Culture of Competitiveness in the New Global Context

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Contents

Introduction

Competitiveness is a key issue in the globalization of enterprises, to understand how it can be improved is basic nowadays. New disciplines are used for companies in order to increase the competitiveness. The first paper exemplifies how new marketing strategies in some SMEs in the metropolitan area of Guadalajara, Mexico can increase their global positioning.

Education is also an important aspect to increase the competitiveness in one country and/or in the industry, so the education levels of the employees in 63 companies established in Rioverde, San Luis Potosi, México, is measure in order to find a relationship with the culture of quality.

Following the aspects of quality, the third work focuses in the discrepancy that occurs between the ISO 9000 standard and its implementation, focusing in the identification which processes may cause such distortion.

Innovation and the value creation are some aspects that may increase competitiveness, so indentifying them could help the companies to improve their performance. Using a model that identifies leadership possibly will encourage the innovation generation and the value creation in companies.

To develop an entrepreneurial vision is also and advantage that favors competitiveness, having found which the key strategic profiles in SMEs may facilitate the crucial continuity of the enterprise, helping to accomplish strategic objectives in some areas such as increasing sales and productivity. This economic impact may be contrasted between new and experienced entrepreneurs. We present these two issues in our works five and six.

CRM is shaping the ways to understand the needs of customers. This book presents two works related with CRM: The first deals about how much CRM may improve competitiveness in the service sector in Guadalajara, measuring the impact in is studied in 418 SMEs. The second article

works with 410 SMEs oriented in the manufacturing sector. We can have a bigger picture of the relationship between CRM and competitiveness.

Continuing with the manufacturing sector, the financial performance is a good index of how well the company is doing. To find a relationship using internal control and investment may be helpful for future researches related with financial performance, and how Guadalajara´s companies are performing.

It is important to find a relationship between key factors of a country and a company in order to determinate competitiveness, so our final paper proposes a mathematical model for it.

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1
Marketing and its effects on competitiveness: SME's manufacturing in Guadalajara, Mexico

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Abstract

Marketing is social and managerial process in which a group or individuals get what they need by generating offering and exchanging products of similar value. Marketing involves strategies of purchasing techniques, market research and market positioning. Therefore marketing is the approach in which market and commerce are managed in an organization. Then the perspective of the following research is to get a better understanding of marketing used by SME in the metropolitan area of Guadalajara, and how the competitiveness of SME makes them more productive competitive and with a better global positioning.

Keywords: *Marketing, Competitiveness in SME's.*

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Introduction

According to A.M.A (2013) or "American Marketing Association," defines: marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large.

In recent days different marketing experts state that marketing involves market strategies, purchases, marketing research and market positioning. Marketing is the approach in which merchandising or commercialization is managed inside of an organization or business. It is really important to identify that marketing is part of business activities as Stanton, Etzel and Walker mention (2004), their definition is really clear: *marketing is an integral system of business activities created to plan products that satisfy needs, assign prices, promote and distribute to different markets. This to achieve the objectives set by an organization*.

Also Keller and Kotler (2006), say that marketing is a social and administrative process in which groups or individuals get what they need by generating and offering exchanges of products of similar or equal value. While Kotler and Amstrong (2010), define marketing as the process in which enterprises create value and solid relationships with their clients with the objective of keeping their clients. Also Lamb, Hair and McDaniel (2011), state that the concept of marketing focuses in the needs and wishes of their customers so that their customers can differentiate their products from the products of their competitors, achieving goals in more efficient time frames and not forgetting to achieve their customer's goals in a legal and responsible manner.

In the international market which is highly competitive we need to have better relations company-customer and at the same time customers push to get better results like reducing costs, have improved production and have a better quality of the product (Euroscrip, 2012). For these reasons SME have to develop and execute a series of complex operations of global quality with providers and associates in continuous evolution.

In June of 2011 the production of the national manufacturing industry registered a growth of 0.8% compared to the same month back in 2010. The volume of productivity for the manufacturing sector in Jalisco grew 4.4% in the period of January – June 2011. In September of 2011 the national records for manufacturing business showed a growth of 4.9% compared to the same month in 2010, and in the State of Jalisco it showed an incredible growth of 7.7% according to (SEIJAL, 2011.)

Furthermore the food industry in the state of Jalisco was the leader of the employment sector in the same industry by generating 115 formal employments in the first poll data for 2011. This is an increase of employment for 5.5% an amazing number due to the fact that during the same period of time there were increases of supplies in the global market (Salvador and Maldonado, 2011).

The goal of the following paper is to show the work of the different manufacturing companies in the Guadalajara Metropolitan Area, that use competitiveness as a factor of marketing that has allow them to have a stronger positioning in the manufacturing business locally and globally.

Marketing mix

Arriaga, Avalos and De la Torre (2012), state that the concept of putting together marketing mix was developed by Neil Borden in 1964 and that is had some contributions from Culliton in 1948, who developed a list of element from which 4 of them have reappeared; product, price, place and promotion. This concept was attributed to McCarthy in 1960. Thus the following chart.

Figure 1
The Marketing Mix

Source: Own elaboration based on data from NetMBA, (2010)

A unique combination of product, price, place and promotions in a determined manner allows industries to compete in a more effective way and this guarantees more profitability and sustainability, Barney (1991,)

the elements of a marketing mix provide a unique value to the client or give an accurate reason for purchase to the buyers.

The simplicity and concept of marketing mix have gotten the most of the attentions from SME executives, and they have started to use marketing mix as a fundamental strategy in their organizations.

Product, Price, Place and Promotion

Marketing involves product and according Lamb, Hair y McDaniel (2011), product is all the favorable or adverse that a person receives in exchange and could be tangible or intangible. However Muñiz (2012), states that product is a group of characteristics and attributes tangible with physical attributes; shape, size or color, then intangible with ethereal attributes; brand, services, corporate image. The buyer accepts as something that is going to satisfy their needs in principle. Thus a product does not exist until it does respond to a necessity or wish; the current tendency is that the idea of a service comes together with a product a way to accomplish a better penetration in the market and being highly competitive.

Price another element of marketing mix it has both values for the producer and the consumer, for the consumer is an expense and for the producer is an income and this makes the price the most complex item in marketing tasks, (Gónzalez, Gaytán, Sánchez y Pérez, 2011).

According to Gonzalez, et. Al. (2011), **place** or distribution is a complex exchange and it can be defined as "the group of interdependent organizations involved on placing a product or service in disposition to users or consumers". Furthermore Stern and El-Ansary, 1992 and Gonzalez 2011, state that the exchange could be in three ways; restricted, generalized and complex.

At last **promotion** integrates the strategies to keep target clients from the goods or services offered, thus getting a competitive advantage, the objectives of promotion are very simple; informing, persuading and reminding customers about a good or product, (Gónzalez, et. al. 2010).

In conclusion after reviewing all the definitions given by experts we can say that marketing is the group of activities that create, communicate, offer and deliver value to clients and society in general and its result is beneficial for both clients and businesses. Marketing mix helps the enterprises or organizations to achieve their established objectives and to

satisfy the needs of their clients or markets by developing their own and customized marketing strategies.

Competitiveness

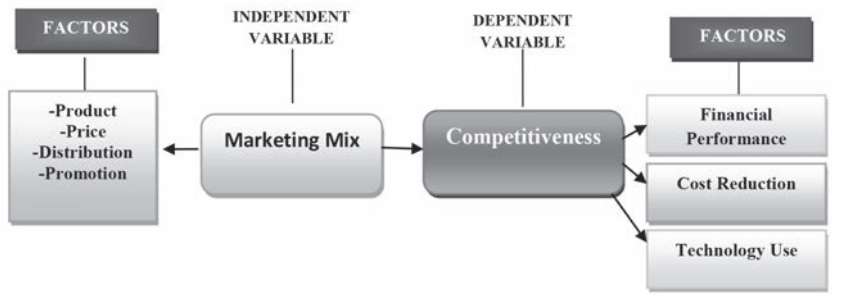
Competitiveness is not a well-defined concept because it has not set limits. The operative definition of competitiveness depends on the point of the analysis point of reference (nation, sector or enterprise,) also from the analyzed product (chain f production, stages of production, basic needs,) and objective of investigation (short-long term, market operation), (Pineiro, 1993).

John Kay (1993), describes business competitiveness in function of four different factors. The first is the capability for innovation. Second are the external and internal relationships. The third one is the reputation. And the last one is the strategy. In this context competitiveness has widen to take in count the principal tangible and intangible resources that provide a competitive edge (Hamel and Prahalad, 1989). Furthermore competitiveness has to have those factors to obtain more capabilities from the own companies; dynamics such as flexibility, adaptability quality and commercialization (Barney, 1991), given this competitiveness is the capability of businesses to design, generate and commercialize products of superior quality in comparison to competitors having always in count the price as a main factor (D'Cruz y Rugman, 1992).

Methodology

The following is going to describe the methods and techniques that will be used to measure what was mentioned in the theory framework in relation to the SME in Guadalajara's Metropolitan area. Taking a look to the figure 2, we can see that competitiveness is a dependent variable, and marketing is the independent variable. Each one of these dependent variables is related to different factors such as financial performance, technology and expenses. And the independent variables are related to product, price, distribution and promotion.

Figure 2
Theoretical model to analyze the impact of marketing mix in the competitiveness



Source: own material

Every independent variable is every aspect, situation feature and fact, which is considered as the root of the relations in between variables. Every dependent variable is the result or effect delivered for the action of the independent variables (Bernal, 2006).

At the end, from the theory framework where all this variables belong, we can define that the framework is an exposition and analysis of the theory that work as a foundation to explain all the results from the investigation (Bernal, 2006).

Hypothesis

For the hypothesis we are going to run a test to proof it validity. According to Tamayo (2012), hypothesis always carries on with an empirical test by formulating a series of questions that will bring us to an answer of any type. This suppositions or questions have empirical and conceptual elements; the purpose of these questions is to achieve a better understanding of these concepts, (Galicia citing Bernal, 2006).

The following hypothesis is to validate this investigation.

- H1: The higher index of marketing mix the greater the competitiveness.

To validate this hypothesis we made an empirical investigation of the manufacturing business and enterprises from the Guadalajara Metropolitan area (Guadalajara, Zapopan, Tlaquepaque, Tonalá, El Salto y Tlajomulco de Zúñiga.) In the first stage of the study there was an investigation of the quality in which the manufacturing sector was surveyed. The results of this stage allowed us to get more knowledge on the situation of the manufacturing sector.

The procedure used for this study to obtain the theory framework was to get the number of SME that have between 11 to 250 employees. For this we asked for help of the local office of Instituto Nacional de Estadística y Geografía (INEGI), which is the local institute for statistics and geography. They have a Statistics National Directory for Economical Business or as the local acronym (DENUE,) for the SME in Guadalajara's Metropolitan Region getting a total of 2, 847 companies which is about 80% of the total of companies to be studied. Since INEGI and DENUE and a part of various organizational businesses locally and national the investigation did not focus in a sole economical sector.

Table 1
Number of manufacturing SMEs in the Metropolitan Zone of Guadalajara

Municipio	*Pymes manufactureras*
1. Guadalajara	1, 417
2. El Salto	114
3. Tlajomulco	112
4. Tlaquepaque	317
5. Tonalá	155
6. Zapopan	732
TOTAL	2, 842

Source: Own elaboration based on data from INEGI (2013).

The survey was designed to be answered by the CEO's of the SME in Guadalajara's Metropolitan area, in the localities of Guadalajara, Zapopan, Tlaquepaque, Tonalá, El Salto and Tlajomulco de Zúñiga, the questionnaire use a Likert's scale the questions were designed to measure the intensity or grade of sentiment in respect to a variable to be measured (Bernal, 2010). It is a psychometric scale used in questionnaires with the goal of getting its participants preferences to agree or disagree in an or-

dinal scale (Bertram, 2007). The objective of a psychometric scale is to measure an attribute that allows to describe people based in different indicators or items. Also to allow them to measure these indicators with coherent responses (Levy and Varela, 2003), the questionnaire of this investigation was developed in relation to the figure showed above in figure 2; where the dependent variable is competitiveness and at the same time has 3 factors; performance, technology and expenses. Each factor has six indicators for measurements; the scale that was handled for this survey was as follows.

1. Totally disagree.
2. Partially disagree.
3. Neutral.
4. Partially agree.
5. Totally agree.

Then the independent variable marketing mix was applied with the factors of; product, price and distribution. Each factor had had various indicators thirteen, seven and eight respectively.

General objective

To identify the marketing factors that has a direct impact in the SME's sector for Guadalajara Metropolitan area.

Technical data of the sample of the research

Features	*Survey*
Universe[1]	2, 847 SMEs in the manufacturing industry.
Field of study	National
Sample unit	Manufacturing SMEs with 11 to 250 employees
Method of data collection	Survey staff
Type of sampling	Random Simple
The sample size	450 companies
Margin of sampling error	± 4% at a global level, for a 97% confidence level (p = q = 0.5).
Date of field work	September 2012 to February 2013

Source: Own elaboration based on data from INEGI, (2013)

Formula for the sample:

$$n = \frac{Z^2.N.p.q}{i^2\,(N-1) + Z^2\,.p.q}$$

$$n = \frac{2.06^2.2847.50.50}{(0.05)(.05)(2847-1) + 2.06^2\,.50.50} = 420\ surveys$$

Terms:
n = Sample
Z = Value the probability of 98% partner = 2.06
N = Population, universe = 2847
p = Success =.5
q = Failure =.5
i = Standard Error =.05

Rounding up the surveys made we closed the margin of surveys at 450 surveys, in order to have a more reliable margin of trust in the study made. Due to the size of variables they required a greater range of study in the number of surveys. The Guadalajara Metropolitan area is defined as follows as it is shown in in chart #1 and the applications of surveys was performed in a randomly manner.

Measures development

About development standards, Marketing was measured on a four scale items, adapted from Davis, (1973), Sethi (1975), Burrell y Morgan (1979), Carroll (1979), Drucker (1984), Cochran y Wood (1984), Barcena (2000), Hertz (2000), Bakan (2004), González y García (2006), Porter y Kramer (2006), Calvente (2007), Keinert (2008), Azcárate, Carrascto & Fernández (2011) y Barrera (2011). Competitiveness was measured on six items and was adapted from Friedman (1970), Barney (1991), John Kay (1993), Pineiro (1993), Freeman (1994), Russo & Fouts (1997), Miles & Covin (2000), McWilliams & Siegel (2001), Chand & Fraser (2006), Beurden y Gößling (2008). All items used were based on a likert scale of 5 positions with 1= absolutely disagree and 5= absolutely agree as limits

Reliability and support

To assess the reliability and validation of scales measuring the level of intellectual capital and business competitiveness, a Confirmatory Factorial analysis (CFA) with the method of maximum likelihood and EQS 6.1 software (Bentler, 2005;) Brown, 2006; (Byrne, 2006). At the same time, Cronbach alfa and IFC exceed the value 0.70 suggested by Bagozzi & Yi (1988), Nunally y Bersntein (1994), Lévy & Varela (2005).

Rates of statistical adjustment that were considered in the NFI, NNFI, IFC and RMSEA (Bentler & Bonnet, 1980); (Byrne, 1989; Bentler, 1990; Hair et al., 1995; Chau, 1997; Heck, 1998); (Hu, Bentler y Kano 1992); (Jöreskog & Sörbom, 1986; Byrne, 1988; Papke-Shields et al. 2002).

Confirmatory Factorial Analysis (CFA) results are represented on table 1 and shows that the model gives well adjustment data ($S\text{-}BX^2$= 1907.8820; *df* = 1321; ($p < 0.0000$); NFI = .838; NNFI = .938; CFI = .943; RMSEA = .031). At the same time, Cronbach alfa and IFC exceed the value 0.70 suggested by Nunally y Bersntein (1994), which refers to the index of extracted variance (IEV), was calculated for each table giving us an (IEV) above 0.50 (Fornell and Lacker, 1981.) And as an evidence of converging validity the results of CAF indicate that all the items from the factors related are significant ($p < 0.001$) and the size of all standardized factor loads are higher than 0.60 (Bagozzi & Yi, 1988).

