



The Characteristics of the Businesses and Entrepreneurs and Their Relationships with the Competitiveness of the SMEs in México

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Abstract

The aim of this work was to determine the correlation between the characteristics of enterprises and entrepreneurs and competitiveness in SMEs (Small and Medium Enterprises) in México City. For this purpose the data collected in the first phase of this research were taken, which were collected through field work using direct structured questionnaire to a sample of 400 companies and correlation statistical tests were performed using the method Chi square. The main findings indicate that the level of education has a significant relationship with the global competitiveness, being coincident with the findings of the literature discussed previously. It's also found that the size of the business has a significant relationship with global competitiveness, and with all factors being coincident with the findings of the literature discussed previously. Finally, the legal personality (natural person or corporation) and the sector also show a significant relationship with global competitiveness and its factors, where the features that have a significant relationship with competitiveness are gender and age and the type of company (family or non-family) and its antiquity.

Keywords

Competitiveness, SME, Enterprise and Entrepreneur

Subject Areas: Business Analysis, Economics, Entrepreneurship

1. Introduction

The importance of SMEs¹ in México is reflected in this business sector, which accounts for 99.8 per cent of the

¹This classification was carried out in accordance with the number of employees, as published in the Official Journal of the Federation on June 30th 2009: micro enterprises are those that are supported by up to 10 workers for all sectors and have annual sales revenues of up to 0.3 million dollars. They are small ones between 11 and 30 workers for the retail sector, and between 11 and 50 employees in the industry sector and services and have annual sales revenues of between 0.3 to 7.8 million dollars. There are the medium industries which have between 51 to 250 employees for the industry sector, between 51 and 100 workers for the service sector and between 31 and 100 workers for the retail sector and have annual sales revenues of between 7.8 up to 19.5 million dollars.

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total number of companies in the country, generating 78.5 per cent of employment and contributes 52 per cent of the domestic gross product [1]. Its importance is also to play a more economic social role to become a balance, where disadvantaged workers can find a source of employment and also among other aspects it can provide goods and services to poor people. If we refer to Latin America, the importance of SMEs is that in most countries it generates over 60 per cent of jobs and 50 per cent of value added, hence the importance of analyzing [2].

On the other hand, the business competitiveness conceptualized as the ability to manage the company productivity, profitability, participation in internal and external market, competitive position and regional infrastructure [3], is vital for these organizations, since if they do not strive to achieve adequate competitiveness levels, they will easily disappear.

Accordingly, the objective of this research consists of determining if there is a relationship between competitiveness and the characteristics of the entrepreneur, measured by age, sex and level of education, and the characteristics of the company, measured by size, legal personality (physical or mercantile society), type of company (family and non-family), sector (industry, trade and service) and their age/seniority in the market.

The importance of carrying out this study derives from the reasons mention above. The study presents the development of the second part of the research project called "Towards Determining the Competitiveness of Latin American SMEs" [4]. The literature reviewed and presented in the theoretical framework underlines the importance which the characteristics of enterprises and entrepreneurs for the competitiveness of SMEs have, in favor of competitiveness of SMEs, so, here a question rises: What is the relation between features of the enterprise and entrepreneurs and competitiveness of SMEs?

This research is divided into two parts: I. Framework, where issues of business competitiveness, features the company and its competitiveness and characteristics of entrepreneurs develop and competitiveness; II. The competitiveness of SMEs in México City, showing where the conformation of the sample is shown, the descriptive analysis and the analysis correlation; and finally, conclusions are presented.

2. Theoretical Framework

2.1. Business Competitiveness

Several researchers of Business Competitiveness have tried to generate models or methodologies to determine competitiveness in companies, the indicators which have been taken into account can be seen in [Table 1](#).

For Rubio and Aragón [5], the key to competitiveness are critical resources², therefore, they suggest that it will be necessary to identify these in the SME.

On the other hand, De la Cruz, Morales and Carrasco [6] argue that the development of capacities³ in a sector and their companies, contributes to boost the competitiveness of a range of products or services, and they also profoundly influence the capabilities of growth and competitive differentiation of a range of products far beyond the success or failure of a single product. Additionally, through capabilities⁴, the sector determines directly the amount of investments, risk-taking and the time horizon that is necessary to achieve its positioning in the market.

Meanwhile, Solleiro and Castañon [7] indicate that the competitive performance of the company depends on the first instance of its capacity to manage the internal elements that are under control, complementary to this, the point that competitiveness also depends on the quality of the interactions that the company has established in a number of factors both internal and external.

Thus, according to the OECD (1992, cited in [7]), the elements which are influencing competitiveness enterprises are:

- Successful management of flows of production, raw materials and inventories;
- Successful management of the mechanisms of interaction between planning, marketing, research and formal development, design, engineering and industrial production;
- The ability to combine research and development and innovation activities in cooperation with universities and

²According to Rubio and Aragón (2006), the critical resources for success are those that allow you to achieve sustainable competitive advantages in time and hijack of the income generated.

