RED INTERNACIONAL DE INVESTIGADORES EN COMPETITIVIDAD

COMPETITIVENESS DEVELOPMENT IN REGIONS, SECTORS AND INSTITUTIONS

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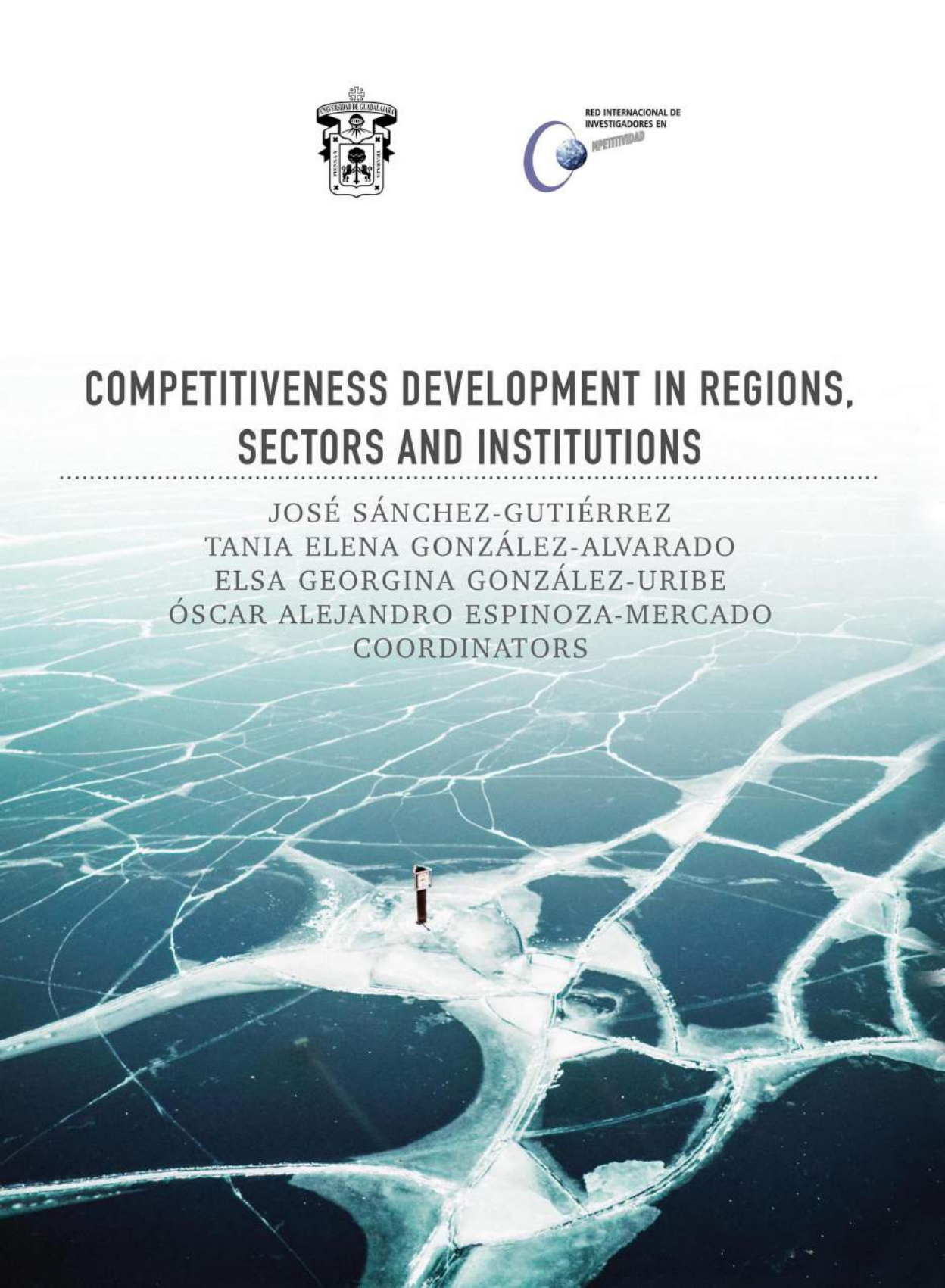

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Prologue

Competitiveness development in regions, sectors and institutions is an excellent book for experts, students and entrepreneurs. In their pages, we can discover different topics about the competitive factors like Knowledge Management, Service Quality, Management leadership, Innovation, Production Value, and so on.

In ten chapters, experts explain the situation of the organization, institutions and regions according to the competitiveness development. Every part of this book was based on empirical and real evidence from enterprises, universities, governments and institutions. All of these studied organizations are part of the competitive environment that involves the market. The writers believe in economic progress across of the innovation, the entrepreneurship and the international cooperation between regions, countries and corporations.

