



## **AN EVALUATION OF SUPPLY CHAIN MANAGEMENT IN A GLOBAL PERSPECTIVE**

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### **ABSTRACT**

The characteristics and challenges of the integrated market, along with the rising international cooperation and vertical disintegration, have led to a notion that firms are linked in a global supply chain. From the elements raised from theory, this study aims to discuss global supply chain management, identifying factors that underpin its global characteristics, gaps and questions for a future research agenda in the area. It was used references that cover supply chain management and the global market factors involving economic, cultural, structural, political and demographic issues that represent opportunities and barriers for moving up in a global supply chain. As the main findings, it was identified that the challenge related to the international operations is to develop a global strategy considering the influence of political and economic factors in the trade, cultural characteristics, supply chain costs, infrastructure, technology, market and competitive rules. The challenge to manage all these external factors guided the composition of the research agenda proposed for future studies in global supply chain management.

**Keywords:** Global supply chain management; global strategy; research agenda.



## 1. INTRODUCTION

In the current global competitive market, the management evolution is oriented for network operation, value and supply chain. This scenario, along with the constant advances in communication technologies and transportation, motivates the continuing evolution of supply chain management and different techniques for managerial efficiency (SIMCHI-LEVI et al., 2010). Supply Chain Management (SCM) has been an important approach of operations management area, and it is at the core of success of most leading companies (SANDERS, 2012). The strategic supply chain management is a phenomenon characterized by broad and complex interactions involving multiple elements such as strategic purchasing orientation for long-term relationships, inter-firm communication, interorganizational teams and buyer-supplier integration (PAULRAJ; CHEN, 2007).

As the flow of products crossing country borders is increasing at a rapid pace (HAUSMAN et al., 2010), all these concepts are understood through strategic management theories in order to seek collaborative advantage in a global environment. Nowadays companies source globally, sell globally, or compete with some companies that also do that. Thus, Global Supply Chain Management (GSCM) represents a major focus for many businesses and business schools today (MENTZER et al., 2007a).

In recent studies, Zacharia et al. (2014) and Ellram and Cooper (2014) post that even after 31 years of studies of this field, there is little agreement on the domain and unifying theory of Supply Chain Management, as well as a consensus definition. According to Ellram and Cooper (2014) this inconsistency in the way that SCM is viewed has also possibly hampered the progression of SCM scholarly work and practitioner application, confusing the way that supply chain management is viewed in both research and practice. This has contributed to the existence of a number of gaps in the knowledge base of the field. Firstly, from a conceptualization perspective, the definition of the term is unclear and the impact of theoretical diversity is such that it is doubtful SCM is based on a coherent theory (BURGESS et al., 2006). Recently, supply chain management deserves further attention because it has been transformed by the influence of globalization and the conceptual fundamentals of



Global Supply Chain Management remain underdeveloped (CONNELLY et al., 2013).

This makes it difficult to accumulate wisdom in the field and to develop a coherent knowledge base to guide research and practice. Connelly et al. (2013) also argue that the amount of research devoted to the global dimensions of supply chain management, however, arguably has been small relative to its practical significance. Based on a literature review, this paper attempts to address this gap, developing a discussion of Global Supply Chain Management, identifying factors that underpin its global characteristics. It also identifies gaps and proposes questions for a future research agenda in the area.

To accomplish these results, it was developed a study based on literature review. According to Easterby-Smith et al. (2008) through this methodological approach it is possible to produce knowledge on a particular subject and also identify research gaps based on prior studies. To compose the list of references used in this research, special attentions was paid to studies focused on the development of concepts, frameworks and models, and also critical discussions related to opportunities and barrier in the SCM field.

This study is also supported by global supply chain approach, considering relationship and cooperation between companies from different countries with different economic and technological developments. References cover the international market factors involving economic, cultural, political and demographic issues that represent opportunities and barriers for going global.

The configuration and management of a supply chain in a global context compose important elements that enable the achievement of higher performance which drive the companies to achieve a proper level of competitiveness. From the elements raised from theory for the configuration of a global supply chain approach, this study also identified gaps and questions for future research agenda in the area. The following section defines the concepts and the elements that compose supply chain management and the characteristics that make up a global operation.



## **2. SUPPLY CHAIN MANAGEMENT AND GLOBAL OPERATION**

The characteristics and challenges of the integrated market have been creating new rules for the achievement and maintenance of competitiveness advantage. Many companies serve multiple global markets, with products sourced and produced across many continents. Even the smallest rural farms are affected by the global influx of foreign goods and trade regulations (SANDERS, 2012).

Rising international cooperation, vertical disintegration, along with a focus on core activities have led to the notion that firms are links in a networked supply chain. This perspective has created the challenge of designing and managing a network of interdependent relationships developed and fostered through strategic collaboration (CHEN; PAULRAJ, 2004).

This was accelerated mainly by rapid changes in information technology and the new competitive globalized environment created by economic, demographic and political developments (GIANNAKIS; CROOM, 2004). The global environment provides many organizations with an incentive to establish a value added network, where complex inter-firm relationship management, collaboration and coordination take place in the areas of product design, production, supplier selection and marketing (KOTZAB et al., 2011).

For the purposes of this study, this paper presents the concept and the elements that compose supply chain management and also the characteristics that make up a global operation, involving the chain relationships between different companies from different countries and different technological and economic levels. The last section presents an analysis, looking for research opportunities in the field of Global Supply Chain Management.

