

The Globalization Strategy of a Chinese Multinational: Huawei in Mexico*

Huawei: Trayectoria global y estrategia para México de una empresa multinacional china

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ABSTRACT

Huawei, a multinational company from China, represents a form of globalization that differs from classical internationalization patterns. It began operations in Mexico only 14 years after its founding in China; this represented one more step in its initial strategy of expanding into emerging economies. This article, using information gathered from interviews and observations that took place during 2014, outlines a general description of Huawei's internationalization strategy, and examines its assembly and logistical operations, as well as its processes of customization and innovation.

Keywords: 1. internationalization, 2. telecommunications, 3. customization, 4. Huawei, 5. Mexico.

RESUMEN

La empresa multinacional de origen chino Huawei representa un caso de globalización que difiere de los patrones clásicos de internacionalización. El inicio de operaciones de esta compañía en México tuvo lugar sólo 14 años después de haber sido fundada en su país y representó un paso más en su estrategia inicial de crecer en economías emergentes. En este artículo, mediante información recabada por entrevistas y visitas que se llevaron a cabo durante 2014, se desarrolla una descripción sintetizada de la estrategia de internacionalización de Huawei y se explora la organización del ensamblado y la logística, así como de la *customización* y la innovación.

Palabras clave: 1. internacionalización, 2. telecomunicaciones, 3. *customización*, 4. Huawei, 5. México.

Date of receipt: April 29, 2015.

Date of acceptance: December 7, 2015.

* Text and quotations originally written in Spanish.

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INTRODUCTION

The globalization of markets and production in recent decades is the result of the diversity of business trajectories in companies' internationalization processes; this has brought about new strategies for companies and organizations, particularly those that have quickly leaped over the various phases of internationalization and thus are called “born global” firms (Dunning and Lundan, 2008; Madsen and Servais, 1997; Knight and Cavusgil, 1996). This article¹ describes Huawei's internationalization strategy, which is based on its technological and adaptive capacities, which are oriented toward local mass telecommunications markets. This description serves as a framework to explain two core structural capabilities of the firm in Mexico: assembly operations and research and development. These core capabilities in the company's local structure will be addressed below. The Chinese corporation Huawei is a main player in this new phase of the complexity of companies' internationalization strategies. Founded in 1987, Huawei plays a leading role in its industry². Huawei operates globally from its headquarters in Shenzhen³, serving various digital economy markets, ranging from infrastructure for carriers⁴, terminal equipment, creation of solutions for businesses, and R&D (research and development) that supports the company's innovations.

This research is part of a study of the current forms of organization and production of multinational corporations in Mexico (Carrillo, 2013), with the purpose of discovering and understanding the way in which such companies transfer specific capabilities under new patterns of internationalization (Dunning, 2006;

¹ This article is based on a review of the literature, visits to company installations, and interviews the authors conducted with various Huawei managers in Mexico in March, April, and October 2014. The corporate headquarters in Shenzhen, China, also were visited in 2013.

² The company's official name is Huawei Investment & Holding Co. The name Huawei can be translated as “of Chinese roots” and the company logo symbolizes a chrysanthemum. Its petals represent the attributes of the firm and all point toward the center, which means that they are focused on their clients. One of the petals has a luminous border and represents the innovation the firm has generated (Delgado, interview, 2014).

³ Huawei has 14 regional headquarters that serve more than 170 countries, its R&D centers are located in more than 20 countries, and it also has logistical, data, financial, and manufacturing centers in various regions.

⁴ In the field of telecommunications, it essentially competes with Ericsson, Cisco, and Alcatel-Lucent for the same markets, and is a provider for 45 of the 50 most important operators in the world, serving, with its products and services, a third of the world's population. The term carriers also can mean “telephone providers.” Examples of carriers in Mexico are Telcel and Movistar.

Dicken, 1992). This article seeks to examine a specific case to broaden this study, contributing a level of greater precision about the various characteristics of the impact of globalization on products and services in Mexico.

IMPORTANCE AND STRUCTURE OF THE COMPANY

Huawei, after existing just a little more than a quarter century, in 2013 saw its income reach 38.9 billion dollars worldwide, with the following breakdown per region: China, 35 percent; Europe, Middle East, and Africa, 35 percent; Asia Pacific, 16 percent, and the Americas, 14 percent⁵. Despite this diversification of markets, the company's workforce is concentrated in its country of origin; in 2012, almost 80 percent of its 150 000 employees were in China, while the breakdown for the rest was the following: 7.5 percent in other Asian countries, 4.9 percent in Europe, 2.9 percent in South America, 2.8 percent in Africa, 1.7 percent in North America, and 0.2 percent in Oceania⁶. It should be noted that 70 000 of Huawei's employees are involved in R&D (Zhang, 2013).