³It refers to the skills that are critical to the performance of the company and its strategy.

⁴They have to meet three characteristics: has to be unique and difficult to imitate, must be translated into a significant value for customers and should facilitate the entry into new markets.

Table 1. Business competitiveness indicators.

Indicator	Author	Rubio & Aragón (2006)	De la Cruz, Morales & Carrasco (2006)	Solleiro & Castañon (2005)	OCDE (1992)	Quiroga (2003)	Martínez, Santero, Sánchez & Marcos (2009)	Rodríguez, Bañuelos, Rubio & Chávez (2010)	IFC (2012)	Map of the IDB (Saavedra & Milla, 2013)
Externa Indicators				√		√	√			
Technology		√	√	√		√	√	√		
Innovation		√					√			
Marketing		√	√	√	√			√	√	√
Human Resources		√	√	√	√	√	√		√	√
Capabilities Directives		√				√	√	√	√	
Financial Resources		√	√	√		√	√			
Culture		√								
Quality		√		√		√	√	√		√
Production			√		√	√				
Logistics			√							
Internal Organization				√		√			√	
Shopping				√	√	√				√
Research and Development				√	√	√	√			
Interaction with Suppliers and Customers					√					
Internationalization							√			
Strategic Planning								√	√	√
Information and Knowledge									√	√
Social Responsibility									√	
Accounting and Finance										√
Environmental Management										√

Source: Evaluation based on the quoted authors.

other firms;

- The ability to incorporate more exact definitions of characteristics of the demand and evolution of the market in the design and production of strategies;
- The ability to organize successful inter-firm relationships with suppliers and customers;
- Improvement of the capacities of workers through investment in specialized training and the generation of high levels of responsibility in the production workers.

The above elements only include aspects that can be controlled by the companies, considering the agreements/links with universities and the customer-supplier relationship.

On the other hand, Quiroga [8] conducted a proposal of a mathematical model to determine the competitive-

ness of SMEs, which determined the critical factors and variables that incorporate internal elements controllable by companies, as well as external elements that affect their performance.

Also, Martínez *et al.* [9] suggest that the key indicators that affect the competitiveness are external indicators that have to do with the environment of the business, technology and innovation that is measured by: the ability to launch new products to market, quality, human resources management, managerial skills in the use of new management tools, the internationalization understood as the capability to reach foreign markets and the financing as a necessary source for their stay.

For his part, Rodríguez *et al.* (2010) [10], designated as internal factors that impact the competitiveness of enterprises, strategic planning, marketing capabilities, product quality or service offered by the company, the management skills of the main leader of the company and technology information and communication.

IFC [11] has proposed a model of competitiveness that determines the following assumptions: (a) the key to the success of the strategy is to work within the organization, in the management of their resources, whether human, material, financial, or knowledge; and (b) the generation of competitive advantages are based on the development and strengthening of the key capabilities of the organization.

Finally, it provides the map of competitiveness of the IDB (Interamerican Development Bank), which considers that there are 8 internal factors to determine the level of competitiveness of the company, such as: strategic planning, human resources, customers, provisioning, information systems, quality, finance and accounting and environmental management.

Furthermore, it is of great interest to see how various researchers (Deniz, Livas and López, 2008, Santillán, 2010, Gómez, 2001, Quince, and Herrera 2006, 2007, cited in [12]) of business competitiveness have generated models to determine the same in specific sectors such as pharmaceuticals, the construction industry, software industry, the baker, the mechanics among others.

2.2. The Characteristics of the Enterprise and Competitiveness

Some of the factors that are considered of success in the SMEs by Aragón and Baños [13] in the study on the strategic analysis for the development of small and medium-sized enterprises are:

- Having a manager with university studies and with a clear guidance in their sales;
- Perform to a greater extent a formal strategic planning and a greater number of alliances and agreements of cooperation, seeking a behavior more innovative, flexible and risky;
- Have more developed its organizational structure, primarily the areas of accounting and finance;
- Use new information technologies, have appropriately communications equipment and computer media and use applications to computerize the management processes;
- Use cost-accounting systems, annual budgets and analysis of its economic and financial situation for the decision-making.

Furthermore, Suárez [14] points out that the characteristics of the successful modern company are: leadership and corporate management, administration of the processes and human resource management.

With regard to the size of the companies, the literature notes that small businesses are those that have poorer results, and those that are placed in sectors or industries of low yields (Du Rietz & Henrelson, 2000; Robb, 2002; Loscocco *et al.*, 1991; Carter & Marlon, 2007; Watson, 2002, cited in [15]). However, we should consider it as one of the segments in which it women mostly operate because they are the ones that present lower institutional entrance barriers to them, in terms of both formal and informal, the combination translates into lower results for these [16]. In the same way, Diéguez *et al.* [15] has pointed out that the potential benefits that are derived from the economies of scale make the business size understood as a significant element in the company's competitive position.