### **2.1. Supply chain management**

There are many efforts of practitioners and scholars to understand this research area, its main elements and to develop models to map and interconnect concepts. Examples are the works of Thomas and Griffin (1996), Harland (1996), Cooper et al. (1997), Mentzer et al. (2001), and Chen and Paulraj (2004). These studies help the understanding of the chain configuration and allow practical applications. In some other works, such as the ones of Charvet et al. (2008), Croom et al. (2000), Kotzab et al. (2011), Giunipero et al. (2008) and Burgess et al. (2006),



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the focus is on the term "supply chain management" and its use in the academic literature. While definitions of SCM vary significantly, an understanding of the range of its use and the structure of related concepts is worthwhile.

The supply chain concept originated in the logistics literature, and logistics has continued to have a significant impact on the concept (BECHTEL; JAYARAN, 1997). Supply chain appears as logistics taken across inter-organizational boundaries (COOPER et al., 1997). The field is generally considered to involve integration, coordination, and collaboration across organizations. A typical supply chain, also known as logistic network, includes activities such as purchasing, manufacturing, transportation, warehousing, retailing and delivery, focusing on the transportation of goods through these facilities (SIMCHI-LEVI et al., 2010).

The management of a supply chain will include a broad array of activities needed to plan, implement, and control sourcing, manufacturing, and delivery processes from the point of raw material origin to the point of ultimate consumption. Thus, leading logistical practice has shifted from an exclusively internal focus to collaboration across the full range of supply chain participants (STANK et al., 2001).

Supply chain management has been a melting pot of various disciplines, with influences from logistics and transportation, operations management and materials, and distribution management, marketing, as well as purchasing and information technology (GIUNIPERO et al., 2008). With recent advances in communications and information technology, firms have had an opportunity for significant savings in logistics and transactions costs by coordinating these ranges of different areas and planning the various stages of SCM (THOMAS; GRIFFIN, 1996). So, what exactly is Supply Chain Management? Gibson et al. (2005) present the following definition:

Supply Chain Management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, demand creation and fulfillment, and all Logistics Management activities. Thus, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers and customers. In essence Supply Chain Management integrates supply and demand management within and across companies. (GIBSON et al., 2005, p. 22)

Hence, supply chain management involves multiple firms, multiple business activities, and the coordination of those activities across functions and across firms in a market. The literature presents different definitions and categories to represent the term and the practices of supply chain management. As a result, it creates a source



of confusion for those involved in researching the phenomena, as well as those attempting to establish a supply chain approach to management (MENTZER et al., 2001). However, even with lots of different definitions and confusions in the literature, several key points emerge in commonality and most of the definitions agree that the supply chain covers material flow from channel members or suppliers through end users (BECTHEL; JAYARAN, 1997). Cooper et al. (1997) propose a list of these key points:

- i) It evolves through several stages of increasing intra and inter-organizational integrations and coordination; and, in its broadest sense and implementation, it spans the entire chain from initial source (supplier's supplier, etc.) to ultimate consumer (customer's customer, etc.).
- ii) It potentially involves many independent organizations. Thus, managing intra and inter-organizational relationships is of essential importance.
- iii) It includes the bidirectional flow of products (material and services) and information, the associated managerial and operational activities.
- iv) It seeks to fulfill the goal of providing high customer value with appropriate use of resources, and to build competitive chain advantages.

The evolution of purchasing from an organizational function to a strategic process is well documented in the literature. The way we think about management of supply chain has developed during the last years and the unit of analysis has changed in its complexity and its nature (Cousins et al., 2008).

A supply chain is composed of a set of two or more organizations directly involved in the upstream and downstream flows of products, services, finances and/or information from a source to a customer (GIUNIPERO et al., 2008). The integration and collaboration between all these companies that are operating in a supply chain evolve a continuum of maturity in terms of processes and management.

It is expected that to progress in SCM partnerships: i) first, companies need to develop their own internal SCM conditions; ii) second, they need to develop capabilities to work with external partners and develop joint SCM conditions both downstream (customers) and upstream (suppliers); and iii) then, to adopt SCM-related processes thereby executing SCM and leverage a supply chain orientation (KOTZSB et al., 2011).



According to Harland (1996), considering the level of relationships, there are different main uses of the term supply chain management: i) dyadic relationship; ii) chain of business; and ii) supply network (HARLAND, 1996). The supply structure model (Figure 1) illustrates these different units of analysis.