As it will be shown, the processes that sustain Huawei's business model come from the challenges it faces as an information and communications technology (ICT) business. These processes combine production of hardware and software on a global scale and call for attending to the demands of Huawei's various markets and territories at the greatest speed possible, in a context of competition with similar rivals in an environment of growing innovation. The challenges the company faces are found in the technical, innovational, and organizational spheres. The firm was born and expanded on the premise of gaining market share from competitors by adapting to client needs in a timely manner, and with the lowest price. This core strategy was first developed in China, but it also applies in Mexico. It means generating capacities to customize and assemble at the greatest speed possible, both electronic products as well as software programs in its global markets.

Huawei's production serves various specialized markets, all of them with great dynamism and indispensable in the information society: fixed networks, mobile networks, data transmission, optical networks, software and services, mobile terminals, and energy solutions. Huawei's organizational structure obeys the requisites of a global enterprise that responds to the pressures of demand and for rapid

⁵ Information from Huawei (2013).

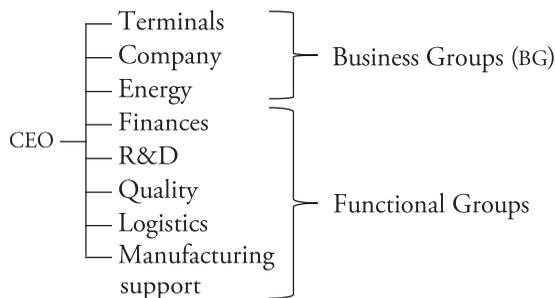
⁶ Data from Huawei (2013); in this division, Mexico is in the North America region.

response in various countries of the world, through products and services that basically originate in China.

The result is an organizational design that adapts to the complexity of its global operations and attends to its clients under the principle of direct relationships and putting that to the test with potential clients, always offering a better price than the competition and greater flexibility to client needs. It involves a design of three organizational levels, where the corporate headquarters in China, regional headquarters, and field offices interact, in addition to establishing strong cooperative ties with companies and R&D centers in various parts of the world.

The structure thus distinguishes between the business groups in charge of the primary production of the goods they sell and the functional groups that provide services for the production of the business groups. These have their base in China, and the functional groups are distributed worldwide so that production can reach the end customer through a centrally controlled supply chain, but they also operate on a decentralized basis by region and/or country. The field offices are charged with identifying local needs and driving the company's business. This structure is shown in a stylized manner in the figure 1.

FIGURE 1. The Global Operating Structure of Huawei



Source: Compiled by the authors as a result of interviews with Rosalba Delgado (2014) and Alejandra Mayorga (2014).

HUAWEI IN THE FRAMEWORK OF NEW INTERNATIONALIZATION PATTERNS

In the 1990s, the transfer of multinational companies' R&D operations outside their original borders became evident, giving rise to a new organizational challenge:

the coordination of R&D operations in various parts of the world (Cantwell, 1992; Chiesa, 1996). This particularly involved proximity to the client for companies in the information and telecommunications technology sector (Siedschlag, Zhang, and Smith, 2013). This foreshadowed a trend that would be later seen as a characteristic of a new phase of the internationalization of high-tech and service companies.

This internationalization process involving proximity to clients was laid out by Dunning and Lundan (2008) in their comprehensive and informed text about this multinational phenomenon; these authors point to the existence of a co-evolution where the expansion of operations in more national markets and with a greater heterogeneity of products is tied to the internationalization of R&D activities in such a way that even if an important part of multinational corporations' R&D capacities remains in their home countries, the proportion of such R&D operations in host countries has grown, including in developing countries. The central motivation behind the internationalization of R&D is an expansion of the company's operations and the need to open its patterns of innovation to local needs; thus, the leading reason behind this trend is the human resources skill levels in the host country, not the advantage of wage costs (Dunning and Lundan, 2008).

On the other hand, the experience of the new multinational companies that form in developing countries has enriched internationalization and globalization theory (Williamson *et al.*, 2013; Dicken, 1992; Hymer, 1976; Frobel, Heinrich, and Kreye, 1981; Vernon, 1966). It is recognized that these new companies go about acquiring comparative advantages as they carry out their internationalization; standing out among these advantages are the development or acquisition of their market knowledge. In this regard, Johanson and Vahlne (1977) say that companies' knowledge of foreign markets plays a central role in the process of internationalization. In that sense, recent theories and companies' experiences in the internationalization process contradict traditional theory, which sees the multinational company as a mere result of its competitive advantage, acquired *ex ante* in its area of origin. In modern China, to the contrary, the big multinationals began as importers of technologies and as local distributors (Aguiar *et al.*, 2006). The new theory about business expansion from China must have a vision based on various trends, that is, it must consider the various parties involved in the companies' internationalization process. "For instance, the recent push for globalization in China is a joint effect of multiple interactive forces, including the state policy, home competition, nationalistic fever, ambitious intent, need for cutting-edge technologies and global brands, and changing rules of global game" (Ping Li, 2007:315).

The companies that internationalize under these new patterns develop comparative advantages that lie in R&D and innovation, particularly in the high-tech sector. Thus, they rapidly adapt global product technologies to the demands of specific clients, and do so with short product cycles. This adaptation involves learning about local circumstances (Johanson and Vahle, 1977; Barbosa, Loureiro, and França, 2014) and having the capacity for strong communication between local headquarters and the main R&D headquarters. The combination of marketing capabilities and of R&D is known as customization, and has been one of the characteristics referred to in the international evolution of Chinese telecommunications equipment companies (Fan, 2006).

