The impact of E-commerce on the Supply Chain B2B in Brazil

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Abstract:

The ability to redefine inter-firm relationships and processes, internet-enabled and other Business-to-Business (B2B) mechanisms facilitate the integration and management of inter- or intra-organizational business processes that produce value for customers. B2B e-commerce in supply chain management (SCM) becomes more important due to its performance implications. The aim of this paper is to discuss the impact of e-commerce in supply chain in Brazil. Regarding research methodology, we will divide into three categories of type of research as to the objectives, the procedures and how to address the problem. The typology of the aims is to a descriptive survey; for the procedures, we use the literature search; and the approach to the problem, it is a qualitative study.

Keywords: Supply chain management, Business-to-Business marketing, Electronic commerce.

Resumo

A capacidade de redefinir as relações entre empresas e processos baseados na Internet e outros mecanismos facilita a integração e gestão de negócios inter ou intra-organizacionais que produzem valor para os clientes. O comércio na Internet e gestão da cadeia de abastecimento (SCM) se tornam mais importantes devido a implicações de seu desempenho nas organizações. O objetivo deste trabalho é discutir o impacto do comércio eletrônico na cadeia de suprimentos no Brasil. Quanto à metodologia de pesquisa, foi dividido em três categorias do tipo de pesquisa: quanto aos objetivos, os procedimentos e a abordagem do problema. A tipologia é de uma pesquisa descritiva, nos procedimentos, foi utilizado a pesquisa bibliográfica, e a abordagem do problema é qualitativa.


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Introduction

The globalization of markets, growing interpenetration of economies, rapid technological change, volatility of demand, wider variety of products available, faster delivery, quicker product development and low cost manufacturing indicate new type of competitive environment. Recent market trends indicate that e-commerce becomes an order qualifying criteria and businesses need to incorporate it as an integral part of their supply chain management. The importance of Internet, e-Business and e-Commerce in BRICs is reflected in the fact that the number of users in Brazil is more than 50,000,000, Russia more than 60,000,000, and China more than 253,000,000 representing more than 28% of total world users. In Brazil, 8.2 billion of business was transacted in 2008 on-line with estimates of 10 billion for 2010 (Latin American Internet Population and Telecommunications Statistics, 2010).

There are several megatrends that are shaping the networked global economy. Some of the most prominent ones are globalization, digitalization, deregulation/privatization, changing demographics, changing industry mix, convergence wave, commoditization of processes, and the increasing importance of emerging economies. Among these trends, the changing industry mix has the most relevance to our discussion (Lee, Ribeiro, Olson, & Roig, 2007).

These megatrends have led to structural changes in the economy. About 100 years ago, agriculture was the prominent industry, which contributed most to national income in the developed countries. Today, agriculture contributes only about 2% of GDP in the United States. The agrarian age gave way to the industrial age. Manufacturing output roughly tripled in the US since 1960. However, the GDP share of manufacturing halved to roughly 15%. In other words, the industrial age is giving way to the service age, more specifically knowledge/intelligence age. For example, agriculture and manufacturing are no longer wealth creators in most developed countries. The primary wealth creators in the intelligence age are knowledge-intensive
industries such as information and communication technology (ICT), financial services, health care, biotechnology, education, entertainment, and the like (Lee, Ribeiro, Olson, & Roig, 2007).

Over the past decade a combination of economic, technology and market forces has compelled companies to examine and reinvent their supply chain strategies. Some of these forces include the globalization of businesses, the proliferation of product variety, increasing complexity of supply networks, and the shortening of the product life cycles. To stay competitive, enlightened companies have strived to achieve greater coordination and collaboration among supply chain partners in an approach called “supply chain integration” (Lee; Chang, 2001).

The use of advanced Information Communications Technologies (ICTs) has become the most significant driver of world economic growth. ICTs are the catalysts through which enterprise, whether traditional or new, can create sustained competitive advantage for its products and services on world markets. In reaction to this reality, businesses have invested heavily in IT; many firms worldwide have succeeded in improving customer service levels with their e-commerce initiatives to transform business processes. Some suppliers for example, had difficulty meeting supermarket chain demand schedule like Pão de Açúcar, Carrefour and Wal-Mart’s, and facing major problems with on-time delivery record. B2B e-commerce has enabled the company to improve its demand replenishment systems, besides facilitating collaboration on demand forecasting, product modifications and order-planning with those chains. As a result, many companies has improved its on-time delivery record, implementing many e-commerce initiatives to harmonize its business process. It designed a web interface, to link front-end sales to the back end ERP systems and developed a business to business portal for its supplier to fill orders and provide financial information electronically on a real-time basis. Among the various benefits the companies to reduce its customer service costs and improved their delivery performance.
Lee and Whang (2001) describes:

the use of Internet-based computing and communications to execute both front-end and back-end business processes — has emerged as a key enabler to drive supply chain integration. Businesses can use the Internet to gain global visibility across their extended network of trading partners and help them respond quickly to a range of variables, from customer demand to resource shortages (LEE; WHANG, 2001).