The authors are from Mexico and Spain. Everyone is an expert in Economic and Business Sciences. The universities that participate in this project are: Universidad Complutense de Madrid, Universidad de Guadalajara, Universidad Michoacana de San Nicolás de Hidalgo and Instituto Politécnico Nacional.

This publication was created under the best practices of scientific edition. Turnitin was applied in favor of originality. The editorial team

carefully analyzed the quality and originality of the contents. Every chapter was selected, evaluated, and modified with the support of international peers.

Editors and authors hope that this book contributes for publishers, researchers and academics to the advancement of theoretical and practical knowledge.

Dr. José Sánchez Gutiérrez

Chapter TEN

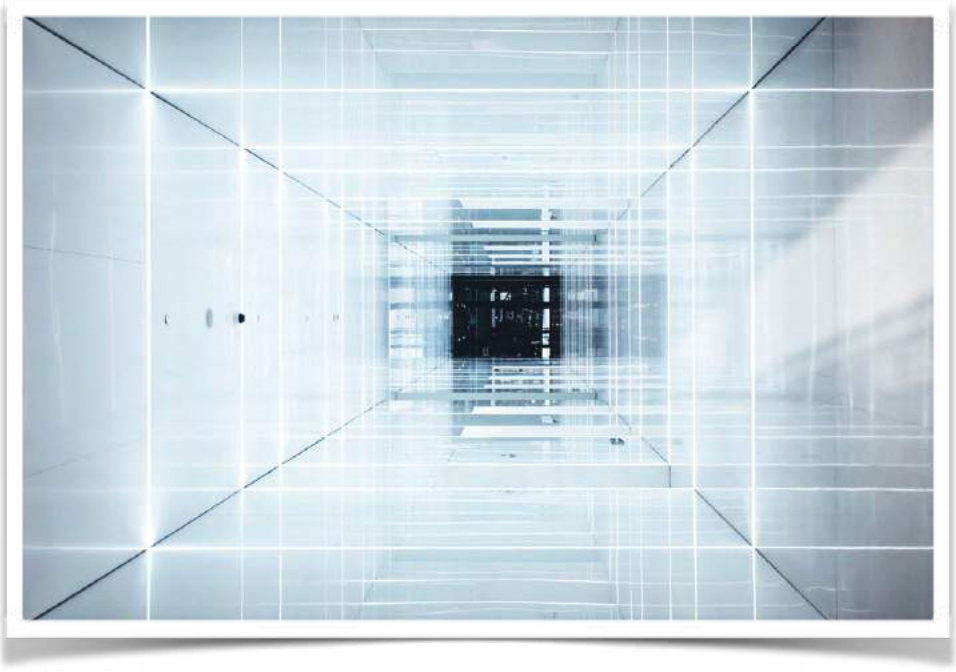

Photo by Daniel Chen on Unsplash

Asymmetric collaboration in Mexican companies in IT: causes and effects

Tania Elena González-Alvarado and Renata Kubus

Asymmetric collaboration in Mexican companies in IT: causes and effects

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INTRODUCTION

Collaboration between companies is essential for local development (Esser *et al*., 1996; Alburquerque, 2006; Erkuş-Öztürk & Eraydın, 2010). In free market environments, such collaboration needs to be run with agents coming from other countries (González & Rodenes, 2008). It allows the company to operate in several regions with lower risks, costs and resources (González, 2007).

These collaborations may or may not lead to the creation of value (Band, 1994, Fernández, Montes & Vázquez, Vidal, 2000, Prahalad & Ramaswamy, 2004, Zott & Amit, 2009). Asymmetric relationships (Keohane, 1990, Di Filippo, 1998, Tickner, 2011; Pérez, & Cambra-Fierro, 2015) present an obstacle to business cooperation strategies and, almost always, the ties that are formed are characterized by the dependence of the smaller company towards the bigger one. The relationships encouraged among Information Technology (IT) companies worldwide are mainly asymmetric. They are maintained progressively through certifications. They validate the representation and use of certain technology, property of the transnational company for a smaller one.

In this way, the information technology sector is no stranger to the relations under the competition strategy. It is a sector in which the ties tend to be many, but they mostly translate into asymmetric and dependent relationships. One of the reasons, is the need for telecommunications infrastructure which is in the hands of one or two companies (Almeida, 2001, Fisher & Serra, 2004, Razo & Rojas, 2007). During the last century, telecommunications infrastructure was developed by public capital, which when privatized led to the existence of monopolies that persist to these days.