Meanwhile, Calvo *et al.* [17] found that there was an inverse relationship between the financial risk of the company and its size, and age. Implying that a larger company would be expected to have greater success, because it was considered that the size was more related to the productive efficiency and its effect on the risk was more evident in the sectors characterized by a lower level of technology, being this also coincided with what was found by Yuh and Gerab [18], in whose investigation found that the size was strongly believed to be related to the performance. Moreover, Also, a senior greater chance of success since ancient times is more related to financial autonomy and implying a lower risk in all sectors, coinciding with the findings of Diéguez *et al.* [15],

who found that companies with most seniority had a stronger financial structure and greater profitability, which consequently was interpreted as greater success.

2.3. The Characteristics of Entrepreneurs and Competitiveness

Mungaray and Ramírez [19] found that there was a positive relationship between the rate of productivity and the level of education, being this finding congruent with what was found by Swinney *et al.* [20], and they also found that the higher the educational level of the employer is, the higher the performance of companies is.

Furthermore, a study conducted by the firm Ernst & Young [21] between 685 entrepreneurs yielded relevant information with regard to the characteristics of entrepreneurs, their mentality and their skills, highlighting the following findings: (a) The majority of entrepreneurs are young people (20 to 29 years old), and of these, the majority believes that the prior job experience and higher education are keys of success; (b) As to the factors of success of an entrepreneur, the followings reach the highest percentages: Vision (76%), Passion (73%), Impulse (64%) and Integrity (53%).

Furthermore, Escandón and Hurtado [22] found that features such as experience, educational level and the attitude to the risk of managers affected the chances that you have to export the Born Global⁵.

Finally, coinciding with the three previous authors, there is a view of the SELA [23], which mentions that the educational level both the employer and the staff/employees/personnel working in SMEs is a key aspect to achieve the business competitiveness.

In regard to gender, the literature that compares between both sexes indicates that women are generally associated with smaller companies, which grow more slowly and are less profitable (Fasci & Valdez, 1998; Hisrich & Brush, 1984; Kalleberg & Leicht, 1991; Pink & Hamilton, 1994, cited in [15]). The arguments supporting the differences would be: to have a psychological makeup that is less entrepreneurial or at least different from that of a man (Fagenson, 1993; Senators, 1987; Sexton & Bowman-Upton, 1990, cited in [15]); present less entrepreneurial spirit or motivation for the growth of their companies (Büttner & Moore, 1997; Fischer *et al.*, 1993, cited in [15]); lack of sufficient experience or education (Boden & Nucci, 2000, cited in [15]); have less desire to start a business (Carter & Allen, 1997; Matthews & Moser, 1995; Scherr *et al.*, 1993, cited in [15]); higher risk aversion (Masters & Meier, 1988, cited in [15]) and having difficulties in the implementation of the business or training needs (Birley *et al.*, 1989; Nelson, 1989, cited in [15]).

In several studies, the approach most often mentioned is that women entrepreneurs have worse outcomes than men. This topic has been extensively analyzed and is considered as one of the myths in relation to women entrepreneurs (Menzies *et al.*, 2004; Ahl, 2006, cited in [15]). However, there are also another set of investigations that pose a null effect of gender on the business result (Johnsen & McMahon, 2005; Chirwa, 2008; Watson & Robinson, 2003, cited in [14]), also being matched these results with what was found by Diéguez *et al.* [15].

3. The Competitiveness of SMEs in México City

This piece of work is the second part of a research project in which the competitiveness of SMEs is determined in the micro level or internal factors, due to the descriptive data are taken from findings of Saavedra *et al.* [12]. Where for the determination of both global competitiveness and by sectors, size and factors, it was used the BID map of competitiveness adapted by Saavedra and Milla [24].

The IDB map of competitiveness is a tool comprised of a questionnaire, which answers are found in a Likert scale from 1 to 5, where 1 is “doesn’t achieve” and 5 is “totally achieved”.

3.1. Methodology

From the first part corresponding to the characteristics of the company, the characteristics of the entrepreneur, the level of global competitiveness and the level of competitiveness factors, chi-square tests were applied to establish the relationships between variables to determine whether the characteristics of enterprises and entrepreneurs have influence on corporate competitiveness.

3.2. Sample Formation

The sample is integrated by 400 enterprises, corresponding to the 16 political delegations in México City. A

⁵It is a type of company that was born internationalized.

random sample was calculated based on 382,056 economic units posted by INEGI in the last enterprises economic census in 2009, with a confidence level of 95% and a maximum margin of error of 5%.

The total sample was of 400 enterprises which 10.3% were from the industrial sector, commerce 48.0% and services 41.8%. In reference to the size of the enterprise, the sample was characterized by 91.0% of micro-enterprises, 7.3% of small and only 1.8% of medium size enterprises.