In this context, Huawei has been the object of study as a key player in the internationalization of Chinese companies, with a prominent position in the global ICT industry. Listed below are the most important factors that make Huawei what it is.

Wu and Zhao (2007), in their article about Huawei's internationalization patterns, say the strategy it has followed is based on the context of the local market and industry circumstances. The first refers to the needs of various local clients and the second to the systemic effect of ICT goods, as they do not acquire value in an isolated way, but in a combination of uses with other ICT goods. Thus, Huawei always seeks a first sale, although it takes time to do so once established in a country: through joint ventures in the case of Russia, United States, and Europe, exports for Latin America, and contracts for Africa (Wu and Zhao, 2007).

Xing and Wei-dong (2014) show the strategy followed by Huawei to avoid the obstacles that block the competitiveness of Chinese companies: high transaction costs, an inefficient supply chain, and a weak capacity to integrate business systems. For this, Huawei took advantage of an important partnership and learning experience with the International Business Machine Corporation (IBM) for the organizational aspects of internationalization and subcontracted operations that were not key for the end of the value chain: "manufacturing, assembly, delivery and logistics, which had made a system integration enterprise of supply chain without [having to have a] workshop and inventory" (Xing and Wei-dong, 2014).

Huawei has been defined as a latecomer company, an imitator more than an innovator, that takes advantage of its familiarity with local markets and factors and that rapidly adjusts its strategies to fast-changing conditions and markets; Huawei's strategy emphasizes the central importance of scale and market share, adjusting its product line and technological processes in accordance with this thinking (Zhang and Vialle, 2014).

The company has recently been the subject of a book in the field of successful business case studies: *The Huawei Story* by Tian Tao and Wu Chunbo, who in 2015 analyzed Huawei and depicted Ren Zhengfei as a modern entrepreneur whose strategy overcomes all obstacles. He is seen as keeping his feet to the ground while recognizing the possibility that his company could decline and even die, for which reason the Chinese firm's value is seen as only being the result of what it accomplishes today. In sum, Huawei forms part of a new reality in the world of multinational companies that move forward in their internationalization, based on adaptive capacities in local markets based on customization, operations centered on R&D, and in the formation of manufacturing networks that respond to demand at the lowest possible cost. As the founder of Huawei clearly points out in the following:

Huawei is a company without historic heroes. Ren Zhengfei does not want the company to take on too much pressure thinking about its legacy. As a Huawei executive said, "The company won't worship anyone in a sanctuary, not even the boss." Ren Zhengfei pays more attention to the present and future, and the entire world is measured for its current competitiveness and earnings. For Huawei, the past is a blank slate (Tao and Chunbo, 2015:130).

THE INTERNATIONALIZATION OF HUAWEI

The company was formed in the context of the Chinese economic reform of the 1980s (Fannin, 2013), which brought about an economic zone in Shenzhen and a wave of companies that sustain the country's economic advances, turning China into what it has been since 2014, a leading nation in economic terms. In this period, the majority of the companies were dominated by the state in China, but Huawei was an exception as it was a private business in the form of a cooperative⁷, although it received help from the state in terms of land donation and contract adjudication.

Victor Zhang (2013), CEO of Huawei in Europe, says that the development of the firm has been divided into three important stages since the end of the 1980s, the first involving the conquest of its domestic market and the other two involving its internationalization. In that development, as will be seen, the bases of its competitiveness were its functions of R&D and manufacturing/logistics,

⁷ A company organized as a cooperative, but without being part of the state and with the right to generate profits. The famous cooperative company in Spain, Mondragón, now a transnational, is a similar case.

which allowed it to generate consistent, innovative offerings in products adapted to the needs of its clients, low costs, and speed in its response to demand. Huawei manufactures high-tech products and R&D is essential for that; similarly, the extensive development of software requires constant R&D operations; the same applies to the logistics of attending to hundreds of clients throughout the world and delivering thousands of products. The triad of R&D, manufacturing, and logistics has been essential to understanding Huawei's great dynamism and internationalization.

During its first phase (1987-1992), Huawei began as a company selling PBX products (telephone exchanges for the public network of landline phones) and a little later began to produce its motherboards, using their own designs. Its market was rural areas, with low costs and without competition from other companies that preferred urban markets.

The company's first R&D center dates to 1990, and it thus established an important competitive advantage over other Chinese communications companies, which operated exclusively as the business agents for Western firms that entered into the new and massive Chinese market. The second stage of Huawei encompasses 1993 to 2000, and is one of energetic economic growth and organizational structuring, which set it in place as a company with international competitiveness. The Chinese government opens the market to foreign companies⁸ and dynamically increases demand for telecommunications equipment, both fixed and mobile (Dussel, 2014). Huawei maintains its hegemony in the rural market thanks to its lower costs resulting from its R&D capacities.