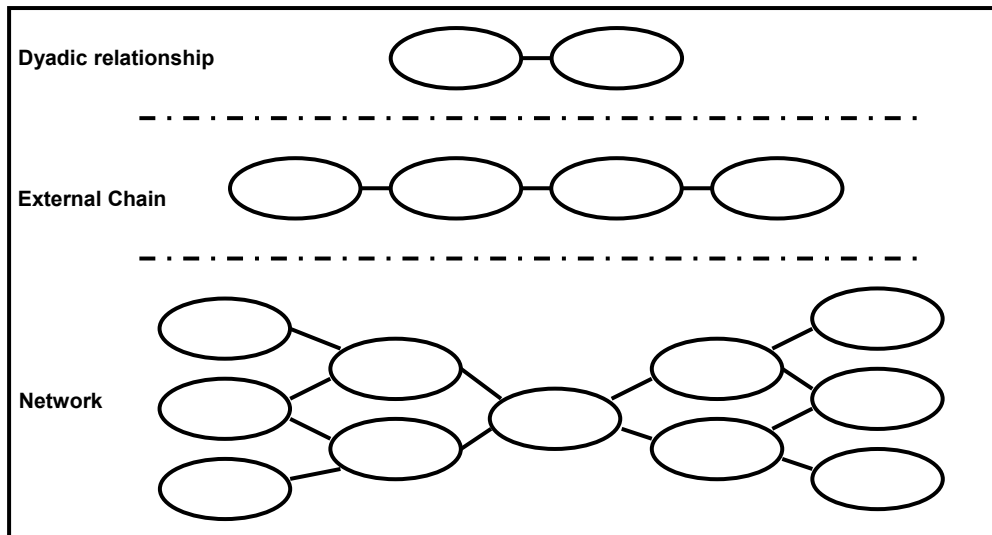


Figure 1: Level of research in supply chain management

Source: adapted from Harland (1996).

- Management of dyadic relationship

Modern manufacturing constructs have forced an evolution of the dyadic relationships between buyers and suppliers (MALONI; BENTON, 1997). Charvet et al. (2008) pose that elements like trust, coordination, and information sharing were found to have a strong positive impact on strategic supplier alliances. For Krause and Ellram (1997), supplier development is defined as any effort of a buying firm with its supplier to increase the performance and/or capabilities of the supplier and meet the buying firm's supply needs. From the buying firm's perspective, effective two-way communication, top management involvement, teams, and purchasing a relatively large percentage of the supplier's output are critical to the supplier development effort.

Chen and Paulraj (2004) establish five elements that must be considered to the management of buyer–supplier relationships:

- Supplier base reduction: work with a limited number of qualified suppliers. This action provides multiple benefits including: (1) fewer suppliers to contact in case of orders given on short notice; (2) reduced inventory management costs; (3) volume consolidation and quantity discounts; (4) increased economies of scale



based on order volume and the learning curve effect; (5) reduced lead times due to dedicated capacity and work-in-process inventory from the suppliers (CHEN; PAULRAJ, 2003). The creation of these links involves effort and trust and Cooper et al. (1997) state that these organizational relationships ties reflect to the success of the chain as a whole. Long-term strategic alliances are developed with a small core group of suppliers (LAMBERT; COOPER, 2000).

- ii) Long-term relationships: Supplier contracts have increasingly become long-term, and more and more suppliers must provide customers with information regarding their processes, quality performance, and even cost structure. Through close relationships, supply chain partners are more willing to (1) share risks and reward and (2) maintain the relationship over a longer period of time (CHEN; PAULRAJ, 2004). Mentzer et al. (2001) pose that supply chain relationships are typically long-term and are required to achieve strategic coordination. The anticipation of sharing risks and rewards across the chain affects long-term commitment of channel members (LAMBERT; COOPER, 2000).
- iii) Communication: Extant research has demonstrated the necessity of two-way interorganizational communication for successful supplier relationship. In order to jointly find solutions to material problems and design issues, buyers and suppliers must commit a greater amount of information and be willing to share sensitive design information (CHEN; PAULRAJ, 2004). Thomas and Griffin (1996) state that with recent advances in communications and information technology, firms have an opportunity for significant savings in logistics costs by coordinating the planning of the various stages of SCM.
- iv) Cross-functional teams: cross-functional teams have been identified as important contributors to the success of such efforts as supplier selection and product design. Expertise is required from various functions within and outside a firm in order to address the wide range of product and process related problems, so that team members can interact with their supplier counterparts (CHEN; PAULRAJ, 2004). According to Lambert and Cooper (2000), the use of cross-functional teams would suggest more of a process approach. When these teams cross organizational boundaries, such as implant supplier personnel, the supply chain should be more integrated.





v) Supplier involvement: A considerable amount has been written documenting the integration of suppliers in the new product development process. The involvement may range from giving minor design suggestions to being responsible for the complete development, design and engineering of a specific part of assembly. Extensive research has documented the benefits of integrating suppliers in the new product development process as well as business and strategic planning (CHEN; PAULRAJ, 2003).

The establishment of closer relationships between buyers and suppliers is necessary to generate capabilities that promote an increase in operational performance of the dyad, and consequently of the chain.

- Management of a chain of businesses

The management of a chain of businesses goes further the dyadic relationship, including a supplier, a supplier's suppliers, a customer and a customer's customer, and so on (HARLAND, 1996). The chain includes all the organizations involved in all the upstream and downstream flows of products, services, finances, and information (MENTZER et al. 2001). This scope of integration is extended beyond a company's boundaries to include suppliers and customers, thus creating chain of firms based on strength partnerships.

This usually decreases the opportunity for squeeze pricing policies and leads to a restricted number of long-lasting relations (CIGOLINI et al., 2004). The length of the chain is related to the make-or-buy decision. The premise is that organizations do not possess all the skills and resources required to design and manufacture entire products in-house (COUSINS et al., 2008).

The choice of what to outsource and what to insource is a key area of debate. The main idea is that firms should focus on core competencies and outsource the rest (ELLRAM; COUSINS, 2007), composing a coordinated chain, capable of delivering value to the final customer.

- Supply network

Rising international cooperation, vertical disintegration, along with a focus on core activities have led to the notion that firms are links in a networked supply chain. This novel perspective has created the challenge of designing and managing a



network of interdependent relationships developed and fostered through strategic collaboration (CHEN; PAULRAJ, 2004). It requires the management of a network of interconnected businesses involved in the ultimate provision of product and service packages required by end customers (HARLAND, 1996).