3.3. The Entrepreneur's Characteristics

The economically active population's profile (PEA in Spanish) has been transformed in México City, firstly because of the increasing participations of women, the relative decreasing of the population involved in manufacture and the size increasing of the services area. These changes have a decisive impact on the creation of new business. A part of the economically active population is neither properly trained, nor have the abilities and competences required by the growing economy areas [25].

This is how, the woman has been incorporated into business field, so 44% of the respondents are women, and meanwhile 56% are men. It is important to mention that in the industrial sector the proportion of the female population is smaller, due to the own characteristics of this sector where the work force is mostly conformed by male population, that's the reason why leadership must be held by men. There, Heller [26] points out that women entrepreneurs are mainly focused in third party activities, such as commerce and services, because these activities are a safe place for those who can't find a job in formal activities. Also, Heller [26] points out that women entrepreneurs are mainly focused on tertiary activities, such as the commerce and services, because they serve as a refuge for those who cannot find work in formal activities; the preference for these sectors is due to the limitations imposed by the other sectors, where a greater demand for infrastructure and capital is required.

Moreover it can be seen that the level of studies of the entrepreneur reflects that 40.3% had completed high school and only 36% is the bachelor. Looking at sectors in industry and service close to 40% of employers have degree while in the trade this level only reaches 30.8%, with a predominance in the latter sector the high school level, with 46.2% (see [Table 2](#)).

In regard to the age of the entrepreneur, the average of the three sectors reaches the age of 36 indicating that the entrepreneurs are mature and with some experience.

3.4. Characteristic of Companies

An impediment to improve the competitiveness of SMEs in México is the fragility of the business to survive, many research agree that the companies are born and die with ease. The companies that have a length of 0 to 2 years are the most prone to disappear, in the case of the Federal District are more than 30%. Companies from the industry sector are those that have a higher age, between 5 and 8 years (41.5%); the commerce sector reaches 37.2% in this range, while in the service sector firms predominate with less seniority of 0 to 2 years (34.5%) and those with lower chances of survival.

Here 64.3% of entrepreneurs are between 30 and 59 years, that is to say, with experience in the business; while the 33.1% the age range fluctuates between 20 and 29 years with less experience (see [Table 3](#)).

In 2013 average about 70% of the business are constituted as individuals with business activity while around 30% as moral persons (mercantile society). In the service sector including the results are even greater, because three-quarters of the business is comprised of individuals.

In respect to capital integration of the company, in the industry and trade is mainly family, while in the trade is corporate governance, *i.e.* non-familiar (see [Table 4](#)).

3.5. Global Competitiveness of the Companies

The overall competitiveness of companies throughout the sample reached 41.85%, in as to competitiveness achieved ranges, the results indicate that 73.3% of the companies are low competitiveness and only 17% of high or very high competitiveness (see [Table 5](#)). That is due to the fact that the Federal District coexists the most modern production processes, technology, communication and global trade, with an informal economy, without access to the systems of social welfare and a rural vulnerable subsistence sector vulnerable sector [25].

⁶It is calculated as average for all firms in the sample.

Table 2. Gender and level of studies of the entrepreneurs. Sectors of industry, trade and service.

Enterprise' Age	Entrepreneur's age	Sectors			Total
		Industry	Commerce	Services	
0 to 2	Up to 20 years	2.4%	1.9%	1.0%	1.5%
	21 - 29 years	4.9%	12.2%	15.8%	13.3%
	30 - 39 years	9.8%	7.7%	11.3%	9.8%
	40 - 59 years	4.9%	4.4%	6.4%	5.5%
	More than 60 years	2.4%	0.0%	0.0%	0.3%
	Sub-total		24.4%	26.3%	34.5%
3 to 4	Up to 20 years	2.4%	1.3%	1.0%	1.3%
	21 - 29 years	4.9%	10.3%	8.9%	9.0%
	30 - 39 years	9.8%	10.3%	7.9%	9.0%
	40 - 59 years	17.1%	14.1%	12.8%	13.8%
	More than 60 years	0.0	0.0%	1.0%	0.5%
	Sub-total		34.1%	35.9%	31.5%
5 to 8	Up to 20 years	2.4%	1.9%	0.0%	1.0%
	21 - 29 years	14.6%	8.3%	4.4%	7.0%
	30 - 39 years	12.2%	10.3%	9.9%	10.3%
	40 - 59 years	9.8%	14.1%	17.7%	15.5%
	More than 60 years	2.4%	2.6%	1.5%	2.0%
	Sub-total		41.5%	37.2%	33.5%
More than 12	40 - 59 years		0.6%	0.5%	0.5%
	Sub-total		0.6%	0.5%	0.5%
Total	Up to 20 years	7.3%	5.1%	2.0%	3.8%
	21 - 29 years	24.4%	30.8%	29.1%	29.3%
	30 - 39 years	31.7%	28.2%	29.1%	29.0%
	40 - 59 years	31.7%	33.3%	37.4%	35.3%
	More than 60 years	4.9%	2.6%	2.5%	2.8%
			100.0%	100.0%	100.0%

Source: Saavedra *et al.* [12].