In 1997, the company established partnerships with leading corporate consulting firms dealing with organizational structure: Hay Group, IBM, and Price Waterhouse Cooper helped Huawei through a process of organizational transformation, with the end of turning it into a company that operates within the framework of best global practices (Larçon, 2009).

The third phase encompasses 2000 to date, and consists of an accelerated internationalization, reflected in the fact that since 2006, about 65 percent of the company's income comes from the international market, in contrast with 10 percent in 2000 (Larçon, 2009).

A concept that aids the understanding of these three phases of Huawei's development, is that of core competencies (Prahalad and Hamel, 1990), which says that it is difficult for competing businesses to imitate the capabilities another company has accumulated throughout its history. Core competencies have the following

⁸ Such as: Lucent, Ericsson, Motorola, NEC, Fujitsu, Nokia, Siemens, and Alcatel.

characteristics: 1) they contribute to increasing what clients perceive as added value to the product, 2) they are exclusive to the company, in such a way that they are distinguished from the competition, being very difficult to imitate, and 3) they have wide application toward a large variety of products (Prahalad and Hamel, 1990).

TABLE 1. Milestones in Huawei's Internationalization

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- 1) Entry into emerging markets: initial phase of internationalization (1992 to 2000). Perhaps the most important phase for its growth, now that China has opened itself to competition from foreign companies and the bases of Huawei's competitiveness are established. Dynamic increase in demand for telecommunications equipment, landlines, and mobile phones. Huawei, having its own R&D center, has the capacity to lower costs in rural areas; the price to acquire a phone line was 6 000 yuan (\$966) but with Huawei's offering, rural families had the opportunity to acquire a phone line for the first time. Chinese providers also begin to compete: Great Dragon (Julong), Datang, Zhongxing (ZTE), and with foreign providers: Lucent, Ericsson, Motorola, NEC, Fujitsu, Nokia, Siemens, and Alcatel. In 1997, the company invited leading consulting firms to back it in its organizational transformation, with the goal of becoming a corporation with global practices.
 - 2) In 1996, it carried out sales to Hutchinson Telecommunications, in Hong Kong, as a pilot project in a developed market.
 - 3) In 1997, it developed a joint venture with Beto Corporation in Russia, to assemble switches in that country. Its competitive advantage was lower costs and post-sales services; nevertheless, the first sales date from 2000. Sales followed in Brazil, Thailand, and South Africa, with prices 30 percent lower than the competition.
 - 4) In 1998, the company entered Brazil.
 - 5) In 2000, then-Chinese Vice Premier, Li Lanqing and Ren Zhengfei traveled together to various African countries and entered into contracts for the company.
 - 6) Entry into developed markets; consolidation phase of internationalization, with about 65 percent of the income of the company in 2006 coming from the international market, as opposed to 10 percent in 2000. An important step was the 25 million dollars contract with British Telecom in 2005, and the global economic context in which Huawei developed in those years involved the impressive increase in mobile phone demand (Huawei Technologies, 2014).
 - 7) In 2001, it established its first presence in the United States, in Plano, Texas; its first U.S. sale did not take place for three years. In 2001 it had its first sales in Germany, the Netherlands, and France; it entered Mexico and Venezuela in 2002.
 - 8) In 2005, the company signed contracts with British Telecom and Vodafone, became a leader in 3G technology, and entered Japan.
 - 9) In 2006, it enters the Internet data market, develops a conflict with Cisco, and is an important player in the creation of standards.
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Source: Compiled by the authors based on information from Huawei (2013).

The global economic context in which Huawei evolved in recent years included the striking increase in demand for mobile phones: the number of mobile phones in use in the world jumped from around one billion in 2000, to six billion in 2012, of which 30 percent correspond to China and India (World Bank, 2012; Chablé, 2012). Important data about Huawei's internationalization path are synthesized in Table 1.

Huawei today maintains a competitive advantage in the equipping of transmission infrastructure, which is the technological heart of the information society. For that, it must deploy its competitive capacities in hardware and software that allow customization in the various national markets controlled by telephone companies. Its big incursion as a global seller in the face of its principal competitors has made it one of the main players in the information society market, as seen in Table 2.

TABLE 2. Participation of Huawei in the Telecommunications Market

<i>Company</i>	<i>Average growth of sales 2007-2010 (percentage)</i>	<i>Participation in the telecommunications infrastructure market 2010 (percentage)</i>
Huawei	31.3	16
Cisco	9.2	9
Alcatel	6.9	13
Ericsson	5.2	20

Source: Compiled by the authors based on information from Ahrens (2013).

The business structure of Huawei is divided into three segments: business for the operators' networks, which represents 69 percent of the company's income; consumer business (24 %); and business with companies (7 %)⁹. The three business areas are defined as follows: business for the operators' networks (development and manufacture of a wide range of wireless networks, fixed networks, software, and solutions for carriers); business for consumers (development, manufacture, and delivery of mobile devices for broadband, domestic devices, smartphones and their apps); and business for companies (development of products and solutions) integrating information and communication technologies, including

⁹ Compiled based on information from Huawei (2013).

network infrastructure for companies, data centers with services in the cloud, security for company information, unified systems of communication and collaboration used by vertical industries, such as government, public infrastructure and energy, transportation, and finance companies.