Table 2
Internal consistency and convergent validity of the theoretical model

Variable	*Indicator*	*Load factor*	*Robust Valor-t*	*A of Cronbach*	*IFC*	*IVE*
Product	MPP7	0.611 *	1,000 *	0.752	**0.776**	**0.505**
	MPP8	0.610 *	12.378			
	MPP9	0.642 *	13.235			
	MPP10	0.681 *	11.901			
	MPP13	0.652 *	10.118			
Price	MPR1	0.682 *	1,000 *	0.706	**0.706**	**0.535**
	MPR3	0.637 *	10.866			

Variable	*Indicator*	*Load factor*	*Robust Valor-t*	*A of Cronbach*	*IFC*	*IVE*
Distribution	MPL1	0.608 *	1,000 *	0.868	**0.872**	0.507
	MPL2	0.639 *	15.741			
	MPL3	0.644 *	14.901			
	MPL4	0.625 *	13.786			
	MPL5	0.637 *	14.306			
	MPL6	0.600 *	15.099			
	MPL7	0.641 *	13.242			
	MPL9	0.647 *	15.342			
	MPL10	0.684 *	15.36			
	MPL11	0.650 *	12.705			
Promotion	MPO1	0.691 *	1,000 *	0.889	**0.890**	**0.502**
	MPO2	0.688 *	19.866			
	MPO3	0.709 *	16.455			
	MPO4	0.751 *	19.036			
	MPO5	0,738 *	19.421			
	MPO6	0.670 *	16.95			
	MPO7	0.740 *	19.524			
	MPO8	0.678 *	18.37			
Performance	FP1	0.672 *	1,000 *	0.815	**0.844**	**0.521**
	FP2	0.762 *	16.874			
	FP3	0.749 *	15.746			
	FP4	0.707 *	14.083			
	FP5	0.714 *	11.109			
Costs	PC2	0.603 *	1,000 *	0.732	**0.733**	**0.507**
	PC3	0.625 *	10.128			
	PC4	0.688 *	10.652			
	PC5	0.634 *	10.003			
Technology	ST1	0.754 *	1,000 *	0.885	**0.885**	**0.539**
	ST2	0.764 *	21.569			
	TE3	0.760 *	22.081			
	TE4	0.751 *	21.255			
	TE5	0.695 *	17.699			
	RE6	0.768 *	21.255			

S BX^2 (df = 1321) = 1907.8820 ($p < 0.0000$); NFI =.838; NNFI =.938 CFI =.943; RMSEA =.031

* = Parameters costrenidos to that value in the identification process

* = $p < 0.001$

Source: Own elaboration

With respect to indicators of greater importance or with increased load factor we have that among the products variable include indicators such as specialization of products (MPP7), needs of the target market for its produce (MPP8), they focus on the maximization of the needs of its customers in regard to the requirements of their products (MPP9,) there is a design, mark, logo, symbol, motto of their products and services to maximize their image and commercialize it (MPP13). Within the price variable the most relevant indicators are optimizing price, expenses, and quality of product (MPR1) and adequate pricing with respect to the expense (MPR3); prices variable distribution its indicators are control of innovative distribution (MPL2) channels of distribution (MPL1), development or implementation of techniques uses highly efficient and skilled sales agents (MPL3), acceptance of products by intermediaries. (MPL4) resolution of problems of logistics (MPL5), flexibility in their processes of logistics (MPL6), variable promotion and its indicators as a management tool to promote products or services (MPO1), (MPO2) trained personnel better than the competition (MPO3), advertising media proper (MPO4), investment in advertising (MPO6), among others and with respect to the variables measuring competitiveness increased impact on financial performance are indicators as good sales (FP2), good in the last three years (FP1), return on investment good financial results in the last three years (FP3), utilities (FP4), and the decrease in debt (FP5); the costs variable has greater impact in the following indicators; low cost providers (PC4), low transport costs (PC3), low costs of orders (PC2), costs of raw materials and ingredients (PC5), low cost and low production costs in the company (PC6); And finally in the variable technology include indicators such as technology development (TE1), development of products and services (TE2), development of processes of production and services (TE3), project (TE4), planning improvement of machinery and equipment (TE5), development of technology information (TE6).

The information above confirms the variables with the greatest impact on the research and for manufacturing SMEs in the Guadalajara Metropolitan area are of greater importance in their strategies and processes.

Respect about the discriminant validity evidence, measurement method is given in two ways that are shown on chart 3. First, the range of 90% of confidentiality, none of the individual elements of the correlation factors matrix contains the value 1.0 (Anderson & Gerbing, 1988). Second, the variance extracted between each pair of factors is higher than its

corresponding VEI (Fornell & Larcker, 1981). Therefore, based on these criteria we get as a conclusion that the different measurements made on the scale show enough reliability evidence and convergent and discriminant validity. See chart 3.

Table 3
Discriminant validity of the measurement of the theoretical model

Variables	*Product*	*Price*	*Distribution*	*Promotion*	*Financial performance*	*Costs*	*Technology*
Product	**0.505**	0.507	0.443	0.370	0.322	0.128	0.400
Price	0.379, 0.635	**0.535**	0.274	0.274	0.328	0.132	0.179
Distribution	0.323, 0.563	0.166, 0.382	**0.507**	0.605	0.356	0.142	0.568
Promotion	0.258, 0,482	0.160, 0.388	0.457, 0.753	**0.502**	0.400	0.160	0.564
Financial performance	0.224, 0.420	0.222, 0.434	0.250, 0.462	0.286, 0.514	**0.521**	0.226	0.756
Costs	0.150, 0.206	0.040, 0.224	0.056, 0.228	0.066, 0.254	0.126, 0.326	**0.507**	0.701
Technology	0.278, 0.522	0.059, 0.299	0.422, 0.714	0.416, 0.712	0.590, 0.922	0.539, 0.863	**0.539**

* These values present the estimation between correlation factors with a confidence interval of 90%.
Source: Own elaboration.

Results

The hypotheses were tested in the theoretical model of competitiveness and marketing, using the Structural Equations Model (SEM) software 6.1 EQS (Bentler, 2005;) Byrne, 2006; (Brown, 2006). The nomological validity of the theoretical model was analyzed through the performance of the chi-square test, in which the theoretical model was compared with the model measurement, not finding significant differences (Anderson & Gerbing, 1988;) (Hatcher, 1994). The results of this analysis are presented in chart 4.

Table 4
Results of the test of hypothesis of the theoretical model

Hypothesis	*Structural relationship*	*Standardized coefficient*	*Robust Valor-t*	*Measurement of the FIT*
H1: A greater Marketing Mix greater competitiveness	Marketing Mix → Competitiveness	0.417 *	15.172	$SBX^2_{(1305)}$ = 1884.7736 p = 0,000 NFI = 0.840 NNFI = 0.938 CFI = 0. 944 RMSEA = 0.031

* = $p < 0.001$

Source: Own elaboration.

Chart 4 depicts the results from the Structural Equations model where there is a reference to hypothesis **H1** and the results obtained ($\beta = 0.417$, $p < 0.001$) indicates the positive and significant effects of marketing mix in competitiveness.

At the end it is shown and proved that the variable that measures competitiveness has positive effects and significant in regards to the value that contributes each one of the performance expenses and technology. This also shows that marketing mix with indicators such as; specialization of products, necessities of target markets, price optimization, cost and quality of product, the control of channels of distribution, the tools of promotion of a product, capable and knowledgeable personnel are great indicators for the measurement of the competitiveness for SME in the Guadalajara Metropolitan Area.

Conclusions

In conclusion, according to the results obtained by the factorial and statistical analysis proved what was defined by diverse and well know authors in the subject of competitiveness. It also gave an answer to the objective of this investigation on what are the factors that are in involved in mar-

keting and hoe those factors generate a direct impact in competitiveness for the SME sector in the Guadalajara Metropolitan Area.

The SME sector in Guadalajara consider that marketing mix has a direct impact in competitiveness and the factors that they include in their SME's strategies are; specialization of products, target markets for their products, maximization of customers' needs in a product, really important to having a brand design, logo, symbol, motto of their products or services to maximize their image and commercialize it. As far as price goes SME's consider the optimization of prices quality and cost of a product. In the area of distribution SMEs carry out a control in product distribution channels development and implementation of innovative distribution techniques. Also uses highly efficient and skilled sales agents, and provide resolution of problems of logistics; there is flexibility in your logistics processes. An adequate in supply chain management a software is used for control orders and deliveries; there is a system to control the perception of brand value of their products by intermediaries and distributors and finally to subcontract activities of distribution and logistics.

In regard to promotion this research showed that most of Guadalajara's Metropolitan area SME's have an exceptional use of resources and tools to promote and sell products. SME's have capable and knowledgeable personnel, also high competitive publicity campaigns then the right as most resourceful communication channels targeting a designed market. Because of the mentioned it is really easy to see an increment on sales for all the publicity campaigns.

As far as the variables related to competitiveness it is shown that SMEs in the Guadalajara Metropolitan area consider really important to have in count the financial performance in sales, financial results, good return investment, decrease of debts in a period of three years. In regards to the costs SMEs manage low costs for transportation, raw materials and inputs with the providers and the customers. In the matter of technology SMEs develop technology to create better products and services. Also revamp their machinery or equipment and develop projects for information technology.

At last the objective of this research was to effectively show that by generating developing and implementing the tools for marketing mix, there will be an exceptional improvement on competitiveness and market positioning in the short and long term future of the Guadalajara's Metropolitan area SMEs.

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2
Competitiveness and Education in Mexico

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Abstract

This is a quantitative inferential investigation. A total of 511 questionnaires were applied it to a sample of 63 firms in the productive sector of Rioverde, S. L. P. The purpose of this investigation is to evaluate the level of the 'culture of quality' in the micro, small and medium enterprises (MSMEs) and to evaluate the educational level of the employees of the MSMEs in order to prove statistically the impact that educational level has in the seven dimensions that form the 'culture of quality' of small businesses. The variable 'culture of quality' is composed of 10 dimensions (Gonzales, 2009) and it is from them one carries out the estimate of the existing level of 'culture of quality'. The educational level was grouped into three categories: basic education, intermediate higher education and higher education. It was statistically proved that there is a dependency only between the educational level of the employee and one of the 10 factors that make up the 'culture of quality' of a MSME. To obtain the results an ANOVA testing was applied.

Keywords: *Educational level, SME, 'Culture of quality'*

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1. Universidad Autónoma de San Luis Potosí, México.

Introduction

According to the report on 2011 – 2012 of the World Economic Forum (WEF), Mexico ranks number 58 (of 542 countries) in the topic of country competitiveness. In this same source we find that in terms of higher education and training, our country ranks number 72. It is reported that the main reasons that discourage investors to come to our country are: crime and theft, corruption, government bureaucracy, difficult access to financing, restrictive labor laws, among others.

Unemployment figures reported by the employment indicators of the INEGI (2011) indicate that of every 100 Mexicans in productive age, 4.8 are currently unemployed and to this we can add that 8.9% are subemployed. The unemployment problem is a bad seed that could generate other greater evils.

Unemployment in our country has a large social impact and the creation of sources of work should be a priority whose responsibility should be shared among the governmental sector, the productive sector, educational institutions and the social sector.

Numerous studies, such as Jimenez (2012) show that education is a determinant factor in the distribution of income, social mobility and the possibility of a respectable level of life. However, in spite of the undeniable advances in the level of education in our country, according to experts, these accomplishments do not seem sufficient to guarantee a sustained growth of the national economy or a greater development.

It is acknowledged that a greater level of education contributes to the generation of wealth but it is also necessary that education be accompanied by policies able to generate employment. Currently not only the number of the years of the study matters but the quality of education that individuals possess is equally important to enhance their well-being, given that this guarantees the necessary competitiveness needed for their fruitful insertion in the work force (SNTE, 2012).

It seems appropriate to build a new educational model that considers the needs of society and of the labor market and that has quality as its axis. The focus of the formation of competencies that have been incorporated in the educational system, points to molding a student who is more autonomous, independent, entrepreneurial, able to confront and solve the problems that present themselves throughout his life, including the lack of employment.

The great part of higher education graduates are between 22 and 24 years old. According to the figures reported by INEGI (2011), 45% of the population of our country is 23 year years old or less. This means that eventually, 50 million Mexicans begin or are ready to begin their productive and professional lives and should confront a difficult reality in terms of employment.

The beginning of the development of certain hegemonic countries and also of the great organizations that were in the middle of serious crises, was based in the improvement of the quality of their products and services, as increasing quality has as its result the improvement of productivity and with it a better positioning in the competitive markets, which will have as a consequence larger sales and more employment. Edward Deming called this sequence the trilogy of quality, the exit from the crisis (Deming, 1989).

But the following question then appears: Do the habits and values of quality that are learned within the national educational system, have an impact in the organizational culture of the Mexican enterprise?.

Context

The study was done in the city of Rio Verde, municipality of the State of San Luis Potosi, a municipality representative of the 2,456 municipalities that make up our country. Rioverde is located about 130 km east of the capital of the state. This is the principal city of the Middle Region of the state, it has a population of 91,924 inhabitants, according to the final results presented by the population and housing census of 2010. The main activity of the economically active population is in the tertiary sector of commerce, services and tourism (48.8%), the following sector is secondary in the industry, mining, construction (19.02%) and the other is the farming and livestock sector (27.8%). Approximately 3,500 mypemes comprise the productive sector of the city. Its proximity to a large number of communities and counties make an important center of consumption of medical services, educational services and commerce. There are 360 schools of basic education and intermediate higher education and 4 institutions of higher education. It is associated with the municipality of Cd. Fernandez and the community of El Refugio, integrating a metropolitan zone of interest with approximately 60,000 inhabitants in the region. It is located about 100 kilometers from the Mexico - Piedras Negras highway

(highway 57) considered the backbone of the road network in Mexico, which constitutes a strategic aspect of its development. On the other hand, its great weaknesses are: the migration of its inhabitants from its rural communities, its hot climate and the small presence of manufacturing industry in the region.

The municipal government, through the secretary of economic development, is interested in the support of the University in municipal development by means of strategic studies, to lead a common strategy and give an impulse to the development of its region by means of the improvement in the productivity of the small enterprises.

Theoretical Framework

The current investigation is supported by some theoretical concepts which we will discuss in the following paragraphs: culture of quality and educational level of employees.

Culture of quality

"An organization doesn't have a culture, it is a culture", Karl Weick - cited by Krieger (2005). Every culture is formed by a set of values, beliefs and ways of doing things (Cantu 2001); culture of quality also has its values and ways of working within the organization, concurrent with the philosophy of quality (Gallear & Ghobadian, 2004). And to the extent to which an organization has integrated within its culture these values and ways of quality work, it will or will not have a culture of quality.

A 'Culture of quality' has been defined by English researchers in the following manner: "that way of doing things within the organization which is carried out by the employees, the solution of problems, oriented to clients, open and free from fear and where in addition, the business practices of the organization are based on, to search for continuous improvement, delegation and decision-making, withdrawal of functional barriers, removal of functional barriers, teamwork and decision-making based on facts" (Gallear & Ghobadian, 2004) is what we call culture of quality in organizations and its presence will guarantee the generation of lasting change.

Another study (González, 2009) brought us an instrument of 47 variables to detect the level of culture of quality of small businesses and regional contexts, proposing that the culture of quality concept is inte-

grated by the following 10 dimensions which were obtained by means of a factor analysis:

1. Responsibility and commitment by management
2. Responsibility and commitment by the employee
3. Trust in the employee
4. Trust in the enterprise
5. Satisfaction of the employee
6. Effective communication
7. Planning and organization
8. Coherent vision
9. Teamwork
10. Continuous improvement in service

It is hoped that the culture of quality be strong and dominant in enterprises, with values, habits, knowledge, practices and tools of work suitable to the management of quality. To implement quality in an effective manner in organizations, it is indispensable to have a strong organizational culture aligned with the principles of quality so that it may generate lasting changes. Analyzing the definition of the 10 dimensions of a culture of quality, we clearly observe that there are seven dimensions in which the employee could have direct influence and these are: responsibility and commitment of the employee, trust in the enterprise, satisfaction of the employee, effective communication, planning and organization, teamwork, and continuous improvement in service. Those are the seven dimensions that we are going to work with in this research, the other dimensions (1,3,8) are the direct responsibility of the owners.

Educational Level

In Mexico education is a high priority policy that supports national development. It is a right supported by the current Constitution, which in article 3 declares that education given by the state should be free and compulsory for all inhabitants of the country. The general law of education of Mexico makes it mandatory for people residing in Mexico to undergo at least the primary and secondary educational levels and now the intermediate or intermediate higher level indicator of education, and establishes that parents have the responsibility to verify that their children fulfill this duty

The general law of education establishes three different educational levels: basic, intermediate higher and higher education, which comprise studies in preschool, primary, secondary, bachelor, licensing, masters, doctorate, as well other modes of technical and higher education.

In Table 1 we find certain descriptive statistics that reveal the magnitude of the educational system of the country.

Table 1
National Educational System

Educational Type	*2010*		
	Schools	*Faculty*	*Students*
Basic Education	222,350	1,156,506	25,603,606
Intermediate Higher Education	14,103	272,817	3,923,822
Higher Education	4,228	283,818	2,705,190
Job Training	5,660	37,164	1,514,568

Source: Based on Rubio, J (2012)

Basic education (formed by preschool, primary and secondary) is compulsory and given by the state (Federation, states, Federal District and municipalities,) in all the territory of Mexico, under the stipulations of the third article in the Political Constitution of the United States of Mexico although there are autonomous schools that also offer these educational levels.

Intermediate higher education comprises bachelor studies and in this category one includes labor training. It should be noted that during the month of February of this year the decree has been signed by which makes constitutional the compulsiveness of intermediate higher education which of the three levels is the one which reports the less favorable results because of its high level of desertion, poor coverage, low quality and inequity.

Higher education comprises a study of professional careers of higher degrees from public and private universities, to the technical higher technical university, as well as programs of technological systems. It includes as well master and doctoral studies.

Objective

The objective of the research presented in this document is: to test the statistical dependency between the level of culture of quality of the organization and the educational level of the employees of the organization.

This will enable us to determine if there is a link between the profiles of exit graduates, as given by the level of the studies and the basic necessities of the productive organizations, expressed by the dimensions that make up the a culture of quality.

Hypothesis

How does the educational level of the employee influences the level of culture of quality perceived of its organization?

The concept culture of quality is a vector integrated by 10 dimensions and of these, there are seven in which the employee intervenes directly, thus to make a comparison of the means one has to approach each one of the seven dimensions of quality in an orderly manner with the educational level variable.

Hypothesis: the level of culture of quality reported by the employees with a basic educational level should be equal to the culture of quality level reported by the employees with a level of intermediate education and equal to that reported by the employees with a level of higher education. The first hypotheses was a stated as follows, there is no difference between the level of culture of quality (COQ) observed in the employees with basic educational level, the employees with intermediate higher educational level and the employees with a higher educational level.

Equations Follow

The statistical analysis of the test of hypotheses makes use of the analysis of variance test (ANOVA) supported by specialized software (SPSS v. 17).

Methodology

The random sample for this is study was composed of 63 MSMEs in Rioverde, S.L.P and with information related to the directors and the employees of those businesses, which gave a total of 511 questionnaires. To process the data the statistical software SPSS version 17 was used and to determine the statistical dependence between the variables level of studies and the level of culture of quality of the employees, an ANOVA test was carried out for independent samples of each one of the seven dimensions of the culture in which the employee has a direct influence. The stages of the investigation were as follows:

Meeting with the University Authorities to Authorize the Execution of the Project

Several meetings with the directives of our educational institution were carried out, with the Intention of presenting the purposes and scope of the project, to know their opinion and obtain their approval. The support was solicited to the respective authorities to carry out the intervention in the business firms.

