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IS THE LOGISTICS SECTOR IN CHINA STILL A CONSTRAINT TO SUPPLYING ITS DOMESTIC MARKET?

Fernanda ILHÉU & Gonçalo SIMÕES

Abstract

China is a market ripe with opportunities for those who dare challenge its vastness; its alluring promise of an outstanding growth possibility thanks to its immense and growing internal market presents itself to companies as a place of both enormous challenges but also of potentially great rewards. The logistics sector is considered to be one essential vector of competitiveness for the development of consumer market supply. Logistics plays a tremendously important role in a company's activity. Poor logistics can lead to lost opportunities and unsatisfied customers, among other things, while having a good logistics system in place might work as a source of competitive advantage. Ilhéu (2006) research concluded that the Chinese logistics and distribution system was one of the myriad problems Portuguese companies encountered when trying to establish a presence in China; poor infrastructure and a generalized lack of value-added services in Chinese logistics companies were some of the widespread problems faced. The highly fragmented nature of the current Chinese market, high road tolls or uneven taxes between provinces, all contribute to the maintenance of an inefficient system that imposes a disproportionately high cost of logistics in the country. A new era for logistics is being ushered in by China since competitiveness and e-commerce requires the modernization of infrastructures as a global mindset management. Some research questions then arise: are Chinese logistics still a burden to the efficiency of Chinese domestic market? How has the Chinese logistical sector progressed in the last eleven years? Is the lack of value-added services still perceived by foreign companies as a constraint to entering the Chinese market?

Keywords Marketing Logistics; Chinese Logistics Competitiveness.

com o apoio

FCT Fundação para a Ciência e a Tecnologia

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INTRODUCTION

China is a market ripe with opportunities for those who dare challenge its vastness; its alluring promise of an outstanding growth possibility thanks to its immense and growing internal market presents itself to companies as a place of both enormous challenges but also of potentially great rewards. In recent years, it has claimed one of the tops spots in the World Economy and positioned itself mainly as the "*Factory of the World*", a label that remains until today, even though efforts are being led by the Chinese Government and by Chinese companies to pivot into becoming "*The Factory of China*" and the "*Services of the World*", by supplying products and services with more value-added processes occurring in China, thereby increasing domestic consumption and developing the tertiary sector.

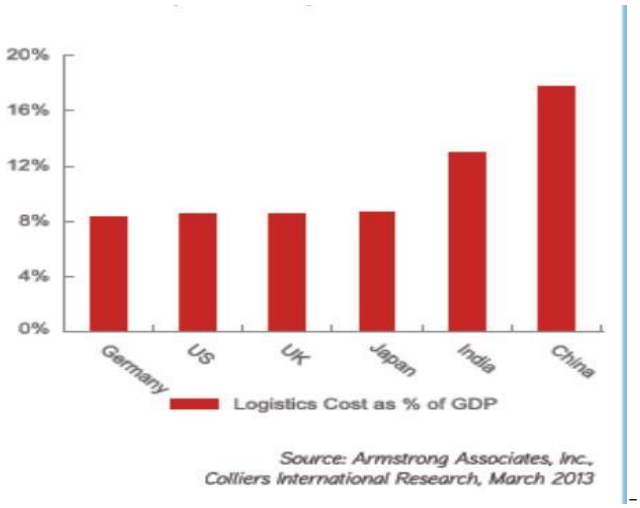
The emergent Chinese domestic market is putting a strain on its logistics sector, according to Taylor (2010), p. 668, "*the creation of a Chinese nationwide market has been impeded by poor transportation infrastructure and provincial particularism*". Nine years before, Demurger (2001, apud Hooi Hooi Lean *et al.*, 2014), p. 102, already defended that "*one of the reasons behind regional inequality is the uneven distribution of transport infrastructure*". Addressing this particular concern, China has been troubled with "*aged infrastructure (…), coupled with archaic handling equipment and the lack of qualified logistics personnel*" (Goh and Ling, 2002, p. 887, my ellipses) to meet the economy's demand. This is an issue with which many authors are concerned and it is a crucial one to address, especially since it has been concluded that there is a "*long-run relationship between logistics development and economic growth*" (Hooi Hooi Lean *et al.*, 2014, p. 103).

Taylor (2010, p. 668), affirmed that "*the creation of a domestic comprehensive inter-modal system has become a major objective of China's Tenth and Eleventh Five Year Plans (2001-2005) and*

(2006-2010)" and Easton (2003, apud Rahman and Wu, 2011, p. 464) concluded that the Chinese government has "*invested heavily in the construction of logistics and transportation infrastructure, while domestic manufacturing companies also strived to develop new logistics competencies to provide better services and reduce operating costs*".

Even so as we can see in the Fig. 1 the total logistics cost as percentage of GDP is much higher in China than in Germany and in EU countries average. In US and Japan this percentage was in 2013 around 8% where in China was 16%. Chinese logistics are still ranked in 27th place in the world ranking.

Fig. 1-Total Logistic Costs as Percentage of GDP- 2013



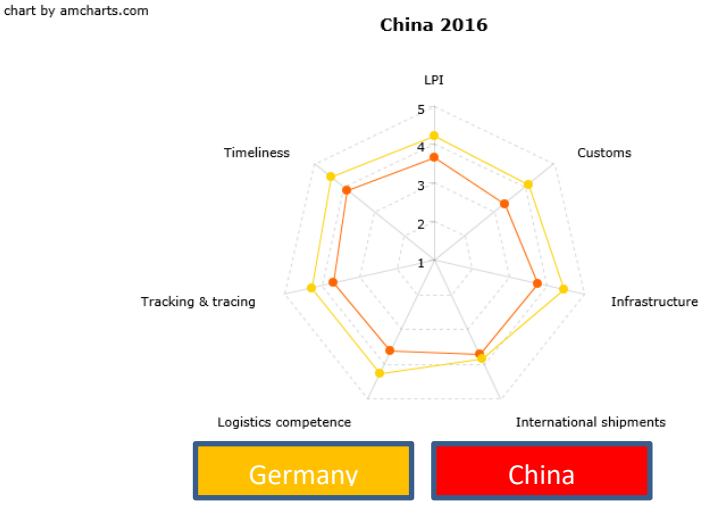
Premier Li Keqiang in the State Council executive meeting of 5th July 2017 declared that "*China's logistics costs are still on the higher end in the world. We should promptly respond to the shared concern of businesses with well-designed measures to make the sector travel light and perform better. That will be a great help for the real economy*"

Although progresses are being made in the last years we still can observe the highly fragmented nature of the current market, high road tolls or uneven taxes between provinces,

all of which contribute to the maintenance of an inefficient system that imposes a disproportionately high cost of logistics in the country. In addition to this, a generalised lack of infrastructure capable of dealing with large fluxes of goods, mainly far from the coast, creates a discouraging environment for companies seeking to enter markets inland.

Logistics Performance Index created by the World Bank that covers 160 countries and regions and quite far from German which leaders this sector efficiency. As we can see in Fig.2 China logistics are quite less efficient than the German ones in all the dimensions timeliness, customs, tracking and tracing and infrastructure, logistics competence and international shipments.