Another reason, is that technological innovation corresponds to more developed countries, and its adoption has barriers for the transfer and assimilation that many time results in another, own innovation (Godínez, 2000, Yarza, 2004, Bandala, 2007, González, 2008, Arceo & Urturi , 2010; Maldonado, 2012). These two facts, infrastructure and barriers to technology transfer, combine to characterize Mexican IT companies based on the existing infrastructure for Telecommunications. Furthermore, it implies scarce development of proprietary technologies; minor development in terms of hardware; high concentration on a smaller size and customized software development; oriented mainly to consulting.

In general, foreign corporations intensive in digitised services (for instance, from banking sector), establishing itself in other countries, enter accompanied by the need of their software adoption and implementation in order to effectively take the control of their subsidiaries (being) established there. In case of the periphery countries, lower costs and the distance from the headquarters makes interesting an establishment of their own software companies there, if prospering foreseen to provide even some IT services to

the mother company and its subsidiaries in other countries. In a particular case of Mexico, relative proximity of the strong economy of the United States or Canada, furthermore implying higher development and lower risk level of Mexico, makes from this country an interesting starting operational point for such IT of multinational companies which are for instance from Europe.

However, the multinational companies are obliged to maintain strict internal cost controls and to provide an extensive overview of the labour conditions of their employees to the shareholders (and customers). Thus, they do not expand so much the number of internal IT departments and employees. They rather establish new IT and consultancy companies and/ or enter the allegiances with the existing ones. Because of the IT software and hardware strict audit requirements perspective, they would need to have the partners among the so called Big 5 global consultancy companies, such as Accenture (formerly Andersen Consulting), Deloitte Touche Consulting (Deloitte Consulting), Ernst & Young, KPMG Consulting, PriceWaterhouseCoopers. Big international IT companies (IBM, Oracle, INDRA, for instance) will be other partners to take into account for this reason.

Prestige, lower risk and common history of collaboration in other markets and countries are also relevant dimensions being taken into account. Other IT companies to be considered would rather need to have strong, local knowledge (reporting to national authorities is in general such an area, for instance) or connections, or probably personal relationships, even if most probably not direct ones. In sum, it leads to the establishment of rather an opaque framework of flow of exchanging the benefits and losts, and

favours among the companies and their high executives and widening, deepening and in general enlarging the sub-contraction chain of projects and workers. Only at further stages, more genuinely local providers would be probably able to enter the allegiances. Open source software companies can be an interesting case to study, probably showing other dynamics in place.

CUSTOMIZED SOFTWARE INFRASTRUCTURE IN TELECOMMUNICATIONS

The development and incorporation of new technologies in the economy is essential in the process of value creation (Yoguel, 2000; Capó *et al*., 2007), it translates into a major evolution of production and organization models and other activities of the companies. (Sieber & Valor, 2008). However, for its incorporation into the economy, innovative technologies require telecommunications infrastructure. The combination of both, infrastructure and technology, gives way to the development of customized software.

The software industry is knowledge-intensive (Novick, 2002, Erbes *et al*., 2006) and can generate skilled and better-paid jobs, as well as innovative environments. In addition, this business requires less initial investment than others (Hualde & Gomis, 2007). It also implies high value-added activities related to the software industry such as consulting, maintenance, support and integration that, in general, are aimed at satisfying a specific need of the client.

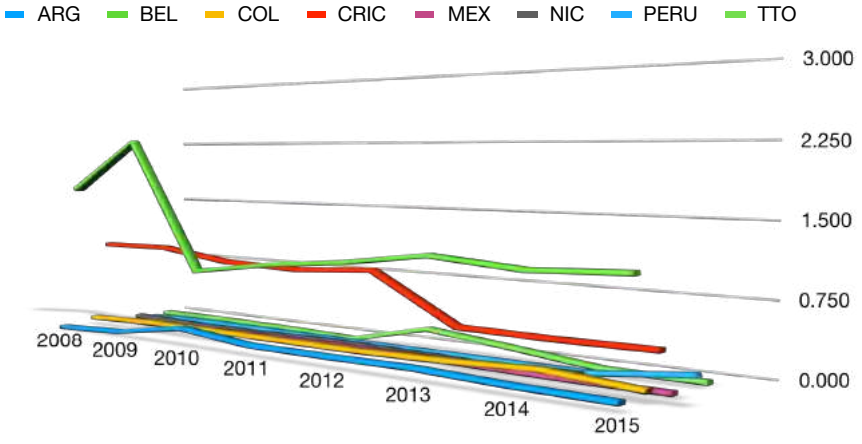
The technical and productive characteristics of the different activities that the software industry comprises give rise to different relationships between companies and, therefore, to a different geography of their disposal.