Revision of articles, thesis and books about culture of quality and organizational behavior

This work is a continuation of the doctoral thesis "Existent levels of the necessary conditions for a culture of quality in the micro, small and medium enterprises in the city of Rio Verde, S. L.P." (Gonzales, 2009). The development of the theoretical framework for this investigation was carried out by means of a literature review to pinpoint from there the information related to this investigation.

Establish the Referential Theories

The culture of quality model that was chosen to carry out this investigation was taken from the already mentioned doctoral thesis (Gonzales, 2009). The model of 10 factors, which were determined by means of the factorial analysis of the survey data, the saturation of the test determined the necessary conditions subjacent to a culture of quality among the small businesses.

Selection of questionnaires

According to Hernandez et al (2006), the redaction errors, the errors of form of in the survey and improvisation are factors that impact the reliability and validity of a survey. The abuse in the use of instruments that are not of that have not been validated in our context, the use of instruments that use sophisticated language for the participating subject, instruments too long or incomplete, all of these are errors that impact the validity and the reliability of the questionnaire. Although the instruments were not designed, but rather taken from the existing literature, these were revised and tested in a stage previous to work in the field.

The used surveys are: inventory of the conditions that facilitate the building of a culture of quality in small and medium-sized businesses; a self-administered questionnaire that has 53 questions. (Gonzales, 2009) source: doctoral thesis of the U.A.S.L.P. page 239.

Revision and fine tuning of the questionnaire

As already mentioned by Hernandez et al. (2009) the surveys were reviewed by a group of the students of the undergraduate program in administration of the eight and sixth semester, who answered and made suggestions regarding the format and reduction errors. It was applied in a pilot business to observe the behavior and duration of answers. Once reviewed we proceeded to the reproduction of the questionnaires

Selection of the Sample

The survey was administered to 65 local entrepreneurs chosen at random, which agreed with participation in the investigation in a voluntary manner. There were 48 micro businesses, 12 small and 3 medium-sized firms. Businesses from the public sector or the educational sector as well as ONG's were not included. The size of the sample was designed to have a maximum expected error of 4.36% and a confidence level of 95%

Fieldwork – Administration of Questionnaires

For the administration of questionnaires a group of students were trained organized and coordinated, led by faculty members. We gave them a presentation letter from the direction of the UASLP campus Rioverde to facilitate the introduction protocol. Although the questionnaire was self-

administered, it was requested of the students to follow up on the respondents to increase the reliability of the study.

Coding, Capture, Editing and Data Matrix

Once the surveys were obtained, they were reviewed to eliminate the all of those that presented deficiencies like wrong answers to the questions or incomplete answers. Also lack of interest was detected in some individuals or lack of effort to respond. Coding was carried out by students which had participated in the science summer of 2011 and the data matrix was captured.

Statistical Analysis for Calculating the Results.

The software SPSS v17 was used to carry out the data analysis and for the tests of hypotheses the ANOVA test was used.

Results

The presentation of the results of the statistical analysis of data will be divided into two sections; the first will show the statistics that describe the sample of the businesses studied and the employees that participated in the study and a second section will show the test of hypotheses of the proposed investigation.

Description of the Sample

A total of 511 surveys were applied and 1.4% of the surveys were invalidated. Of the 504 valid surveys, 66 were answered by directors and 438 by employees; 286 of the respondents were male and 218 (43.3%) were women. Participation of women in productive activities is surprising and it is greater in the service sector.

The mean age of the surveyed subjects is 30.9 years and a median of 28 years with a positive bias; it is in the service sector where the employees of younger age worked. The seniority of the employees has an average of 5.6 years and a median of three years, with a standard deviation of 7.6 years which bespeaks of a large dispersion in the seniority data.

The application of the surveys by productive activity and business size is the following: micro business: 299 surveys, small business: 139, mid-sized business; 66, commerce: 153, service: 205, industry: 146. The sample composition of the businesses interviewed can be seen in table 2.

Table 2
Businesses interviewed in the study

Size / Sector	*Commerce*	*Service*	*Industry*	*Total*
Microbusiness	17	22	9	48
Small Business	2	6	4	12
Midsize Business	2	0	1	3
Total	21	28	14	63

Source: own elaboration.

The questionnaire questions gave us the data that are presented in table 3, in which we can observe that the school level demanded eight categories for the data collection, that for the purposes of this study were compacted or condensed into three categories; basic education (primary and secondary), medium higher education) (prep and technical studies) and higher education (professional and master); participants without studies were eliminated, in the same fashion the ones that reported themselves as others were also eliminated, remaining a total of 420 respondents with the category of employees.

Table 3
School level respondents

School Level	*Director*	*Employee*	*Sindicated Worker*	*Total*
No Studies	0	4	0	4
Primary	4	36	0	40
Secondary	8	160	3	171
Prep	14	136	1	151
Technical Studies	10	39	2	51
Professional	26	49	1	76
Master	2	0	0	2
Other	2	7	0	9
Total	66	431	7	504

Source: own elaboration.

The organizational levels reported were three; director, employee and syndicated worker. For the purpose of this research employees and syndicated workers were considered the same category, resulting in a total of 420 employees to consider. Thus table 3 was condensed as shown in table 4.

Table 4
Educational level of respondents by position

Organizational Level		*Basic Education*	*Intermediate – Higher Education*	*Higher Education*	*Sub-Total*
Employees	Count	199	178	50	427
	Percentage	47%	42%	12%	100%
Directors	Count	12	24	28	64
	Percentage	19%	38%	44%	100%

Source: own elaboration.

To test the hypotheses in this research only the category of employees will be taken into account, because the quantity of data in this group is sufficient to carry out robust proofs or tests. Besides we cannot combine data from directors with data from employees because they belong to different strata and the integrity of the study could be damaged.

Table 5
Educational level of respondents by gender

Gender		*Basic Education*	*Intermediate – Higher Education*	*Higher Education*	*Sub-Total*
Male	Count	134	104	41	279
	Percentage	48%	37%	15%	100%
Female	Count	77	98	37	212
	Percentage	36%	46%	17%	100%

Source: own elaboration.

In table 5, we can observe the behavior of the educational level variable by gender and infer that in the sample, women are shown with a higher proportion in the level of the studies.

In table 6, we compare the behavior of the variable educational level but now by size of business; we found that in the sample, in the micro and small business the behavior is very similar and the proportions don't have significant differences. However in the mid-level firms, the level of higher education declines.

Table 6
Educational level by business size

Size		*Basic Education*	*Intermediate – Higher Education*	*Higher Education*	*Sub-Total*
Micro	Count	127	116	47	290
	Percentage	44%	40%	16%	100%
Small	Count	59	54	23	136
	Percentage	43%	40%	17%	100%
Midsize	Count	25	32	8	65
	Percentage	38%	49%	12%	100%

Source: own elaboration.

In table 7, we compare the behavior of the variable educational level but now with respect to the type of business and we find in the sample that the higher educational level characterizes employees of businesses in the service sector. Nevertheless the difference between the different types is not significant.

Table 7
Educational level by type of business

Type		*Basic Education*	*Intermediate Higher – Education*	*Higher Education*	*Sub-Total*
Commerce	Count	73	62	21	156
	Percentage	47%	40%	13%	100%
Service	Count	75	75	40	190
	Percentage	39%	39%	21%	100%
Industry	Count	63	65	17	145
	Percentage	43%	45%	12%	100%

Source: own elaboration.

The presentation in this first section of descriptive statistics, could enable us to infer if there could be some interrelations between the different variables, relations that could be intervening in the effectiveness of the test of hypotheses.

Tests of the Hypotheses in the Research.

First we are going to show in table 8, about the evaluation of the culture of quality of the businesses being studied. The existing level of the 10 dimensions of culture of quality are indicated using a scale from 1 to 5. The value of the means and the standard deviation are given. The information corresponds uniquely to the opinion of the employees.

We designed a scale from 1 to 5, where five is the maximum value, five indicates a total presence of the dimension and one indicates absence of the dimension. We can observe that the existing level of the conditions of the businesses in the region is good, where the exceptions are: trust in the employee, effective communication and improvement in the quality of service, which we consider as weaknesses over which one would have to concentrate improvement efforts. On the other hand, we have strong dimensions; responsibility and commitment of the employee and planning and organization of work.

Table 8
Level of the culture of quality of the businesses
from the perspective of the employees

Dimensions of the quality of culture	*Median*	*Typical Deviation*
Dim_#1 Responsibility and commitment of managers	4.084	0.672
Dim_#2 Responsibility and commitment of employees	4.347	0.562
Dim_#3 Trust in the employees	3.525	0.730
Dim_#4 Trust in the organization	3.841	0.787
Dim_#5 Job satisfaction	3.862	0.712
Dim_#6 Effective communication	3.648	0.738
Dim_#7 Planning and Organizing	4.175	0.658
Dim_#8 Congruent Vision	3.861	0.765
Dim_#9 Teamwork	3.902	0.728
Dim_#10 Continuous improvement of service	3.802	0.650

Source: own elaboration.

Intuitively we were inclined to a small presence of this culture. However we find that the results give witness to the presence of knowledge habits and attitudes and values of quality in the small businesses in the regional contexts. Regarding the evaluation of these dimensions, is it impacted by the educational level of employees. Research indicates a positive correlation between the educational level and development, but does the educational level lead to any difference in values that pertain quality?. As we have mentioned previously there are seven dimensions in which the employee intervenes in a direct manner and those are the ones we will choose to carry out the tests.

Table 9
Results of the ANOVA tests by dimension

ANOVA TESTS							
Variables	*Basic Education*		*Intermediate-Higher Education*		*Higher Education*		*Significance Prob.*
	Mean	*Typ. Error*	*Mean*	*Typ. Error*	*Mean*	*Typ. Error*	
Dim#2	4.3055	0.0423	4.3618	0.0416	4.4560	0.0580	0.214
Dim#4	3.7851	0.0551	3.9157	0.0613	3.7950	0.0983	0.250
Dim#5	3.7877	0.0524	3.8988	0.0516	4.0300	0.0927	0.066
Dim#6	3.5866	0.0542	3.6966	0.0539	3.7150	0.0963	0.279
Dim#7	4.1507	0.0469	4.1966	0.0505	4.1933	0.0825	0.779
Dim#9	3.8140	0.0525	3.9382	0.0548	4.1266	0.0862	0.017
Dim#10	3.7412	0.0463	3.8511	0.0495	3.8700	0.0833	0.192

Source: own elaboration.

Test of hypotheses of the second dimension (X_2) of the culture of quality: Dim_#2 Responsibility and commitment of the employee.

$$\overline{X}_{2EmployeesBasicEd} = \overline{X}_{2EmployeesIntermedEd} = \overline{X}_{2EmployeesHigherEd}$$

In table 9, but could observe for this dimension P (0.214) which indicates that the hypotheses of equality between the group means is accepted (P>0.05). Thus the educational level does not have an impact on the perception of the employee in the responsibility and commitment of the employee. Even when we observe the values of the means and the typi-

cal errors, we notice that the greater educational level generates a larger responsibility and commitment (4.4560) but that the difference between groups is not significant at a 95% confidence level.

The responsibility and commitment of the employee, do not seem to be affected significantly by the level of the studies of the employee.

Test of hypotheses for the fourth dimension (X_4) of the culture of quality: and Dim_#4 Trust in the business

$$\overline{X}_{4EmployeesBasicEd} = \overline{X}_{4EmployeesIntermedEd} = \overline{X}_{4EmployeesHigherEd}$$

We could observe in table 9 that for this dimension value P (0.250) indicates that the hypotheses of equality between the means of the groups, is accepted (P >0.05). Even if we observe the values of the means and the typical errors, we notice a special behavior, given that the greater educational level generates less trust in business (3.7950) than the intermediate higher level (3.9157) but the difference is not significant at a 95% confidence level.

Trust in the business by the employee, does not seem to be affected significantly by the educational level of the employee.

Test of hypotheses of the fifth dimension (X_5) of the culture of quality: Dim_#5 Job Satisfaction

$$\overline{X}_{5EmployeesBasicEd} = \overline{X}_{5EmployeesIntermedEd} = \overline{X}_{5EmployeesHigherEd}$$

We can observe in Table 9 that for this dimension # 5 P (0.066) indicates that the hypotheses of equality between the group means is accepted (P > 0.05). Thus the educational level does not generate an impact over the a perception of satisfaction by the employee. Even if we observe the values of the means and the typical error, we notice that corresponding to a larger educational level there would be a larger job satisfaction (4.0300) but that the difference between groups does not appear significant at a 95% confidence level.

Job satisfaction does not seem to be affected significantly by the educational level of the employee. However, given the value of the significance level we could consider a minor influence.

Test of hypotheses of the sixth dimension (X_6) of the culture of quality: Dim_#6 Effective communication.

$$\overline{X}_{6EmployeesBasicEd} = \overline{X}_{6EmployeesIntermedEd} = \overline{X}_{6EmployeesHigherEd}$$

We can observe in table 9 that for this dimension # 6 P (0.279), indicates that the hypotheses of the quality of means between the groups is accepted. Thus the educational level does not generate an impact on the perception of effective communication. Even if we observe the values of the means and the typical error, we notice that to a greater educational level corresponds a greater job satisfaction (3.70 150) but that the differences between groups does not appear significant at a 95% confidence level.

The employees' effective communication does not seem to be affected significantly by the educational level of the employee.

Test of hypotheses of the seventh dimension (X_7) of the culture of quality: Dim_#7 Planning and organization of work.

$$\overline{X}_{7EmployeesBasicEd} = \overline{X}_{7EmployeesIntermedEd} = \overline{X}_{7EmployeesHigherEd}$$

We can observe in table 9 that for dimension # 7, P(0.779) indicates that the hypotheses of the quality of the means for the groups is accepted (P >0.05). Thus the educational level does not generate an impact on the perception of the employee on the planning and organization of work. Even if we observe the values of the means and the typical error, we notice a special behavior, given that greater educational level generates smaller trust in the business (4.1933) than the intermediate higher level (4.1966) but the difference not is not significant at a 95% confidence level.

The planning and organization of work does not seem to be significantly affected by educational level of the employee.

Test of hypotheses of the ninth dimension (X_9) of the culture of quality: Dim_#9 Teamwork.

$$\overline{X}_{9EmployeesBasicEd} = \overline{X}_{9EmployeesIntermedEd} = \overline{X}_{10EmployeesHigherEd}$$

We could observe in table 9 that for this dimension P (0.017) which indicates that the hypotheses of the quality of the group means is rejected (P < 0.05). Thus the educational level seems to generate an impact on the

perception of the employee towards teamwork. Even when we observe the values the means and the typical error, we notice that a greater educational level generates greater responsibility and commitment (4.1216) and the difference between groups are significant at a 95% confidence level.

Teamwork seems to be affected significantly by the educational level of the employee.

Test of hypotheses of the tenth dimension (X_{10}) of the culture of quality: Dim_#10 Continuous improvement in service.

$$\overline{X}_{10EmployeesBasicEd} = \overline{X}_{10EmployeesIntermedEd} = \overline{X}_{10EmployeesHigherEd}$$

We can observe the P (0.192) of this dimension # 10 in table 9 which indicates that the hypotheses of equality between group means is accepted ($P > 0.05$). Thus the educational level does not generate an impact on the perception of the employee of continuous improvement of the service. Even if we observe the values of the means and the typical error, we notice that a greater educational level generates a greater continuous improvement of the service (3.8700) but that the difference between groups does not become significant at a 95% confidence level.

Continuous improvement in the service of the employee does not seem to be affected significantly by the educational level of the employee.

Conclusions and Recommendations

Quality management is a management strategy to improve the productivity and competitive position of the business, its implementation requires an organizational culture aligned with the values of quality (culture of quality). The small businesses studied indicate the presence of a culture of quality although this should be improved.

Of the sample studied composed by 427 employees, with diverse educational levels from basic education 47% middle higher education 42%, and higher education 12%. However, of the seven quality dimensions of the small businesses, dimensions in which there is a direct relationship with the employee, it was only proven statistically that teamwork was impacted by educational level ($P = 0.017$) and we have another dimension that is an approximate zone: job satisfaction ($P = 0.066$)

This finding calls our attention because the small impact of the educational level in the development of quality values, could be the result of the lack of relevance between the exit profile of graduates of educational institutions and the requirements of the work sector.

The problem of the country's competitiveness is not the responsibility only of the governmental sector, the IES could direct some alternative actions to improve the quality of education, which could be generated from universities and technological institutes. The proposals follow:

A) The link between the research programs of the academic bodies of institutions of higher education with the social and economic sectors of the regions. The research in part should be directed to the elaboration of studies in regional development. Carry out this research at the local level.
B) Training within the universities oriented to the business sector, to break old paradigms and renew the way of explaining and managing organizations.
D) Teach entrepreneurship to the students, given that once they turn into entrepreneurs one learns to be a solution to the problem and not part of it.
D) The effective and compulsory exercise of social service, and that this form part of the plan of the curriculum of programs. But social service conceived, not like a prerequisite for graduating, but like a program that matters in support of entrepreneurs.
E) The inclusion of professional practices, where businesses commit to open spaces for the development of the competencies and work, to the students.
F) Participative exercises for the identification of competencies of graduates' exit profiles for the different programs and levels. In this manner the voice of the different sectors, the productive, social, governmental etc. would be taken into account, obtaining thus greater relevance.
G) The teaching in the educational institutions based on the development of competencies, etc. such that knowledge, abilities and attitudes, what the youngster should do, be aligned with the necessities and exigencies of the environment that will have to be faced.
H) Continuity; independently from the political currents, one must continue to give an impulse to the culture of evaluation, accountability and strategic planning in higher education and to share from the

universities that habit to all educational levels, articulating thus the practices of the different educational levels.