Fig. 2-Logistic Performance Index 2016 China versus Germany



Source: Logistics Performance Index 2016, World Bank

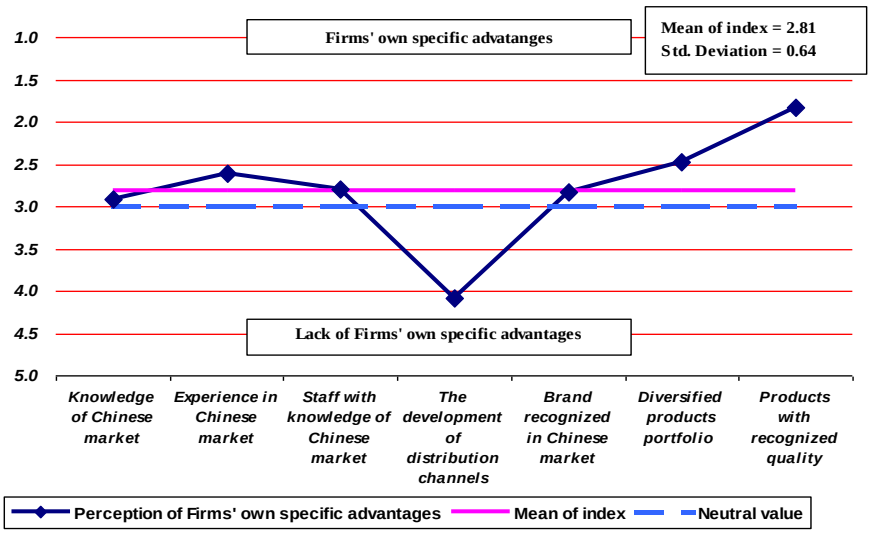
The logistics sector is also considered to be one essential vector of competitiveness for the development of consumer market supply. Logistics plays a tremendously important role in a company's activity. Poor logistics can lead to lost opportunities and unsatisfied

customers, among other things, while having a good logistics system in place might work as a source of competitive advantage.

Ilhéu (2005) research concluded that the Chinese logistics and distribution system was one of the myriad problems Portuguese companies encountered when trying to establish a presence in China; poor infrastructure and a generalized lack of value-added services in Chinese logistics companies were some of the widespread problems faced.

In fact this research conclusions, were that Portuguese companies main constrain when trying to establish a presence in Chinese market was the development of distribution channels there being poor infrastructure and a generalised lack of value-added services in Chinese logistics companies important faced problems. In the Fig. 3 we can see that that Portuguese companies own specific advantages where mostly products with recognized quality and diversified products portfolio and the most important constrain the development of distribution channels.

Fig.3 –Portuguese Firms Major Firm's Constrains in Chinese Market



Source: Ilhéu (2005)

A new era for logistics is being ushered in or, as Cho *et al.* (2008), p. 337, putted it, "*e-commerce requires a new logistics approac*h". This new approach and the frame of thinking that is required for it can be a major issue for traditional players transitioning to an e-commerce setting or for a mixed setting of traditional plus e-commerce. Delfmann *et al.* (2002), p. 203, drawing on a study by Bretzke (2000), pointed out that "*the failure of so many companies in e-commerce can be in part accounted for by the neglect of logistics as a key factor of success*".

Some research questions then arise: are Chinese logistics still a burden to the efficiency of Chinese domestic market? How has the Chinese logistical sector progressed in the last years? Is the lack of value-added services still perceived by foreign companies as a constraint to entering the Chinese market? Are the Chinese logistics services appropriated on an e-commerce market approach?

Taking into consideration our research questions we establish the following objectives for this research:

1. Identify the development of Chinese logistics in the past years;
2. Research the international perception of Chinese logistics competitiveness

Hence, the review of literature will start with a broad overview of what logistics is and the relationship between logistics and marketing; afterwards, it will be focused mainly on understanding the evolution of the Chinese logistic system as well as the obstacles still on the way towards a Chinese nationwide market and the logistical impact of e-commerce in China.

1. LITERATURE REVIEW

11. LOGISTICS AND MARKETING

The literature basically refers to the marketing-mix strategy as the 4Ps (product, price, place, promotion) but this is a simplification of reality and we have to consider a wider scope of elements for this strategy, for instance Ilhéu (2006) considered that the marketing-mix strategy have to be planned accordingly with the forces acting upon the market constrains, it refers essentially to product planning, pricing, branding, packaging, labeling, channels of distribution, personnel selling, advertising, promotion and after sales service strategy. In this concept we don´t mention logistics because in fact availability of logistic services is part of the market environment that the firm has to take into consideration when planning its marketing-mix strategy and when this environment is negative it is consider one constrain that the company has to overcome for itself. The decisions about distribution channels are among the most important ones that a manager has to do on its marketing plan and are linked to all other marketing decisions because it is at some time an strategic decision by positioning the offer and allowing its contact with the right clients and consumers and an operational one by making it in a most efficiently and less costly way.

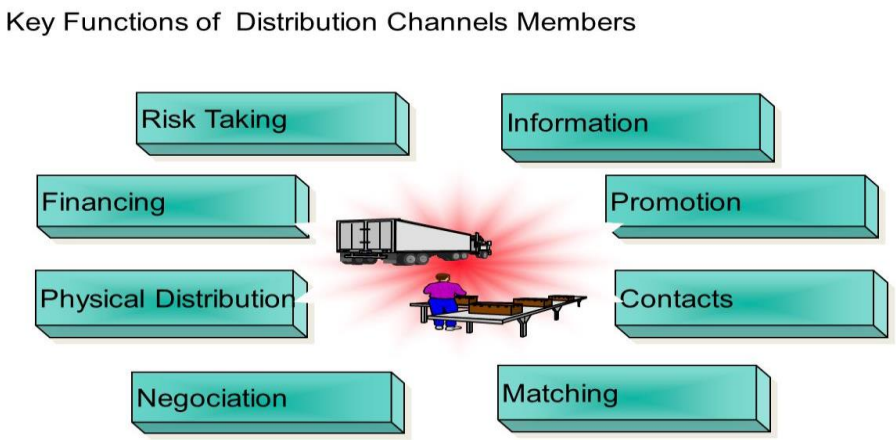
In marketing, distribution means convenience for the consumer, that means to deliver the product or the service in the most convenient place for the client at the convenient time, without much effort for him and this delivery should not increase the price significantly the client wants it to be affordable.

When we talk on distribution channels we talk of a set of interdependent organizations, channel members, involved in the process of offering a product or service for use or consumption by an end user or business user Kotler and Armstrong (2014) defended the use of these marketing intermediaries because they have greater efficiency in offering products to target markets in pag.342 they affirmed "*In making products and services available to consumers, channel members add value by bridging the major time, place, and possession gaps that separate goods and services from those who use them*".

In fact these intermediaries offer to companies more than they can do by themselves with theirs means in terms of contacts, experience, specialization and operational scale.

The key functions of distribution channels members are risk taking, information, financing, promotion, physical distribution, contacts, negotiation, matching, Fig. 4.

Fig.4 –Key Functions of Distribution Channels Members.



Source: Kotler and Armstrong (2014).

When planning a distribution channel the company has to research if the required logistics services are available or if not it will be a big constrain and either the companies

risks to offer a delivery not convenient to the client in place time or price or the company tries to result that problem by itself and this can increase its cost making the operation not rewarded.