The articulation of supply networks, as an extension of supply chains, seeks to accommodate and explain the commercial complexity associated with the creation and delivery of goods and services from the source of raw materials to their destination in end-customer markets. In place of the simplistic, linear and unidirectional model sometimes presented for supply chains, the supply network concept describes lateral links, reverse loops, two-way exchanges and so on, encompassing the upstream and downstream activity, with a focal firm as the point of reference.

It follows that supply networks encompass not only the upstream network of suppliers but also the downstream network of distributors and customers (LAMMING et al., 2000). This involved examining the interrelationships across an entire industry sector where frequently buyer and supplier roles are reversed multiple times throughout the network structure (COUSINS et al., 2008).

These three perspectives (dyads, chains and network) lead to the definition of supply chain orientation as the recognition by an organization of the systemic, strategic implications of the tactical activities involved in managing the various flows in a supply chain (MENTZER et al., 2001). In this way, supply chain management must be understood as an integration of key business processes from end user through suppliers that provides products, services, and information that add value for customers and other stakeholders (LAMBERT; COOPER, 2000).

The international environment provides many organizations with an incentive to establish global added networks, where complex inter-firm relationship management, collaboration and coordination are established in order to seek cost efficiency, mass production and flexibility. Next section presents the main elements that must be considered to characterize the management of a supply chain in a global level.



## 2.2. Global supply chain

The strategy of the supply chain is a global issue. Slack and Lewis (2011) pose that a global supply means the identification, evaluation, negotiation and configuration across multiple geographies. Companies are increasingly looking for suppliers in some remote locations. According to these authors, many companies have accomplished to save from 10 up to 35% in costs by working with suppliers from low-cost countries. Considering this scenario, global supply chain management (GSCM) represents a central area of focus for many businesses and business schools today (MENTZER et al., 2007a).

Managers seeking to leverage supply chain processes in order to enhance performance need to understand the relative importance of the various competencies in each particular operating arena. The needs of key customers may vary across international borders and the means for developing an effective fulfillment and replenishment process may also vary across international locations (CLOSS; MOLLENKOPF, 2004).

According to Mentzer et al., (2007a), the complexities of cross-border operations are exponentially greater than in a single country, and the ability to compete in the global environment often depends on understanding the subtleties that emerge only in cross-border trade - that is, in GSCM. The operation in a GSCM is based on the development of capabilities to integrate different companies, from different countries, languages and cultures and different economic and technological level.

Thun (2010) states that the supply chain integration necessary to compete in the global market is defined as the improvement of cooperative relationships with customers and suppliers. The challenge is to develop the buyer-supplier cooperation in an environmental uncertainty with multidimensional constructs consisted of dynamism and complexity such as: (1) the dynamism regarding an internationally purchased item which measures the frequency, extent, and unpredictability of changes; (2) the complexity of that purchased item which measures technical complexity; (3) the cultural distance between the buyer's country and the supplier's country which measures informational and communication complexity; and (4)



geographic complexity between the two countries which measures the complexity of the flow of goods or logistical complexity (KAUFMANN; CARTER, 2006).

Without going global, companies would be limited to have just goods and services produced within their own borders. Being global provides opportunities to tap into huge and growing markets, capitalize on new economic trends, and utilize natural resources available in other geographic areas (SANDERS, 2012). The larger the portfolio of markets in which the supply chain operates, the greater the opportunities and, simultaneously, the greater the complexities and risks resulting from turbulent environmental conditions (MYERS et al., 2007).

Trading on a global or international market scale is considerably more complicated than on a domestic one. There are time costs due to longer transit time and there are also operational costs involved in conducting business in a different part of the world. These include differences in labor productivity and access to labor skills, access to transportation and infrastructural support, as well as availability of technology. Besides, there are significant risks that include political instability, as well as currency fluctuation (SANDERS, 2012).

A proper evaluation of these opportunities and barriers, considering the different trade off involved, is what best characterizes the management of a supply chain in a global level. Studies in Global supply chain management such as Sanders (2012), Mentzer et al. (2007a), Mentzer et al. (2007b), Myers et al. (2007), Caniato et al. (2013) and Skjøtt-Larsen et al. (2007), discuss that the complexities of this field is related to a diverse set of environmental issues and conditions of the global market. So, the concept of Global Supply Chain Management can be described as follows:

Global Supply Chain Management integrates supply and demand management within and across companies (suppliers, intermediaries, third party service providers or customers) belonging to different countries and presenting distinction in their economic and technological level. The planning of activities involving sourcing, outsourcing and supplying are subject to environmental conditions that compose the global market.

This concept considers the fundamentals of supply chain management, aligned with the characteristics and complexities of global operations. The global environment embraces a long list of possible topics that express this complexity (SKJØTT-LARSEN et al., 2007).



Sanders (2012) resume these environment issues in six significant factors that companies must monitor throughout the process of managing their global supply chain. They are: market and competition, cost, infrastructure, technology, political and economic environment and culture.

### *2.2.1. Market and competition*

The international market is not only a sum of different national markets. Traditionally, international business strategy is based upon these individual markets and sets up objectives and policies separately to satisfy the specific requirements of different countries (SHI; GREGORY, 1998).

Outsourcing manufacturing to offshore supplier locations, for example, has been a common practice in recent years. In this way, supplier selection decisions have been changing the global supply chain design problem in fundamental ways, in part because they are based on more broadly complex criteria (MEIXELL; GARGEYA, 2005).