We should continue to pursue areas of opportunity that can be taken advantage of by the educational policy in Mexico to continue contributing to the economic development of the country by means of the increase in the quality of education and the increase in its scope. Inspired the words of the Pope: "where there are children and youngsters, we could write a different history". words mentioned in his visit to our country, in the month of March, in Guanajuato. And this depends on us.

Further studies could be carried out to analyze the impact of the educational level of entrepreneurs in the level of a culture of quality in business firms. Also it could be interesting to carry out a comparative study between the impact of university education and technological education.

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3
Discrepancy between ISO 9000 standard and its applicability toward business performance

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Abstract

This research focuses on understanding the discrepancy between ISO 9000 standard and its implementation; the fundamental discrepancy lies in the method for identifying and selecting key processes of the organisation and proper alignment to business indicators driving performance. We present a methodological proposal to perform the correct alignment between processes and key indicators to engage the organisation to higher level of performance on the based on ISO 9000 standard.

Keywords*: ISO 9000; process approach; key process indicators; business performance.*

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Introduction

ISO 9000 is broadly adopted standard focus on quality system; it defines the foundation of quality based on three key areas: 1) Quality system's documentation: quality manual, quality policy, quality objectives, and mandatory procedures, 2) Process management approach, and 3) Quality records. The international standard it is self-explanatory according to the related guidelines in regards of the requirements of quality documentation and quality records; even though ISO 9000 focus on process management approach there are some discrepancies in spite of its applicability towards business performance. Therefore, this empirical research paper will present a model that helps in this matter.

Purpose

The purpose of this article is to argue for an alternative approach to ISO 9000 implementation towards business process management. The proposed process management business model is unique because it offers a new perspective of management processes identification that complies with ISO 9000 and aligns core organisational functions and support areas to key process indicators.

An appropriate process management selection focus on key process indicators will lead the organisation to higher level of productivity and competitiveness.

Literature Review

International requirements

ISO 9000 is a broadly implemented standard in which different countries around the word have gotten to an agreement about the specific requirement need to fulfil and be in compliance; According to

Kumar and Ahuja (2007) the international standard ISO 9000:2008 focus on specific principles, system documentation, mandatory system procedures and regulatory requirements, all requirements need to be fully integrated into a process management approach in order to focus to business performance (Table 1). Calisir, Osman, and Dogan (2005) focus

on the relevance of ISO 9000 and its benefits such as: integrated vision toward customer satisfaction and business performance.

Table 1

Quality system requirements based on ISO 9000:2008 standards

Quality documents	*Mandatory Procedures*	*Quality Records*
4.2.2. Quality manual	4.2.3 Control of documents	5.6.1 Management review
5.3 Quality policy	4.2.4 Control of records	6.2.2.e) Education, training, skills and experience
5.4.1 Quality objectives	8.2.2 Internal audit	7.1.d) Evidence that the realisation processes and resulting product fulfill requirements
	8.3 Control of nonconforming product	7.2.2 Results of the review of requirements related to the product and actions arising from the review
	8.5.2 Corrective action	7.3.2 Design and development inputs relating to product requirements
	8.5.3 Preventive action	7.3.4 Results of design and development reviews and any necessary actions
		7.3.5 Results of design and development verification and any necessary actions
		7.3.6 Results of design and development validation and any necessary actions
		7.3.7 Results of the review of design and development changes and any necessary actions
		7.4.1 Results of supplier evaluations and any necessary actions arising from the evaluations
		7.5.2 d) As required by the organisation to demonstrate the validation of processes where the resulting output cannot be verified by subsequent monitoring or measurement
		7.5.3 The unique identification of the product, where traceability is a requirement
		7.5.4 Customer property that is lost, damaged or otherwise found to be unsuitable for use
		7.6 a) Basis used for calibration or verification of measuring equipment where no international or national measurement standards exist

Quality documents	*Mandatory Procedures*	*Quality Records*
		7.6 Validity of the previous measuring results when the measuring equipment is found not to conform to requirements
		7.6 Results of calibration and verification of measuring equipment
		8.2.2 Internal audit results and follow-up actions
		8.2.4 Indication of the person(s) authorising release of product.
		8.3 Nature of the product nonconformities and any subsequent actions taken, including concessions obtained
		8.5.2 e) Results of corrective action
		8.5.3 d) Results of preventive action

Source: Based on international requirements and guidelines of ISO 9000:2008 and its related references: (ISO/TC 176/SC 2/N 544R3, 2008), (ISO/TC 176/SC 2/N 525R2, 2008), and (ISO, 2008).

Figure 1
Quality system fundation

Source: Based on international requirements and guidelines of ISO 9000:2008 (ISO 9000 / TC176, 2009).

As a summary, ISO 9000 structure requires definition and implementation of three quality documents, six mandatory procedures and twenty one quality records, all of these requirements organised and supported by process approach (Figure 1) driven core quality principles.

Process approach

As Douglas, Kirk, Brennan, and Ingram (1999) described in their research ISO 9000 can be considered the foundation of a quality system that triggers the quest for higher business performance levels; Golden Pryor, Toombs, Cooke, and Humphreys (2011) and Alonso-Becerra, Michelena-Fernandez, and Robaina (2013) concurs in regards of process approach as the way to align the organisation to key performance indicators.

On one hand ISO 9000 implementation requires process approach. However, there is no written methodology in order to help organisations to select, define and implement process management that is engaged to business performance results (Jurica & Jurova, 2012; Singh and Sharma, 2013); on the other hand Pirnea (2011) suggests the use of balanced score card to align processes to business key process indicators. However, there is not an agreement on process approach methodology that helps organisations to select, define and implement process management approach.

Business performance driven by key process indicators

Rodriguez-Escobar, Gonzalez-Benito, and Martinez-Lorente (2006) made an empirical analysis about ISO 9000 certified firms and the outcome of this research trigger implies that ISO 9000 certification have high-level of expectations throughout the company. However, when the organisation is not able to achieve ISO 9000 certification through process management based on the proper connections to key performance organisation will influence directly to dissatisfaction on managerial levels; on the other hand there are some empirical evidence that the ISO 9000 success is not only relying on process management definition and deployment. Therefore, quality system success also depends on the maturity level of the organisation, focus on business goals and performance (Popescu & Tifrea, 2011).

Ashrafi and Bashir (2011) made a comparison between ISO 9000 certified versus non certified organisations in order to find the key factor that drives business performance; the result indicates that certified companies have formal ISO 9000 system and structure (as expected) however there were no statistical evidence that business performance has been influenced due to ISO 9000 implementation; On the contrary Singh and Sharma (2013) found a connection between productivity and quality driv-

en taking into account ISO 9000 system as the basement for management. This dialectic remains unsolved and is not getting to a common consensus about the ISO 9000 link to business performance. One underlying factor to these opposite perspective is that companies that fail to have the appropriate engagement to business key performance indicators are not solid enough about their foundation of process management approach (Bernardo, Casadesus, Karapetrovic, & Heras 2012); This statement is also supported by Lohrmann and Reichert (2013) that emphasises a clear link between goals and process management in order to provide a holistic foundation of quality system.

Methods

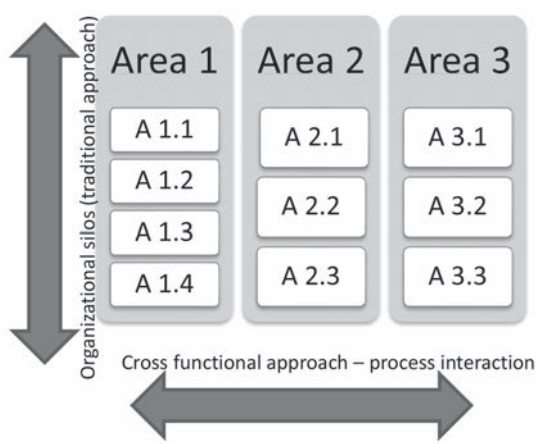
This empirical research uses deductive approach in order to propose a weighted criteria matrix in order to help the organisation to select the appropriate processes for ISO 9000 documentation and deployment that aligns each process to business key performance indicators.

Results

There are three relevant aspects of ISO 9000: 1) Specific documented quality system requirements, 2) ISO 9000 business model driven by process management approach, and 3) Discrepancy between process management approach and its implementation.

One challenge for any organisation is to properly select the key process in with the top management will base their business performance; Such processes should be aligned to the core of the business and truly relevant to the key process indicators. In Figure 2, we will notice the difference between traditional organisational silos versus process approach. Process approach emphasises the effectiveness and efficiency of all related activities driven and linked to particular key process indicators; process approach does not seek the effectiveness of a particular department or activity, instead process approach can be used as a support tool for business performance driven by results.

Figure 2
Traditional organisational silos versus process approach



Source: Made based on proposed models by Beltran Sanz, Carmona Calvo, Carrasco Pérez, Rivas Zapata, and Panchon (2012).

Table 2 illustrates the way in which you can list all the organic functions of the company to be able to cross-reference items and relevant to the quality system and key performance factors of the organisation. The list can be displayed from top to bottom in the first instance being those processes that actually have high impact to the elements of organisational performance.

Table 2
Quality system requirements based on ISO 9000:2008 standards

Function	*Relevance to the core of the business*	*Relevance to business performance key process indicators*	*Critical to support quality system*	*Total weighted sum*
Manufacturing	3	3	3	9
Engineering	3	2	3	8
Continuous improvement	2	3	3	8

Function	*Relevance to the core of the business*	*Relevance to business performance key process indicators*	*Critical to support quality system*	*Total weighted sum*
Process engineering	2	3	3	8
Procurement	1	3	2	6
Human resources	2	2	1	5
Maintenance	1	2	1	4
Environmental, health and safety	1	2	1	4
Marketing	1	1	1	3

Source: Self-development using weighted code: 3-Most relevant. 2-Moderate relevance. 1-Less relevant.

Discussion

According to the literature review we have found some theoretical convergences in regards ISO 9000 and process management approach. However, the method of selecting the key processes has not been clearly identified - this is ISO 9000 number one discrepancy in regards of its application -; Another relevant factor is that the appropriate identification of those key processes to drive business performance, such processes may fall into the following categories: management support processes, customer oriented processes or support processes, the main difference between such processes relies on the correspondence to business process performance - this is ISO 9000 number two discrepancy-; There are theories that supports that ISO 9000 provide the foundation of a quality system and maximised business performance focus on process oriented approach when these processes are linked to key performance indicators. However, there are some other researchers that found that one of the common lessons learned in ISO 9000 implementation journey is the proper alignment between process and performance management otherwise the outcome of ISO 9000 will be dissatisfaction and low driven results.

This empirical research presents a model that the organisation can list all of their different areas/departments in order to weight their roles and functions toward three elements: relevance to core business, quality system and key performance indicators; Once the organisation has made

the categorisation and top down sorting final numbers, then we will be able to identify the most relevant processes for the company - primarily customer oriented processes, others may fall into another process category such like support processes, management process and others are specific activities not processes.

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4
Modeling MLQ5X for innovation and value creation

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Abstract

The Multifactor Leadership Questionnaire (MLQ5X) Model by Avolio & Bass, (2004) currently is used to identify the leadership style on business practice. This document propose a complement of such model to encourage the Innovation Generation (IG) process and the Value Creation (VC). It´s a descriptive and correlational study that analyzes the variables, dimensions and indicators about MLQ5X, identifying the relationship among IG and VC processes in the organizations. The methodology is based on a document review that involves MLQ5X and other authors related with IG and VC, for discovering the predominant Leadership styles (LD) such as: Transformational (TRFL), Transactional (TRSL) and Passive / Avoidant (PAVL). The final model, involves: 9 variables, 36 dimensions and 103 indicators and was applied to 200 managers from Software Developer Sector (SDS) firms in Guadalajara, Mexico (GM). The final highest positive correlations results were: TRSL (.213) and Output Items for IG (OIIG=.135).

Keywords*: Leadership, MLQ5X, Innovation Generation, Value Creation.*

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Introduction

Innovation is the main key for the firms and nations for the development (INSEAD, 2013, OECD, 2005) but actually, the comprehension about how is created in a systematic form is still unknown for the firms. Many authors have described how to collect and use the data to identify components of a different innovation types (Rogers, 1962, Chesbrough, 2006; Shipp et al., 2008; McKinsey, 2008; OECD 2005), because is the principal driver for improving the competitiveness in the organizations and are considered in the present study as IG components. Other important factor, is the leadership concept , that has generated excitement and interest from ancient times, because is a complex issue finding out how certain individuals have the power of attraction and persuasion to achieve goals and objectives, with limited resources and how they exceed the expectations. The organizational world requires to identify the main characteristics that drive individuals to discover their skills (Petrick, et al.,1999) developing certain leadership style: Transformational, Transactional or Passive/Avoidant (Avolio &. Bass, 1995, 2004); Avolio & Gibbons,1988; Bass, 1985; Bass & Avolio, 1990, 1997, 2006) able to create value (Bonel et al., 2003; Gale & Chapman, 1994) with innovation. Therefore, the challenge is to identify what IG components, LD style and indicators are predominant in the SDS (200 firms) in the GCM, considered as one of the most successful in the creation of value and innovation. This work is divided into: 1) contextual reference, research questions, hypotheses, research questions and rationale for the study; 2) the theoretical framework, which is a collection of concepts of leadership, value creation and innovation and closing with the design of the questionnaire; 3) methodology description; 4) analysis of results; 5) conclusions.

Contextual Reference

One sector, that is considered successful, fast-growing and highly dependent on IG is the SDS. According to INEGI (2013), in GCM located in Jalisco state, there are around 200 firms that are directly or indirectly related with SDS, which have opportunities to develop them into the Digital Creative City program. The project, was officially announced on January 30, 2012 by President Felipe Calderon, to enable 1000 acres, with an investment close to 1000 million USD looking for create 20,000 jobs

in 10 years. Disney, Pixar Studios and Disney already have shown interest in joining to the *Jaliwood* concept of Mexico, hence the importance of identifying and promoting in a systematic way, the major factors such as IG in SDS firms.

Rationale of the Study, Problem and Hypotheses

According GDP (WB,2013) Mexico is placed in innovation as 14/90; INSEAD (2013) placed on site 63/142, but still so far away to represent an emergent economy. A real fact of this, is the competitiveness level, which is located on site 53/144 according the WEF (2013). Despite all above, there are some firms well known as successful organizations, due to the practice of LD on IG and VC, and that they have reached to increase their level of competitiveness in recent times. Some of those firms are grouped in the SDS into GCM. So, our problem is described in a general question as:

GQ: What is the conceptual model that involves MLQ5X model on IG and VC in a SDS firm?.
The specific questions (as **SQ**), are:
SQ1: What is the scheme of the model?
SQ2: What are the variables, dimensions and indicators added on MLQ5X model to obtain a final questionnaire that encourage the IG and VC in a SDS firm?
SQ3: What are the variables, dimensions and indicators among MLQ5X, IG and VC with higher correlation in a SDS firm?
The general hypothesis (as **GH**), is: What is the most predominant leadership style (according the MLQ5X model) style to encourage the IG and VC in the SDS firms in GCM?

Literature Review

This section analyze the concepts of leadership, value creation and innovation in order to find similar points to determine and describe the main variables and propose the conceptual model for its interrelationship.

4.1. Leadership. According to DRALE (2013), means: 1. m. *lead.* 2. m. *Status of superiority which is a company, a product or an industry, within its scope*. Today, we have recognized the advantage represented transforma-

tional leadership in innovation processes, due to the work of Avolio & Bass (2004). Sample's report (2007), for example, has the following profile of transformational leader: *creating greater alignment around strategic visions and missions, their behavioral factors are associated with increased sales, transformational leadership explains between 45% and 60% levels of organizational performance; create greater unit cohesion, commitment and lower turnover, predicted higher levels of innovation in teams of R & D products, transformational leaders create safer working environments* . Hence, is suggested to identify the level of transformation and transactional leadership qualities of the leaders of the organization using the tool known as the Multifactor Leadership Questionnaire (MLQ5X). This questionnaire has 4 variables that identify the type of leadership (Transformational/ Transactional/Passive-Avoidant Behavior and Outcomes of Leadership style), 12 dimensions and 45 indicators.

4.2. Innovation Process. According to DRALE (2013) comes from the latin *innovatio,-ōnis* and means: 1. *f. Action and effect to innovate.* and 2*. f. Creating or modifying a product.* For the Oslo Manual (OECD, 2005, p.56) innovation is the introduction of a new or significantly improved product (good / service), process, a new marketing method, or a new organizational method in the internal business practices, the workplace organization or external relations, so it is not just limited to the field of technology, product or services. Also, OECD (2005, p.37) recognizes the process of creative destruction, enunciated by Schumpeter, which raises two types of innovations: the *radicals* that contribute to major changes in the world and, the *incrementals,* happening on an ongoing change process. The Rogers Innovation Bell (1962), divides the innovation market in : a.*the innovators* (they are very careful to use the latest in technology, and very important to communicate and spread) ; b. *early adopters* (people considered as *opinion leaders* and influence their environment but are very careful to suggest and / or use the latest innovations); c.*early majority* (conservative people, but open to technological change with some level of careful to adopt it); d.*late majority* (consumers particularly skeptical to the use of innovations until a large number of his acquaintances, has adopted it); 5.*the laggards* (very traditional people maintaining the old forms; they hardly accept any changes and adapt to them until they become a habit even.). Afuah (1997), describes the importance to define the Lifecycle of Product (the start/end of the technologies).So, are involved 3 variables, 12 dimensions, 41 indicators.

4.2.1 Measuring the Innovation Generation. In this context, it is recognized that it is a complex process and therefore its measurement (OECD, 2005, Shipp et al., 2008). However, the propose is to identify the major elements of the innovation generation in: 1). *Incoming items* divided in tangibles-intangibles, (since equipment until intellectual capital (Lev, 2001)); 2).*The process* based on close or open innovation concepts (Chesbrough, 2006);3). *The outcoming items* characterized by concepts suggested by OECD (2005) and the McKinsey Report (2008) aimed to measure the new products or services characteristics designed by innovation;3). *The feedback* line to the leadership, that is described for 1 variables, 5 dimensions, 9 indicators .