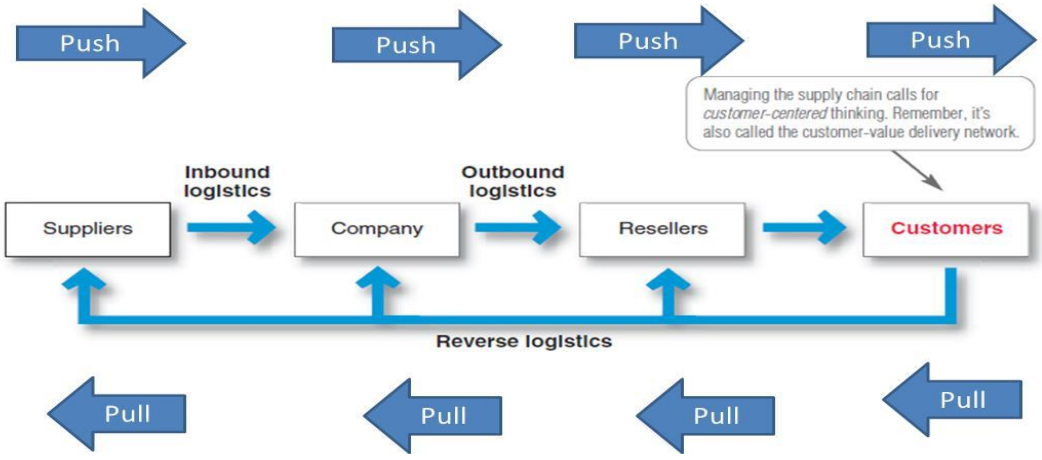
In the 80´s and until recent times marketing and logistics have been treated in separate functions by the companies, but recently due to the importance of the efficiency of distribution channels for the satisfaction of the client they begin to be integrated in the marketing-mix plan of the companies. This two are the two faces of the same coin logistics is the management of flows of goods and services with the maximum efficiency at the least cost and marketing is the management philosophy of a company oriented to the satisfaction of the client in order to get a profit for the company middle and long run through the clients loyalty

Pilarczyk, Mruk, Sojkin, Szulce (1999) considered that at present logistics and marketing are treated as dual concepts of an integrated company management and according with Kotler (1998) a modern company marketing must be logistic, logistics must be marketing, also Barcik & Jakubiec (2013, p.10) concluded that "*In the modern concept of logistic-marketing management on one side, customer satisfaction is achieved by coordinated marketing activities concerning product, price, promotion and distribution by offering to customer logistics time and place usefulness. On the other side, achieving by company an acceptable level of profit in long time is determined by reduction of global logistic costs".*

In fact marketing logistics has changed profoundly from the time it meant storing products or moving them from point A to point B. According to Kotler and Armstrong (2012), p. 357, *"to some managers, marketing logistics means only trucks and warehouses. But modern logistics is much more than this. Marketing logistics – also called physical distribution – involves planning, implementing and controlling the physical flow of goods, services, and related information from points of origin to points of consumption to meet customer requirements at a profit".* It evolved from a past where

"physical distribution planners typically started with products at the plant and then tried to find low-cost solutions to get them to customers" to a present where *"marketers prefer customer-centred logistics thinking, which starts with the marketplace and works backward to the factory or even sources of supply"* (Kotler and Armstrong, 2012, p. 357). As an example, this shift towards customer-centred thinking is essential in e-commerce, where a customer's perception of last mile logistics can greatly influence their perception of a company's service quality. As such, where traditional logistics most pressing concern was how to get a product to the customer in the least costly way, modern logistics has come to encompass not only *"outbound distribution (moving products from the factory to resellers and ultimately to customers) but also inbound distribution (moving products and materials from suppliers to the factory) and reverse distribution (moving broken, unwanted, or excess products returned by consumers or resellers)"* (Kotler and Armstrong, 2012, p. 357); in other words, evolving into a system of upstream and downstream flows, managing the entire supply chain, as can be seen in Fig. 5. These supply chains can be pulled by customers when the brand awareness and customer loyalty is high or pushed by suppliers if not.

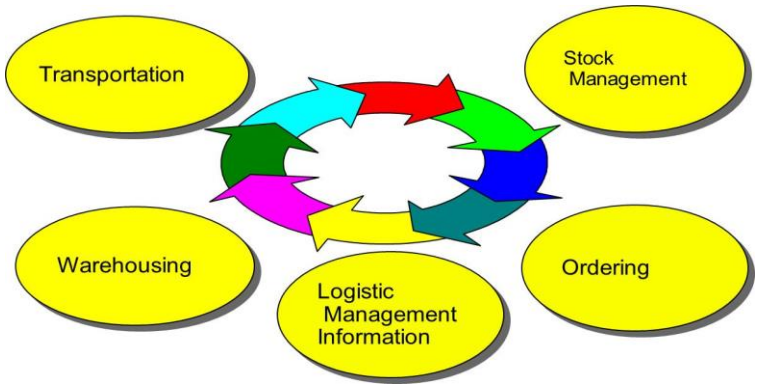
Fig. 5 – Supply Chain Management)



Source: Adapted from Kotler and Armstrong (2012)

Yet to many managers, logistics means only transports and warehouses but today is more complex then this it "*involves planning, implementing, and controlling the physical flow of goods, services, and related information from points of origin to points of consumption to meet customer requirements at a profit"* in conclusion "*getting the right product to the right customer in the right place at the right time*" (Kotler and Armstrong, 2012, p. 357). According with these authors the major logistics functions include warehousing, stock management, transportation, and logistics information management, Fig. 6.

Fig.6 –Main Logistics Functions



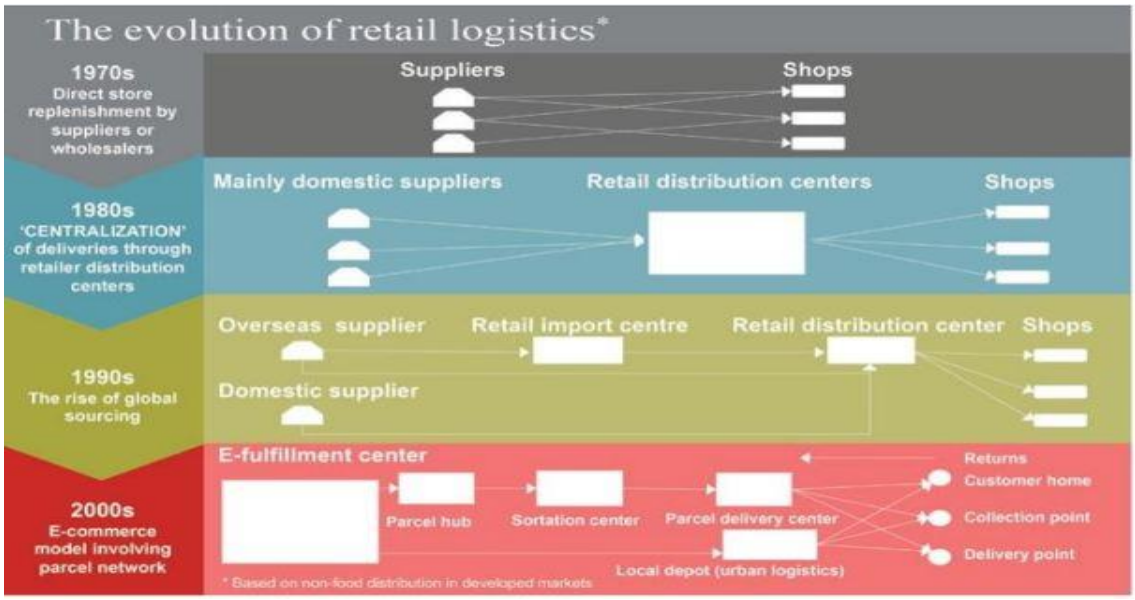
Source: Kotler and Armstrong (2012).