Market and competition are all factors involved in marketing and selling to global markets, including customer preferences and competition. Customer preferences and expectations are often unique in different global regions (SANDERS, 2012). To gain competitive advantage in this scenario, a firm needs to examine its activities in relation to the comparative advantages offered by various nations. Matching these activities and the sourcing decisions with the appropriate country conditions can lead companies to gain costs, quality, lead times and perhaps innovation (PRASAD; SOUNDERPADIAN, 2003).

Globalization of markets interacts with globalization of firms which act as buyers and sellers of goods and services. (MATTSSON, 2003). This global market is based on the shared and common demands of different countries. It integrates different national preferences into a core entity and presents this as a fundamental and non-differentiable market requirement. To satisfy the growing global market, the traditional products and related development strategies are clearly not enough to satisfy companies' internationalization (SHI; GREGORY, 1998).

The challenge to today's global business is, firstly, to identify the appropriate supply chain solutions to meet the different needs of the different product/market



characteristics and then, secondly, to manage what are likely to be multiple supply chains (CHRISTOPHER et al., 2006).

On a global scale, companies will need to decide upon the degree to which the supply chain can be rationalized (PRASAD; SOUNDERPADIAN, 2003). Many critical issues, such as properties of international manufacturing network systems in terms of structural architecture, dynamic mechanisms, and related strategic capabilities and strategy processes (SHI; GREGORY, 1998) must achieve a higher maturity level in global markets.

### 2.2.2. Cost

Today's market place is characterized by heightened global competition often against a backdrop of an excess of supply over demand (CHRISTOPHER et al., 2006). Considering this scenario, the global competition is forcing corporations to periodically look at their supply chain map to reduce costs and time involved in the process. Innovations in this area are helping corporations gain significant advantages over their global competitors (MOTWANI et al., 1998).

In order to reduce their production costs, especially labor costs, many firms have relocated segments (sometimes the entire process) of their industrial production systems to new locations; a process commonly known as offshoring (RODRIGUE, 2012).

Cost is often the most cited reason by companies for going global. Often companies only consider individual costs, such as low directed labor cost, marketing cost, or perhaps local supplier cost. However, it is important for companies to consider total supply chain costs when going global. These include costs of quality, differential productivity and design costs, as well as added logistical and transportation costs (SANDERS, 2012).

Cost management must focus on the functional and integrated logistics and supply chain cost components. (CLOSS; MOLLENKOPF, 2004). Cost components include fixed and variable production charges, inventory charges, and distribution expenses via multiple modes, taxes, duties, and duty drawback (ARNTZEN et al., 1995).

### 2.2.3. Infrastructure



Flexibility is important in global supply chains because it plays a facilitating role in the coordination process and provides a unique ability to help firms manage the high levels of environmental and operating uncertainty inherent in global operations (MANUJ; MENTZER, 2008). Infrastructure availability enables the development and functioning of the supply chain network flexibility.

This includes access to roads and transportation, equipment and communication network, distribution systems, and skilled labor. This is typically one of the biggest global challenges. The ability to penetrate global markets depends on having global facilities and distribution and supply networks to respond to consumer demands (SANDERS, 2012).

Infrastructural deficiencies in developing countries in transportation and telecommunications, as well as inadequate worker skills, supplier availability, supplier quality, equipment and technology provide challenges normally not experienced in developed countries. These difficulties inhibit the degree to which a global supply chain provides a competitive advantage (MEIXELL; GARGEYA, 2005).

The infrastructural challenges to have a global chain capable to respond the demands involve the management of three main factors (SANDER, 2012):

- Labor: access to low-cost and/or high quality labor.
- Transportation: access to roadways and transportation.
- Supplier: designing a global supply chain requires important decisions regarding the number of suppliers and their geographic locations.

#### 2.2.4. *Technology*

The emergence of the global market and intensification of global competition is matched by major developments in technology. New generations of communication and transportation technologies are creating the possibility for transnational companies to organize their worldwide operations more effectively and efficiently (SHI; GREGORY, 1998). An important aspect of global supply chain cooperation is the communication between partners from different nations. So, the more integrated the flow of information between customers and suppliers, the easier it becomes to balance supply and demand across the global network (THUN, 2010).



Technology enables manufacturing innovation that in its turn allows more efficient means of changing the product mix and the ability to serve different markets. The global planning process must include competencies of technology and planning integration resulting in information systems capable of supporting the wide variety of operational configurations needed to serve diverse market segments. (CLOSS; MOLLENKOPF, 2004)

Information technology, in particular, enables information sharing and collaboration across the globe. Examples of this are availability of bar code technology, GPS, EDI and RFID, since all of them enable global product tracking and communication (SANDERS, 2012). By making collaboration easier and cheaper, the new technology means companies can integrate aspects of their operations more swiftly and collaborate more closely than before (FROHLICH; WESTBROOK, 2001).

#### *2.2.5. Politics and economy*

In a global context, the ability of managers to serve specific segments effectively can be limited by regulations and political economies that restrict the ability to standardize the offerings and processes needed to do so. These, often dichotomous, environmental conditions alone account for the often exponentially more difficult management conditions faced by global, rather than single-market supply chain managers. (MENTZER et al., 2007b). Politics and economy can include government regulation, political stability, formation of trade agreements, and currency fluctuations (SANDERS, 2012).

