training of the supplier's personnel and investment in the supplier's operation.
Krause, Handfield and Scannell (1998)	Any set of activities carried out through the purchasing companies to identify, measure and improve the performance of suppliers and facilitate continuous development of all products and services values offered to the business units of purchasing companies.
Krause, Scannell and Calantone (2000)	Set of activities performed by purchasing firm to increase either supplier's performance or capabilities, both of which made to meet firm's needs on both short and long term.
Sako (2004)	Development of suppliers can be understood as the attempt of buyer firms to transfer or replicate part of their capacities through their organizational boundaries.
Narasimhan, Mahapatra and Arlbjorn (2009)	Investments made by buyer firms to increase the operational capacities of suppliers.
Govindan, Kannan and Haq (2010)	Effort made by purchasing firms with suppliers to increase their performance and / or capabilities thereby obtain procurement needs from suppliers.
Sillanpää; Shahzad and Sillanpää (2015)	Supplier development is a understanding process including four steps: supplier assessment; competitive pressure; supplier incentives and direct involvement.
Dalvi and Kant (2015)	Supplier development activity is defined as any set of activities undertaken by a buying organization to identify, measure and improve supplier performance to facilitate the continuous improvement of the overall value of goods and services supplied to the buying organization's business unit.
Rezaei and Tavasszy (2015)	Supplier development is a related strategic supplier activity designed to upgrade the performance level of suppliers in order to create and maintain a network of competent suppliers, which has a major influence on the competitive advantages of a buying company.
Chen, Ellis and Suresh (2016)	It is a consensual intention to implement specific activities or developments in a given supplier, inside of a specific environment, in which there is an exchange of knowledge with suppliers.
Shahzad et al. (2016)	More important efforts by purchasing companies not only to maintain their competitive advantage, but also to develop suppliers to achieve long-term partnership and to strengthen their relationships.

The concept of supplier development presented an evolutionary process over time. The main points of this concept and the steps of its evolution can be identified by the analysis of Table 2 and demonstrated by the following aspects:

- the development of suppliers is carried out only with those enterprises that already belongs to the suppliers' base of the purchasing companies;
- for construction of the concept, indicated by the researched authors, there is no indication of which practices could be adopted by these companies in order to develop their suppliers;
- the non-restriction of the practices to develop their suppliers promoted a profusion of them developed by the purchasing companies, with to intending to develop their suppliers;
- in the initial stages, the development of suppliers had an imposition by the purchasing's firms over its suppliers - the so-called buyer's firm long arm over their suppliers;
- actions taken by the purchasing's firms may range from an extreme where only limited and short-term efforts by companies are considered to correct existing supplier's problem, to a more profound spread, where actions were taken in conjunction with their suppliers, and these meant, therefore, a long- term mutual commitment partnership;
- according to Sillanpää, Shahzad and Sillanpää (2015), supplier's development should be understood as a process, which consists of four stages: supplier assessment; competitive pressure; supplier incentives and direct involvement;
- Rezaei, Wang and Tavasszy (2015) emphasize that the suppliers' development is a strategic action of the purchasing companies, in order to obtain a qualified supplier base and, with this, to obtain competitive advantages with its competitors;
- this set of integrated practices has been transforming the actions carried out with the suppliers into a more collaborative, committed, and intense generation and knowledge exchange. It arose from the process of development and learning, nourished by the relationship between the companies.

The leading supplier development practices that were identified by the literature review are indicated by Pareto's diagram, shown in Figure 2. The Pareto's diagram shows the following vital supplier's development practices, which were captured by the conducted literature review: Performance improvement and goals/Assessment and supplier qualification; limited number of suppliers/Segmentation; Direct investments/Supplier development Programs/Supplier support activities; Long-term activities/ Commitment/mutual trust; Team works/Cooperation efforts; Training and education; Communication and information; Feedback; Knowledge transfer; promises for future business; Awards and recognition; Site visits on consulting performance improvement/goals, assessment and supplier qualification.