Mentzer, Stank and Esper (2008, p. 34), curated a series of logistics definitions but put forth a comprehensive explanation of logistics as "*consisting of the following key elements: transportation network design and management; warehousing techniques including location, design, and management; materials handling management; system wide inventory management; order management and fulfilment; procurement; and customer service*". Therefore, logistics nowadays encompasses a great assortment of functions, even assuming some roles and responsibilities that were not initially theirs in the beginning. As Gimenez and Ventura (2005, p. 22), explained it, "*Before the existence of the integrated logistics concept (supply-production-distribution), some of today's logistics responsibilities were*

under production or marketing control. But, when logistics appeared as an organizational function, some of the marketing and production's responsibilities were transferred to, or co-managed with the logistics department". This integration is fructuous as the relation between logistics and production and logistics and marketing influence each other acting positively within a company (Gimenez and Ventura, 2005). As such, logistics starts to arise as a pivot point within a company, able to integrate several functional areas and producing value in a different way than was expected from an area that is more "*often thought of in terms of supply chain management and total cost minimization*" (Morash *et al.*, 1996, p. 44). Business process reengineering assumes thus a role of major importance as a re-inventor and re-designer of the cooperative work these dissimilar areas must perform to enhance *"customer satisfaction and firm success*" (Morash *et al.*, 1996, p.43), also these authors trace this importance and put in evidence affirming also in p.43 the "*extremely strong relationship found between channel distribution and marketing performance implies that logistics channel performance also has major impacts on marketing performance*" ; this is especially true in an e-commerce setting, as "*logistics plays a very important role in ensuring customer loyalty*", and not only that but with the rise and continued, sustainable growth of e-commerce, the *"importance of logistics is set to increase"* (Ramanathan, 2010, p. 951). In fact, not only is its importance increasing but new opportunities are being presented and fresh challenges are appearing; a new era for logistics is being ushered in or, as Cho et al. (2008, p. 337), concluded "*e-commerce requires a new logistics approach"*. This new approach and the required mindset can be a major issue for traditional players transitioning to an e-commerce setting or for a mixed setting of traditional plus e-commerce. Delfmann *et al.* (2002, p. 203), based on a study by Bretzke (2000), pointed out that "*the failure of so many companies in e-commerce can be in part accounted for by the neglect of logistics as a key factor of success".* According with Robinson (2014) in the 70´s we could see direct store replenishment by suppliers or wholesalers, in the 80´s we

could verify a centralization of deliveries through retailer distribution centres, in the 90´s the rise of global sources and in 2000´s e-commerce model involving parcel network, see Fig. 7.

Fig.7 - The Evolution of Retail Logistics



Source: Robinson, Cerasis (2014).

One of the most important changes is the *"substitution of long-term predetermined logistics flows through stable networks by physical flows through constantly- and fast-changing origin- and destination pairs"* (Delfmann *et al.,* 2002, p. 214).

Ensuring a good response level to these fast-changing pairs can be very time-consuming, and that is one of the reasons why companies turn to Third-Party Logistics providers (3PL); Kotler and Armstrong (2012), p. 365, named a few of those reasons: *"first, because getting the product to market is their main focus, these providers can often do it more efficiently and at lower cost. Outsourcing typically results in 15-30 percent in cost savings. Second, outsourcing logistics frees a company to focus more intensely on its core business. Finally, integrated logistics companies understand increasingly complex logistics environments"*. Also, and perhaps the most important for this

research, *"3PL partners can be especially helpful to companies attempting to expand their global market coverage. For example, companies distributing their products across Europe face a bewildering array of environmental restrictions that affect logistics, including packaging standards, truck size and weight limits, and noise and emissions pollution controls. By outsourcing its logistics, a company can gain a complete pan-European distribution system without incurring the costs, delays, and risks associated with setting up its own system"* (Kotler and Armstrong, 2012, p. 365). Due, in part, to this paradigm shift, value-added services started to be added to logistics; *"leading 3PL providers differentiate themselves by offering new value-added services and comprehensive supply chain solutions"* (Shi *et al.*, 2015, p. 189). These *"value added services are commercial offerings that go beyond the standard logistics offering of transportation and warehousing. (…) Some examples of value added services include tagging, kitting, labelling, returns management, repairs, recycling, packaging, preparing for retail display and many other activities. (…) also included post-manufacturing activities like quality checks, final assembly, repair and returns management"* (Rivera *et al.*, 2016, my ellipses, p. 286). Other examples were given by Dubey and Shah (2010), p. 79, when discussing value-added services on Indian logistics service providers, and are *"loading, unloading, acknowledgment on proof of delivery, door-to-door service, delivery against consignee copy, freight on delivery, and multimode"*.

Hertz and Alfredsson (2003), considered different types of 3 PLs providers; the Standard 3PL which is the most basic, they perform activities as pick and pack, warehousing, and distribution (business), the Service Developer which offer advanced value-added services such as tracking and tracing, cross docking, specific packaging and providing a unique security system, the Customer Developer provider that comes at the request of the customer and takes over complete control of company´s logistics activities ant the Customer Development that is the high level of 3PL provider it integrates itself with the customer and runs over their entire logistics functions.

A major issue with e-commerce has been logistics-related. A practical problem for online retailers and shoppers is how to ship products to consumers, for instance in China it can be a relevant problem since in many places in China commercial couriers do not reach far enough, since service areas can be limited, can be costly and take long time (Wang, 2012). According to Delfmann *et al.*, (2002), one of the most important characteristics of the e-markets deliveries is a flexible transport system in order to serve fast-changing customers. Higher flexibility is thus expected from a seller; not only that, but also better service and better last mile logistics can leave a lasting imprint on a consumer. Also, due to the great amount of stores available online, customers may also switch a seller for another quite easily. Thus, to maintain buyer/seller relationship in good terms delivery service is critical and a top delivery service can gain preferred status to a supplier (Stank *et al.,* 1999). Many researchers concluded that logistics performance is an important factor of e-commerce mostly in last-mile distribution, they back up this argument with the argument that companies that have a self-supporting logistics have higher rates of customer satisfaction (Ying Yu *et al.*, 2016). This is, consequently, one of the main differences between e-commerce and traditional, brick-and-mortar commerce. In traditional commerce, last-mile logistics was the responsibility of the consumer and a company selling its products had to, in regard to logistics, mainly focus on delivering its goods in good condition and in large quantities to a retailer; the buyer would then physically go to a store and would, in most cases, take care of the transportation of the item bought there to its final destination. Now, with e-commerce, that has ceased to be the case: most online customers want the goods they bought to be delivered to the address they state, resulting in fewer items per package, because orders are not usually as large as those made by retailers, and more packages to deliver in a wider array of locations. The retailer ceases to be the sole intermediary between a buyer and a company selling the product, creating room for a possible new and much more direct relationship between a buyer and a

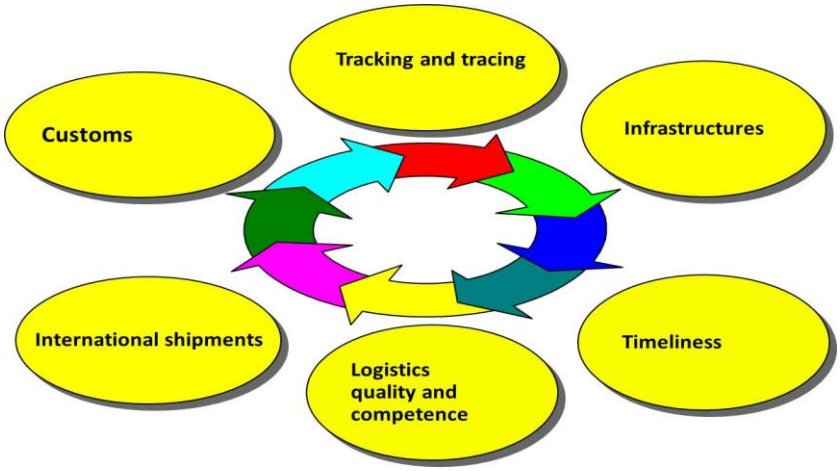
company selling an item. As per Delfmann *et al.,* (2002), conclusions this paradigm shift has the following implications, from decentralized and uncoordinated logistic activities to centralized and coordinated ones, from individual customers to potentially bundled goods flows, at certain extend controlled by supplier side and requiring a sophisticated planned as well designed effective logistics system. This forces companies to rethink their logistical strategies and makes room for a plethora of third-party logistics providers to arise, hoping to fill in the gaps that this type of distribution creates in a company's logistical planning, especially if these cover geographical regions a company's current logistical capacity does not yet cover. On the other side, this could be an opportunity for third-party logistics providers to focus on ever-increasing network density, creating for themselves a logistical network that can work both as a comparative advantage between other third-party logistics but also as a key marketing point for selling its services to companies that have a need or a desire for such a network, but do not want to go through the hassle of creating it themselves or managing a logistical operation of that size. In summary, and as Delfmann *et al.*, (2002) concluded to participate in e-commerce companies have to perform new logistical solutions, one for offline buyers and other for online ones.