Proper assessment of the political economy scenario often facilitates considerable savings in tariffs, as well as market opportunities. It is essential to evaluate political risk, credit risk, social risk, and market risk and minimize their effects through awareness of their impact and cost across global supply chains (MAYERS et al., 2007).

According to Mann (2008), trade facilitation must be pursued by policymakers. It is the rubric that covers the research and policy analysis on impediments to global sourcing and multinational supply chains that are not the traditional border barriers such as tariffs or quotas. Trade facilitation offers a macroeconomic perspective on how policymakers should change the environment facing business to promote international trade and economic growth, whereas the microeconomic perspective of





supply chain logistics considers how a business should organize its operations given the policy environment. The view is that policies that, for example, increase port efficiency, or use of information technology or adherence to international standards will improve the environment for business to buy, sell and invest across borders and thus drive more efficient and effective trans-border supply chains (MANN, 2012).

Another economic factor that global operations face is the exchange rate fluctuations. Actually, the financial and accounting complexities of foreign exchange rates go beyond the understanding, or responsibility, of global supply chain management. Instead, it is the task of managers to reduce foreign exchange in global supply chain transactions (MAYERS et al., 2007).

Small fluctuations are expected and do not have a large impact. However, large fluctuations can have huge implications for global operations. It means that the ability to purchase in the currency you possess is suddenly diminished with no fault of your own. Supply chain managers have to include these fluctuations in their management strategies (SANDERS, 2012).

#### 2.2.6. Culture

Culture refers to acceptable behaviors, beliefs and norms characteristic of a particular global region. This includes social structures and acceptable interactions, work ethic, observances and manners, gender roles, and adherence to formal chains of authority (SANDERS, 2012). A market is embedded in an institutional setting, which is comprised of a society's norms and culture (MATTSSON, 2003), where different languages, beliefs and practices have a close relationship with the effectiveness of business processes (MEIXELL; GARGEYA, 2005).

Globalizing the supply chain is often ineluctable and requires the development of good relationship across multiple cultures (MAYERS et al., 2007). Each country has its specific elements of originality and peculiarity, and matching supply chain strategies with the different cultural imperatives is a challenge for every organization that decides to go abroad to do business (MAYERS et al., 2007).

Globalization of firms and markets involves confrontation between these different cultural issues, both at the organizational and national level. The challenge is that national culture is deeper and less adaptable than organizational culture where the latter is influenced by the former (MATTSSON, 2003). It is critical for



managers the understanding of these dimensions related to culture issues and keep them in mind as they conduct negotiations, collaborate, and build rapport with members of their supply chain across the globe (SANDERS, 2012).

### **3. RESEARCH OPPORTUNITIES IN THE GLOBAL SUPPLY CHAIN FIELD**

Global supply chains operate in a distinct geography, where the dimensions of production, distribution and consumption may be established at a different location on the globe (RODRIGUE, 2012). The relevance of developing a proper model for managing a supply chain in a global perspective is justified precisely by the complexity of the international market. The international market needs greater flexibility and lean operations and it requires more added value for customers from different geographies and specific needs.

Environmental complexity encompasses a rich variety of dimensions, of political and foreign risks, cultural and geographical differences, variations in legal systems, and differences in infrastructure (SKJØTT-LARSEN et al., 2007). According to Myers et al. (2007) the very characteristics that make supply chain cost-effective also make them vulnerable to the volatile global environment.

By exploring the six factors proposed by Sanders (2012) - market and competition, cost, infrastructure, technology, political and economic environment, and culture - this study discusses how managing international supply chain is more complex than managing a domestic supply chain (DRAKE, 2012). All the six factors represent external forces that must be carefully evaluated while developing a strategy for global transactions.

The scheme represented in Figure 3 shows that from a global perspective it is not just enough to acquire new resources, modern equipment's and to hire specialized people. Managers need to access critical aspects related to these factors jointly with the internal enterprises characteristics to determine the proper global supply chain strategy their organization should seed to align operations with global partners (MENTZER et al., 2007b).

The scope of international chains is more complex in terms of mission, structure, infrastructure, capability, and design process (SHI; GREGORY, 1998), which needs more detailed attention to external factors. Because of these factors, the achievement of the outcomes expected in a chain operation – customer satisfaction,



value, profitability and competitive advantage (MENTZER et al., 2001) – is more dependent of an effective coordination model and collaboration between the global partners.

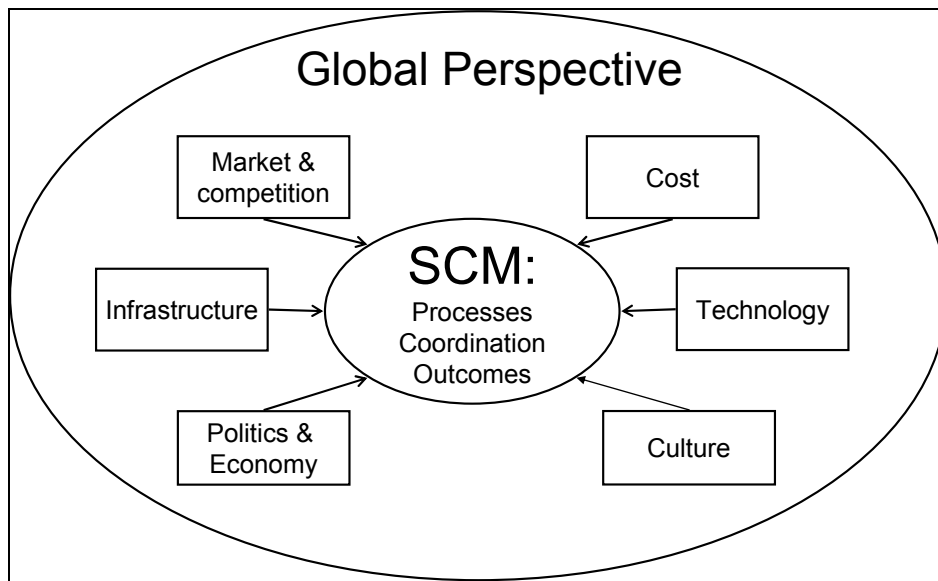


Figure 3: Factors impacting global supply chain management  
 Source: Adapted from Sanders (2012).