The government has established support programs targeted to the productive chain and services of companies driving with the small and medium-sized enterprises, a positive policy, therefore we find in these sectors dynamic and competitive businesses. However, there is a slope to the competitiveness of microenterprises government strategies have failed to develop challenge.

3.6. Global Competitiveness by Factors

In terms of global competitiveness factors, the opportunity areas for these companies are presented in each of these factors predominating: strategic planning, information systems, human resources, environmental management and quality assurance (**Graph 1**).

Table 3. Age of a company and age of the entrepreneur, industry, trade and services.

Enterprise' Age	Entrepreneur's Age	Sectors			Total
		Industry	Commerce	Services	
0 to 2	Up to 20 years	2.4%	1.9%	1.0%	1.5%
	21 - 29 years	4.9%	12.2%	15.8%	13.3%
	30 - 39 years	9.8%	7.7%	11.3%	9.8%
	40 - 59 years	4.9%	4.4%	6.4%	5.5%
	More than 60 years	2.4%	0.0%	0.0%	0.3%
	Sub-total		24.4%	26.3%	34.5%
3 to 4	Up to 20 years	2.4%	1.3%	1.0%	1.3%
	21 - 29 years	4.9%	10.3%	8.9%	9.0%
	30 - 39 years	9.8%	10.3%	7.9%	9.0%
	40 - 59 years	17.1%	14.1%	12.8%	13.8%
	More than 60 years	0.0	0.0%	1.0%	0.5%
	Sub-total		34.1%	35.9%	31.5%
5 to 8	Up to 20 years	2.4%	1.9%	0.0%	1.0%
	21 - 29 years	14.6%	8.3%	4.4%	7.0%
	30 - 39 years	12.2%	10.3%	9.9%	10.3%
	40 - 59 years	9.8%	14.1%	17.7%	15.5%
	More than 60 years	2.4%	2.6%	1.5%	2.0%
	Sub-total		41.5%	37.2%	33.5%
More than 12	40 - 59 years		0.6%	0.5%	0.5%
	Sub-total		0.6%	0.5%	0.5%
Total	Up to 20 years	7.3%	5.1%	2.0%	3.8%
	21 - 29 years	24.4%	30.8%	29.1%	29.3%
	30 - 39 years	31.7%	28.2%	29.1%	29.0%
	40 - 59 years	31.7%	33.3%	37.4%	35.3%
	More than 60 years	4.9%	2.6%	2.5%	2.8%
			100.0%	100.0%	100.0%

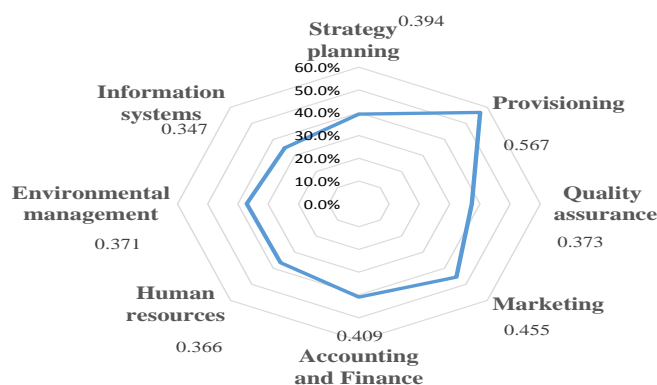
Source: Saavedra *et al.* [12].

3.7. Competitiveness by Sector

The government of México City considers that the competitiveness of SMEs is based on the performance that have linked to the creation of the necessary conditions to potentiate their capacities, both innovation in processes, such as in the momentum of research and development of new products for the increase in productivity, the strengthening of the profitability, training, innovation and participation in the markets, based on benefits associated with products or services, as well as to the conditions that offer [27].

In respect to the industry, only 36.6% is highly competitive and close to 60% of low competitiveness as a result of the lack of an industrial policy defined for several decades (see **Table 6**).

In both trade and services sectors, three-quarters of business are not competitive. For the retail trade sector,



Graph 1. Global competitiveness by factors. Source: Saavedra *et al.* [12].

Table 4. Legal personality and capital formation of the business.