THE DIGITAL ECONOMY AND HUAWEI'S CURRENT CHALLENGES

The expansion of mobile phone consumption and new uses for the phones has brought about a transformation in telecommunications networks, with an increase in data and a drop in voice transmission, meaning a greater percentage of business operations depend on mobile devices and network apps. It has been observed that “consumer demand for the latest wireless devices and higher bandwidth are driving telecommunications services growth, while the shift to cloud-based solutions is enriching the value of the network” (Send2press, 2014).

This has brought about change in the dominant players in telecommunications networks, characterized by an important drop in profits from voice and SMS and, hence, a quest to broaden the value-added services sector (games, social networks, music, maps, etc.) The rapid growth in data traffic is being accompanied by a drop in operators' margins: the typical margin of a telecommunications operating company ranged between 45 and 50 percent in 2011, basically relying on traditional services such as voice and SMS. However, it was predicted that data services would cause operators' margins to fall below 45 percent in 2015, according to a telecommunications sector study (Ey Global Telecommunication Group, 2013).

New forms of communication have been produced by companies using OTT (over-the-top content, a reference to their doing business over the Internet): Skype (the carrier that generates the most traffic at the international level), Facebook, Apple, and Google. The participation of these new players in the network traffic grew from 5 percent to 25 percent from 2005 to 2010, given that the trend is for less voice and more data (Ey Global Telecommunication Group, 2013).

The new competition has meant a loss for the companies controlling the value chain¹⁰; the carriers are facing the loss of their service as a commodity and must

¹⁰ The Internet value chain has five markets: content (text, video, audio, etc.), online services (Skype, Facebook, Google, etc.), facilitating technologies and services (Paypal, hosting, etc.), connectivity (ATT, Vodaphone, etc.), and applications and terminals (search engines, media players, computers, smartphones, operating systems, etc.).

generate more personalized offerings (Delgado, interview, 2014; Funes, interview, 2014; Wang, interview, 2014).

The software programs that expand the functions of telephones (applications) have given rise to an increase in services based on data and have opened a new customized mass market. In 2012, it was estimated that 1.2 billion people used some app on their telephone, and that this figure represents 17 percent of the 6.8 billion cellphone subscriptions in the world (Mitchell, 2013). The number of application users is expected to increase 29.8 percent annually; that would work out to be 4.4 billion application users in 2017. The number of downloads of these programs is shown in Table 3:

TABLE 3. Application Downloads (Billions)

<i>Downloads</i>	<i>2012</i>	<i>2016</i>
Free	40.5 (89 %)	287.9 (93 %)
With cost	5.1 (11 %)	21.7 (7 %)
<i>Total</i>	<i>45.6 (100 %)</i>	<i>309.6 (100 %)</i>

Source: Compiled by the authors using information from Mitchell (2013).

The competitive challenges for the sector's companies are, basically, to monetize services associated with the new infrastructure, which means making innovations both to the business and application models, and expanding their coverage through infrastructure at the lowest cost possible. This is the scenario in which the company takes action with its strategy of being a supplier of hardware and software for the companies that compete as carriers.

Ren Zhengfei, the founder of the company, provides an interpretation of the competitive environment in which the information society is seen as a market. The focal point is the phenomenon of big data, which for the company means having to position itself as a leader in infrastructure building.

The concept of big data emerges in 2000, as a consequence of the accumulation of data by the ICTs; “big data refers to things one can do at a large scale ... to extract new insights or create new forms of value, in ways that change markets, organizations, the relationship between citizens and governments, and more” (Mayer-Shönberger and Cukier, 2013). It has to do with a technological revolution in the utilization of data that has given origin to an emerging science that

allows correlation, prediction, pattern-finding, aggregation, metadata definition, and algorithm generation on a scale never before seen.

For Ren Zhengfei, the battle over ultra-broadband is the final step of the technological competition inside the information society, and its implementation will open a new stage where the best-placed companies will predominate. In the Internet market, Huawei has a privileged place as a producer of the transmission infrastructure; hundreds of other companies are infrastructure operators and thousands more manage the information. Indeed, this can be seen as the productive pyramid of the Internet industry, in which Huawei wants to maintain its privileged position.

Huawei is a company conscious of the challenges that the era of big data carries with it. Therefore, it is expending its efforts to try to utilize its advantages and to create products with high standards of quality that satisfy consumer needs; in this sense, its R&D capacities are continuously aimed at laboratories “studying the approaches of adapting to disruptive technical innovations, as well as the ways of applying sustaining innovations to today’s technologies in order to make them future-proof” (Huawei, 2013:5).