The spending power of Brazilian consumers is on the rise with the country’s economic recovery well under way. Demand should remain strong for telecom services, especially broadband and mobile phone. Brazil’s regulator Anatel has an ambitious agenda to overhaul the country’s regulatory framework. The General Plan for Updating Telecom Regulations, known as PGR, includes lists of actions to be carried out in the short, medium, or long term. Among others, there are plans to develop open networks in the country through local loop unbundling and through structural or functional separation regulations (Brazil - Telecom Market Trends, Key Statistics & Regulatory Overview, 2010).

The aim of this paper is to discuss the impact of e-commerce in supply chain in Brazil. Regarding research methodology, we will divide into three categories of type of research as to the objectives, the procedures and how to address the problem. To discuss the impact of e-commerce in supply chain in Brazil, we define the typology of the aims is to a descriptive survey. Regarding procedures, the decision on which way we collect data, we use the literature search. Regarding the approach to the problem, it is a qualitative study, in working with values, beliefs, habits, attitudes, representations, opinions and suits to deepen the complexity of events and processes particular and specific individuals and groups (RAUPP; BEUREN, 2006).

E-commerce and E-business
Electronic commerce (e-commerce) can occur between a business and its customers, as well as between a business and its suppliers. To facilitate interorganizational e-commerce it is often necessary to share supply and demand information between supply chain partners.

Wigand (1997) defines e-commerce as “any form of economic activity conducted via electronic connections”. As we can see this definition highlights two important aspects of e-commerce: economic activity and electronic connections.

For Lee and Whang (2001):

[…] the impact of e-business on supply chain integration on four critical dimensions: information integration, synchronized planning, coordinated workflow, and new business models. By adopting e-business approaches businesses can reap the benefits of supply chain integration — reduced costs, increased flexibility, faster response times — more rapidly and effectively (LEE; WHANG, 2001).

Delfmann et al (2002) divides an economic transaction into five phases: (1) Initiation; (2) Agreement; (3) Exchange; (4) Inspection/control; (5) Adjustment/Service (see Figure 1)

**Figure 1.** Phases of an economic transaction

Source (Delfmann, Albers, & Gehring, 2002)

The second element of e-commerce is the electronic connection, which can range from phone lines, telegraphic wires to fibre optic cables and satellite connection. Combining the two elements defined above, e-commerce can be
expressed as the two way communication via electronic networks that allows the automated processing of economic transaction data. Accordingly to Delfmann, Albers, & Gehring (2002) e-commerce can be identified in nearly every type of economic relationship (see figure 2).

**Figure 2. Types of E-commerce**

Adapted from Delfmann, Albers, & Gehring (2002).

By referring to the figure above, five general types of e-commerce transactions can be identified: (1) business to business (b2b); (2) business to consumer (b2c); (3) consumer to consumer (c2c); (4) business to administration (b2a); and (5) consumer to administration (c2a).

Mahadevan (2000) identified within these types of transaction three basic classes of business models: (1) Portal; (2) Market maker and (3) Product/Service provider (see figure 3 for examples).

Portal offer information, search services for their customers and serve as the
entrance into the e-market. Their revenues streams mainly come from advertisements and provision fees for channeling Web traffic to Web sites of product/service providers.

Market maker enables economic transactions between a community of customers by offering mechanisms for the secure and trustworthy conduct of such transactions. Their source of revenues can be provision fees per transaction or one-time charges for developing and establishing electronic marketplaces.

Product/service providers are companies that sell directly via the Internet. Depending on the type of good/service, the result can be the physical or digital delivery of goods or the performance of some kind of service.