Customized software is developed through close and constant interaction with the client (Hualde & Gomis, 2007). It is characterized by the provision of intangible services, making intensive use of knowledge and innovation, that are main sources of generation of competitive advantages. It has a high potential to generate added value and create new jobs, it also implies training that is much higher than for the average economy. In addition, there is an evidence of an increasing penetration in various economic activities and a clear predominance of micro, small and medium enterprises (Estayno *et al*., 2009).

ECONOMIC ENVIRONMENT FOR INFORMATION TECHNOLOGY IN LATIN AMERICA

Infrastructure has a high impact on poverty reduction and sustained economic development (González, 1993; Moser, 1998; Roller & Waverman, 2001; Ali & Pernia, 2003). According to Perrotti and Sánchez (2011) in Latin America and the Caribbean, recent years have shown a decrease in investments earmarked for this purpose, which caused a distancing between the infrastructure requirements and the effective provision of it. According to Perrotti and Sánchez (2011), it is necessary to invest annually around 5.2% of the regional GDP to respond to the needs of companies and final consumers in the region, only in the period 2006-2020. This volume investment has not been achieved in Latin America. Graphs 1 and 2 show the low and inconstant investment in telecommunications infrastructure in Latin America. Careful consideration of the data is required as the time span is corresponding to the last collapse related to international crisis. There is an inconsistency happening both in public and private investment. The countries with the greatest impact of investment in this area are the smallest of the region.

Graph 1. Private investment in telecommunications as a percentage of GDP (2008-2014)



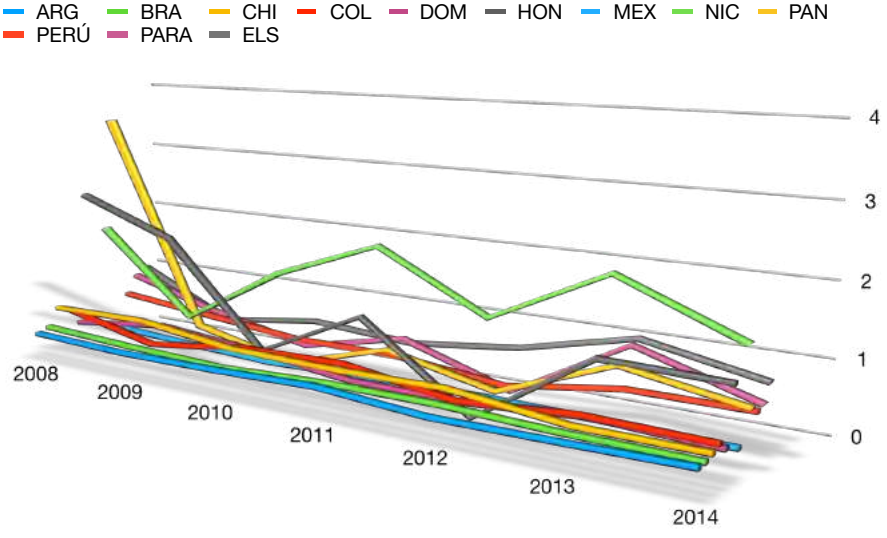
Source: Own elaboration based on BID (2017) data.

Mexico is positioned in the last places in this statistical comparison (Graphs 1 & 2). This is unfortunate because it impedes the development of the region. The maximum investment has been concentrated in the big cities and in the main commercial routes, both of them are attractive for foreign investment that is shaping up as a maquiladora (assembly line services and industry).

This favors economic growth in the short term in certain regions of the country but accentuates the inequalities between regions and hinders the growth of rural areas. There are locations areas of companies with international activities that have no proper communication infrastructure and, therefore, do not have Internet access. This condition in turn requires

establishing offices in the urban area, increasing operating costs and further complicating the company operations.

Graph 2. Public investment in Telecommunications as a GDP percentage (2008-2014)



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A greater availability and quality of infrastructure services facilitates a higher productivity and lower production costs for producers (Rozas, 2010). The higher profitability encourages investment and, therefore, increases the product growth potential. The main reason for the insufficient development of the basic infrastructure of Latin America in the last two decades lies in the difficulties that countries have had to maintain an adequate rhythm of investment in the different activities of the sector (Rozas, 2010).

Both public and private investment retain an important role in the construction of environments that facilitate the use of IT and its adequate assimilation by local agents. The existence of competitive companies that operate in the IT sector depend heavily on the existence of telecommunication infrastructure.