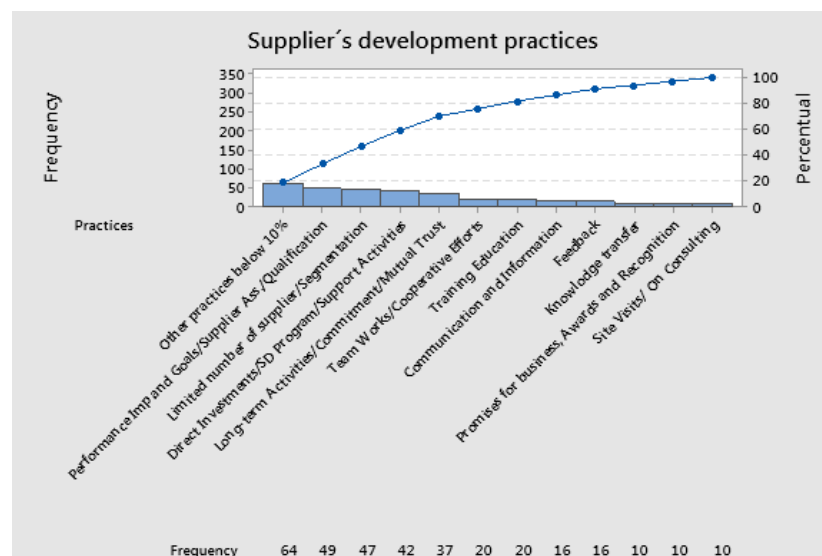


Figure 2: Pareto's Diagram of supplier development practices [developed by researcher]

Analysis of the Pareto diagram reveals the following aspects:

- there are some supplier development practices applied by purchasing firms, which are already consecrated by the use and some of which were mentioned earlier by the author's Ayres et al. (2017);
- in general, the supplier development practices aim to improve the performance of their suppliers in order to achieve the organizational objectives of both enterprises;
- the performance improvement and goals/assessment and supplier qualification can be understood, as former actions used by purchasing firms to segment and reduce the number of supplier's base are considered as precedents efforts of the development practices themselves;
- training and education practices; feedback of the results obtained; direct investments/supplier development program/support activities of the purchasing companies in the suppliers; the communication and information processes; long-term activities/commitment/ mutual trust favors the relationship between them; team works/cooperative efforts by common projects carried out with multidisciplinary teams; associated with visits on consulting in the supplier's site; related to promises for future business/awards and recognition; associated with the transfer of knowledge reinforce the established practices;
- analyzing the concepts established by the reviewed academics, it is implied that researches have been suggested that buyer-supplier relationships are undergoing a paradigm shift, which means, from a transaction-oriented way to a relation-oriented relationship, that represents an important organizational concern for business.

Sánchez-Rodríguez (2009) argues that relational view may realize a competitive vantage for those organizations who combine resources in a unique way, mainly if they are connected and aligned with the firm's overall goals and strategies, through four important mechanisms: joint investments; knowledge exchange; combining valuable and scarce resources and effective governance.

### 3. Methods

In the process of reviewing the literature, researchers face a significant challenge, according to Glock, Grosse and Ries (2017), which is to define the boundaries to be used in order to either separate or include the articles used for the study of the phenomena in question. The same authors point out that a restrictive criterion used in the literature review could exclude relevant works and, at the same time, on the other hand, will promote an expressive number of articles, which many of them are not addressed directly to the topic researched. The research methodology, the steps taken to review the literature, the results obtained, which were carried out in this paper, was based on the main categorization's steps proposed by Cooper and Hedges (2010) and adapted by the authors for this specific paper. The research focused on collecting the leading interest material for this research to obtain data related to supplier development in a competitive environment. The SD concepts obtained were consolidated in order to depict an integrated supplier development conceptual framework. The articles inclusion criteria for this research were - the used search engine was "Google Scholar," and the keywords were "Supplier Development in the article's title" limited them to English language, only academic peer-reviewed papers, and the research range was from 01/01/1990 until 30/06/2018. The research's range allowed us better to understand the evolution of supplier development over time and capture the best practices to be used by the purchasing firms to develop their suppliers. Integrate the past literature, consolidated supplier's development concepts and develop a proposal of a supplier development conceptual framework and its expanded version to be validated and used by the managers to improve the supplier's development practices were the main objectives of this paper.

### 4. Proposed conceptual framework and its expanded version

A conceptual framework is defined as an interconnected network of concepts that, as a whole, promote a comprehensive understanding of a given phenomenon (Jabareen, 2009). The concepts present in the proposed conceptual framework were not inserted into it at random but were picked up and harvested from a robust review of the literature on suppliers' development for almost three decades. In this way, the concepts inserted in the conceptual framework interact with each other and support them by articulating the respective phenomenon, representing the developing supplier's process, thereby establishing a specific philosophy. The relevant practices obtained by the literature reviewed lead to the construction of the following conceptual framework as proposed by the authors of this article, which is depicted in Figure 3.