**Figure 3. Business models in e-Commerce**

Source: Adapted from Mahadevan (2000)

**Supply Chain B2B e-commerce in Brazil**

E-commerce is a revolutionising element in supply chain management (SCM)
and is used to link suppliers, manufacturers and downstream customers providing considerable additional value to activities. In a business-to-business (B2B) context involves a wide spectrum of activities including purchasing, supplier management, sales activities, payment management, service and support. The use of e-commerce in SCM encompasses electronic data and information exchange technology and application tools such as the Internet and electronic data interchange (EDI) that assists integration and management of core business processes between key supply chain partners.

A supply chain is a network of facilities that procures raw materials, transforms them into intermediate subassemblies and final products and then delivers the products to customers through a distribution system (BILLINGTON *apud* STRADER, LIN and SHAW, 1999).

SCM expands the scope of the organization being managed beyond the enterprise level to include interorganizational relationships. Examples include improving coordination between suppliers and manufacturers, as well as between manufacturers and distributors (STRADER, LIN and SHAW, 1999).

SCM is a management process that attempts to optimize the operation of the entire supply chain. Different entities in a supply chain typically operate subject to different sets of constraints and objectives. Even when belonging to the same company, supply chain entities often report to different divisions.

Lee and Chang (2001) describes supply chain and information integration as

Information integration refers to the sharing of information among members of the supply chain. This includes any type of data that could influence the actions and performance of other members of the supply chain. Some examples include: demand data, inventory status, capacity plans, production schedules, promotion plans, and shipment schedules. Ideally, such information can be accessible by the appropriate parties on a real-time, on-line basis without significant effort (LEE; CHANG, 2001).
By adopting e-business and e-commerce approaches to supply chain integration promises more than a incremental improvements in efficiency. Many companies are discovering whole new approaches to conducting business, and even new business opportunities not previously possible. This concept allows partners redefine logistics flows and impact on roles and responsibilities of members may change to improve overall supply chain efficiency. A supply chain could together create new products, engage in mass customization, and go through new markets and customer segments. New rules of the supply chain business can emerge as a result of integration fueled by the Internet (LEE; CHANG, 2001).

In Brazil e-commerce presents a real opportunity to grow the logistics. While the Internet will enable the electronic distribution of many products, such as software and music, most products will still require physical delivery. Increased parcel delivery of goods that are ordered over the Internet is likely to be one of the most immediate impacts of e-commerce. For some businesses, this will require increased flexibility in logistics. For others, it will mean a complete re-engineering of their logistics processes. Businesses targeting consumer markets will need the ability to produce, package, and deliver customised orders, within a specified time period, to a guaranteed level of quality. For Brazil-based enterprises targeting business markets, it will require the management of integrated extranets on which customers can order and schedule delivery to their batch sizes, and track and trace their order through the production and distribution processes.

Logistics can be a mix of in-house and out-sourced functions in the e-commerce space, including parallel delivery, customer support and, in some cases, collection of taxes.

B2B e-commerce provides high visibility, resulting in process acceleration and streamlining (Croom, 2000). The strategic implications for B2B marketing include increased opportunities to market direct to multinationals based in Brazil, and
to their corporate headquarters. However, it also results in increased transparency of competitiveness in terms of costs and performance, in particular relative to other companies in the Euro-zone, and it requires promoting other strengths, such as quality and reliability of service.

For many Brazilian companies engaging in e-commerce, the cost and time associated with dispatch from Brazil has a great impact on the competitiveness of their products. To serve export markets such as the US, there may be a need to ship product in bulk to the destination market and break bulk locally as orders are received. This activity is undertaken by establishing a distribution centre in these markets, by outsourcing to a fulfilment company in that market or through alliances with other Brazilian exporters to achieve economies of scale in distribution. B2B e-commerce facilitates collaborative planning by creating accessible virtual inventory stores for relevant members in the supply chain. This contributes to more efficient shipment planning and faster order processing. Crum et al (1998) found that adopting e-commerce tools, such as EDI, increases operational benefits including greater accuracy and quicker response.

Another important aspect of B2B e-commerce is the development of extranets connecting business production and operational systems; they are more likely to impact on logistics than on any other significant operational area. The impact is greatest on sub-suppliers to multinational companies (MNCs). They have to adapt quickly to the systems and standards of larger companies. MNCs will be able to compare the offerings of alternative suppliers from around the world. B2B e-commerce facilitates logistics and procurement pooling among companies, as both exports and imports can be scheduled and tracked electronically by them.