Investment in infrastructure leads to an increase in the number of companies operating in the sector; such is the Spanish case. It needs to be taken into careful consideration as Spanish economy and its actors have a prevailing old-school inclination towards the hard infrastructure (see for instance, real estate and associated bubble undermining the general economy, regional airports or motorways explosion with the waste of

public money due to their closing or need for compensation for the private losses).

The telecommunications infrastructure is one of the best in Europe, however the operations run on them are not at the level that hopefully will increase in the future. The Spanish IT sector is characterized by the sustained growth in the number of companies, which went from 25,838 in 1999 to 55,707 in 2008. Small companies, however, are proliferating, and in many cases, micro-companies with sole ownership. Thus, 56% of the total companies in the sector correspond to self-employed professionals without contracted employees (which represents an increase of 5 percentage points with respect to 2001), and 24% corresponds to companies with one or two employees, especially in the IT services segment, where 58% of the companies are formed by independent professionals. It is followed by the telecommunications services segment, with 50%, and third, manufacturing, with 34%. (Sieber & Valor, 2008)

Likewise, the IT services segment brings together 88% of the total number of companies in the IT sector, which are mainly focused on consultancy, supply, IT assessment for applications and computer programs, as well as rental, maintenance and repair of machinery and equipment. (Sieber & Valor, 2008).

Another example is Egypt. During more than three decades, Egypt has implemented IT policy plans and established the relevant institutions and regional technology centers in order to boost the international competitiveness of the sector and the inflows of IT related foreign investments. In 2011 and 2012, the number of Egyptian IT companies

increased at an annual rate of approximately 15%, so that in 2012 the country had more than 5,000 companies of this type. (WIPO, 2014)

In the period 2011-2012, the income of the IT industry reached 65,000 million Egyptian pounds. In 2012, exports reached a total of 1,442 million Egyptian pounds. In the period 2012-2013, the ICT sector contributed 3.3 percentage points to Egyptian GDP. In 2012, the IT sector employed 283,000 workers through direct contracting. For IT companies in other countries, Egypt has been an attractive destination for investment for more than a decade. Companies such as Apple, Cisco, HP, Intel, Microsoft, Oracle, Teradata, Valeo, Vodafone or Yahoo!, among others, have subsidiaries in the country (WIPO, 2014).

Most Egyptian companies are engaged in data transmission and hosting activities in the field of IT services and related administrative support services, or what is also referred to as outsourcing of business services, or software manufacturing. Either these are Egyptian companies that provide their services mainly to foreign multinationals from high income countries or else such multinationals have established subsidiaries in Egypt, and those are the ones that execute the activities directly (WIPO, 2014).

On the basis of available data, it is not easy to adequately analyze the extent and nature of innovation in the IT sector in Egypt, whether these are local ICT companies or subsidiaries of multinational companies (WIPO, 2014). When analyzing the available IT specific data; or the main data compiled during the study mission, it appears that only a small number of Egyptian IT companies were engaged in R & D and innovation activities. Thus, for instance, among the 400 software companies, the focus is on the

production of a customized software, intended for another end user, as input to services aimed at completion of a tangible or intangible product (WIPO, 2014). The activity focuses on traditional processes, testing and configuration and other basic activities, rather than on more advanced innovation.

When deciding on matters and investment, multinational companies did not usually take into account Egypt's R & D capabilities or considered them irrelevant. Most of the affiliates of the multinationals in the ICT sector in Egypt are engaged in marketing and sales and the possible manufacturing or adaptation of existing products to local markets or other Arabic-speaking countries. For these companies, the main investment factor in Egypt is a highly qualified and specialized workforce (WIPO, 2014). The point is here that this is a stage in the innovation ecosystem establishment. With time probably this activity will have the possibility of evolving into a more advanced one.

Mexico is the sixth best destination in the world for the location of global services, which include outsourcing of Information Technology (IT) and business process outsourcing (BPO) services, as well as work in voice (such as contact and call centers). On the other hand, Mexico ranked second in Latin America as an investment destination, attracting 23% of the total investment in the software sector projects. Furthermore, it is considered also the best destination in the Americas for the establishment of IT companies (ProMéxico, 2017).

Mexico has become the third largest exporter of IT services worldwide. Exports of IT services and BPOs showed a 12.25% growth, increasing its

value to 5.560 million dollars with respect to the previous year, 2011. (ProMéxico, 2017).