Robinson (2014).considered that the e-commerce logistic models raised the need for new logistic functions such as mega e-fulfillment centers, parcel hubs/sortation centers, Parcel delivery centers which handle the 'last mile' delivery to the customer, seamlessly integrated technology where shopping carts connect via API, web xml or some other connection to a transportation management systems, and better management see Annex 1

In summary, logistics was an area some companies chose to overlook: undifferentiating, unable to provide competitive advantage, mostly irrelevant from a marketing or production perspective; however, various studies keep disproving the veracity of these claims: Kotler and Armstrong (2012, p. 367), pointed out that marketing logistics "*is*

an area of potentially high costs savings and improved customer satisfaction" and others continue to research and replicate other studies' discoveries, reaching the conclusion that there is a positive relationship *"between logistics capability and firm performance"* (Cho *et al.*, 2008, p. 352). It is important to note, though, that *"logistics performance both in international trade and domestically is central to the economic growth and competitiveness of countries, and the logistics sector is now recognized as one of the core pillars of economic development"* (Arvis *et al.*, 2016, p. 1). That is why the World Bank developed the Logistics Performance Index (LPI), a metric that "*embodies the experience of logistics professionals worldwide and tries to capture the complexity of supply chains in synthetic indicators that are comparable across countries*" (Arvis *et al.*, 2016, p. 1). This Index is based on a survey with two parts: one on international logistics, gathering the perception of professionals on eight randomly-chosen markets *"based on the most important export and import markets of the country where the respondent is located"* and another part assessing the *"logistics environment in the country where they work"* (Arvis *et al.*, 2016, pp. 55 and 58). The one of interest for this study is the last one, a *"summary indicator of logistics sector performance, combining data on six core performance components into a single aggregate measure"* (Arvis *et al.*, 2016, p.55), these six core components, are as follows: efficiency of customs and border management clearance (customs); quality of trade and transport infrastructure (infrastructure); ease of arranging competitively priced shipments (international shipments); competence and quality of logistics services (logistics quality and competence); ability to track and trace consignments (tracking and tracing); frequency with which shipments reach consignees within scheduled or expected delivery times (timeliness), Fig.8. These dimensions were utilized by the World Bank to compare the performance of the logistic sector on the different countries calculating what is called the international logistic performance index (LPI).

Fig.8 – Logistics Sector Performance



Source : Arvis et al. (2016).

2. DEVELOPMENT OF CHINESE LOGISTICS IN PAST YEARS

2.1. POLITICAL AND LEGAL ASPECTS

When Deng Xiaoping rose to power and began effecting reforms to China's centrally planned economy, starting in late 1978, the country began to shift toward a more market-oriented economy. This "*Reform and Open Door Policy"* saw the Chinese Government opening its country's doors to foreign investors and private enterprises, while retaining control of sectors considered vital and strategic to the State, like the construction or energy sectors. This series of reform policies led to a new Chinese golden age, placing China among the fastest-growing economies of the world; since 1979, "*on average, China has been able to double the size of its economy in real terms every eight years*" (Morrison, 2014, p. 3). These reforms also led to

the establishment of Special Economic Zones (SEZs) in mainland China, territorial areas where special economic policies are tested or implemented and a more flexible posture from the governmental body overseeing the SEZ is to be expected. The combination of these two elements garners interest from foreign investors, as they take advantage of the looser policies and of the benefits of establishing their companies in SEZs in order to conduct business with the rest of the country. Nevertheless, even with these reforms, echoes from the centrally-planned economy from the earlier stages of the People's Republic of China can still be felt and the establishment of these SEZs, fostering the advancement of the eastern coastal regions, further fragmented the market, creating even greater rifts between China's coastal region and its hinterland.

Before the "*Reform and Open Door Policy"* the, *"logistics services were provided exclusively by the central government or local authorities who rarely offered value-added logistics services"* (Powers, 2001, apud Rahman and Wu (2011), p. 464). According to Luk (1998, p. 45, my ellipses), *"under the central economic planning system, the government of the PRC adopted a central, three-tier distribution system (…) to control the flow of commodities*". We have to take into consideration that the allocation of quotas for the production and distribution of goods were decided by the Central government, so on the end the "*the State Planning Commission set overall production goals for factories and collected the output from them*" (Luk, 1998, p. 46). This output would then be delivered and stored at one of three national distribution centers, located in Tianjin, Shanghai and Guangzhou, thus constituting the first-tier of the central distribution system. These centers, managed by the Ministry of Commerce, would then continue the process by dispatching their stored goods to second and third-tier distribution centers, located "*at both regional and local levels*" (Luk, 1998, p. 48). These centers were required to store and transport goods to local retailers; they were mainly responsible for the physical movement of goods and "*rarely performed value-added and differentiated marketing activities*" (Luk, 1998, p. 48). Also it is important to point out that

distributors were not allowed to import products because this was a right only of Foreign Trade Companies but these companies couldn´t sell it in domestic market so "*once an import entered the country, it was handed over to the appropriate distributor*" (Baldinger, 1998 apud Jiang and Prater, 2002, p. 784).This model began to crumble, however, as it was not able to meet the demand for a swift and efficient flow of goods; it was a "*highly rigid, inefficient distribution network*" (Luk, 1998, p. 48). As Lin and Si (2010, p. 577) concluded, "*Ultimately, the constant intervention of the Chinese Government in almost all matters of resource allocation leads to the overall inefficiency of the social economy*". It is relevant to point out that this system was based on resource allocation and not market demands, since it was formed in a socialist mindset (Jiang and Prater, 2002).

In 1978, Deng Xiaoping and the central government tried to resolve this situation, starting a reform in this sector with several policies, such as "*removal of the channels through which industrial goods were marketed by the commercial departments"* or the "*creation of new channels of circulation and improvement of operational methods*" (Luk, 1998, p. 49).

In 1986, China's former Prime Minister "*highlighted the need for establishing horizontal connections/associations between enterprises across different industries and/or provinces*" (Li Peng, 1988 apud Luk 1998, p. 50). These connections were seen as essential in destroying "*bureaucratic and geographical barriers*" (Luk, 1998, p. 50). In order to establish these connections, a dual distribution system was created, with two different sides consisting of, in one side, the supplying, by manufacturers, of "*a certain quantity of products to the central government as specified in the production contract*" and on the other one, the possibility of formulating a "*supplementary plan at their own discretion according to the market needs and sell their products directly either to state-owned wholesales/retailers or to private sales agents/retailers at market price in the free markets of different provinces*" (Luk, 1998, p. 50).

In consonance with these directives, the then Minister of Commerce declared that these aimed at "*first, to establish a new commodity circulation system with state-owned commercial enterprises playing the leading role while encouraging collectives and individuals to engage in this new distribution system. Second, to create a new city-based wholesale system comprising multiple channels but fewer intermediate links and, third, to establish a far-flung network to ensure a smooth flow of commodities between town and county and between different regions*" (Luk, 1998, p. 49). These policies, along with the Ten Regulations passed by the State Council in 1984, granted companies a greater degree of autonomy to explore new markets and to select their costumers and middlemen (Luk, 1998).