Through the introduction of e-commerce, the supply chain B2B suffered major modifications. A typical supply chain may involve a variety of stages. These supply chain stages include: (1) Customers; (2) Retailers; (3) Wholesalers/Distributors; (4) Manufacturers; and (5) Component/Raw material suppliers.
The new supply chain B2B e-commerce does not have a retailer, wholesaler, or distributor; the producer is connected directly with the customer. Companies need to focus on their logistics or to outsource them. Os Correios, the national Brazilian postal service, serves the needs of Brazilian companies engaged in e-commerce, as it has both a national door-to-door distribution network and direct access to the distribution networks of postal services in most countries across the world. It is also a comparatively cost-effective solution for low volume distribution.

For Brazilian enterprises to be competitive in the e-commerce environment, An Post must rapidly develop the capability to guarantee delivery times and quality of delivery. It will need to develop alliances and extranets with international postal services in order to provide such guarantees. Cash-on-delivery services to Brazilian businesses need to be developed. Businesses will also need access to online tracking and tracing services for parcels being delivered to customers across the world. Delivery of product through the postal service or by courier will require new forms of packaging. A high level of innovation will be required in packaging design to maintain the quality of product shipped while reducing the bulk.

Brazilian packaging companies can develop a first mover advantage in designing and producing specialized packaging for e-commerce distribution. The agencies need to assess the capability and opportunities for the packaging industry to meet the new requirements of e-commerce logistics.

The year 2009 was marked by the crisis, the pessimism and even the euphoria began to take over the market at the end of the year. The online retailer was one of the few sectors that, in the midst of this whirlwind of news were little impacted by the crisis. The year closed with a turnover of on-line by $ 10 billion, with excellent prognosis for 2010. The good news is that we should continue at a steady pace of growth in the coming years, creating several opportunities for entrepreneurs and innovative business models.
In Brazil e-retailing start-ups face a complex and fiercely competitive landscape, along with a still-nascent market. Yet ask executives at Submarino, a leading local start-up, what the chief obstacle to mounting an effective online store in the country is, and they will answer, “its supply-chain logistics” (MACDERMONT, 2000).

And Escolari in Macdermont (2000) affirm

In the US a company could outsource in-bound logistics and concentrate on marketing, […] the US e-retailing success story. But Brazilian online retailers must often tolerate a business culture that is not accustomed to just-in-time deliveries—a crucial component of the success of online retailers, which often depend on making deliveries at lightning speed. “Every day a guy has to go round to eight suppliers to physically show them the orders faxed the night before” (ESCOLARI apud MACDERMONT, 2000).

Such problems suggest that traditional retailers— which can already claim solid experience and relationships with suppliers — have an edge over so-called pure-play ventures such as Submarino. “In Brazil there are over 1,000 publishers and virtually no book wholesalers,” says Ledo Camargo, logistics director at Saraiva, a chain of book and music stores that is also selling its products online. “The supply chain is therefore very disorganised, and this gives the advantage to clicks-and-mortar retailers. We have the scale and the relationship with suppliers. Pure-plays will have to build huge inventories, and that damages the fundamentals of e-retailing.” (CAMARGO apud MACDERMONT, 2000).

Nevertheless, supply logistics also presents a challenge for online extensions of existing chains, according to Pedro Donda, CEO of Americanas.com. Although its online catalogue comprises 10,000 items, only 15 suppliers are capable of “cross-docking”— a precise logistical process that allows the retailer to avoid maintaining inventory (DONDA apud MACDERMONT, 2000).
We have to know a supplier’s processes and track record, also need a good supply agreement. Yet conflicts can arise when a traditional retailer and its online counterpart share suppliers’ stocks (even if it does allow traditional retailers to launch online stores at marginal costs). If books are not held in a central warehouse, for instance, Saraiva must remove them from its São Paulo bookstores and send them back to its distribution centre. Indeed, at any given time, a book or CD could already be “sold”, even though it remains on the shelf.

For Paulo Bastos Tigre (2003)

Internet and e-commerce use in Brazil started out as an extension of the United States, with mostly English content and imported products. But now a vibrant local market is developing, with domestic companies offering local products and Portuguese-language content. Most Brazilian firms are already linked to the Internet, but they are usually at an early stage of development. The use of e-commerce is led by information-intensive and transaction-intensive sectors such as finance, manufacturing, and retail/wholesale. Large businesses have been leading adopters, along with microenterprises in some technology-related sectors. Mid-sized firms have been slower to participate (TRIGRE, 2003).