The IT industry in Mexico is composed by small and medium-sized companies oriented mainly to the production of services. A significant proportion of software production in the country is self- or in-house consumption, so that large companies in other sectors develop or adapt internally the software programs they use and the IT services they require. (ProMéxico, 2017).

The largest or so-called corporate companies are focused on implementation services and, in particular, the development of customized software and the implementation and support of solutions; a very high proportion of these services are offered through outsourcing of personnel where the company is not responsible for the project, which reflects lower added value and vulnerability (Select, 2012).

It seems that when the size of the Mexican company decreases, its portfolio of goods and services is becoming more diversified; that is, smaller companies sell equipment, software and services in a more heterogeneous mix, reflecting less focus and specialization. The same happens when analyzing ICT services divided into consulting, implementation, support and outsourcing. This diversification is also associated with lower proportions of turnover per employee, so it can be affirmed that the most specialized companies are those with the highest performance (Select, 2012).

Both, small and medium companies are those that have a higher percentage of linkage with multinational companies. In general, all sizes of companies mainly serve as distribution channels (23%), solution integrators (30%) and / or service providers (47%) of multinational companies that do not necessarily have headquarters in Mexico (Select, 2012). Of the 23% of the companies that serve as distribution channels, 35% reported that in addition to distributing solutions, they are in the process of obtaining the necessary certifications that accredit them as service providers (Select, 2012).

On the other hand, of 42% of the companies that do not have a business relationship with a multinational company, 47% reported that they are already in the process of having it. The software development and IT services sectors, as well as the research centers, have high percentages of association with global companies and institutions. It is noteworthy that the creative media segment is mainly focused on the realization of local projects. This finding reflects the need for programs focused on the internationalization of this sector in Mexico. Lastly, remote business services and contact centers are the segments with the lowest linkage percentages due to the weight of local content derived from the type of activities they perform (Select, 2012). Under this scenario, we proceeded to analyze the results achieved by a group of small and medium-sized Mexican companies.

METHODOLOGY

The database on companies operating in business cooperation networks within the framework of Al-Invest corresponding to the information technology sector, was integrated by companies that participated in the

program through Nacional Financiera (NAFIN) . The Eurocentro Nafin organized 16 business meetings in the period 2002-2009 (2,724 participating companies). Two of these events were for Information Technology. About the companies studied, those that had disappeared were identified and a comparison was made between those that are still operating and those that closed. In a period of ten years the information is available for the companies that once operated in the sector and are not there any longer (2008-2017).

The companies initially had the requirements included in different directories, these were: website and links with companies from other regions. The Nafin Eurocenter was asked for the data about the events starting in 2002 because it was allowing a greater distance between the current situation of the companies and the meetings. In this way, we were able to analyze in retrospection the behavior of the links between companies and other local agents. Since the strategies within the business collaboration link were the aim of the study, the employer or strategist was required to facilitate interviews, workshops and field visits. This greatly reduced the study group and subordinated its size in terms of the phenomenon studied. In this way a study group consisted of only 35 Mexican companies.

Flyvbjerg (2006) points out that when the objective is to achieve as much information as possible about a given problem or phenomenon, a representative case or a random sample may not be the most appropriate strategy. This is because the typical case or the average case usually does not provide the best or the most appropriate information. Atypical or extreme cases usually reveal more information because they activate more

actors and more basic mechanisms in the situation being studied. In addition, from a perspective oriented to the understanding but also to the action, it is usually more important to clarify the deep causes of a certain problem and its consequences than to describe the symptoms of the problem and the frequency with which they occur.

Random samples that accentuate representativeness will rarely produce this type of knowledge and it is more appropriate to select only some cases due to their validity. (Flyvbjerg, 2006: 45) That is why within this project the case study is deepened, event if this leads to obtain results more slowly and with a greater cost.

A questionnaire was applied to entrepreneurs in the sector, field visits were made, and a workshop was held with eight businessmen. The evidence recovered through these three tools has been complemented with the search for information about companies through electronic means. This allows to triangulate the results and complement the obtained information.

A database was created, containing both qualitative and quantitative information for each company. That allowed the recording and analysis of the results. In relation to qualitative information, the binary system has been fundamental to measure the frequency of events among the companies studied, identifying tendencies, contradictions and unusual situations that may contribute to the theory of international cooperation links, local development and strategies for international competitiveness in the Information Technology sector.

The analysis of the data is enriched with the statistical and economic data obtained by international organizations (IDB, ECLAC, among others) and national organizations (INEGI, WIPO, SE, among others). Because the phenomenon studied is the international business cooperation network and its local impact, the development of the analysis and interpretation were run at three levels: global, national and local.