In November 1993, the Third Plenary Session of the 14th Central Committee of the Chinese Communist Party, compromised with the advance of more economic reforms which were followed by the government with the publication of the "*Decision on Some Issues Concerning the Establishment of a Socialist Market Economic System"*, guarantying that the "*market mechanism would serve as a fundamental factor in the disposition of resources under the State's macro level control and that all forms of ownership – state, collective and private – should coexist to activate national economy*" (Luk, 1998, p. 52).

After this, several more reforms of the distribution system were introduced, with the most important one being granting the rights to companies and manufacturers to import and export goods and components, resulting in a greater autonomy for these from the state (Luk, 1998). Furthering these reformist efforts, and with China joining the World Trade Organization in 2001, some restrictions "*on foreign logistics investment*" were eliminated and this "*opened opportunities for free access to supply chain management system implementation*" (Spillan et al., 2013, p. 156). The final restrictions on this sector were lifted in 2005, thus opening the Chinese economy to a "*wide range of international and domestic commercial activity*" (Spillan et al., 2013, p. 156).

Entering the WTO created the expectation of lifting the "*severe restrictions on foreign companies' distribution rights"*) and that, in a few years period, "*the barriers to distribution and logistics services market entry*" (Jiang and Prater, 2002, p. 96) would be completely lifted.

Nevertheless, even with the reforms for establishing a market economy and the accession to WTO, echoes from the centrally-planned economy from the earlier stages of the People's Republic of China can still be felt in some Chinese regions not so open as the SEZs which were establish mostly along the eastern coast, fostering the advancement of the eastern coastal regions, and thus contributing to a fragmented market.

Market fragmentation and state intervention are some of the most recognized looming problems in China; covering an enormous span of land, with very developed and efficient places as well as underdeveloped country places, with few infrastructures and mostly composed by rural communities.

In spite of these reforms, "*China's distribution systems lie somewhere between a rigid planned structure and a free market system*" (Jiang and Prater, 2002, p. 85), since a State-owned system that spans the entire country is still in place.

Deloitte Research (2015) identified three types of companies operating in China in logistics business:

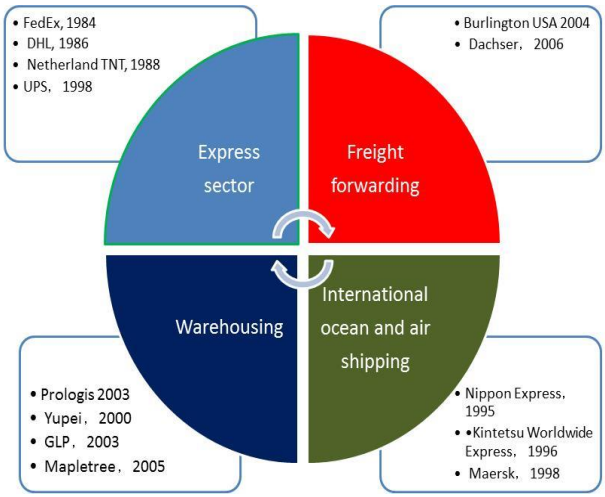
1- The State-Owned Companies such as Sinotrans; CSC; China Shipping Group; China Post; China Railway Freight; China Railway Express; Air China Cargo among others, in 2014 the top 50 logistic enterprises where State-Owned

2- The Foreign-Owned Companies, including companies with capital from Hong-Kong and Macau, such as FedEx; DHL; UPS; Kerry Logistics; Global Logistics Properties, and others among the top 500 logistic providers, with global coverage and experience.

3- The Private-Owned companies, companies such as SF Express; YT Express; STO; Yunda; these enterprises are huge in number and spread across every market segment, such as road transportation, domestic express delivery, they practice lower prices, and tend to concentrate in segments with lower threshold.

The logistic multinational companies in China are capitalizing their lead in scale, capital technology and management, they run operations in form of joint venture or wholly-foreign enterprises, and they do from single to multiple businesses and are concentrating on logistics operations in central cities to build national logistics networks. They have start their operations after 1984 and they operate in express sector, freight forwarding, warehousing, International Ocean and air shipping, see Fig. 9.

Fig.9 – Multinationals Logistics Companies enter in China



Source: Deloitte Research (2015)

2.2. INFRASTRUCTURE ASPECTS

It is important to point out that, according to Lin (2001), apud Hooi Hooi Lean *et al.*, (2014), p. 102), "*at the early stage of China's economic reform, infrastructure development lagged behind due to low government spending, decreased investment incentives of state-owned enterprises and weak capability of local government*". With a long road still ahead in the development of the logistics sector in China, the distribution sector's reform did not cease there; one of the problems still afflicting the Chinese distribution system was the inefficient, costly and time-consuming process that was the flow of goods between provinces.

It should be stressed that, due to "*China's size and complicated geographic environment, only the state had the resources to build and operate a costly, national distribution system. Hence, despite the liberalization of the distribution sectors since, in the post-reform era, many Chinese and foreign suppliers still rely on this distribution system, because of its extensive network"* (Jiang and Prater, 2002, p. 84).

China has been troubled with *"aged infrastructure, archaic handling equipment and the lack of qualified logistics personnel*" (Goh and Ling, 2002, apud Hooi Hooi Lean *et al.*, 2014, p. 96) to meet the economy's demand. This is an issue with which many authors are concerned, and it is a crucial one to address, especially since it has been found that there is a "*long-run relationship between logistics development and economic growth*" (Hooi Hooi Lean *et al.,* 2014, p. 98). According to Taylor (2010, p. 668), "*the creation of a Chinese nationwide market has been impeded by poor transportation infrastructure and provincial particularism*". Addressing this particular concern, "*the creation of a domestic comprehensive inter-modal system has become a major objective of China's Tenth and Eleventh Five Year Plans (2001-2005) and (2006-2010)*" (Taylor, 2010, p. 668) and the Chinese government has *"invested heavily in the construction of logistics and transportation*

infrastructure, while domestic manufacturing companies also strived to develop new logistics competencies to provide better services and reduce operating costs" (Rahman and Wu, 2011, p. 464).

Mody and Wang (1997) affirmed that developing roadway infrastructures was an important mechanism of economic growth in coastal China, between 1985 and 1989 and Demurger (2001) concluded that infrastructural amelioration contributed to economic development in 24 Chinese provinces from 1985 to 1998. This economic growth through the amelioration of infrastructural conditions is of the utmost importance; not only is this growth desirable, especially for the disadvantaged Chinese hinterland, but it also reduces "*travel time and cost, increasing producers' access to distant markets*" (Hong *et al*., 2011, apud Hooi Hooi Lean *et al,* 2014, p. 102). This progress is, nonetheless, still not enough to satisfy both local and foreign customers and further improvement on infrastructural networks is still required; Infrastructural development is but one of several concurrent items to develop in order to further China's need to enhance its logistics system.