Legal Personality	Capital Formation	Sector			Total
		Industry	Commerce	Services	
Legal Person	Familiar	49.3%	35.4%	47.3%	41.3%
	No Familiar	19.5%	26.6%	27.5%	26.3%
	Sub Total	63.4%	62.0%	74.9%	67.5%
Legal Entity	Familiar	9.8%	6.8%	4.2%	6.0%
	No Familiar	26.8%	31.3%	21.0%	26.5%
	Sub Total	36.6%	38.0%	25.1%	32.5%
Total	Familiar	53.7%	42.2%	51.5%	47.3%
	No Familiar	46.3%	57.8%	48.5%	52.8%
		100.0%	100.0%	100.0%	100.0%

Source: Saavedra, *et al.* [12].

Table 5. Global competitiveness of enterprises (percentage).

Range of Competitiveness	Total Number of Surveyed Companies	Average%
Very High 81 - 100	14	3.5%
High 61 - 80	54	13.5%
Medium 41 - 60	39	9.8%
Low 21 - 40	292	73.0%
Very Low 0 - 20	1	0.3%
Total	400	100.0%

Source: Saavedra, *et al.* [12].

the government has established supporting programs such as: my shop, my shoe store and my pharmacy with the goal of financing their growth and development, offering specialized consulting and training to the employer in the administrative, commercial and technological areas in order to make their business profitable and survive.

The specialized services sector that makes up only 16.2% of turnover of high competitiveness has support

Table 6. Industries Global competitiveness by Sectors. (percentage).

Competitiveness Range	Sectors		
	Industry	Commerce	Services
Very High 81 - 100	19.5%	2.1%	1.2%
High 61 - 80	17.1%	11.5%	15%
Medium 41 - 60	4.9%	10.9%	9.6%
Low 21 - 40	58.5%	75.0%	74.3%
Very Low 0 - 20	0%	0.5%	0%
Total	100.0%	100.0%	100.0%

Source: Saavedra, *et al.* [12].

programs as Prosoft⁷, that encourages innovation and the high value added services in information and communications technologies (ICT).

3.8. Competitiveness by Size

In terms of competitiveness measured by company size, the results show that 80.2% of the micro enterprise is low competitiveness, while in the small business 75.9% is of high competitiveness, while in the medium-sized business 100% is of very high competitiveness (see [Table 7](#)), showing that when the larger the company is, the greater chance you have to achieve a high level of competitiveness.

4. Relationship between the Characteristics of the Employer and the Companies and the Competitiveness of SMEs

In this section the hypothesis tests of the present investigation will be made.

4.1. Relationship between the Characteristics of the Employer and the Competitiveness of SMEs

In order to perform this test, the following null hypotheses were formulated:

Ho1: There is no relationship between the global competitiveness and the characteristics of the employer;

Ho2: There is no relationship between the factors of competitiveness and the characteristics of the employer.

Using the method of Chi-square to determine what kind of relationship exists between the characteristics of the employer and the competitiveness of enterprises, with a confidence level of 95% and an error of 5%. And finally it achieved the following results.

As we can see in [Table 8](#), most of the relationships between the characteristics of the entrepreneur and the global competitiveness and competitiveness factors were not significant, which in some way could be interpreted as follows:

- The gender of the entrepreneur does not affect the competitiveness of his business or in any of the factors, this finding is consistent with what was found by Diéguez *et al.* [15], which found a null effect of this variable in business success.

- The age has no relation to the competitiveness of the company or with any of its factors, being this finding does not coincide with what was found by Mungaray and Ramírez [19] in which determined that there was a negative relationship between the experience of the owner and the business operation. On the other hand, it was not coincident with the study conducted by Ernst and Young [20] where it was found that a factor of success was the prior job experience, this study coinciding with the findings of Escandón and Hurtado [22] who found that the experience was important for business success, as measured by the ability to export.

- The level of education has a significant relationship with the global competitiveness, the factors of supply and marketing, which shows how important it is to be able to count on a skilled entrepreneur, which boost the

⁷Development of the Software Industry Program.

Table 7. Competitiveness of businesses by size (Percentage).

Range of Competitiveness	Size		
	Micro	Small	Medium
Very High 81 - 100	0%	24.1%	100.0%
High 61 - 80	8.8%	75.9%	0%
Medium 41 - 60	10.7%	0%	0%
Low 21 - 40	80.2%	0%	0%
Very Low 0 - 20	0.3%	0%	0%
Total	100.0%	100.0%	100.0%

Source: Saavedra *et al.* [12].

Table 8. Relationship between the global competitiveness and its factors and the characteristics of the employer.

Features/ Global Competitiveness and Competitiveness Factors	Strategic Planning	Provisioning	Quality	Comerciaizacion	Accounting and Finance	Human Resources	Environmental Management	Information Systems	Global Competitiveness
Gender	0.492	0.415	0.006	0.125	0.547	0.177	0.225	0.300	0.669
Age	0.244	0.050	0.499	0.723	0.065	0.017	0.156	0.543	0.884
Level of Studies	0.295	0.000	0.164	0.000	0.193	0.092	0.058	0.169	0.000

Source: Own elaboration. Note: we do not reject the hypothesis when p is greater than 0.05.

competitiveness in the company. We can also see that the entrepreneurs trained were concerned with the aspects of provisioning, taking care of a company to purchase inputs and quality services which will result in benefits for the customer. Also, they are concerned about the aspect of marketing, increasingly looking for distribution channels for their products and services. This finding is consistent with the studies carried out by Aragón and Baños [13], Mungaray and Ramírez [19], Ernst and Young [21], Escandón and Hurtado [22] and SELA [23], who considered the level of studies as an important factor to boost competitiveness.