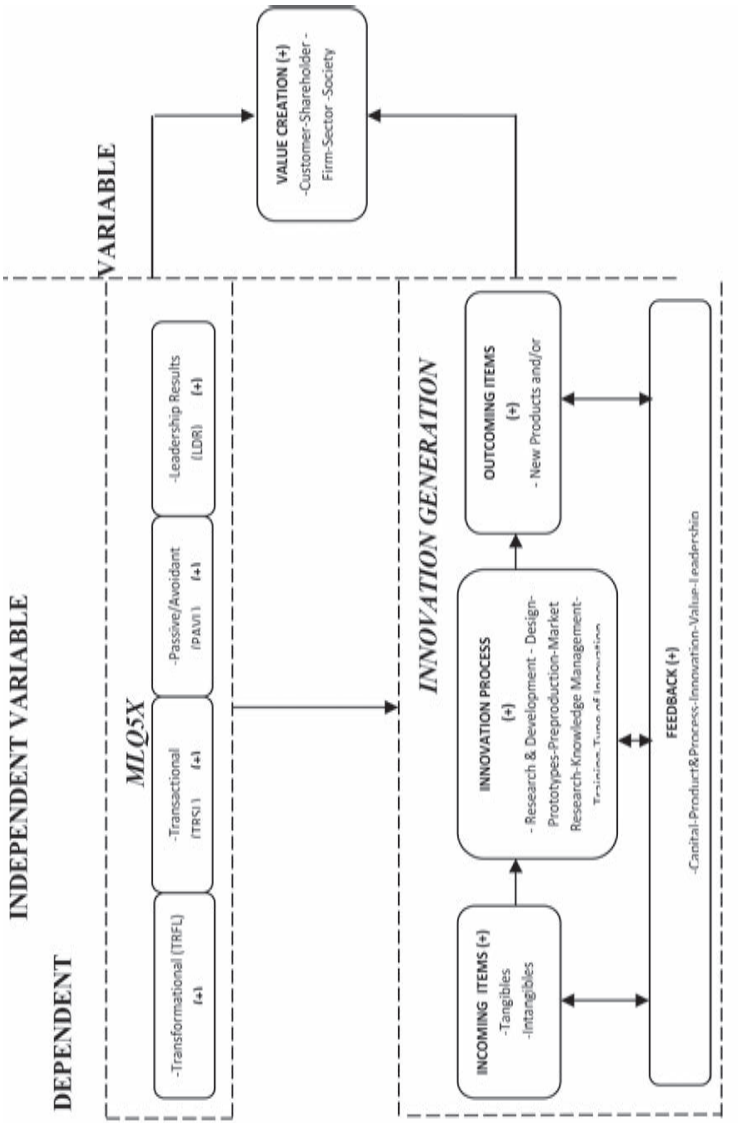
4.2.2 Value Creation. Bonel (et al., 2003); Gale & Chapman (1994) define it as the set of economic goods or any other type of utility (power or prestige) that pursuing the owners and managers of an organization as well as products, and services offered by the organization . The beneficiary has value not only to customers but also shareholders, the organization, the industry and society. It consists in 1 variable, 7 dimensions, 8 indicators.

As a result of the documental analysis, we obtained the Scheme 1.

Methodology

The subject of study were the 200 firms managers from the SDS placed in GCM. The results were analyzed through statistical inference tools, contained in the SPSS program. This is a descriptive, correlational and transversal study; it is based on MLQ5X model and documental research on IG concepts about its components, to design a complementary questionnaire with added variables, dimensions and indicators that encourage the relationship between MLQ5X and the IG.

Scheme 1
General Conceptual Model that involve MLQ5X on IG and VC



Source: Own by Authors adaptation

Analysis of results

Table 1 shows variables, dimensions and indicators which describes the detailed conceptual model taking as foregoing, the **Scheme 1** with 9 variables, 36 dimensions and 103 indicators.

Variable	*Dimension*	*Indicator*	*Item*	*Author*
1.Transformational Leadesrship (TRFL)	1.Idealized Influence-Idealized Attributes (IA)	Instills pride in me for being associated with him/her.	1	Avolio & Bass, (2004); Sample, (2007)
		Goes beyond self-interest for the good of the group.	2	
		Acts in ways that builds my respect.	3	
		Displays a sense of power and confidence.	4	
	2.Idealized Influence-Idealized Behaviors (IB)	Talks about their most important values and beliefs regarding education.	5	
		Specifies the importance of having a strong sense of purpose.	6	
		Considers the moral and ethical consequences of decisions.	7	
		Emphasises the importance of having a collective sense of mission.	8	
	3.Inspirational Motivation (IM)	Talks optimistically about the future.	9	
		Expresses confidence that goals will be achieved.	10	
		Talks enthusiastically about what needs to be accomplished.	11	
		Articulates a compelling vision for the future.	12	
	4. Intellectual Stimulation (IS)	Re-examines critical assumptions to question whether they are appropriate.	13	
		Seeks differing perspectives when solving problems.	14	
		Suggests new ways of looking at how to complete assigned tasks.	15	
		Gets me to look at problems from many different angles	16	

Variable	*Dimension*	*Indicator*	*Item*	*Author*
1.Transformational Leadesrship (TRFL)	5.Individual Consideration (IC)	Treats me as an individual rather than just a member of the group.	17	Avolio & Bass, (2004); Sample, (2007)
		Helps me to develop my strengths	18	
		Spends time teaching and coaching.	19	
		Considers me as having different needs, abilities and aspirations from others.	20	
2.Transactional Leadership (TRSL)	6.Contingent Reward (CR)	Makes clear what one can expect to receive when performance goals are achieved.	21	Avolio & Bass, (2004); Sample, (2007)
		Provides me with assistance in exchange for my efforts.	22	
		Discusses in specific terms who is responsible for achieving performance targets.	23	
		Expresses satisfaction when I meet expectations.	24	
	7.Management by Exception: Active (Mbe-A)	Focuses attention on irregularities, mistakes, exceptions, and deviations from standards.	25	
		Concentrates his/her full attention on dealing with mistakes, complaints and failures.	26	
		Keeps track of all mistakes.	27	
		Directs my attention toward failures to meet standards.	28	
3.Passive/ Avoidant Leadershio (PAVL)	8.Management by Exception: Passive (MBE-P)	Fails to interfere until problems become serious.	29	Avolio & Bass, (2004); Sample, (2007)
		Waits for things to go wrong before taking action.	30	
		Demonstrates his firm belief that "what is not broke do not fix".	31	
		Demonstrates that problems must become chronic before taking action.	32	

Variable	*Dimension*	*Indicator*	*Item*	*Author*
3.Passive/ Avoidant Leadershio (PAVL)	9.Laissez-Faire (LF)	Avoids getting involved when important issues arise.	33	Avolio & Bass, (2004); Sample, (2007)
		Is absent when needed.	34	
		Avoids making decisions.	35	
		Delays responding to urgent questions.	36	
4.Leadership Results (Ldrs)	10.Extra Effort(EE)	Get others to do more than they expected to do	37	Avolio & Bass, (2004); Sample, (2007)
		Heighten others' desire to succeed	38	
		Increase others' willingness to try harder	39	
	11.Effective-ness (EFF)	Are effective in meeting others' job-related needs?	40	
		Are effective in representing others to higher authority?	41	
		Are effective in meeting organizational requirements?	42	
		Leads a group that is effective	43	
	12.Satisfaction (SAT)	Uses methods of leadership that are satisfying	44	
		Work with others in a satisfactory way	45	
5.Value Creation (VC)	13.Emotions & Desires of the Customer	The innovation actions are aimed to increase the Emotions & Desire of the Customer	46	Bonel (et al.,2003); Gale, B.T.; Chapman W.R. (1994)
	14.Cost & Risk	The Cost is the main constraint to implement actions to increase the value	47	
		The Risk is the main constraint to implement actions to increase the value	48	
	15.Customer	The innovation actions are aimed to increase the Customer value.	49	
	16.Share-holder	The Innovation actions are aimed to increase the Shareholder value	50	
	17.Firm	The innovation actions are aimed to increase the value of the Firm	51	
	18.Sector	The innovation actions are aimed to increase the value of the Sector	52	
	19.Society	The innovation actions are aimed to increase the value to the Society	53	

Variable	*Dimension*	*Indicator*	*Item*	*Author*
6.Incoming Items (IIIG)	20.Tangibles	Provides the most sophisticated equipment to support innovation time creating value	54	Shipp (et al. 2008); McKinsey (2008)
		Invests in Research, Development and Innovation creating value	55	
		Assigns staff to Research & Development and Innovation creating value	56	
	21.Intangibles	Makes efforts to use and / or generate Patents creating value	57	
		Makes efforts to create and / or improve Databases creating value	58	
		Makes efforts to create and / or improve organizational processes, creating value	59	
		Makes efforts to use the most of the knowledge and skills of staff, creating value	60	
		Makes planned decisions to increase its availability to the risk, creating value	61	
7. Innovation Process (IPIG)	22.Research & Development + Innovation	Makes actions to improve existing processes of Research & Development + Innovation, creating value	62	Shipp (et al.,2008); Chesbrough (2006); McKinsey (2008); OECD (2005); Rogers (1962)
	23.Design	Makes actions to improve the existing design	63	
	24.Prototypes	Makes actions to develop prototypes for improvement, creating value	64	
	25.Pre-Production	Makes improvement actions to pre-production, creating value	65	
	26.Market Research	Makes to investigate market needs of obsolete products, creating value	66	
		Makes to investigate the needs actions and / or market changes for innovators, creating value	67	Rogers (1962)
		Makes to investigate needs and / or market changes for early adopters, creating value	68	

Variable	*Dimension*	*Indicator*	*Item*	*Author*
7. Innovation Process (IPIG)	26.Market Research	Makes to investigate needs and / or market changes for early majority, creating value	69	Rogers (1962)
		Makes to investigate needs and / or market changes for late majority, creating value	70	
		Makes to investigate needs and / or market changes for laggards, creating value	71	
		Makes to investigate the onset of a new technology, creating value	72	Afuah (1997)
		Makes to investigate the term of a technology, creating value	73	
	27.Knowledge Management	Documents market knowledge, creating value	74	OECD (2005)
		Documents the knowledge of their employees to apply in their processes, creating value	75	
		Encourages the exchange of information within your company, creating value	76	
	28.Marketing	Decides actions to improve or introduce new forms of marketing, creating value	77	Lev (2001)
		Seeks to be new or improved in the World (Radical Innovation), creating value	78	OECD (2005)
		Seeks to be new or improved to the Firm (Incremental Innovation), creating value	79	
		Seeks to be new or improved in the region (Incremental Innovation), creating value	80	
		Seeks to be new or improved in the industry (Incremental Innovation), creating value	81	
	29.Training	Makes actions to train the staff continuously (Incremental Innovation), creating value	82	

Variable	*Dimension*	*Indicator*	*Item*	*Author*
7. Innovation Process (IPIG)	30.Type of Innovation	Makes actions to innovate in technology	83	OECD (2005)
		Makes actions for innovation in production processes, creating value	84	
		Makes actions to improve or introduce new products forms, creating value	85	
		Makes actions to improve or introduce new forms of service, creating value	86	
		Makes actions to improve or introduce new organizational structures and functions, creating value	87	
		Innovation activities tend to be rather radical, creating value	88	
		Innovation activities tend to be incremental, creating value	89	
8.Outcoming Items (OIIG)	31.New products/ and/ or services	Detects the projected level of revenues generated by innovation, creating value	90	Shipp (et al. 2008); Reporte McKinsey (2008);Lev (2001)
		Detects the projected customer satisfaction level generated by innovation, creating value	91	
		Detects the projected sales percentages levels generated by innovation, creating value	92	
		Detects the level of the number of launches of new products/services in a period ended generated innovation, creating value	93	
		Detects the net present value of its portfolio of products / services in the market generated by the innovation, creating value	94	
9. Feedback Items (FBKIG)	32.Capital	Based on the results identifies intellectual capital dedicated to innovation for its improvement, creating value	95	Lev(2001); Shipp (et al. 2008); OECD (2005); Bonel (et al., 2003)

Variable	*Dimension*	*Indicator*	*Item*	*Author*
9. Feedback Items (FBKIG)	33. Product & Process	Based on the results identifies the stages of new or improved process for upgrading, creating value	96	Lev(2001); Shipp (et al. 2008); OECD (2005); Bonel (et al., 2003)
		Based on the results identifies attributes of new or improved product / service for its improvement, creating value	97	
	34. Innovation	Based on the results identifies the stages of new or improved form of marketing for improvement, creating value	98	
		Based on the results identifies the stages of new or improved technology for improvement, creating value	99	
		Based on the results identifies the stages of the new or improved structure and functions of the organization to its improvement, creating value	100	
		Based on the results identifies the type of innovation (radical or incremental) that has given best results, creating value	101	
	35. Value	Based on the results identifies the new or improved value proposition (benefits / costs) for its completion, creating value	102	
	36. Leadership	Based on the results identifies the leadership style practiced by their commanders for their improvement, creating value	103	

Source: Authors by own adaptation

Data Analysis

About the statistical inference tools from SPSS program, were obtained: Alpha Cronbach's test around 0.857; Kolmogorov-Smirnov as a distribution normality test with more than $p>0.05$: LG (0.058); LD (0.575). Pearson Correlation is presented in **Table 2;** Coefficients by Enter Method are

shown in **Table 3;** Model Summary is presented in **Table: 4** and finally, **ANOVA** in **Table 5.**

Table 2
Pearsons Correlation

		VC	IIIG	IPIG	OIIG	FBKIG	TRFL	TRSL	PAVL	LDRS
Pearson Correlation Coefficient	VC	1	.399**	.497**	.427**	.425**	**.521****	**.509****	**.068**	0.253**
	IIIG	.399**	1	.807**	.259**	.427**	**.597****	**.530****	**.018**	.203**
	IPIG	.497**	.807**	1	.385**	.590	**.783****	**.710****	**.034**	.216**
	OIIG	.427**	.259**	.385**	1	.553**	**.548****	**.419****	**.111**	.314**
	FBKIG	.425**	.427**	.590**	.553**	1	**.659****	**.554****	**.005**	.273**
	TRFL	**.521****	**.597****	**.783****	**.548****	**.659****	1	**.670****	**.040**	**.349****
	TRSL	**.509****	**.530****	**.710****	**.419****	**.554****	**.670****	1	**.060**	**.290****
	PAVL	**.068**	.018	.034	.111	.005	.040	**.060**	1	**-.034**
	LDRS	.253**	.203**	.216**	.314**	.273**	**.349****	**.290****	**-.034**	1

** Correlation is significant at 0.01 (unilateral)
Source: Results in SPSS program

Table 3
Coefficients by Enter Method (a)

Model	*Unstandardized Coefficients*		*Standardized Coefficients*	*t.*	*Sig.*
	B	*Std. Error*	*Beta*		
Constant(b)	.778	.385		2.021	.045
IIIG	.044	.073	.060	.604	.547
IPIG	.085	.120	.099	.708	.480
OIIG	**.135**	.056	.182	2.409	.017
FBKIG	.016	.064	.021	.245	.807
TRFL	**.116**	.097	.131	1.189	.236
TRSL	**.213**	.087	.216	2.453	.015
PAVL	**.041**	.092	.027	.450	.653
ldrs	.056	.072	.050	.775	.439

Dependent Variable: VC; (b) Predictors: (Constants), LDRS, PAVL, IIIG, OIIG, TRSL, FBKIG, TRFL, IPIG.
Source: Results in SPSS program

Table 4
Model Summary (b)

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error for estimate*
1	.593(a)	.352	.325	.5045

Predictors: (Constants), LDRS,PAVL,IIIG,OIIG,TRSL,FBKIG,TRFL,IPIG (b) Dependent Variable: VC
Source: Results in SPSS program

Table 5
ANOVA (a)

Model	*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
1 Regression					
Residual	26.430	8	3.304	12.981	0.001(b)
Total	48.613	191	0.255		
	75.043	199			

(a) Dependent Variable: VC ; (b) Predictors: (Constants), LDRS, PAVL, IIIG, OIIG, TRSL, FBKIG, TRFL, IPIG.
Source: Results in SPSS program

Discussion and conclusions

The **GQ**, involving the relationship about MLQ5X on IG applied for the SDS in GCM is reached at 100% when is responded: firstly, resolving the **SQ1** with the **Scheme 1** with 9 variables, 36 dimensions and 103 indicators. Secondly, resolving the **SQ2** with the description of variables in **Table 1**, from the theoretical framework. **SQ3** is reached when we obtained **Table 2** about the leadership style, with highest positive correlations on TRFL and TRSL; the lowest positive correlation was on PAVL, even a little negative in the relation PAVL-LDRS (-.034). However, acting all together, from **Table 3**, we have with highest value TRSL (.213) on contradiction with the academy definition around TRFL as a principal IG driver. Therefore, **GH** is responded from **Table 3** values, with TRSL (.213) as the most predominant leadership style. The R square value in **Table 4** shows the amount of variance in the dependent variable that can be explained by the independent variables, in this case: 0.352; The R value (0.593) indicates the multiple correlation coefficient between all the entered inde-

pendent variables and the dependent variable. The Adjusted R (**Table 4**) Square adjusts for a bias in R2 as the number of variables increases. With only a few predictor variables, the adjusted R square should be similar to the R square value. It is recommended to take the adjusted R square value when we have a lot of variables. The Std. Error of the Estimate is a measure of the variability of the multiple correlations. **Table 5**, the regression line predicted by the independent variables, explains a significant amount of the variance in the dependent variable. It would normally be reported in a similar fashion to other ANOVAs: $F(8,199) = 12.981$; $p<0.05$. Dividing the Sum of squares by the degrees of freedom (df) gives us the Mean Square or variance. We can see that the Regression explains significantly more variance than the error or Residual. We calculate R square by dividing the Regression Sum of Squares by the Total Sum of Squares (26.430/75.043=0.352). **Table 3**, explains from Unstandardized Coefficients the final equation as conclusion:

$$\text{IG} = 0.778 + 0.044\ \text{IIIG} + .085\ \text{IPIG} + .135\ \text{OIIG} + .016\ \text{FBKIG} + .116\ \text{TRFL} + .213\ \text{TRSL} + .041\ \text{PAVL} + .056\ \text{LDRS}.$$

The Standardized Beta Coefficient column shows the contribution that an individual variable makes to the model. The beta column is the average amount the dependent variable increases when the independent variable increases by one standard deviation (all other independent variables are held constant). As these are standardized we can compare them.t tests are performed to test the two-tailed hypothesis that the beta value is significantly higher or lower than zero. This also enables us to see which predictors are significant. Given the results, for the SDS firms in GCM, the TRSL (.213) is the most predominant leadership style according to the MLQ5X against the TRFL and PAVL. The most important IG component is the OIIG (.135) because the firms are more interested in results rather than the rest of IG components (eg. IIIG=0.044; IPIG=.085; FBKIG=.016).