A.T.Kearney, (2010, p. 1*)*.also concluded that "*China's transportation and logistics industry as a whole remains in the early stages of development. Fragmentation and intense competition highlight a market, in which competitors offer similar and limited services*" According to Spillan *et al.,*(2013, p. 157) interpretation of A.T.Kearney's (2010) report, there are several *"fragmented and uncoordinated logistical activities that need to be rationalized"*. These point to the fact that the infrastructure that should be supporting China's logistics is "*straining under the weight of its new economic growth: insufficient highways, ancient port facilities, and limited runways and airports"* this fact, according with Daly and Cui (2003) conclusions, contribute to the expensive, inefficient and of general poor-quality services provided by logistics companies in China. In fact, the study, made by these authors in Qingdao, based on panel interviews with 15 people representing municipal government as well as marketing and logistics staff from major local business, concluded that *"transportation, while good in the general Qingdao area and along waterways, is a wide*

spread difficulty throughout the country" (p.239) and on this survey one of their interviewees express that there were *"plenty of transport companies, no real third party providers*" (p. 239). It is also remarkably important to allow for the expansion of 3PL, as this sector is "*still in its infancy" (*Rahman and Wu, 2011, p. 471) in China. It is worthwhile mentioning that "*small, nimble logistics firms can operate in a gray area of Chinese law*" since "*logistics, unlike distribution, does not have a clear regulatory structure in China"* (Jiang, 2002, p. 186).

Hong and Liu (2007), apud Hooi Hooi Lean *et al.* (2014, p. 97) point out that "*most of the logistics companies in China provide limited value-added service to customers and society*" but they can no longer be content with that position; evolution from this stance must take place. It is therefore important to develop logistics capabilities and knowledge in most Chinese manufacturing companies, since they are frequently the logistics services providers to their customers (Rahman and Wu, 2011). This development and change is of the utmost importance when considering the growth of e-commerce in China, as will be mentioned later. Delfmann *et al.* (2002, p. 214) remind that "*Logistics Service Providers fulfilling logistics for electronic marketplaces have to offer a more flexible transport system in order to serve fast-changing customers*"; this flexible transport system is far apart from the Chinese logistics' highly structured past and this adaptation and mental shift may present itself as a major hindrance standing in the path to transformation. But the change does not end there; A.T. Kearney (2010, p. 7) stated that, for future leaders in the Chinese logistics sector, moving goods cannot be their only concern, as "*they will offer new, value added services based on existing capabilities to match customers' increasing demands and capture market opportunities*. In consonance with the aforementioned new, value added services, A.T. Kearney (2010, p. 7) also underlines the adoption of Information Technology as a "*major differentiator as requirements become more complex*".

Furthermore, according to Colliers International (2013, p.3), the blossoming of e-commerce in China "*will drive greater demand for logistics*" as online retail sales have grown "*at a*

compounded average growth rate of 71.3% from 2009 to 2012" and are expected to reach, in 2015, sales of RMB 2.57 trillion, almost doubling its 2012 number of RMB 1.32 trillion. This growth is mainly generating demand for 3PL, which will continue to rise as online sales expand. According to Goodman, quoted by Colliers International (2013, p. 3), "*3PLs hold just 7% of market share in China, compared to 10-14% in developed countries*". The same company foresees that this share of the market will develop into 11% by 2016, putting China in line with other developed countries in Asia. A greater number of 3PL providers, value added logistics services instead of just offering the physical movement of goods and ever better infrastructures are thus needed in order to ameliorate the logistics sector in China. In response to this need, and due to "*the development of e-business, through the internet and by using software such as RFID, the logistics industry in China, has experienced rapid development*" (Hooi Hooi Lean *et al.*, 2014, p. 96).

But this enhancement does not stop with the 3 factors mentioned before. The geographical location of major logistics clusters still constitutes a challenge to be faced. In China, logistics has been developing in and around first tier cities like Shanghai, Beijing and Guangzhou, two of the characteristics that these three cities share are their proximity to the coast and their eastern location. Another two reasons for this clustering around first tier cities are the high retail sales in each of these cities and the developed infrastructure in those locations. It is important to notice that as one goes further west into inland China, development and urbanization also lessen, as China's central and western provinces have "*lagged behind eastern China*" (Colliers International, 2013, p. 3).

According to Hooi Hooi Lean *et al.* (2014, p. 102), the Chinese eastern region is much more developed in terms of infrastructure than its central and western counterparts; however, "*since the late 1990s, the government has exerted a lot of effort to address this problem and has tried to develop transport infrastructure in Western and Central China*". It cannot be stressed enough

that, due to China's massive size, having adequate infrastructure connecting its regions eases trading between provinces both near and further apart and is, therefore, "*helpful for economic growth in lagged areas*" (Hooi Hooi Lean *et al.,* 2014, p. 102). As an example of the relevance these connections can have for underdeveloped provinces, Hooi Hooi Lean *et al.* (2014) point out the projects for the Qinghai-Tibet Railway and the Lanzhou-Urumchi high-speed railway; not only can these two projects contribute towards the growth of the regions they connect but they can also contribute to the development of supporting infrastructure, such as roads.

However we can observe that since 2010 mass constructed transport infrastructures all over China. The High Speed Rail network extends to 29 of China`s 33 provinces and by the end of 2016 exceeded 22 000 km, the network is the longest in the world. The objective is to reach 90% of the population by 2020 linking the main cities at one day travel.

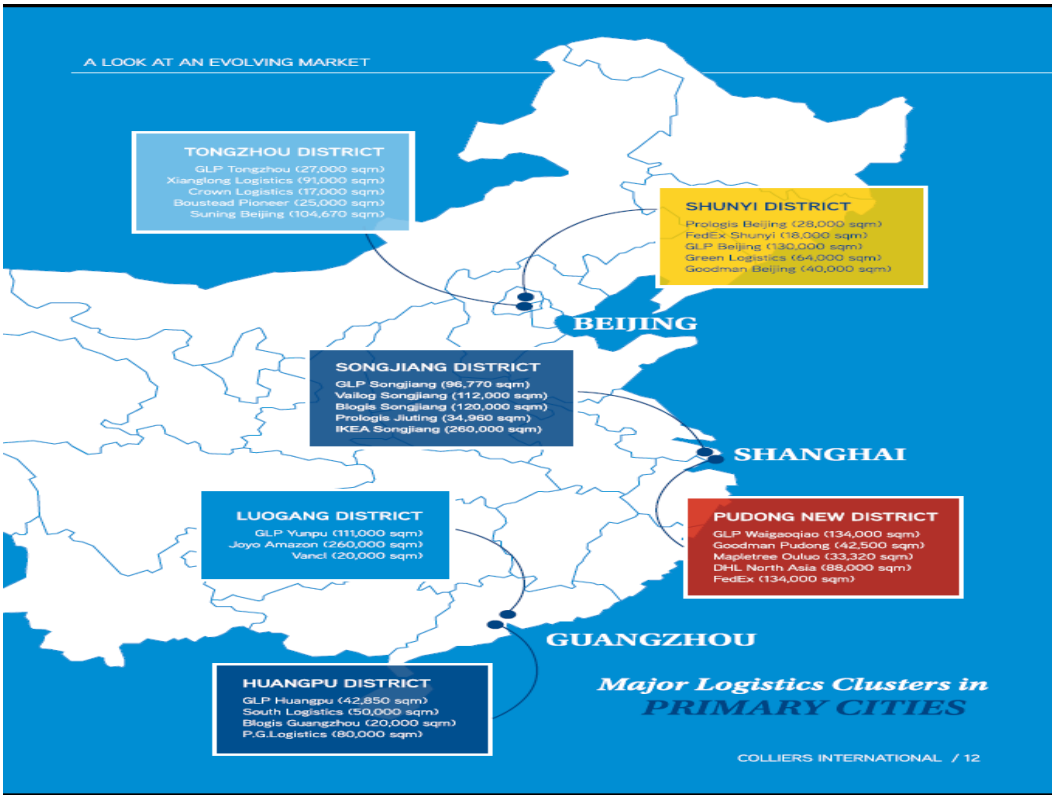
In 2016 around 131 000 Km of highways were done. The Ministry of Transport announced in 2013 the `National Highway Network Planning (2013 - 2030)´, which will bring the total number of highways to 119, with 81 connecting highways between them. The total mileage will be increased to 265 000 km with focus on the western and less developed regions. In 2016 China registered 180 certified airports, 2290 airlines from which 443 international. China has 26 ports with capacity over 100 million tons of cargo, and 19 containers ports with more than 1 million TEUs

Even so, with the rise of e-commerce, the question of geographical dispersion and geographical coverage, especially in a country as big as China, must be addressed; while an online shop is far easier to access and to buy from for people that were previously unable to do so due solely to the distance to the closest brick-and-mortar store, it also creates more hurdles for a company selling and distributing its items.