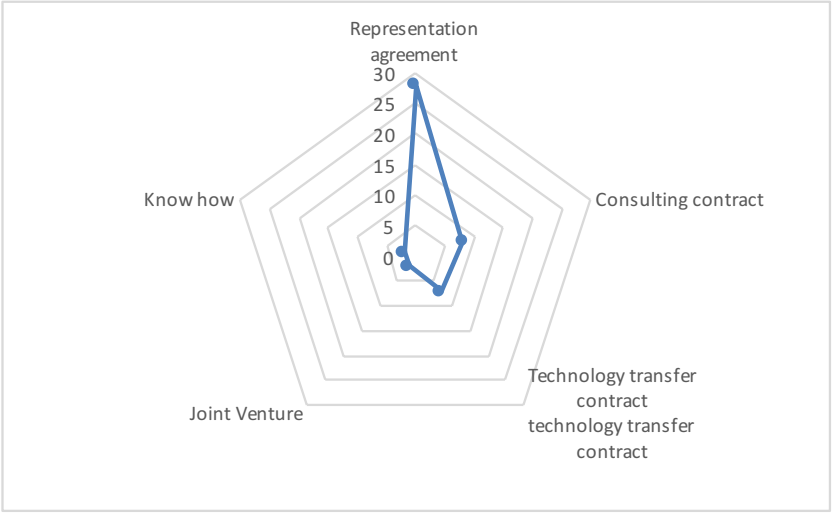
RESULTS

The studied companies are mainly concentrated in large cities (Mexico City, Guadalajara and Monterrey). Because they depend on the telecommunications infrastructure, none of the group of companies studied is located in the rural areas.

As indicated in Graph 3, the inward trend of ties with foreign companies is the establishment of representation agreements. Second, and with fewer companies interested, are consulting and technology transfer contracts. This is contrary to what would be expected in the sector. As a sector understood to be oriented on the development of technologies, in principle, agreements should be characterized by technology transfer and joint investment projects. In relation to the establishment of ties and their maintenance over time, entrepreneurs show a highly rational attitude in terms of profitability and liquidity. The same, in principle, cannot be applied for the risk derived from the links, only 57.14 percent considers it. In fact, 94.28 percent of companies are in a constant process of search of new international partners despite the fact that 74.28% have faced failures within the ties. This is due to the fact that especially in the IT sector, the strength of the company is considered also in terms of the agreements portfolio (with a particular accent on the international ones). When larger

and more diverse, the negotiation power and future outlook of the company in particular are reinforced.

Graphic 3. Collaboration agreements type



Source: own elaboration based on the results from the projects PAPIIT IN308008 UNAM and "Generation of value and international cooperation in the small companies in Latin America" UDG-CA-484.

The history of the collaborations is also relevant for acquiring new contracts, some of them can even be not profitable in the economic terms but are considered due to the terms of prestige. Being in the game is an important asset for company image also. As for the results and quality of the cooperation itself it is always prone to mixed experience.

According to generally accessible estimates two thirds to 90% of the IT contracts are not delivered in time and within the budget and when this is the case it is because they were initially overestimated as recognized by the companies' managers. This is due to the limited knowledge of the reality, not sufficient time taken for the assessment and also the fierce competition in the field meaning that high executives know that probably the evaluation provided would need severe amendments.

In principle, the extreme cases of projects proposals are not contemplated directly (the most expensive or the cheaper, for instance) as not being 'rational'. It can be considered a kind of silent pact between both sides. In this way software or service provided in the estimated timeframe is somehow corresponding to the initial requirements but not really working for the reality. As this is the general dynamic this is rather hard to recognize who was bad or worse.

Especially that it is mixed with the human factor, simply accompanying the customer with different problems arising during the project implementation can be considered more valuable than the real success of some project, anyway very difficult to reach with the unrealistic expectations being the general dynamic (as much as 75% of IT managers believe that their projects are doomed from start).

Probably this is the unwanted outcome of the 2000 IT bubble when some even small IT amendments were charged very high, after that the general expectation was that IT sector specialists are always 'overshooting' with the difficulty. From higher level everything is tending to be simplified, and smaller projects can be more easily sold in and outside the company for

running them. Once in the project, it is difficult to leave it and restart it with other partners, the same is the case for the innovation companies. This shows the high rationality of the strategists when establishing the ties (Table 1).