HUAWEI IN MEXICO

The company has been present in the Mexican market since 2001. The local fieldwork conducted for this paper found that the business strategy for this complex structural organization—where spheres of local decisions are combined with those in the country of origin (China)—appears to rest on three main pillars:

- a) Marketing activities and post-sales services.
- b) Assembly operations for mass and immediate distribution to the national and Latin American market.
- c) Customization activities, which take place in the R&D center.

Mexico is the operations headquarters for both the entire region of Latin America and for Mexico; the executive director for Mexico is Mark Xueman, who is of Chinese origin. The company says its local business structure began when two Chinese engineers sent by Huawei began working in partnership with three Mexican engineers to introduce some mobile phone designs. Its objective was Telmex, although the first sale of its products was to the Mexican Social Security Institute in 2003. The narrative that comes from the company and journalistic sources about

its evolution in Mexico is similar to that it offers in general about its international expansion in emerging markets: efforts concentrated on specific potential clients, lower prices and shorter delivery times, adaptability to local conditions, and putting itself to the test for potential clients. The company positioned itself in the Mexican market following a five-year process, beginning with the introduction of a group of Chinese technicians who sought business opportunities for Huawei's telecommunications technology with various companies. It created a climate of confidence with its clients—via competitive prices, high quality, and adaptation to their needs—by providing consulting services to and training the technicians in charge of implementing the use of Huawei products in client companies (Dussel, 2014).

Huawei began its operations in Mexico as part of its overall interest in Latin America; in 1998 it had moved into Brazil (China-Brazil Business Council, 2013) and in 2002 to Venezuela (Delgado, interview, 2014), to cite two important examples. Accordingly, the presence of Huawei in Mexico must be understood both from the regional perspective of the company—its interest in this region—as well as from the perspective of the Mexican market itself. Thus, the company has various operations in Mexico that are both part of its global strategy as well as its strict pursuit of the local market.

The various interviews conducted indicated that Mexico is the seventh-most important country for Huawei, according to the following hierarchy: 1) China, 2) India, 3) United Kingdom, 4) Australia, 5) Japan, 6) Russia, and 7) Mexico; nevertheless, the sources also said that in terms of sales volume, Mexico represents about two percent of Huawei's global market. Given that the main markets are for network infrastructure for the country's telecommunications companies, it can be said that the strategy for Mexico is more one of service for the expansion of the telephone and cable operators as well as for the local market, in addition to that of the region, whose corporate headquarters are in Mexico¹¹.

The size of the company's market and Huawei's expectations for that market in terms of its operations in and from Mexico can be seen through the following data: Latin America represented, in 2013, 10 percent of mobile phone income worldwide, double what it was the previous decade, thanks to annual growth rates of nine percent. Smartphone penetration has reached 20 percent of the population, similar to the worldwide level, and it is predicted that it will reach 44 percent in 2017. Technology turnover is still slow, but large growth is expected in 4G and

¹¹ In contrast to Brazil, where the company produces mobile phones, or to Venezuela, where the company's consumer end products are marketed directly.

LTE technologies as a result of investments in infrastructure. An important macro-economic datum is that the mobile phone industry will represent 4.5 percent of regional GDP in 2020, as opposed to 3.7 percent now.

In Mexico, according to government information (SCT, 2014), investments of 10 billion pesos will be made over 10 years for the construction of a shared mobile services network that will use the 700 megahertz broadband spectrum, and 750 million pesos for the fiber optic trunk network, which will broaden Internet coverage, combining resources with the mobile services network: this is the business area the company is interested in.

Huawei's corporate offices are in Mexico City, and consist of an R&D center, a training center, and a call center; it also has an office in Monterrey, a manufacturing and logistics center in Guadalajara, and branch offices in Mérida, Puebla, Tijuana, and Querétaro (Huawei Technologies, 2014). Also, a regional call center was established in Querétaro in 2014 that provides technical assistance to a large portion of Huawei's clients in Latin America (there are two similar centers in China and Russia).