Paulo Tigre continues to conclude and states:

The diffusion of e-commerce in Brazil has been relatively rapid compared to other developing countries. However, the future growth of e-commerce may be limited by social and economic factors such as income level, income distribution, and education. The vast majority of the population is unlikely to participate in e-commerce until income levels are raised and lower cost access to information technology is made available. Income distribution is probably the most important factor in determining the actual and potential use of B2C e-commerce (TIGRE, 2003).

Within this scenario, I will venture to make some predictions and trends that
should mark the coming year:

- **Consolidation and expansion of the market** - With the unification of operations of the Sugar Loaf, Ponto Frio and Casas Bahia, we are creating a new major player in the market, with some segments and complementary offerings. B2W, which has giant submarine, Americanas.com and Shoptime in its portfolio, now has a strong competitor, with bargaining power with suppliers and purchasing of online media. Moreover, in the last survey Webshoppers e-Bit, saw the growth of the business niche on the cake, also called long-tail. These small retailers, with their innovative models, high knowledge of clients and flexibility to adapt their strategies, should continue growing and increasing the base of e-consumers.

- **Growth sectors even more rarely explored** - In recent years we see a strong growth in sectors such as textiles and cosmetics sales online. This year will see a maturing of the market as stores increasingly better understand the dynamics of selling this type of product online. Concerns such as reverse logistics (when a customer returns the product) has been endorsed in several national operators, including the Post Office. In addition, the interface of the sites that work with these types of products is becoming more involved and understanding the desires of the internet.

- **Focus on the User Experience** - More than just through a catalog online, the shopping experience on the web must be engaging and enjoyable for the User. This should be a major concern for online retailers in 2010. Is the only thing that can stop the competition simply by price. Concerns such as the bundled service, features a comparison and post-sale first line are just some examples of elements that impact the shopping experience online.

- **Social Networks** - Social networks are no longer an option for retailers. They have a decisive influence on purchase intent and have the ability to
propagate information to impressive speeds. In 2009 was the year of social networks. Much has been said, much has been written about it, but we should see solid strategies were drawn by Brazilian retailers in 2010. The wave of E-Commerce Agenda should be getting more intense and become an integral part of any online strategy.

- Specialization of services - With the maturing of the market, more providers of services for online retailers must specialize and focus on niche increasingly specific. Since suppliers of means of payment by operators of logistics, we will see more focus and targeting the specific needs of players of e-commerce.

Independent forecasts, we are talking about a market that is still in training, which brings numerous opportunities to those who know how to seize the moment and find niches of expertise. Every day I see success stories and entrepreneurs who knew how to innovate and get ahead, reaping impressive results in the online market. The opportunities are there, and turning into reality for those who know how to take advantage.

**Conclusions**

E-commerce provides a fundamentally new way of conducting commercial transactions and has far-reaching economic and social implications. It will affect industry structures and competition in home and international markets. It presents major new business opportunities for Brazilian-based enterprises and for the development of new sectors. It also poses significant threats for enterprises that do not prepare for the fundamental changes that are taking place. At a national level there is a need to ensure that the required legal, regulatory and facilitatory business environment is contributing to the enterprise sector to fully exploit the opportunities and to develop Brazil as a leading location for e-commerce-driven investment. At the level of the development agencies, it requires a new approach to the development of
national enterprise policies and new actions.

Companies have separate extranets with more than one large customer, and systems integration between existing IT systems and Internet systems are a significant challenge for them. In order to overcome these issues, the companies will need to plan the development of their Internet strategies, and ensure that their systems are based on international standards that can accommodate MNC-specific extranets.

E-commerce offers major potential for Brazilian companies to improve the efficiency of their procurement processes, as the Internet allows them to buy directly from suppliers, bypassing intermediaries and wholesalers. They will be able to capture a great deal of significant business information, in relation to costs and performance of their supply chains, and customer trends and purchasing patterns. The ability to analyses and interpret the data generated will be critical for efficiency improvement and competitive advantage.

We will see an explosion of business-to-business applications used by companies to develop new forms of e-business for the near future. Many have already found ample opportunities in e-business. Such advancements have accelerated the movement towards supply chain integration. These integration will move companies that make use of e-business to redefine supply chain integration to achieve significant increases in efficiency and gain tremendous competitive edge over their competitors.

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