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5
Identification of Strategic Profiles at SMEs[1], an Advantage that Favors Competitiveness

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Abstract

SMEs face several problems, among which we can find an insufficiency of mechanisms to support them, as well as a nearly non-existent entrepreneurial vision; therefore, learning can become an advantage that favors competitiveness. The goal of this research is to identify which are the strategic profiles at SMEs that may favor the improvement of productivity and the level of sales as competitiveness detonators. The method to be applied for this research was designed and validated, and the diagnostic techniques – needed to know the strategic objectives – were organized.

The resulting findings point out that 33% of the companies have an aggressive profile, that another 33% of them are defensive, while 17% of the companies are competitive or conservative. The invitation for the units that have been analyzed is growth, not survival or continuity, since most of the SMEs that were studied describe their strategic objective as the increase of their sales and productivity.

Key Words: *strategic profile, SMEs, growth, competitive advantage*

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Introduction

According to international experiences, and from the technical point of view, there are some arguments used to describe the weakness of the micro, small and medium-sized enterprise (SME). Observing and analyzing the information that is nowadays available on the international behavior of those organizations, we can appreciate that it shows that the most serious manifestation can be seen in the high levels of "infant mortality."

The goal of this research is to identify which are the strategic profiles of SMEs that may favor the achievement of improvement in productivity and the increase of the level of sales as detonators towards competitiveness.

For this purpose, a method to identify the profile of the strategy was designed and validated, and some diagnostic techniques were organized in order to know which are the strategic objectives of the enterprises that were being studied. It is an applied research with a descriptive scope.

Regarding the theoretical references, we took into consideration those theoreticians whose main topics are strategic direction, entrepreneurial culture and competitiveness, as well as those theoreticians who refer to learning and innovation as a component of the competitive advantage of a company; in the same manner, the context of SMEs is presented, with the goal of explaining how important such sector is for the Mexican economy.

The results of this research show that the SMEs that were studied still consider that the increase in their sales and productivity are elements that demonstrate that an entrepreneurial management is successful, but also that they are detonators of competitiveness; the identified strategic profile ranges from aggressive to defensive – not many companies behave in a competitive or conservative way.

Context

The SMEs – as a part of the Mexican entrepreneurial sector – are facing the threat of disappearing due to the displacement they have experienced in the chain of supplies, and also because of the lack of effective mechanisms to strengthen and to encourage their development. Such displacement has kept them from getting into the competitive world that demands the liberalization of markets, economic and cultural challenges;

one of the actions that is to be carried out – and which is considered as a possible source of results in the future in terms of encouraging the companies continuity – is the capacity of people to learn.

Taking into consideration the studies of several research works (Ruiz, 1995; Skertchly, 2000; Guillen P., 2003; Pomar, 2001; García L., 2001; Arechavala, 2003 and 2001; Martínez, 2005), we can say they concluded that SMEs have a peculiar way of management that may be characterized by informal organization. In general terms, they ignore what planning, organizing, directing and controlling imply.

In most cases, the technology being used is just a little specialized and their production systems are traditional – they lack of an economic guarantee.

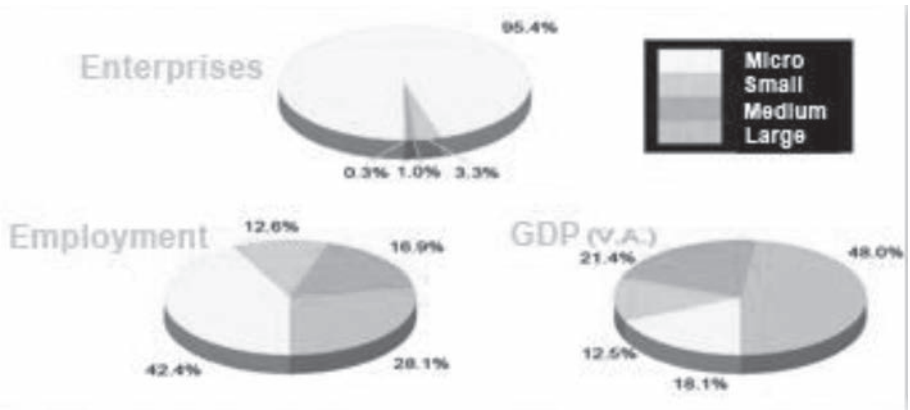
In fact, the concept of small enterprise can be fully distinguished by its implications in: administrative, financial and investment capacities, entrepreneurial culture, and flexibility to get adapted to markets and economic policies.

In Mexico, the General Law of Competitiveness for Micro, Small and Medium-sized Enterprises – in Spanish MIPYMES – (2012), defines them as those enterprises that do not sell more than $4,600,000.00 (Mexican currency) and that do not have more than 250 employees. Such limits are related to the sector to which they belong.

The Ministry of Economy (ME) mentions that SMEs[4] generate 52% of the Gross Domestic Product (GDP) and that they provide 71.9% of formal employments. The transcendence of this kind of enterprises can be appreciated thanks to the summary of the results of the 2009 economic census of INEGI. Such summary shows that there are 5,144,056 enterprises in our country – 99.7% out of those are SMEs.

4. For the purpose of this work, whenever we refer to SMEs, we are also considering that we may refer to Micro, Small and Medium-size Enterprises.

Figure 1
SMEs, number, employment and GDP



Source: http://www.compite.org.mx/otros/IMPORTANCIAPYMES.pdf, referring to the Deputy Ministry for Small and Medium-sized Enterprises of the Ministry of Economy.

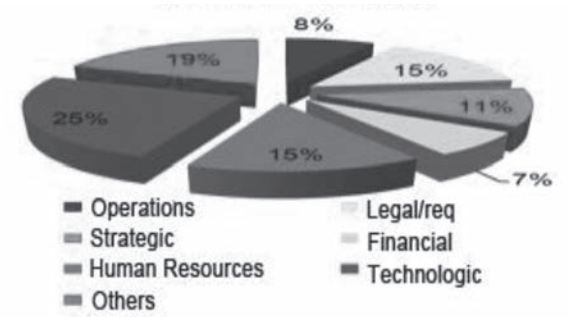
In spite of their contribution to the GDP, SMEs have been lessened by several external and internal factors – they do not create an added value. García P.D. (2004) says that the problems of SMEs come from the frame of macroeconomic instability (inflation, devaluation and change rate.)

According to the specialists of the Institute of Economic Research of the Autonomous National University of Mexico (*Universidad Nacional Autónoma de México*, 2009), "there are no adequate public policies to support the SMEs, even though in this country 97% of the enterprises are micro, small or medium-sized, and their average lifespan is of only two years."

And the SMEs Observatory in Mexico says that small and medium-sized enterprises declare bankruptcy due to problems caused by internal factors, since processes and technology reach 40%. See Graph 1.

In regards to this, García P.D. (2004) says that the larger the enterprise, the larger insertion and the greater experience it has in international markets. SMEs are able to exploit their behavioral advantages thanks to their low level of bureaucracy, their informal system of communication and their flexibility, as well as the dynamic quality of their own nature.

Graph 1
Internal factors. SMEs



Source: Deputy Ministry for the Small and Medium-sized Enterprises of the Ministry of Economy [online]: http://www.compite.org.mx/otros/IMPORTANCIAPYMES.pdf

As we can see, SMEs also have good qualities and characteristics of flexibility; they adapt more easily to the current economic environment thanks to their dynamism, which in terms of economy and finances causes uncertainty and accentuates the difficulty to predict what will happen in the future.

The classic economy of Adam Smith, (Trans. by Ortiz, A., 2012), describes how organizations create knowledge as they are born, grow up and develop as economic entities.

Therefore, we can affirm that in order to compete and to create a competitive advantage, the strategic direction has established a justified field of investigation in order to improve directive practice.

It is thanks to the evolution in the research of strategies and considering organizational development that a great variety of approaches to organizing, interpreting and acting strategically in an organization have arisen.

Because of that, not only the SMEs but also large organizations must have economic and administrative tools, as well as market tools to reappear or to keep their position, they need innovation and techniques with strategic vision to achieve being competitive, and to contribute to this country's economic development. To this end, several administrative approaches are used, among which we can consider entrepreneurial management, strategic planning and organizational development.

Strategic thought, entrepreneurial culture

Macroeconomic, cultural and technological conditions have changed throughout time, and according to the economic policies for each country's growth and development; companies have gotten adapted to such changes.

For example, when plow was invented. The strategic factors for organization were abundance and the quality of the land; later on, when the steam machine was invented and the industrialization of products came, those factors were complemented by using machinery and specialized labor, serial production was then favored. But nowadays, in the face of a world that has been globalized by markets and whose characteristic is a fast pace and constant change, those factors were transformed in order to become an intangible active – intellectual capital – and the customer's expectations.

In that sense, the ability to learn faster than the competitors in the eyes of the customer is fundamental to create market differences. (Villarreal, R. & Villarreal, T. 2003).

As we had previously mentioned, nowadays organizations face highly demanding business scenarios, which require the construction of roads, innovating for competitiveness; creative may be the only competitive advantage, and assuming this approach implies a strategic fusion of the competitors in local, global and complex contexts. Creativity stimulates scientific and technologic innovation, it increases the productivity and an efficiency culture is spread for economic development.

However, the needs of an organization are focused at all times on selling more, with quality that decreases costs, and satisfying the customer's needs. To this regards, we will refer to the philosophy of Marsushita Konosuke, known as Keieino Kamisan >> the wit of management <<, which is based on the idea that both industry and business have a duty to satisfy the needs of society, and the benefit they get from it is legitimate and necessary. The greater the level of accomplishment is for the enterprise, the greater its benefit. (Cleary 2007.) But, how can it be achieved?

In this context, Savall, H and Zardet, V. (2009), say that in order to achieve the company's growth, strategic reflection from the foresighted actor is required, this means that the director of the organization must make decisions based on a close and deep observation of their company, as well as on a wider vision of markets and of the environment for analysis and decision. (Intelligence and strategic pertinence, respectively.)

On the other hand, Hamel and Prahalad, (1999) state that the real problem nowadays lies in identifying the competition as latecomers and challengers, non-innovative and innovative people, apathetic and followers vs. Imaginative and creative.

The aforementioned aspect implies putting into operation a "*strategic thought*", carrying on a process from the highest levels of direction to the base levels of operation, aiming to achieve goals and objectives for the development and the progress of the company – using distinctive characteristics such as creativity, learning and innovation, having an open mind to identify future opportunities. In that sense, SMEs are not excluded.

It is worth to mention that the perspective of innovation and creativity is, in terms of the application of knowledge, as a continuous long term effort, considering that learning may be the only advantage to achieve competitiveness in the organizations; there are several ways to achieve it, such as training, continuous improvement, strategic planning, organizational change, among others. These are without doubt actions that stimulate scientific and technologic creation in order to significantly increase productivity.

According to Villareal, R., (2007), in order to move into competitive development, specialized technicians – workers of knowledge – and alliances to train the members of the company must be formed. The organization that is able to learn faster than its competitors will be able to be more competitive.

With this in mind, it is through education that innovation for development will be achieved, understanding that innovation means change, development, or transformation. For Nonaka & Takuchi (1995) it consists of a continuous learning process that companies use to generate new technological knowledge. It is a feedback process, both coming and going among its different areas. But in addition it involves interactions with the suppliers, customers, research centers, Institutions of Higher Education (IHE), the community and in general terms with their groups of interest.

For this work we also take into consideration that being global means being able of negotiating, identifying and lessening the risks that may have an impact in the results of the entrepreneurial management through productivity and competitiveness, thus helping their social transformation.

In the same manner strategy is conceptualized as the planned action that comes from the analysis of internal and external factors of the company as well as the respect of the mission, the needs, and the goals of the organization, in such way that those elements make it viable for execu-

tion and in a future, to receive feedback with the objective if of getting a perspective of profitability and competitiveness.

But it is as well a process of: conception, formal, analytic, visionary, mental, emergent, negotiation, collective, reactive, or transformation. (Mintzberg, 1999) depending on the needs of the organization.

Strategy as a process was defined as basic elements such as: mission, vision, objectives, and values. (Foster 2000.)

Regarding competitiveness advantage, it is supposed to be the key success factor acknowledged in the company, the one that makes the difference between the company and its competitors; the one that leads to a planned result by increasing its economic value.

Methodology

It is an applied research, with a descriptive scope to refer to strategic situation of SMEs through the representation of activities, objects or processes.

The research question we need to answer is: Which are the strategic profiles at SMEs that will achieve an improvement in productivity and an increase at sales level?

In order to achieve the objective of identifying strategic profiles that favor the improvement in productivity and an increase at sales level at SMEs, the background of previous researches was considered, as well as the methodology of connection among SMEs and the Higher School of Commerce and Administration (ESCA, as abbreviated in Spanish) Tepepan of the IPN (*National Polytechnic Institute*, phase 1 and 2) as well as the design of the instruments to collect field information, validation and application of such tools. The method applied to those enterprises being studied was of course validated. Such method was formed by three phases; the fifth phase was formed by 5 different stages.

Once the objective was established, the hypotheses of the research was presented, it was described as: the identification of strategic profiles of SMEs – according to the sector to which they belong – assures the fulfillment of strategic objectives of productivity and sales increase, and cost reduction.

Therefore the dependent variables are the strategic profiles: aggressive, defensive, competitive and conservative, whilst the independent variables are: productivity, sales and costs. Up next we present the method: ***First***

phase: the micro and small-sized enterprises of the location within the political municipality of Tlalpan and Iztapalapa (Asociación de Micro industriales de Tlalpan, A.C. and Asociación de Empresarios de Iztapalapa, A.C.) Using this information the first research on effectiveness of micro industries was derived.

Second phase: the methodology that allowed the construction of a *cooperative connection* was designed, such methodology would grant access to the necessary information for the corresponding analysis, which will create the possibility of thoroughly studying the entrepreneurial culture of each SME that was a participant, it would then help the group of academics and researchers to start working on the application of alternatives to solve different problems In an agile and economic way.

I. The method that was prepared to pay attention to these different problems was based on facilitating the establishment of information systems to the entrepreneur, in order to enhance the efficiency in the operational processes, to strengthen their abilities in entrepreneurial management. To this end, the following actions – included in the third stage – were carried out:

Third stage: the method was validated (see figure 2) as well as the set of techniques and tools that were used at the enterprises that were being studied, with the objective of getting true and reliable information.

I. In order to validate the process used at the enterprises being studied, a questionnaire was designed and applied to 8 consultants, after it was tested through the judging technique among the researchers. The topic of such questionnaire is related to SMEs. The tested elements were: language, reliability, and objectivity. It included questions with multiple options and Likert-type answers. Their criteria were: general data of the consultant, tools to determine strategic plans, role of the strategic elements in the entrepreneurial culture, applicability at the SME.
II. For the stage "Getting to know the SME personally" in this first stage we identified who the enterprise is, what its genesis is, how long it has been in the market, what it does and what its business is, understanding this term as the essence of activity.
III. For the step called: "What is the problem?" an interview with the owner of the enterprise was carried out, direct observation at the

company's facility was executed, and we requested documents to compare their data with the information provided by the director and with the findings from the stage called "Getting to know the SME personally." Later on, the mechanism proposed by Joseph Lufh and Harry Ingham was applied with the "*Johari window*", whose objective is to determine the communication system through the identification of: how well does the company know itself and which is the perception of external entities about it?

IV. Third stage: "The strategic elements." The same analysis techniques were used at each enterprise being studied, such as the evaluation of internal and external factors, the analysis of appeal, maturity and competitiveness according to Ramírez & Cabello (1997). Likewise, a timeline was set to identify the background and the evolution of the enterprises. Also their mission, vision, objectives and values were studied.

V. In the fourth stage: "identification of the strategic profile", a strategic profile matrix was used, and the action evaluation. The *financial force* (FF) and the *competitive advantage* (CA) were considered as internal factors, and the *environmental stability* (ES) along with the *force of the industry* (FI) as external factors when providing a value to determine in which quadrant the company is located, thus identifying their strategy.

VI. Once the data that originated during the previous stages had been analyzed, a proposal of the strategy as a process and based on strategic profile is presented.

It is worth to mention that the identification and resolution of problems (figure 2) was carried out along with the directors of the enterprises and the students of the Master Degree at the ESCA Tepepan, under the scheme that considers that a leader of strategic projects is focused on visualizing key points of success at the organization.

The method that was designed and validated for the identification of strategies for SMEs is the whole first block, and stages 5, 6 and 7 of block 2 of figure 3.