The development of strategic capabilities can influence companies' success factors competition directly in their operations in a global supply chain, i.e., capabilities are potential behavior modes of a plant with which it can support and shape corporate strategy and which help it to succeed in the international marketplace. The development, nurturing and abandonment of strategic capabilities become an important issue of manufacturing strategy (GRÖßLER; GRÜBNER, 2006).

For a supply chain to be competitive, it is important that the required capabilities of each constituent firm are closely related to the competitive priorities of the dominant firm in the supply chain (AHN et al., 1999). The need to follow standards and rules established by leader companies and leading countries is even more critical considering a global chain. There is also the need of key customers, that may vary across international borders and the means for developing an effective fulfillment and replenishment process may also vary across international locations (CLOSS; MOLLENKOPF, 2004).

It is not clear how the expected outcomes of a supply chain, proposed by Mentzer et al. (2001) as customer satisfaction, profitability and competitive advantage, can be achieved in a global perspective. According to Mentzer et al. (2007b), even the assessment of overall global supply chain performance has been limited as the metrics employed have often been measures of internal operations. This need for formulating a supply chain strategy capable to deal with the complexities of the global market to achieve global performance leads to the proposition of the first question that will compose a research agenda in the global supply chain area:

- Question 1: What international capabilities must be developed in a global supply chain in order to promote customer satisfaction, profitability and competitive advantage?

Global supply chains are characterized by a growing level of integrated services, finance, retail, manufacturing and distribution (RODRIGUE, 2012). Considering this complexity, the development of expertise is important to overcome the friction of distance more effectively and to manage the complexity of fragmented and global production systems (RODRIGUE, 2012).

Independent of the analysis' level - dyad, chains or networks - the global factors impact on the way the relationships are established and the outcome achieved. These new perspectives require new understandings of the nature of manufacturing systems and the ways in which the required performance can be achieved (SHI; GREGORY, 1998). These systems are composed by areas such as the management of technology and innovation, streamlining processes, insourcing and outsourcing, and the management of the different relationship management (ELLRAM; COUSINS, 2007).

In this way, supply strategy is inherently broader than manufacturing strategy, because it incorporates interactions among all these different processes and supply chain members. There are lots of processes involved in a global supply chain orientation. Mentzer et al. (2001) highlight the main processes as marketing, sales, research and development, forecasting, production, purchasing, logistics, information system, finance and customer service. Global supply chains are developed by the integration of all these processes and are characterized by a growing level of



integrated services, finance, retail, manufacturing and distribution (RODRIGUE, 2012).

The integration of all these processes must be defined as extending from the supplier's supplier to the customer's customer, and acknowledge the flow of information from global customer interest to final delivery of a valued solution (MCADAM; MCCORMACK, 2001). According to Larsson and Ljungberg (2007), core processes decide the competitiveness and differentiate between successful and less successful organizations.

In the case of global operations, process management represents a critical issue, where cooperation needed not only across company borders internal to a company but also across different corporate cultures, different legal systems, different languages, different business ideas, and also different strategies (LARSSON; LJUNGBERG, 2007). This need for the integration and coordination of the different processes involved in a global supply chain leads to the proposition of another question for future research:

- Question 2: What is the proper process management model for integrating different interorganizational processes among companies belonging to a global chain, with different economic, cultural and technological level?

According to Sanders (2012) relationship management is one of the most important aspects of supply chain management. Relationship integration represents an important ability to develop and maintain a shared mental framework with customers and suppliers regarding enterprise dependency and principles of collaboration (CLOSS; MOLLENKOPF, 2004).

So, the buyer-supplier relationship composes an important managerial element of supply chain. It acknowledges that entities that have interact for a long time may view their relationship very differently from those that have little experience with each other (MENTZER et al., 2007b).

The components proposed by Chen and Paulraj (2003) for the development of dyadic relationships – supplier base reduction, long-term relationships, communication, cross-functional teams and supplier involvement – are affected by the external factors. The needs of key customers may vary across international borders, and the means to developing an effective fulfillment and replenishment



process may also vary across international locations (CLOSS; MOLLENKOPF, 2004).

Long-term relationships offer both parties the opportunity to gradually learn how to better do business with each other (KAUFMANN; CARTER, 2006). The knowledge transferred from these intimate business relationships are able to increase the quality and efficiency of the dyadic operations resulting in greater competitive advantage to the global chain.

Coordination with customers and suppliers may become more difficult due to physical and cultural distance or the presence of intermediaries (CANIATO et al., 2013). Considering the role of dyadic tiers in global operations and the importance of infrastructure in the supply chain performance, one more question is proposed for the research agenda:

- Question 3: How can buyer-supplier strategy help the different companies, from different countries, with different economic level to improve their efficiency needed to operate in the global market?