Below a list of the hypothesis tests with the Chi-square value is presented, only for the variable level of studies (there are no other due to lack of space) (Table 9).

4.2. Relationship between the Characteristics of the Employer and the Competitiveness of SMES

In order to perform this test, the following null hypotheses were formulated:

Ho1: There is no relationship between the global competitiveness and the characteristics of the entrepreneur;

Ho2: There is no relationship between the factors of competitiveness and the characteristics of the business.

Using the method of Chi-square to determine what kind of relationship exists between the characteristics of the competitiveness of enterprises, with a confidence level of 95% and an error of 5%. And it achieved the following results.

As it can be seen in Table 10, the characteristics of SMEs such as the size, the legal personality and the sector have an impact on the global competitiveness and the factors of competitiveness, while features such as the type of business (not family or family) and the old have no effect on competitiveness. The results are interpreted as follows:

- The size of the company has a major impact on the global competitiveness and the factors affecting the competitiveness of the same, this finding coincides with what was found in the descriptive analysis shown in

Table 9. Hypothesis tests of the relationship between the global competitiveness and its factors and the characteristics of the employer (level of studies).

Hypothesis	Calculated Chi-square	Chi tables	Statistic Decision
Ho ₁ : There is no relationship between the global competitiveness and the characteristics of the employer	221.266	3.9440	Ho ₁ is rejected
Ho ₂ : There is no relationship between the factors of competitiveness and the level of studies of the businessman			
Ho _{2.1} : There is no relationship between strategic planning and the level of studies of the businessman	27.207	3.9440	Ho _{2.1} is rejected
Ho _{2.2} : There is no relationship between the supply and the level of studies of the businessman	215.770	3.9440	Ho _{2.2} is rejected
Ho _{2.3} : There is no relationship between the quality and level of studies of the businessman	30.670	3.9440	Ho _{2.3} is rejected
Ho _{2.4} : There is no relationship between the marketing and the level of studies of the businessman	215.766	3.9440	Ho _{2.4} is rejected
Ho _{2.5} : There is no relationship between accounting and the level of studies of the businessman	29.750	3.9440	Ho _{2.5} is rejected
Ho _{2.6} : There is no relationship between the human resources and the level of studies of the businessman	33.616	3.9440	Ho _{2.6} is rejected
Ho _{2.7} : There is no relationship between Environmental management and the level of studies of the businessman	35.775	3.9440	Ho _{2.7} is rejected
Ho _{2.8} : There is no relationship between the information systems and the level of studies of the employer	30.506	3.9440	Ho _{2.8} is rejected

Source: Own elaboration.

Table 10. Relationship between the global competitiveness and its factors and the characteristics of the company.

Features/ Global Competitiveness and Competitiveness Factors	Strategic Planning	Provisioning	Quality	Commercialization	Accounting and Finance	Human Resources	Environmental Management	Information Systems	Global Competitiveness
Size	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Legal Personality	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Type of Company	0.250	0.168	0.518	0.668	0.247	0.238	0.145	0.286	0.530
Sector	0.000	0.109	0.003	0.014	0.013	0.000	0.003	0.000	0.000
Seniority	0.651	0.592	0.952	0.593	0.875	0.272	0.984	0.296	0.772

Source: Own elaboration.

Table 9 where you can clearly see that the companies of micro size have low competitiveness, while small and medium-sized enterprises with high competitiveness. Also, this finding is consistent with what is found by Calvo *et al.*, [17]; and as well as Du Rietz & Henrison, 2000; Robb, 2002; Loscocco *et al.*, 1991; Carter & Marlon, 2007; Watson, 2002, cited in [15], who claim that smaller companies show worse results.

-The legal personality (legal person or Commercial Company), have an impact on the global competitiveness and the factors of competitiveness, in the case of México, there is a clear trend of banks, government agencies and larger enterprises to conduct business with SMEs that are formed as a commercial entity, this represents a limitation that impedes these companies will have sources of external financing through the banking sector, which could perform long-term investment and expand or improve their productive capacity on the one hand and the another dabble in businesses that would allow them to participate in a productive chain to raise its competitiveness.

- The sector in which the firm operates, has impact on the global competitiveness, as well as the factors such as strategic planning, human resources and information systems, these findings are also explained with the descriptive analysis as shown in **Table 8**, where in the range of high and very high competitiveness are the companies in the industrial sector with a 36.6%, while the companies of the sector trade only 13.6% reach this range, and in the services sector reach a 16.2% of the businesses, this is explained by the high demand that has the industrial sector to provide high quality goods at competitive prices in a market saturated by both national products as foreigners.