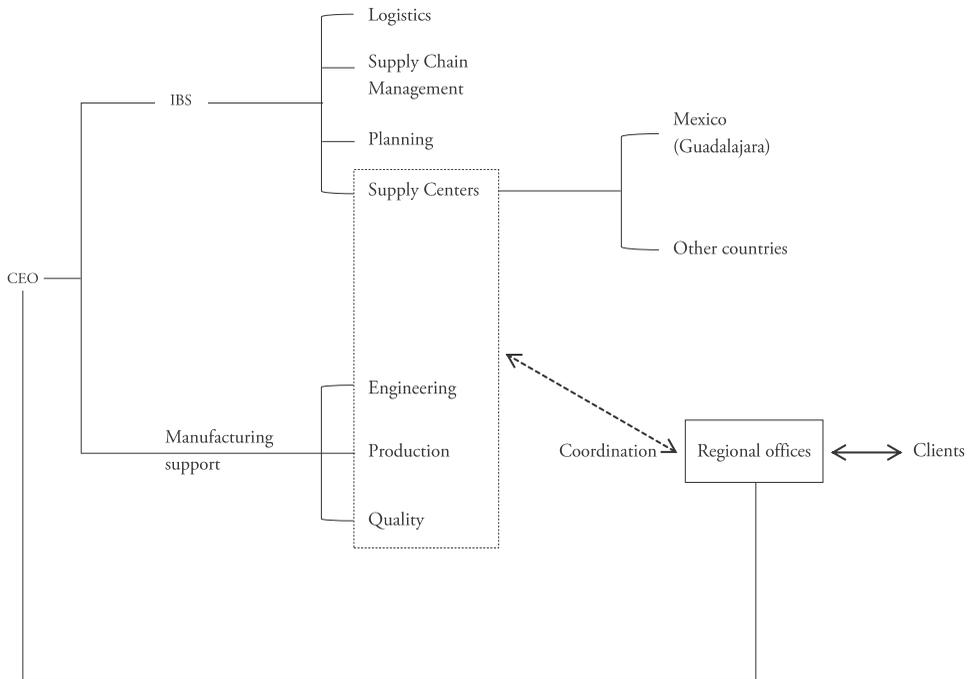
The company now directly employs 1 200 people in Mexico and 5 000 more indirectly (Huawei Technologies, 2014) in areas of manufacturing, sales, technical support, administration, R&D, and logistics, which belongs to the supply chain department. Most of the 1 200 people Huawei employs in Mexico (of which 85 percent are concentrated in Mexico City) are bilingual professionals. It is important to mention that the company pairs alongside each person of local origin at the management level personnel of Chinese origin who interact in business and technological decisions and report to headquarters in China, such that there is always a co-responsibility that guarantees the transparency of communications and decisions; this allows cultural barriers to be overcome and generates quick responses, a key factor in the firm's competitiveness.

The two operating centers, one charged with logistics and assembly, and the other with R&D, are described below.

GUADALAJARA, MEXICO, SUPPLY CENTER

Huawei supply centers form part of the structure of the international logistics of the company (International Business Support, or IBS), as seen in Figure 2. The centers' support structure has a strong connection to manufacturing, because they are the locations for carrying out assembly operations where parts are adapted locally (a process known in technical business terms as customization).

FIGURE 2. The Guadalajara Plant in the Global Structure of Huawei



Note: The dotted lines show the existence of functional relationships between different parts of the structure.

Source: Compiled by the authors using information from interviews with Esquivel (2014) and Pérez (2014).

For that, collaboration with the regional offices is necessary, as they are the demand generators and responsible to the client for product opportunity and quality, and for the post-sale. This is how the operations centers play a decisive role in Huawei's business strategy, and combine the capacity of product production for final assembly from China with a logistical and assembly operation that is subcontracted by Huawei, and a regional delivery network.

The supply center of Huawei's northern Latin American region has been in Mexico since 2010¹²; its basic duties are to consolidate inputs, do the final assembly of various components of the telecommunications networks (radio bases, boards, and parts), now that they operate for the business group of the telephone operators,

¹² The information presented below was gathered during a visit to the Flextronics plant in Guadalajara on April 24, 2014; today this supply center serves the entire Latin America region.

and send them to the installation location in accordance with the needs of clients in Mexico and the Latin American region (except for Cuba and Brazil).

Its customization duties consist of improving the equipment software according to client needs, improving manufacturing and packing, distributing the workload in accordance with client needs, and making the final configuration of the network, in keeping with the physical conditions of the site where the equipment is placed. This center prides itself on having the experience and human resources to provide solutions to urban problems that result from network congestion and/or challenging situations caused by natural disasters. Like all of Huawei's centers, its role is strategic for the company's internationalization, by guaranteeing the lowest costs and highest speed possible in the supply of products to its markets; the value chain's logistical and assembly stages are flexible, combining Chinese inputs into the assembly of the final product in Mexico¹³.

This plant was established in Guadalajara in December 2013, with the goal of benefiting from the outsourcing strategy that Flextronics provides in its industrial park. Flextronics, a Singapore company, is the third-ranking contract manufacturer in the world; these companies are subcontractors for original equipment companies, offering them manufacturing services. To show the context of how Huawei's relationship works with its assembly and logistics providers, there is the example of the supply center inaugurated in Hungary in 2013 (in Biatorbagy), from which 55 countries in Europe, northern Africa, Russia, and the Middle East are supplied; in that case, its providers are Westlog DC and DHL (China Room, 2014). Flextronics is characterized by the hiring out of its human and physical capabilities in manufacturing and logistics to contracting companies and taking charge of their operations. In the case of Huawei, the subcontracting with Flextronics took place under strict planning and monitoring; the contract is for 20 percent manufacturing and 80 percent logistical and maintenance services, which provides a clear picture of the nature of outsourcing¹⁴. There were 250 people working in the Huawei operations at the time of the interview: 67 belonged

¹³ Around 90 percent of the components for assembly (in terms of value) come from China, in monthly shipments in 60 containers.