Delfmann *et al.* (2002, p. 215) stress that for short-term relationships between buyer and seller, as those online usually are, *"fluctuating geographical distances and greater dispersion of buyer and customer favor those LSPs of this type [standardizing and/or bundling LSPs] who operate an extensive network in order to be able to cover all city-pairs required by their potential customers. In addition to the mere geographical extension, the question of network density arises*".

Despite this question, and as reported by Colliers International (2013), there are six major logistics clusters in first tier cities such as Beijing, Shanghai and Guangzhou: the Tongzhou and Shunyi Districts in Beijing, the Songjiang and Pudong New Districts in Shanghai and the Luogang and Huangpu Districts in Guangzhou, see Fig.10.

Fig.10 – Logistics Clusters 1st Tier Cities



Source: Colliers International, 2013.

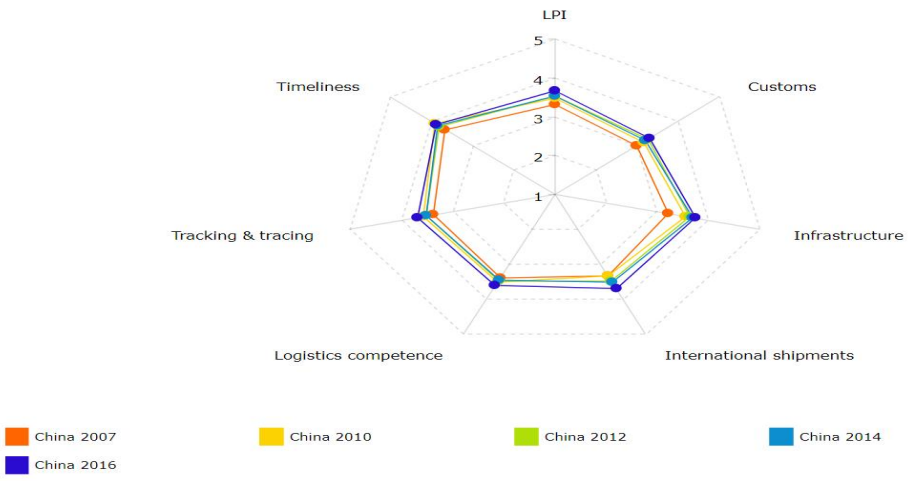
Notwithstanding this clustering, there are problems that afflict logistics companies looking forward to establishing themselves or expand in these locations. One main issue is forcing companies to seek other places: supply of land. In main cities, such as Shanghai or Beijing, "*most suitable land has already been developed*" (Colliers International, 2013, p. 5), not only that but, when there is still land available, prohibitively high land costs are effectively zoning logistics providers out of these sites. Due to this, logistics providers have to seek new land on which to settle but this too can become problematic. Even though there has been, as previously mentioned, a loosening of regulations on logistics development policy by the Chinese government (Rahman and Wu, 2011) and "*Central Government support for the sector*" (Colliers International, 2013, p. 5). This support for the logistics sector is not yet sponsored by municipal governments; In comparison to "*manufacturing, logistics generates lower tax revenues for a city and creates limited employment opportunities. Municipal governments generally prefer a high-tech facility with hundreds of workers and taxable goods to a 20 000 square meter warehouse with 20 workers*" (Colliers International, 2013, p. 5). Jiang and Prater (2002, p. 787) also support this notion, as they say that "*beyond the geographic size and unbalanced development, the political/legal barriers are the most powerful forces that separate China's distribution market*". This lack of support by municipal governments accounts for how hard it is to acquire land in secondary cities despite its abundance.

3. INTERNATIONAL PERCEPTION OF CHINESE LOGISTICS COMPETITIVENESS

On the beginning of our research we formulated two objectives one was aiming to identify the development of Chinese logistics in the past years; and the seconds to research the international perception of Chinese logistics competitiveness.

For what was documented above China logistics sector made a huge progress both in legal and infrastructure aspects, since the "*Reform and Open Door Policy"* initiated in 1978. Utilizing the dimensions of Arvis et al. (2016) we can see a very positive evolution on its development, see Fig.11.

Fig.11 – Chinese Logistics Sector Development



Source: Arvis et al. (2016).

However in our survey we have concluded that this development is not yet enough to satisfy local and foreign customers and that infrastructural development is but one of

several concurrent items to develop in order to further China's need to enhance its logistics system.

Although Chinese government huge investment in the construction of logistics and transportation infrastructure, as well as in the modernization of the legal framework of this sector and, also in spite of domestic manufacturing companies, strive to develop new logistics competencies to provide better services and reduce operating costs; market fragmentation and state intervention are still some of the most recognized looming problems in China.

Mostly, China 3 Pls providers, still lacks management competitiveness, analyzing the ranking of China**'**s logistics competitiveness in the world by sub-indexes, based on Arvis et al. (2016) and the done by the World Bank, we can see in Fig.12 that China needs to do better to be competitive with other countries. According with Deloitte Research (2015) p.2 "*It shows that the weakness in China´s logistics industry mainly comes from its customs clearance efficiency, timeliness of delivery and logistics service ability and quality*"

Fig.12 – Ranking of China's Logistics Competitiveness in the World by Sub-indexes

Sub-Index	China´s Ranking
Customs clearance efficiency	38
Quality of trade and transportation infrastructure	23
Delivery of goods at competitive pricing	22
Logistics service ability and quality	35
Ability in tracking and tracing goods	29
Timeliness of delivery	36

Source: Deloitte Research (2015)

Chinese government is well aware of this lack of competiveness and of the importance of the development of Chinese logistics in the future. Premier Li Keqiang on the executive meeting of the State Council on July 5th 2017, referred above, recognized that "*The logistics sector is the groundwork of strategic importance for the development of market economy. Lowering logistics costs and raising the efficiency should be prioritized this year*," and he announced that the focus of Chinese economic policy will be placed in better road transportation through better road administration and law enforcement to enable better services, while reducing administrative red tapes and taxes, in that meeting he announced in the guidelines for the development of logistic sector in China and the creation of a number of logistics centers at national level.

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Annex 1

Mega e-fulfillment centers *where the merchandise is stocked and picked at item level. 500,000 sq ft to one million sq ft in size, or even larger. They often operate 24/7.*
Parcel hubs/sortation centers *which sort orders by zip or post code so that they can be delivered to the relevant parcel delivery center for final delivery to the customer's home or designated collection point.*
Parcel delivery centers which handle the 'last mile' delivery to the customer
Seamlessly integrated technology where shopping carts connect via API, web xml or some other connection to a transportation management system *so shoppers are getting the exact price quote of shipping of larger items more suited for less than truckload modes, as these technology products for logistics, such as a TMS, must accomplish along with the shopping cart for better management:*
Ability to organize and track shipment no matter what mode
Online order status and documentation
Online dispatch documentation and invoice, such as a bill of lading and freight invoice
Auto reminder for payments
Seamless interface with existing SCM or ERP system
Online alerts for critical information via text or mobile
Information systems reports on past data analysis, delivery history,

Source: Robinson (2014) Cerasis