Table 1. Perception of the informant about international ties

Maintains relations considered as an international cooperation	80%
Has failed to establish links with agents from abroad	74.28%
Considers profitability in establishing relations with agents from abroad	94.28%
Considers liquidity when engaging with agents from abroad	74.28%
Calculates the risk derived from the links with agents from abroad	57.14%
Remains in search of new international collaborators	94.28%

Source: own elaboration based on the results from the projects PAPIIT IN308008 UNAM and "Generation of value and international cooperation in the small companies in Latin America" UDG-CA-484.

Following the explanation, 80 percent of the companies studied maintain ties with foreign companies. This is a fundamental characteristic if one takes into account the need for certifications to participate in the market and the interest in representations. In other words, the Information Technologies sector is characterized by international ties, the exception being the existence of unrelated companies. These unrelated companies pursue the establishment of such links (Table 1).

The group of companies that closed shows similar results to the group of companies that remain active (table 2). Although, there is greater interest in calculating profitability, liquidity and risk in the companies that are active. 85% of the companies that closed maintained international ties, and even, they had fewer failures than the active ones. This shows that in business

collaboration for one hundred percent open and high-speed industries, international collaboration is basic and in principle does not add more to the competitiveness of the company, even for the case of economies in the periphery. Everything depends on the particular partners, agreements, ways of approaching the projects executions and perhaps simply the good luck in its implementation and the environment of the time. However, in case of the periphery, this collaboration is probably more dependent, asymmetric and competition mechanisms are more forced.

Table 2. Comparison between active and non-active companies

	Companies that closed (percentage over 13)	Active companies (percentage over 22)
International cooperation ties	85%	77.27%
Failed to establish links with agents abroad	69.23%	77.27%
Consider profitability in establishing links with agents from abroad	92.30%	95.45%
Consider liquidity when engaging with agents from abroad	69.23%	77.27%
Calculate the risk derived from the links with agents from abroad	53.84%	59.09%
It remains in search of new international collaborators	92.30%	95.45%

Source: own elaboration based on the results from the projects PAPIIT IN308008 UNAM and "Generation of value and international cooperation in the small companies in Latin America". UDG-CA-484

CONCLUSIONS

There is rather scarce commercial policy and development in the telecommunications sector in Mexico. Although this sector is an important step towards innovation and furthermore supposes an increase in the

population welfare. Such is the case in countries like Korea, an example of the positive impact of telecommunications on development.

The data shows that in Latin America the symptoms are general. The smaller countries have a higher proportion of investment compared to GDP. In the case of the larger countries, such as Mexico, the proportion is smaller. This can be retracted to the scale effects. Being a maquiladora (assembly line industry and services) country, in principle this does not negatively affect economic growth; but it does not positively affect economic growth accompanied by local development.

The main symptom is the drastic change from year to year in the amount of investment dedicated to this question. It is clear that investment in the telecommunications sector depends more on the individual decision of the investors in the unfolding world scenario, leading to investment and disinvestment, rather than a national policy that attracts capital to this area.

This can be traced back to the disposition of exploitation of the market potential by the international companies, which in principle does not require an active country policy, probably involving the national and local governing part wanting to participate in the benefits, which in turn rather retracts the investors appetites due to the higher risks of involvement in doubtful and prone to the prestige affecting operations, furthermore not easily gaining support at the higher company levels.

The problem with the infrastructure is that it can hardly be 'rolled-back', once done it will stay in the country benefitting or not the investor. So that, the investment in this case will highly depend on the economic cycles,

expanding when the environment is favorable and retracting in more challenging times. Anyway, the international companies need to be in the picture, for the international prestige and for demonstrating the business savviness of the managers, i.e. not losing the potential business opportunities that can arise in unforeseeable future. This makes it difficult to distinguish the real dynamic behind the infrastructure investments.

What happens with the Mexican companies that operate in the sector? They identify more with software development than with hardware. It is considered that the most important innovation should be in the hardware, or hardware plus software ... otherwise, there is a risk of having only companies that create small systems without importance and which rather foster the technological dependence on the countries advanced in this area.

The question here is also that this software is volatile, can be rather easily copied and replaced by a cheaper one in the future. In other words, in Mexico we are facing the companies that hopefully only at this preliminary stage adapt the technology already created to the activities of local agents who demand their services, encouraging the consumption of technology rather than innovation.

It is not surprising that these companies are passive in the search of foreign partners. Neither, that most of them have foreign suppliers and probably no customers from other regions. Nor it is surprising that companies that are competitive at the national level, are those with foreign capital. But the IT companies from Mexico or with Mexican participation are starting to be involved in the game, which opens the doors for learning and taking a more proactive stance in the global world of IT sector in the future. As

already explained, probably Mexico is the best bet for IT development among the Latin American countries anyway. Hopefully further research can deepen the analysis proposed.

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