¹⁴ Flextronics dedicates two buildings exclusively for Huawei production, which is unparalleled, as Flextronics' strategy has been to be a *maquiladora* company, having various assembly lines inside the same buildings for different companies (such as Blackberry or for various Microsoft products).

to Huawei (50 of them from China, and 17 Mexicans), while the other 183 were Flextronics personnel.

Nevertheless, the operations of this center in Guadalajara are not limited to the subcontracted assembly with Flextronics, but also incorporate logistical operations. In the case of logistics, it works with DHL, CEVA, and Kuene & Nage, and materials that do not come from China (9 % of the total) are shipped by companies such as North Star, Volex, etc. That is, it is a productive center that sustains a broad network of companies that provide various services, tied to the administration of the value chain.

THE R&D CENTER

Huawei's R&D center for the northern Latin America region is in Mexico City, in the company's offices in the Santa Fe neighborhood. It is one of 31 R&D centers the company has at the global level; it was created in 2007. Its mission is to adapt and/or create the software necessary for network elements, that is, the teleinformatic mechanisms that make up the structure of the network for the specific needs of the carriers that acquire the company's telecommunications infrastructure¹⁵. The R&D center was conceived as a bridge between China and Mexico in terms of understanding, as Huawei, as in all its local markets, needs to comprehend the particularities of the Mexican market; this is necessary in order to create the software locally. In this sense, its technical objectives are those of customization in the shortest time and at the lowest cost to offer the best service to the client.

The R&D center and the marketing department work jointly; the first attends to client needs and the second determines the price of the service to be provided. The work orders are classified according to the time needed for their delivery: one month (small requirements), two to three months (medium requirements), and four to six months (large requirements). The majority of its work orders fall in the category of medium requirements and the approximate cost of a product made over the course of a month is 10 million pesos. The orders include the customiza-

¹⁵ The competition with Ericsson and Alcatel is based on hardware and software; the fixed investment of a telephone system lies in the hardware, and that factor is what can provide the most profitability, once the investment is made, improving the software. Thus, Huawei can cushion the loss of value of the fixed investment by increasing the functionality of the software. In the context of the competition between Telcel and Movistar, the latter has a greater need for innovative products to reduce its disadvantage with Telcel.

tion of software coming from China as well as the creation from scratch of software for specific local needs; most of the work taken up by the R&D center is customization (about 60 percent of the total), while new innovation is at about 40 percent.

Huawei's R&D center in Mexico complements with its local capacities those of China, in a framework of autonomy, although the decisions in Mexico are made in conjunction with the sales department. The general rule is that if the work order requires a major change in a product that Mexico cannot make, then China takes over. Each work group, made up of systems engineers, has a project leader, a solutions architect, a development team, a consumer team, and a new services team. At the time of the interviews, the R&D center was composed of 14 people in Mexico, plus three in other Latin American countries.

CONCLUSIONS

The challenges for every company making multiple products with global operations are production and attention to markets and territories at the greatest possible speed. As they are challenges for the technical, innovational, and organizational spheres, the strategy is to unite all of them; by defining objectives during various stages, the company's resources are mobilized for competitive ends.

This article has shown the most characteristic processes of the Huawei enterprise as an example of the new phase of internationalization coming from emerging countries and productive sectors in the global economy. Given that Huawei, in its initial strategy of internationalization, sought to approach less complicated markets, its first steps were directed at less-developed regions and countries. The next step, which was to enter Western Europe, required an organizational restructuring, which, as mentioned, was actively aided by leading companies in organizational development. With that, it was possible for the company to establish the best practices that allowed potential European clients to recognize it.

The firm has gone about accumulating competitive capital in the deployment of its expansion to foreign markets, beginning its internationalization in developing countries. Its strategy consists of establishing itself in a country, winning the confidence of its clients through innovation, lower costs, and greater speed in its deliveries, as well as a close commitment to its customers. Thus, the functions of customization and of product delivery play a critical role, taking into account the branch's links to its home base in China—birthplace of the innovations—like the assembly teams in other locations in the world.

In the case of its branch in Mexico, the organization has the twofold commitment of efficiently attending to its local markets and to its relationship with its home base; the assembly and distribution and R&D centers in Mexico are extensions of the competitive advantage Huawei enjoys from China. The first—assembly and distribution—assures the response capability for production and installation of hardware for the local market and for a broad area of the center and south of the continent. The second—R&D—reproduces the capacity of the company in terms of innovation and adaptation of software for the specific conditions of the regional market. Then both are placed at the heart of Huawei's business: telecommunications hardware and software.

The new forms of internationalization are necessary elements for contextualizing the specific ways that multinational companies develop operations in and from Mexico, generating novel organizational structures and with business models that must be analyzed and exhibited to generate an updated vision and understanding about the operational methods of multinational companies recently established in Mexico—in this case one from China—. Huawei provides a good example of the internationalization of firms born globally that have an enormous capacity for using their resources, and those of other countries with the goal of penetrating various markets at the world level, both through their equipment and products, as well as their services to local clients, basing their competitiveness not only on competitive costs and lower prices, but in their capacity of rapid response in the face of changing demand. All of this is based on innovation and customization.

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