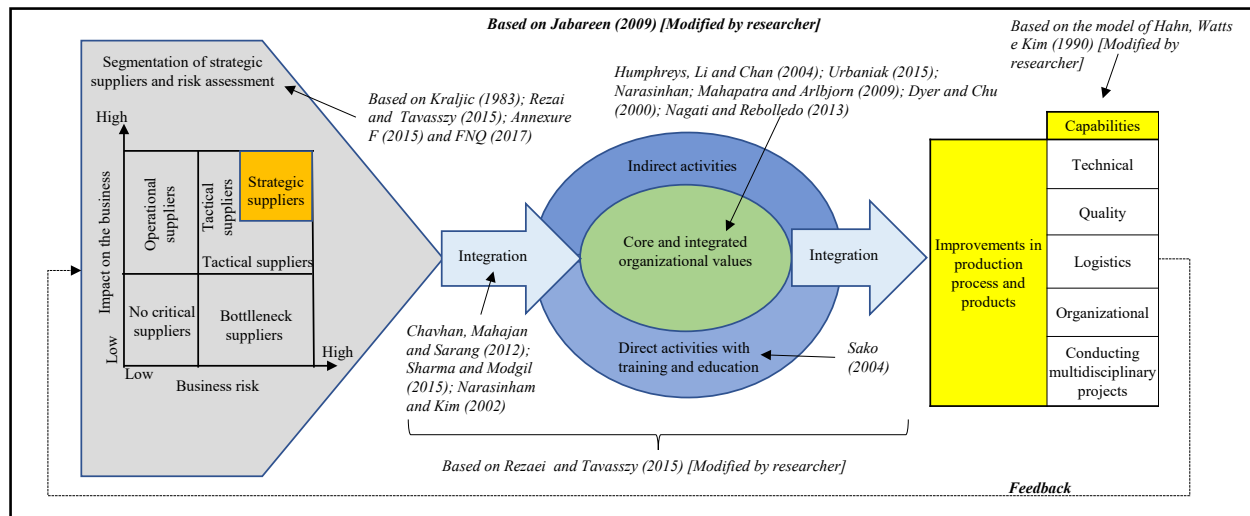


Figure 3: Conceptual framework representing the supplier's development process [Developed by researcher]

Jabareen (2009) proposes the use of conceptual frameworks for phenomena linked to different bodies of knowledge. The same academic points out that most social phenomena are complex and linked to the knowledge of different disciplines and, therefore, the conceptual framework builds the bridges that promote the link between these different bodies of knowledge. As we can see in Figure 3, the conceptual framework contains the related concepts to the SD phenomenon picked up from the literature review and the relevant authors who support the placed concepts put in it. The following concepts are highlighted in it:

- segmentation of supplier base to identify the strategic ones to develop them;
- support the long-term partnership by the organizational values;
- integrating and synchronizing SD practices between companies, ensuring the commitment of the multidisciplinary teams to achieve challenging goals;
- developing new capabilities to improve the production process, products, and services;
- finally, the feedback to ensure dynamism to the model.

However, the conceptual frameworks are indeterministic in nature and therefore do not enable us to predict an outcome (Jabareen, 2009). Thus, the conceptual framework used in this project assists in the identification of relevant supplier development concepts, their contextualization, indicating their interrelationships (Waldt, 2005). In this way, the conceptual framework contributes to the academy, as it consolidates the SD practices collected from the literature review integrating them through in a holistic representation of the supplier development process. However, it does not directly apply in assisting organizational managers in developing their supply base.

#### 4.1 Proposed expanded framework

The relevant practice's concepts obtained by the literature reviewed and shown in Figure 3 lead to a construction of a following conceptual expanded framework to develop the supplier's base of the purchasing companies proposed by the authors of this article. The expanded framework depicts in Figure 4 was planned to be a practical contribution to the understanding of the supplier development process, understood holistically, as the generator of outputs, designed in this case as an organizational result, a developed and apt strategic supplier which are able to be delivered to the following most relevant internal organizational's customers:

- the purchasing area;
- the manufacturing and
- the logistics

Figure 4 represents the expanded framework.