According to Mann (2012), companies that are involved in global relationships, following global standards may have a competitive edge in some international supply chains over firms that are not familiar with those standards. The emergence of the global market and intensification of global competition is matched by major developments in technology. New generations of communication and transportation technologies are creating the possibility for global companies to organize their worldwide operations more effectively and efficiently (SHI; GREGORY, 1998).

The technological development level available, especially for processing information – GPS, EDI and RFID – impacts on the communication between partners, on the quality of the relationships and on the performance and competitive advantage. The quality of the infrastructure also impacts on the relationship performance. One of the biggest challenges for companies setting up global operations is the significant differences in infrastructure among countries (SANDERS, 2012).

Access to road and transportation, equipment, distribution systems and skilled labor allow for more efficient means to respond to the market demands. The management of the relationships considering cultural aspects such as social



structural and dynamics, work ethics and productivity, gender roles, religion and language, represents opportunities and barrier for strengthening relations and ensuring long-term relationships and the operation with cross-functional teams. Customer integration, internal integration, technology planning integration, and relationship integration all contribute to improve productivity (CLOSS & MOLLENKOPF, 2004). Considering the role of infrastructure in the supply chain performance, one more question is proposed for the research agenda:

- Question 4: How infrastructural elements – technology, labor, transportation and supplier – impact on national companies' attractiveness and contribute to improve efficiency in the global chain?

All the organizations today operate in a global environment and are affected by global trade (SANDERS, 2012). Supply chain optimization mandates that firms take advantage of all the trade arrangements to meet multiple markets, or benefit from multiple market offering, while reducing the overall costs associated with taxes, tariffs and other trade barriers (MAYERS et al., 2007).

In this sense, the composition of the global supply chain must also take into account political and economic factors to remain competitive. The complexities of the political environment involve different criteria, such as instability, ideology, institutions and international links (SANDERS, 2012), that draw the scenario where companies operate. Regional trade agreements and trade protections mechanisms proposed by public policies influence the decision to globalize operations (SANDERS, 2012).

Supply chain optimization mandates that firms take advantage of these trade arrangements to meet multiple market needs, or benefit from multiple market offerings, while reducing the overall costs associated with taxes, tariffs, and other trade barrier (MYERS et al., 2007).

Public policies can stimulate market, attract investments and foreign companies, promote national industry and competitiveness, and support proper infrastructure for logistic and trade issues. According to Myers et al. (2007) it is essential to evaluate political risks, credit risk, social risk, and market risk and minimize their effects through awareness or their impact and cost across global supply chains.



Policymakers should change the environment facing business to promote international trade and economic growth, whereas the perspective of supply-chain logistics should consider how a business should organize its operations given the policy environment (MANN, 2012).

If the strategies and guidelines proposed by public policies are not properly developed and prioritized, they may represent a barrier to economic development and a disincentive to business and international cooperation. The role of public policies in the operation and management of a global leads to the formulation of another research question:

- Question 5: What is the role of public policies to leverage the trade facilitation, attracting new investments and enterprises to stimulate the growth of national companies and creating proper capabilities to operate in the global market?

The key to Global supply chain management success lies in the ability of managers to access the global market and also internal enterprises environmental characteristics to develop appropriate capabilities to formulate strategies to allow companies to upgrade and move up in global chains. The five questions compose a research agenda that covers the integration of internal and external factors in different dimensions that can generate new investigations with potential academic and managerial contributions.

#### **4. FINAL CONSIDERATIONS**

Firms are competing in a global economy, and thus, the unit of business analysis is the world, not just a country or region (MENTZER et al., 2007a). Thus, it is important to undertake the traditional studies of operations management in a global perspective. Based on the literature related to supply chain management and global operations, this study provides a discussion, linking the main elements that compose supply chain management and the significant factors that companies must monitor throughout the process of managing their global chains.

Companies are sourcing and selling in the global market looking for new supplier, partners and distribution channels and also new possibilities for growth and profitability. Being international provides lots of opportunities, but it also demands special attention to the dynamic factors that compose the complexity of the global market.





The challenge related to the international operations is to develop a global strategy considering the influence of political and economic factors in the trade, cultural characteristics, supply chain costs, infrastructure, technology, market and competitive rules. To propose a research agenda, the main features of supply chain management, which are process management, relationships and performance, were aligned to these main elements that compose the global market.

The agenda covers the identification of capabilities to promote competitive advantage, the composition of a management processes model aligned with the characteristics of the international market, how companies can upgrade through buyer-supplier relationship, the impact of infrastructure to promote competitiveness and the role of public policies to move up national industries to the global market. It is clear that global market poses a number of challenges.

Even considering that the term "supply chain management" is over 30 years old, first appearing in the practitioner literature in 1982, there is still not an agreed-upon its definition (ELLRAN; COOPER, 2014). This field deserves further attention especially because supply chains have been transformed in recent years by the influence of globalization (CONNELLY et al., 2013). According to Caniato et al. (2013) research has not yet clarified which programs lead to real improvements when SCs become global. Those statements reinforce that studies that focus on the promotion of new understandings of the global supply chain field can be useful both for scholarly work and practitioner application.

The agenda proposed in this study for future research represents opportunities for growth and improvements within the global supply management field. These questions can serve as base for different theoretical and empirical investigations to evaluate the impact of the different external factors for the configurations and management of global chains. Understanding and linking different perspectives of the field is useful for SCM to continue to grow and add value to academia, organizations and also the society.

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