Figure 2
Stages for the identification and resolution of problems

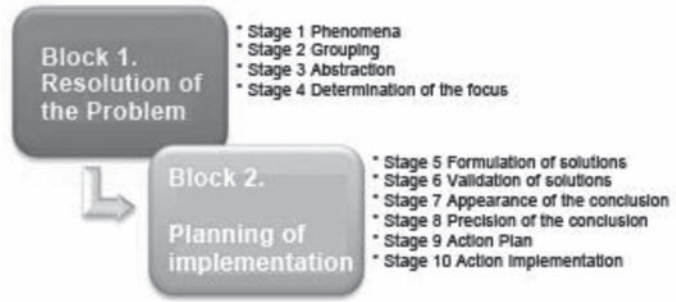
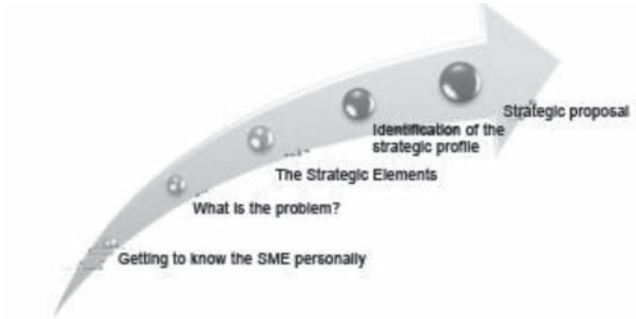


Figure 3
Stages for the identification of strategies at SMEs



Source: Created by the authors based on different administration and strategic direction authors.

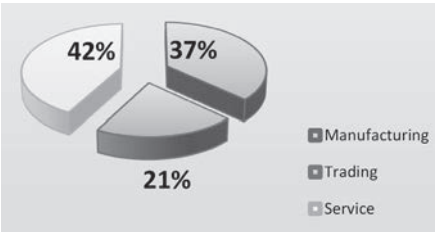
Results

The process that has been described in the section of methodology was applied to 22 companies. Up next, the resulting findings are presented.

I. Getting to know the SME personally: The general aspects of SMEs were known as analysis units: they are micro, small and medium-sized enterprises located in the Federal District, companies that have a federal registration as tax payers, our universe was conformed by those companies that expressed their interest and acceptation in becoming a part of this study.

1. They are SMEs, constituted as legal entities of their own, and identified as natural persons with entrepreneurial activities, or Anonymous Partnerships (*Sociedades Anónimas*.)
2. Out of the 22 enterprises that were interviewed, 46% provides services, 36% manufactures and the remaining 18% trades.

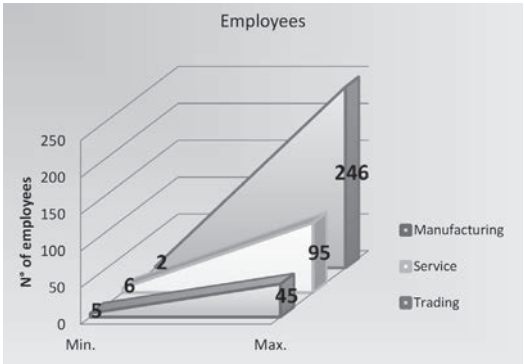
Graph 2
No. SMEs being studied by sector



Source: own elaboration.

3. The amount of employees they hire goes from 10 to 246, and it is the trading sector the one that hires the smaller amount of workers.

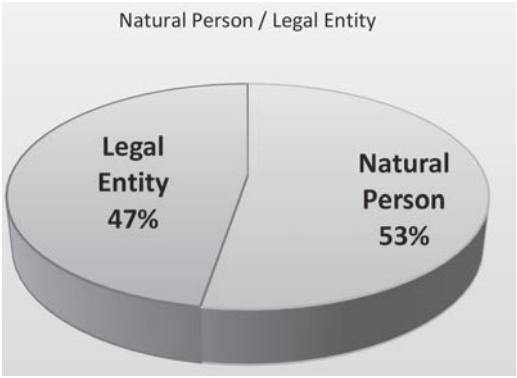
Graph 3
No. SMEs being studied classified
by the number of employees they hire



Source: Interviews with the owners of the SMEs being studied.

62% of the companies are registered as natural persons with an entrepreneurial activity, the rest of them are Anonymous Partnerships.

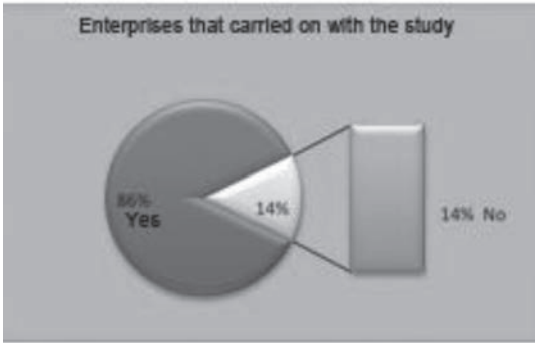
Graph 4
Fiscal situation of the SMEs being studied



Source: Documents provided by the SMEs being studied.

II. What is the problem? Identification of the organizational culture: It includes the communicative ability to provide feedback and to perform changes:
Out of the 22 SMEs that agreed to be analyzed, only 19 decided to continue based on the results of the Johari window.

Graph 5
Determination of the sample after the application of the Johari window



Source: Method for the construction of the Johari window.

Then the next stage came along, and three basic questions were asked: ***what is done, how is it done, and who does it satisfy?***

Out of the enterprises that decided to go on, 100% immediately responded the questions What and How, while the last question was not clearly responded, or they didn't know how to answer at all.

III. Strategic elements: For the identification of the business models, the persons being interviewed found it difficult to provide an answer, and it was difficult for them to understand the questions. Who is the enterprise directed to? How does it do it? And what are the means it has to do it? That is why we had to resort to the help of the students of the Master Degree in Management Science to help by providing a definition of basic marketing and trading concepts.

Students also helped at the work sessions to clarify what the questions meant for the identification of the business model of their enterprises.

Strategic elements: Regarding the relationship that exists between the objectives and the requirements for the integration of results, the persons answering the interview said they know their company and that their main objective is to sell and to produce more.

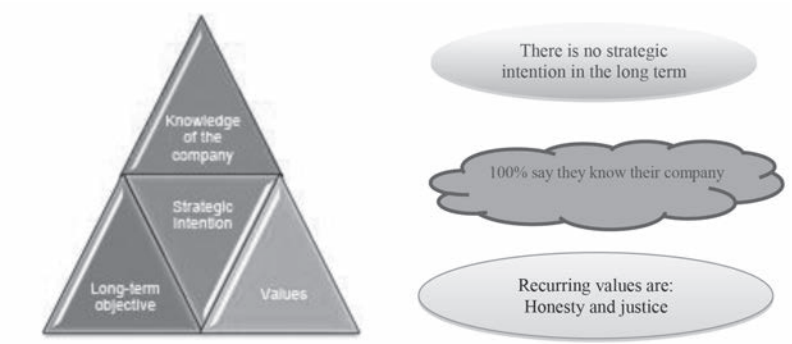
When referring to the goals of the company regarding service, earnings, and the growth of the company, 40% mentioned that the growth (sales increase) has a priority over immediate profit to guarantee sustainability of the company in the long term, another 40% pointed out that the most important aspect is service. In that sense we can observe that the entrepreneurs consider that it is more important to get more customers and to increase their sales than visualizing if there are profits or losses in relation to this income.

Table 1
Definition of the objectives of the enterprises being studied

3 *Cost reduction*	*1* *Producing and selling more*	*4* *Getting greater profits*	*5* *Keeping the same number of current employees*	*2* *Using the profits on projects to favor the company's growth*
18.00%	47.00%	12.00%	0.00%	23.00%

Source: Interview with the owners of the SMEs being studied.

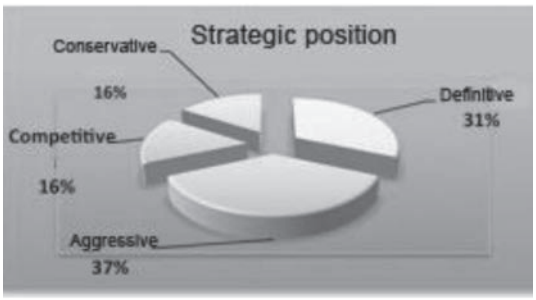
Figure 4
Strategic elements, a response that favors management



Source: Interview with the owners of the SMEs being studied.

Stage: Identification of the strategic profile
The results show that 33% of the SMEs have an aggressive or a defensive profile, while only 17% are competitive or conservative.

Graph 6
Determination of the strategic position



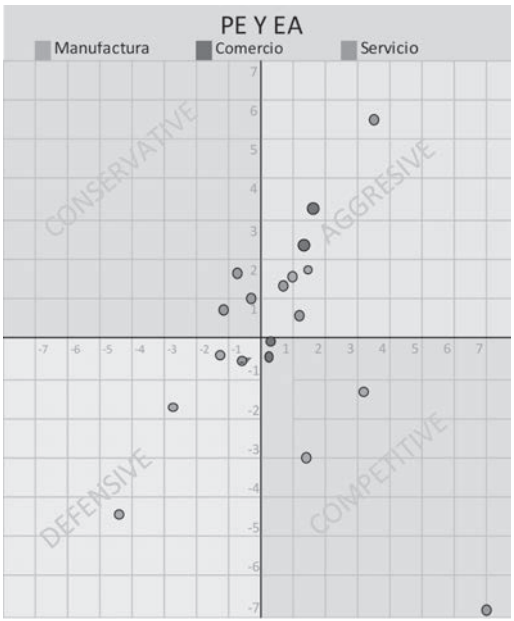
Source: Method of the SP and ES (Strategic Position and Environmental Stability) matrix, analysis of the industry and interview with the SME.
Note. The companies that were studied provided information related to their finances, customers, and about their legal and tax situation.

When segregating the profiles based on their sector, we could see that the manufacturing SMEs have a defensive profile in 57.1%, aggressive only 28.6% and competitive only 14.3%, which means they are not com-

petitive, they have financial problems but they don't identify themselves with competitive advantages.

The trading SME has an aggressive profile in a 50.0%, as well as competitive, which means that these companies have financial strength and they are as well a part of a stable economic sector, and also that they have competitive advantages. About the service SMEs, they were identified with a conservative profile in a 37.5%, as well as an aggressive profile, and 25.0% had a defensive profile.

Figure 5
Dispersion of the strategic profile by economic sector



Source: Method of the SP and ES (Strategic Position and Environmental Stability) matrix, analysis of the industry and interview with the SME.

The following table defines the strategy that is to be followed depending on the objectives of the SME.

Table 2
Definition of the strategy based on the SP and es

Sector	*Population*		*Strategic profile*	*Kind of strategy depending of the goal*
Manufac-turing	8	7	Aggressive	Growth (increase in sales)
			Defensive	
			Competitive	
Trade	4	4	Aggressive	Productivity Cost Reduction
			Competitive	
Service	10	80	Aggressive	
			Conservative	
			Defensive	
	22	19		

Source: Method of the SP and ES (Strategic Position and Environmental Stability) matrix, analysis of the industry and interview with the SME.

According to the result $x^2 = \mathbf{12.6186}$ with a degree of freedom **4** and a reliability level of **.05** whose expected value is **9.488**, regarding the relationship that exists between the strategic profile variable and sales, productivity or costs, the hypotheses is accepted, thus providing evidence in favor of the identification of a strategic profile for the SME, because it assures the fulfillment of the strategic objectives of productivity and sales increase, as well as cost reduction.

It is worth to mention that according to Hernández, S. (1999) a sample of volunteering subjects deduces conclusions in relationship to the subjects who accepted to be a part of the study.

Up next, we show the determination of the Chi-Squared:

Table 3
Determination of the Chi-Squared

		Σ	$\frac{(fo - fe)^2}{fe}$
	Sales /production	*costs*	
Aggresive	0.61456672	0.84502924	1.4595956
Defensive	1.73684211	2.38815789	4.125
Competitive	1.22488038	1.68421053	2.90909091
Conservative	1.73684211	2.38815789	4.125
	5.31313131	7.30444446	**12.6186869**

Source: Elaborated by the authors based on Excel databases

Proposal

Once the strategic profile is determined, we proceed to level and to validate the kind of strategy that is to be proposed considering the kind of enterprise and the resources it has, with the goal of having a strategy that corresponds to the company's reality and that fulfills the established objectives.

A planned working culture in the long term must permeate among the directors of the SMEs through the programming of basic strategic administration courses.

Porter (2002), points out that the importance of the identification of the strategies in an enterprise answers to the benefits that have been detected by their leaders. And competitive advantage is nothing but the strategy of selection of activities within the framework of a system of values of the enterprise.

In the same manner it is worth to emphasize that designing a strategy means to create a general formula of how an enterprise is going to compete, which will be its goals, and which policies will be required in order to achieve them. The strategic proposal includes: the construction of strategic elements, the viability to increase sales and/or to reduce costs.

Nowadays it is fundamental to think of scenarios that are not only possible but probable and desirable; strategic thought can be a fundamental element for that, because this globalized world demands flexibility – which the SMEs have – learning capacity and knowledge (students of an IHE) and the vision for the future (the SME entrepreneur.)

Conclusions

1. SMEs can come up as efficient entities, due to their particular characteristics of adaptation to specific demands of the products they transform, therefore they must strengthen their existing characteristics through learning for innovation and development; connecting with IHEs and the productive sector. Balancing the university language with the working language.
2. The findings that result from this research show that most of the manufacturing SMEs have a defensive profile, which is not necessarily negative, because in the environment of business a defensive strategy is to wait, and depending on the attack the company receives,

is how they react. We also have to consider that defense is relative, since the objective is continuity.

Once the strategic profile, the weaknesses, the strengths and the strategic objectives of SMEs are identified, we may differentiate them based on their competitors and outline the competitive advantage in order to get a sustained profitability. It was evident in the results that 47% of the companies being studied are only interested in producing and selling more, this finding is an indicative of work in the short term, but also of growth.

3. Regarding the existing relationship between the strategic profile variable and the sales productivity and costs variables, the hypotheses is accepted. By so doing, we provide evidence that favors the identification of strategies of SMEs, because it would favor the implementation of actions for the increase of productivity or sales.
4. It is also worth to mention that one of the major difficulties of this research was the definition of the business model, we worked along with the directors of the SMEs (they didn't achieve such definition), therefore we discovered that one of the tools that is needed for this kind of entities is marketing, this area of knowledge provides techniques that help and level the goals of growth, consolidation and visualization of new market opportunities.

In the sphere of social responsibility, institutions of higher education – through the entrepreneurial connection programs – must design advisory or consulting programs, both for individuals and for groups, to improve the functional areas of an organization, in order to achieve a situation in which the conditions of global demand and innovation are favored. This means learning for competitiveness.

5. As this is an applied research, we managed to connect postgraduate students with the aforementioned productive sector; they related the theoretical background with the problems of the SMEs. This study can be extended, aiming to implement the strategies, to get feedback, to observe if the increase in productivity and/or sales is achieved at the SMEs being studied.
6. Finally, favoring the discovery of key points at the organization as a competitive advantage and for the development of the country can be achieved by using the knowledge acquired at an IHE. It can also be used through the cooperative connection among the parts that are interested, like the government, IHEs, suppliers, customers, enterprises and business administration professionals.

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6
The economic impact of SMEs: Novel versus established entrepreneurs

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Abstract

SMEs play a central role in the business world due their important influence on social and economic development. Hence the aim of this study is to identify when SMEs make their greatest economic contribution in terms of employment, innovation and export, asking whether this is during their first year after creation or later, when they have become more consolidated. Contrasting Neo-Schumpeterian theory with Organizational Learning theory, this paper will try to identify when the SMEs make the highest economical contribution in matters of employment, innovation (products, process and strategic innovation) and export. To do this we used data collected from the Adult Population Survey (APS) for Spain extracted from the Global Entrepreneurship Monitor (GEM), to analyze the six-year period from 2005 to 2010. The results showed that recently created Spanish SMEs do not necessarily have a higher economic impact, entrepreneurs with older companies are just as important as newly created SMEs.

Keywords: *SMEs, Entrepreneurship, Employment, Innovation, Export.*

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Introduction

In recent decades, small and medium enterprises (SMEs) have gained particular importance in the business world. Such prominence is due to their influence on social and economic development, whereby they are making increasingly greater contributions and acting as agents of change (Acs & Audretsch, 1990; Carrée & Thurik, 2010). Such ventures have also been considered an essential source of business innovation and employment, and this, in turn, helps to foster competitiveness (Kirchhoff & Phillips, 1988; Carré & Thurik, 1998). Birch's study (1979) showed that SMEs created much more employment than other kinds of business (Baldwin & Picot, 1995). SMEs have a major positive impact on productivity and efficiency, not only in domestic markets but also abroad (Vesper, 1984; Beck,T., Demirguc-Kunt, A. & Levine, R., 2005).

Based on Schumpeter theory was born the Neo-Schumpeterian approach, which say that the new companies are considered agents to introduce the innovation in the market (Kirchhoff & Phillips, 1988). The assumption being that greater business creation leads to higher levels of innovation, employment and productivity in markets (Schumpeter, 1934; Acs & Audretsch, 1990; Carrée & Thurik, 2010).

However, it has also been argued that SMEs make their greatest economic contribution some time after their creation, when they have gained experience, become more settled in the market and achieved financial strength (Carr, J., Haggard,K., Hmieleski, K. & Zahra,S., 2010). This is the view supported by what is known as Organizational Learning theory, which highlights the importance of learning processes in companies, and the benefits that these offer in the future (Kolb, 1984). This opposing view sustains that it can be very difficult for companies to survive in their first few years of existence. This due to the high level of uncertainty and their lack of experience or domain in the market, which puts them in a more vulnerable position in comparison with longer established companies (Carter, N., Reynolds, P., Stearns, T. & Williams, M., 1994; Audretsch & Thurik, 2001).