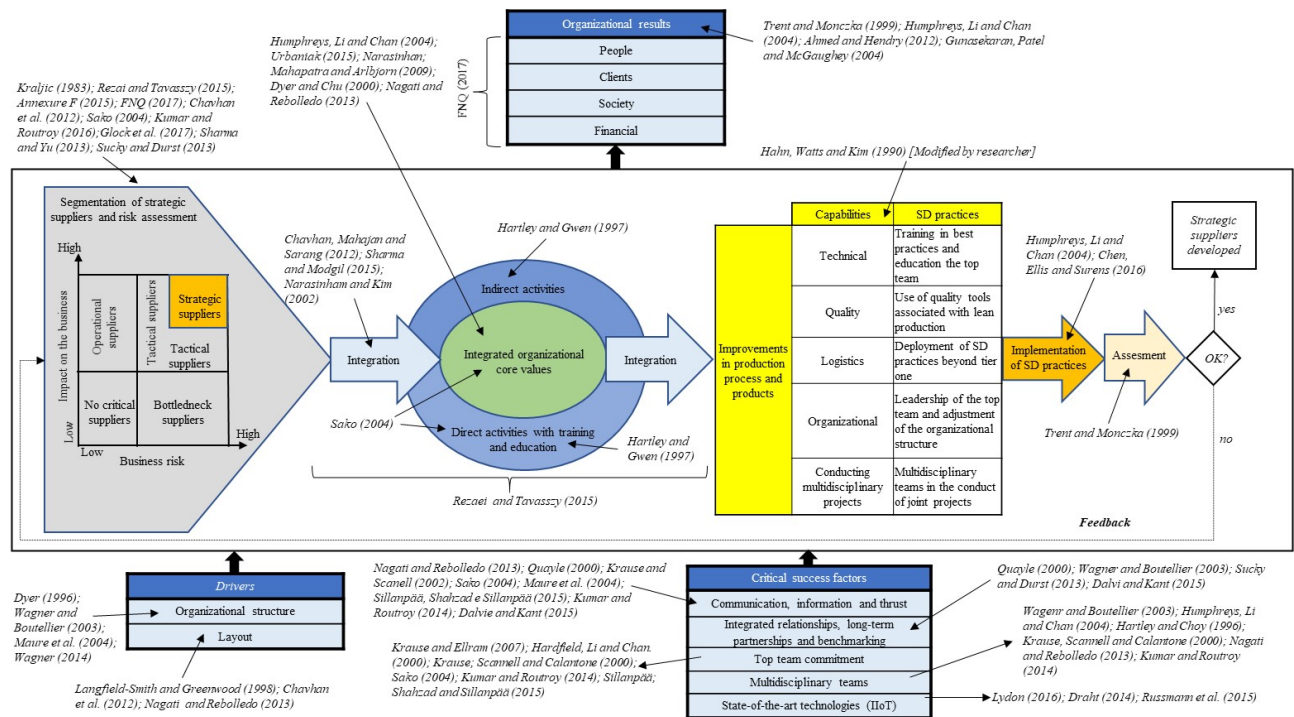


Figure 4: Expanded framework representing supplier's development (Soares, A.R. and Ayres, 2017) modified by the author

In this way, the conceptual expanded framework developed from the suppliers' development concepts and relevant practices obtained by the literature review that constitutes the supplier development process, barriers, critical success factors, drivers, and the managers' speeches are depicted in Figure 4. The expanded framework proposed by Figure 4 represents a holistic view to be followed by the purchasing companies to facilitate the development of their supplier base. Maurer, Dietz and Lang (2004) emphasize that the relationship between purchasing companies and their suppliers has been becoming increasingly complex among its participants, mainly because of reduced time of the life cycle of new products and the vast innovations' speed. Therefore, the actors on both sides of this relationship need to leave their usually antagonistic positions to become more cooperative and integrate unique capabilities to obtain increasingly differentiated products for their end customers (Sánchez-Rodríguez, 2009). Thus, the practices indicated by Figure 4 need to be coupled with the following trends:

- dramatic acceleration of new products' development and shrinking of the production cycles, with increasing dependence on its suppliers;
- development of new capabilities with knowledge transfer to ensure better management of quality along the supply chain must integrate the necessary capabilities and expertise into their purchasing organization;
- increased quality of the products and services offer to the market. Use of the multidisciplinary teams specializing in quality and process improvement into the supplier's manufacturing sites, using the lean manufacturing principles;
- increased product differentiation reflects the individual lifestyle. It becomes increasingly important to design systems and components for complete product's families with high and long-term activities integrating purchasing firms and their suppliers;
- global sourcing means that purchasing firms need to identify and develop a new set of local suppliers, evaluating, developing, and recognizing them as strategic suppliers;
- strategically suppliers will grow by acquisition, reducing the field of maneuver of the purchasing companies;
- the next challenge is that the suppliers need to be able to identify their sub-suppliers, integrating them into the entire supply chain;



- suppliers will be the drivers of the innovation. Resident engineers in the purchasing firms to better understanding the development plans and influence them to the supplier's strategic advantage;
- engaging strategic suppliers in a partnership program such as P&D;
- the buyer firms become even more dependents on the supplier's overall performance;
- suitable product categorization to improve the adoption of e-procurement and the critical factor is the linkage systems existing in both organizations.

Therefore, to understand the expanded framework of the supplier development, it is necessary to link the development practices employed by the purchasing companies with the trends above presented. In this way, the expanded framework was designed to help organizational managers develop their strategic suppliers in a design that graphically represents the entire developing suppliers' process in a holistic view.

## 5. Results and Discussion

The development of suppliers has been experiencing an evolutionary process over time. All the changes in this concept have transformed the practices carried out with the suppliers into a more collaborative, committed, and intense generation and exchange of knowledge. Shahzad, Sillanpää and Imeri (2016) point out that companies participating in competitive markets need to establish longer-term relationships. This approach was already highlighted by Krause and Ellram (1997), which asserted that the central purpose of the buying firms procurement's function was to assure and maintain a capable supplier base. This type of approach has become more critical since the purchasing companies, focusing on their core competencies to outsource part of their production processes, are becoming more and more dependent on their suppliers. These considerations are essential nowadays, just because the production processes usually are dispersed across many regions of the globe, so that the buying firm's suppliers, customers, and other stakeholders are joined through shared information, material, and capital flow (Seuring and Müller, 2008). A more significant point is that, has been changing the competitive edge of enterprises by shifting competition between individual enterprises to the supply chain as a whole (Kumar and Routroy, 2017). Similarly, Lambert and Schwieterman (2012) had already made the same considerations by finding out that competition between companies operating in highly competitive environments does not compete more independently and autonomously, but rather than between their supply chains, reinforcing the importance of developing suppliers to these enterprises. Accordingly, to Kumar, Routroy (2017) purchasing companies become responsible for the social and environmental performance of their suppliers and these considerations are aligned with Krause, Handfield and Scannell (1998b) and Glock, Grosse and Ries (2017), which reinforce the increase of production's process dispersion around the world and the supplier's consideration as an important partner to increase the competitive position of the purchasing companies. Another critical study on the challenges to be faced by suppliers in disruptive environments was developed by Lazard and Roland Berger (2017), who emphasized that suppliers need to ensure the following main steps in order to assure their competitiveness:

- suppliers need to build up new hard and soft competencies very fast because the old competencies will often not work anymore in disruptive scenarios;
- the massive technology shifts will require suppliers to invest in new and old technologies in parallel;
- usually, the supplier base does not have enough investment capacity.

In the same way, Shahzad, Sillanpää and Imeri (2016) highlighted that in recent years, supplier development activities are considered to be significant efforts that firms need to undertake, not only to gain competitive advantage but also to develop their suppliers for a long-term partnership and thereby to improve and consolidate the partnership between them. Therefore, suppliers are considered the most critical assets to provide the incomes and capabilities for purchasing firms to produce meaningful products and services, and it is the primary reason firms are making efforts to produce supplier development programs (Shahzad, Sillanpää and Imeri 2016). Wagner (2006) established an essential aspect when a buying firm proposing a supplier development based on improving their short-term results, the as called supplier development oriented toward results, the gain of these activities is limited, and the supplier's chance to improve through their own efforts is reduced. On the other hand, when applying a development-oriented to a process, suppliers' ability in acting by itself is increased and, mainly from when the buyer companies finished their development activities and left the suppliers at their own expense. The practices indicated in Figure 4 reveal the relevant practices used to develop the suppliers, representing critical success factors, barriers, and drivers for supplier development. However, how they are combined and interconnected is ensure the unique competitive differential for organizations in these environments promoted by IIoT. Therefore, the expanded framework proposed in Figure 4 aims