- Both the type of company (family or non-family) and antiquity do not have an impact on the level of global competitiveness nor competitive factors. However, Calvo *et al.* [17] found that the age was a factor that has an inverse association with business failure, and Saíñz [28] points out among their findings that the companies with the greatest seniority have a more consolidated financial structure and high profitability that somewhat minimizes the risk of bankruptcy.

Below is a list of the hypothesis tests with the Chi-square value only for the variable level of studies (there are no other due to lack of space).

As we can see in **Table 11**, all the null hypotheses that deny the relationship between global competitiveness and competitive factors and the company size are rejected, therefore, it is established that there is a relationship between these two variables.

5. Discussion

It is increasingly evident the need exists to have businessmen increasingly academically prepared given the relationship found between competitiveness and the level of studies, and so is the fact of being constituted as a trading company as this gives you more security to creditors and investors expanding the possibility of doing business with SMEs. Therefore, it is necessary that the governments of countries where there is an important contribution of SMEs to generate policies and programs to enable the entrepreneur to have all the necessary elements to face a competitive environment.

Table 11. Hypothesis tests of the relationship between the global competitiveness and its factors and the characteristics of the company (size).

Hypothesis	Calculated Chi-square	Chi tables	Statistic Decision
Ho ₃ : there is no relationship between the global competitiveness and the size of the company	172.093	1.635	Ho ₃ is rejected
Ho ₄ : there is no relationship between the factors of competitiveness and the size of the company			
Ho _{4.1} : there is no relationship between strategic planning and the size of the company	103.439	1.635	Ho _{4.1} is rejected
Ho _{4.2} : there is no relationship between the provisioning and the size of the company	24.182	1.635	Ho _{4.2} is rejected
Ho _{4.3} : there is no relationship between the quality and the size of the company	89.269	1.635	Ho _{4.3} is rejected
Ho _{4.4} : there is no relationship between the marketing and the size of the company	69.349	1.635	Ho _{4.4} is rejected
Ho _{4.5} : there is no relationship between the accounting and finance and the size of the company	59.892	1.635	Ho _{4.5} is rejected
Ho _{4.6} : there is no relationship between the human resources and the size of the company	115.523	1.635	Ho _{4.6} is rejected
Ho _{4.7} : there is no relationship between environmental management and the size of the company	114.572	1.635	Ho _{4.7} is rejected
Ho _{4.8} : there is no relationship between the information systems and the size of the company	126.346	1.635	Ho _{4.8} is rejected

Source: Own elaboration.

6. Conclusions

According to the literature review, in relation to the characteristics of the company they are considered success factors for SMEs, the size (Du Rietz & Henrelson, 2000; Robb, 2002; Loscocco *et al.*, 1991; Carter & Marlon, 2007; Watson, 2002, citados en Diéguez, *et al.*, 2010), and of antiquity [15].

The findings of this research indicate that the level of studies has a significant relationship with the global competitiveness and remain consistent with the findings of the literature previously analyzed. Therefore, it was found that the size had a significant relationship with the global competitiveness and with all other factors, being also matching with the findings of the literature previously analyzed. The legal personality (physical person or mercantile society) also has relationship with competitiveness. In the case of Mexico there is a clear trend of banks, government agencies and large enterprises, SMEs do business with companies with legal personality, which is a limitation that does not allow these companies to have external funding sources through banking sector, with what could be done long-term investment and expand to improve their productive capacity, on the one side, to take part in business would enable them to participate in a productive chain that would increase its competitiveness.

For its part, the sector shows a significant relationship with the global competitiveness and its factors, these findings are also explained with the descriptive analysis as shown in **Table 8**, where in the range of high and very high competitiveness are companies in the industrial sector with 36.6 per cent, while the companies of the sector trade only 13.6 per cent reach this rank and the services sector reach 16.2 per cent of the companies. This is because of the high demand that has the industry to provide of high quality goods and better prices in a saturated domestic and foreign products market.

The features that did not have a meaningful relationship with competitiveness were gender. The characteristics that had no significant relationship with competitiveness were gender and age, the reviewed studies are not conclusive, some have found a positive, others negative relationship and other null and found no coincidence of this finding with the review by the literature, because it is considered that the age has to do with the experience and it suggests that a more experienced greater competitiveness. However, perhaps in the case of México, the experience is supplied/replaced with the momentum that the young entrepreneur has to take forward his business.

Another factor that shows no relation to the competitiveness is the type of business (familiar or non-familiar), and finally the seniority, still this finding does not coincide with what has been found in the literature, since it is said that the oldest companies are more rooted in the market and therefore, there are less prone to break.

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