to relate the SD practices consolidating them in an image that represents the dynamics for the supplier's development process by the purchasing companies. According to the proposed expanded framework, suppliers' development starts with the segmentation and reduction of suppliers' numbers to be developed by the purchasing companies. This is a strategic move to be used by purchasing companies since suppliers' development must focus on those suppliers considered strategic for these companies' business model. The next step is determined by long-term activities based on commitment and mutual trust related to both enterprises' organizational values. The SD practices integrated and synchronized between enterprises ensure new competencies to build a differentiated competitive level is the next step to be considered. These practices are then directed to manufacturing processes based on lean manufacturing principles. In this way, managers implement and evaluate the results of improvements made in the suppliers with subsequent feedback to stakeholders. Practices based on multidisciplinary team work's ensuring cooperative efforts to solve common problems, with intensive knowledge transfer, communication and information in a two-way road, strengthen the education and training of the strategic suppliers' managers, associated with integrated relationships partnerships and the application of the cutting edges technologies make up the critical success factors. The organizational structure and layout are presented as important drivers, as they interact with decision-making and communications between the SD processes' agents. The results obtained through these integrated practices are communicated by Feedback, which mobilizes the suppliers for challenging results, aided by the recognition of suppliers who made a difference with promises for new business, awards, and recognition. It should be noted that the monitoring of the integration of these practices is carried out through visits to supplier's sites, conducted by employees of the purchasing companies acting as consultants and not as auditors.

## 6. Conclusion

The bibliographic study allowed us to outline some significant conclusions, such as some practices of supplier development that were practiced by purchasing companies consecrated by the use. According to the researched authors, the concept of supplier development extended its scope to a more systemic partnership between companies, with a massive exchange of knowledge and learning between them. Therefore, Wagner (2006) points out that supplier development is "an inter-organizational collective learning", and in this way, suppliers become a valuable knowledge-generating asset with significant potential to be explored by purchasing companies. Urbaniak (2015) stresses the importance of establishing a relationship of trust between purchasing companies and their suppliers, what according to this author, is a critical success factor so that the relevant practices of purchasing companies incorporated them into the suppliers' process. The established trust becomes the basis for ensuring mutual commitment between companies and sustaining long-term relationships between stakeholders (Hofmann and Rüscher 2017). The trends pointed in this article reflect the challenges that suppliers will have to face in conjunction with purchasing companies so that they need to catalyze and integrate supplier's development practices that make them innovators. The interfaces between purchasing companies and their supplier base must be able to develop new business models and long-term strategic partnership programs to enhance and multiply new supplier's capacities for the challenges ahead. The presence of multidisciplinary teams to consolidate preventive measures instead of corrective actions and improve the qualitative level of products and services throughout the supply chain is also considered a critical success factor for the strategic supplier's development. The considerations taken from the literature review constitute demands to be overcome by companies, which aim to move to markets that use new technologies in their manufacturing systems in a massive way, just in case as the I4.0. This approach significantly increases the importance of the quality of the interface between suppliers and purchasing companies, increasing the need to strengthen partnership programs, the commitment of the top team to design new business models and to use the new tools provided by IIoT (Maurer, Dietz and Lang, 2004). The paper contributes academically to a conceptual framework that sought to aggregate the relevant SD concepts through a robust literature review, integrating them through a visual representation (Figure 3). The considerations made until now reinforce the importance of using the supplier development practices as indicated by the expanded framework in Figure 4. However, they must be applied in an interconnected way. The expanded framework proposed gives us a graphical representation of how buyer companies can apply their SD practically. With this intent, this article was produced to consolidate these different tendencies in the suppliers' development and thereby facilitate purchasing companies' managers the development of their supplier base.

## Paper's limitation and future investigations

The extended framework was obtained from the conceptual framework and the managers' speech and, therefore, needs to be tested in practice to prove its use by the managers. In this way, a window of opportunity opens up to develop new studies based on the conceptual framework and the extended framework proposed in this paper to collaborate for

academia and for organizational managers who aim to develop strategic suppliers in their supply chains. Future research is expected to put in practice the expanded framework by the organizational managers.

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