As a result of the theoretical division mentioned, the main research question of this study is as follows: which SMEs contribute more economically, the recently formed ones or the ones that are already established? Contrasting Neo-Schumpeterian theory with Organizational Learning theory, this paper will try to identify when the SMEs make the highest economical contribution in matters of employment, innovation

(products, process and strategic innovation) and export. We wish to ascertain if it is during the first year of operation or in the following years, when the SMEs have had greater time to better consolidate themselves. To achieve this, we used data from the Adult Population Survey (APS) for Spain, extracted from the Global Entrepreneurship Monitor (GEM), to analyze the six-year period from 2005 to 2010.

It is important to note that this study do not intend to analyze the moment of highest economic contribution in the lifecycles of these companies. Instead, we wish to make a contrast between companies that have been in business for less than a year and those that are more established. Likewise, the results of this study will help in the design of new and more effective policies that will be able to support new business owners, and also to redirect the support provided to help existing businesses to stay active and avoid an early demise.

This paper is organized as such following: a review of the literature and a presentation of the hypotheses. Then there will be the methodology section, followed by a presentation of the results and a discussion of the findings. The paper ends with the conclusions, implications, and future lines of research. There is also a bibliography.

Literature review and hypotheses

A growing number of studies have shown that large companies are no longer the favorite economic figure, and instead it is SMEs that are assuming the leading role (Wennekers & Thurik, 1999). This is particularly true of Spain, where SMEs make up 99% of the business sector[3].

Newly created SMEs are considered an important source of job creation (Fritsch, 2008), because they make a major contribution to technological progress through innovative activities as the introduction of new products and services and the application of new organizational processes and business strategies (Dutta & Evrard, 1999; Mulhern, 1995; van Stel, A., Carrée, M. & Thurik, R., 2005). They also have the capacity to increase competitiveness and productiveness in domestic and foreign markets (Vesper, 1984; Fritsch, 2008). Schumpeter (1950) comments that

3. DIRCE. Directorio Central de Empresas. Since January 1st 2011, in Spain there were 3,246,986 enterprises, of these 3,243,185 (99.88%) were represented by SMEs (between 0 and 249 employees).

new companies have been identified as being responsible for innovation, whereby established companies are replaced in the market by newer ones, which therefore boosts economic growth.

Schumpeter (1934), cited by Morgan (p.174, 1987), highlights the connection between the entrepreneur and innovation throughout the evolution and development of his economic theory, which states that it is entrepreneurs who, by creating innovative activities, initiate the process of economic upheaval and development (Audretsch & Fritsch, 1994; Kirchhoff & Phillips, 1988). Likewise, Neo-Schumpeter suggested that the company is the realization of new and different combinations of production media and that the entrepreneur is the dynamic, active and innovative element that tips the balance of the market system (García & Calantone, 2002; Wong, P., Ho, Y. & Autio, E., 2005; Peneder, 2009). Finally, the entrepreneur is perceived as a person capable of promoting innovations (Schumpeter, 1950).

This innovative activity, according to Schumpeter's theory, is what unintentionally feeds a creative process of destruction, causing constant economic disturbance to the balance of the system, as well as creating opportunities for increasing economic benefits (Wong et al., 2005).It is therefore considered that economic development primordially resides in the innovative functions and productive combinations produced by entrepreneurs when they create new companies and thus interrupt the routine of economic life. In short, new companies are considered to be the instigators of the modernization process and economic development.

In recent decades, the Organization Learning theory has attracted attention due to its applicability to both companies and entrepreneurs. It suggests that organizations are stronger when they have more capacity to learn and to correct errors, and have accumulated the experience, knowledge and learning that influences the future performance of the company (Levitt & March, 1988). The importance of organizational learning is that it helps to improve competitiveness, productivity and innovation under certain technological and market circumstances (Dogson, 1993).

Organizational Learning theory perceives that organizations are capable of processing, acquiring, interpreting, distributing and storing information that helps them to improve their future performance (Huber, 1991). Hence the study of Organizational Learning seeks to respond to the challenges arising in business within a constantly changing environment, and it helps companies to cope with the long-term difficulties for survival. It helps these companies to achieve competitive advantage

through the capacity to learn and to absorb knowledge (Levitt & March, 1988; Real, J., Leal, A. & Roldán, J., 2006). However, the most important thing is not for them just to accumulate knowledge, but for these companies to genuinely be able to learn continuously through the creation of new knowledge (Ahumada, 2002; Real et al., 2006; Argote, 2011).

In this study, the economic contribution made by SMEs entrepreneurs is analyzed in terms of employment, innovations of products, processes and strategies, and also in terms of export. The relationship between SMEs and each of these contributions is presented in the following topics.

Employment

Business creation has become a more serious factor in socioeconomic terms, particularly in a time of rapid changes and a constant search for business opportunities. It also plays an important role in global, social and economic policy, as well as being a robust indicator of economic performance (Carrée, M., van Stel, A., Thurik, R. & Wennekers, A., 2002; Marulanda, J., Correa, G. & Mejía, L.F., 2009; Sánchez & Gutiérrez, 2011; Carrée & Thurik, 2010). The evolution of employment in newly created SMEs has been characterized by two main effects, jobs creation is the most common. That is why companies, whether large or small, have always been measured by their contribution to employment, their size or by the number of jobs they create (van Praag & Versloot, 2007).

Birch's study (1979) titled "The Job Generation Process", was one of the first attempts to highlight the importance of SMEs in economic growth in terms of the creation of employment. Studies in different countries, such as Davis, S., Haltiwanger J. & Schuh, S. (1996) and Neumark, D., Wall, B. & Zhang, J. (2011) confirm Birch's earlier findings by asserting that SMEs contribute most to the growth of employment through job creation. This has led entrepreneurs to be characterized as a group that mobilizes resources to generate jobs, hence suggesting that business start-up plays an important role for this, both in the short and long term (Audretsch & Fritsch 2002; van Stel & Storey 2004). This is because new companies have the capacity to create an initial number of jobs, but once they have reached a state of maturity, the number of jobs they generate will depend on their capacity to grow.

The economic impact of job creation through the formation of new businesses will vary with respect to each entrepreneur (Audretsch &

Thurik, 2001). They will face different difficulties due to the varying nature of companies. We should not forget that new companies refer to different management processes in order to set up and start running their operations, such as the hiring of new employees, administrative processes and decision making, which are frequently presented as obstacles that have to be dealt with (Fritsch & Mueller, 2008). As previously mentioned, it is important to stimulate the creation of new businesses, due to the jobs created by this. However, the jobs are not always created at the conception of the firms, but sometimes at a later stage.

According to the literature review on this topic, it may be stated that Novel SMEs can contribute more to employment than those which are already established. However, in the same stream of research, other studies propose that established SMEs can generate greater employment. As a result of the literature discussion, the following hypothesis emerges is:

H1: During the first year of operation SMEs will present higher levels of employment than those that are already established.

Innovation

According to Schumpeter and as mentioned by Peneder (2009), entrepreneurship plays a particular economic function by introducing innovation to the system. By far the most significant study to have related the creation of businesses with innovation was that by Drucker (1985). Following on from that, different studies have focused on the substantial advantages that entrepreneurship can generate in terms of employment and innovation (van Praag & Versloot, 2007) and the positive relation between innovation and economic progress (Rodeiro & López, 2007). From here, a growing interest has derived in innovation and the substantial effects that it more often than not has on economic activity.

According to the existing literature on this topic, there are different kinds of innovation, but we will use one of the best known and most widely accepted classifications, as proposed by Damanpour (1991): technical and administrative. The former includes new processes, new products and new services, while the latter includes administrative innovation with regard to new procedures, policies and forms of organization.

Product innovation: Studies such as Audretsch (1991) and Lewin & Massini (2003) comment product innovation is considered to be another way to enter the market in order to increase the possibility of survival and attracting new clients. However, according to Grant (2006), product innovation is no more than the initial commercialization of an invention. SMEs play an important role within the economy as agents of change due to the rapid pace of innovative business activity and the stimulation of industrial development (Acs & Audretsch, 1990; Carrée & Thurik, 2010). On the other hand, studies such as that by Tether (1998) comment that between 1980 and 1990, SMEs started to participate even more in innovation than they did in job creation, and they were not only more innovative but also more efficient than larger companies (Pavitt, K., Robson, M. & Townsend, J.,1987). Therefore, product innovation provides benefit to the company as well as to the economy.

Many studies reveal that newly created SMEs perform better in terms of innovation in more innovative industries that require a qualified workforce, and are a key element of technological change (Acs & Audretsch, 1990). One of those studies examined the factors that determine the advantages in terms of innovation in new companies as opposed to those that are already established by Audretsch (1995). Although other studies such as the Gort & Klepper (1982) have revealed that the innovation through time generated a knowledge advantage.

In terms of product innovation, already established SMEs have the advantage of knowing the market, and the channels of commercialization and distribution that can make the introduction of products an immediate success, and they are also likely to face far fewer financial restraints (Lewin & Massini, 2003). According to Organizational Learning theory, established companies possess organizational knowledge and dynamic capacities that make it easier to introduce and administer innovation. However, we cannot forget that bureaucratic processes often tend to become a major obstacle for established companies, while for newly created SMEs, such affairs are often smoother and more dynamic. This is because they are new, more flexible, less bureaucratic and more adaptable to changes in the market.

As the literature suggests, R & D has the tendency to decrease with age and for that reason new businesses are more innovative in relation to products than those which are already established. On the other hand, already established companies are likely to have bureaucratic processes that could hinder product innovation, meanwhile new SMEs are more

dynamic because they have a higher flexibility and can adapt to the changing market. According to this, the next hypothesis is as follows.

H2a: Product innovation is greater during the SMEs first year of operation, as compared to older SMEs.

Process innovation: One of the main goals of the innovation of processes is to reduce the marginal production costs through the adoption of new technologies (Barkema & Vermeulen, 1998). Unlike product innovation, new technologies present an existing challenge to both new companies and those that are already established. This is because the sectors in which competition is based on innovation and the application of new technologies provide some of the most fascinating and complex competitive environments (Almus & Nerlinger, 1999; Grant, 2006).

Both in emerging sectors and in those in which technologies provide the main foundation for competition, business development and the generation of process innovation is the fundamental source for competitive advantages. It lies at the core of the formulation of strategies (Grant, 2006; Keskin, D., Diehl, JC. & Molenaar, N., 2012). This competitive advantage usually arises more easily in newly created SMEs because they are so flexible and dynamic, while established companies tend to be slower in responding to changing contexts.

SMEs have sometimes encountered limitations with respect to the technological aspect, which has obliged them to search for whatever means they can to acquire technology, often with great difficulty (Merino & Villar, 2007). Changes in this respect have confirmed that the inclusion of process innovation plays an important role in business processes (Leibestein, 1968). Recently created companies have more freedom to apply new technological solutions to their processes because they are supported by start-up subsidies (Niosi, 2002). However, the financing of technological investments can sometimes represent a bigger problem for newer SMEs than more established ones, because the latter tend to have gained a reputation in the market that gives them access to such funding.

From this general point of view, if they have sufficient access to technology, then newly created SMEs will possess more tools than established companies that they can exploit in order to gain a competitive position in their economic context (García & Calantone, 2002). On the other hand, some literature suggests that business activity in relation to process innovation plays an important role within company processes. Newly created

firms have more freedom and financial backing to produce innovative process solutions. We therefore propose the following hypothesis:

H2b: Process innovation is greater during the SMEs first year of operation, as compared to older SMEs.

Strategic innovation: Strategic innovation is described as the creation of growth strategies, using new categories of products, services or business models that change the 'rules of the game' and generate significant value for the consumers, clients and corporation partners (Palmer & Kaplan, 2007). The search for innovation requires an entrepreneurial organization to have the freedom to experiment and the capacity to learn (Grant, 2006), which implies that strategic innovation involves much more than merely reformulating strategies.

Therefore, strategic innovation is the foundation of competitive advantage in sectors where the potential to construct such advantages appears limited. Ultimately, the essence of strategic innovation is the reconciliation of quality alternatives, variety and swiftness (Palmer & Kaplan, 2007).

So, strategic innovation would generally be a new way of doing business, by changing the rules of the game in order to continue to do the same thing, but differently. These it is harder to accomplish for established companies because their little interest in new business models due to their highest cost. Contrarily, newly created companies are able to adopt new organizational shapes without additional costs.

Studies such as Markides (1998) confirm it is more difficult for established companies innovate strategically, due resistance to change. Therefore, established SMEs tend to have little interest in adopting new business models, and often try to avoid any strategic innovation, as this might create greater levels of uncertainty, questioning of the current model and concerns about whether the new model might have brought more success in the past.

The idea of higher costs can often also be a factor affecting established companies (Niosi, 2002), while this is not an issue for recently created ones because they can freely adopt new forms of organization without incurring any additional costs (Dosi, 1988). Given the above, we propose the following hypothesis:

H2c: Strategic innovation is greater during the SMEs first year of operation, as compared to older SMEs.

Export

New firms are able to learn and develop processes and routines to comply with the requirements of internationalization. However, they will probably suffer some resources restrictions which make it difficult for them to enter foreign markets. Since the 1970s, the internationalization of SMEs has been considered part of a gradual process of growth on the basis of the Uppsala model. It begins in accordance with the amount of knowledge a company has of its market, starting with sporadic foreign sales, later leading to gradual and increasingly larger commitments to markets abroad. The more the company learns, the larger these commitments will be, and so on successively (Cavusgil, 1980; Kalinic & Forza, 2012).

Export has been considered the first step into international markets, and then serves as a platform for future expansion, which is why internationalization has been based for several years on two main theories, the internationalization process (Johanson & Vahlne, 1990) and the product life cycle theory (Vernon, 1966). However, these theories have been displaced by an increasing focus on internationalization in the form of what have been dubbed 'born global companies' (McDougall, P., Shane, S. & Oviatt, B., 1994; Knight & Cavusgil, 1996). Studies of internationalization and entrepreneurship have found that some SMEs are able to internationalize faster than other more gradualist models (McDougall et al., 1994; Rialp, A., Rialp, J. & Knight, G., 2005a; Rialp, A., Rialp, J., Urbano, D. & Vaillant, Y., 2005b; Kalinic & Forza, 2012). This leads them to play a more active role in international markets (Oviatt & McDougall, 1994; Lu & Beamish, 2001).

In the literature, the aforesaid 'born global' companies are considered to be those that from their very creation seek to obtain a significant competitive advantage by utilizing resources and selling products in several countries (Knight & Cavusgil, 1996; McDougall et al., 1994; Rialp, et al., 2005b). However, we should note that such companies are still very much the exception from the norm. The internationalization of new ventures has come to play a significant role in the issue of international growth (Rialp, et al., 2005a). However, many established companies still consider internationalization to be a slow way to evolve, while some new-

er and more dynamic companies manage to internationalize from their foundation or only very shortly after (McDougall et al., 1994). Different studies claim that gradual internationalization not only enables companies to grow, but also to learn in advance about their capacities and needs for international expansion (Eriksson, K., Johanson, J., Majkgård, A., & Sharma, D., 1997). Given the above, an SME should achieve higher levels of commitment to international growth after becoming more settled and accumulating experience in earlier stages.

According to Organizational Learning theory, companies that internationalize gradually have a greater chance of success because they first gain experience that enables them to develop organizational routines in domestic markets, which later helps them to cope more efficiently with the internationalization process (Carr et al., 2010). Moreover, companies that have operated in the market for more than one year have a higher level of knowledge and legitimacy, which fosters opportunities for successful alliances (Delmar & Shane, 2004). Established companies have greater access to external funding, which helps to prevent new commitments from putting existing operations at risk (Carr et al., 2010). Even when new companies are able to learn and develop the necessary processes and routines to comply with the requirements for internationalization, there is still the likelihood that they will face restrictions in terms of resources (Carr et al., 2010). Therefore, the following hypothesis is formulated:

H3: Exports of newly created SMEs is lower than the older ones.

Methodology

Data

With the aim of testing the above hypotheses, the study uses data collected from the Adult Population Survey (APS) for Spain, extracted from the Global Entrepreneurship Monitor (GEM), to analyze the six-year period from 2005 to 2010.

Description of Variables

Employees, Product Innovation, Process Innovation, Strategic Innovation and Export were used as response variables. All the aforesaid variables are binaries, with the exception of Employees. The numeric Employees variable was taken from the number of employees that actually work for a given company. All companies with more than 250 employees were discarded, because our intention was only to analyze SMEs. The Product Innovation, Process Innovation, Strategic Innovation variables were converted into binaries as we were only seeking information on whether companies innovate or not. The Export variable was also converted into a binary figure.

For this analysis we used the "Novels" category provided by GEM. This variable was converted to binary, where first-year companies were given the value of 1, and those older than one year received a value of 0.

To contrast the stated hypotheses, a series of three models have been developed, each using the same data sample. The first model adopts employment as its dependent variable and applies a linear regression to find out which types of SMEs generate the greatest employment: novels or incumbent firms. The second model uses innovation as the dependent variable. A logistic regression was used to find out which SMEs make the greatest contribution in products, processes and strategic innovation. The third model uses export as the dependent variable and applies a logistic regression in order to test whether established SMEs have the greatest levels of internationalization with regards to export sales.

Additionally, two groups of control variables have been used. The first is related to industry: extraction, transformation, business services and consumer services. This group tries to identify if any industry sector has some influence on the moment of highest economic impact for each model. The second group of control variables relates to the year when the entrepreneurs were surveyed. This group is included to identify any economic cycle effects of these companies in the analysis.

Models

As mentioned earlier, the statistical methods used in this study to test the presented hypotheses used two models:

a) Linear regression model

To describe the number of employees in the companies included in the study, we used the following model:

$$Employees = \hat{\beta}_0 + \hat{\beta}_1 Novel + \hat{\beta}_2 ExtractionS + \beta_3 TransformationS + \hat{\beta}_4 BusinessServS + Sur\_Yr\_2006 + \hat{\beta}_5 Sur\_Yr\_2007 + \hat{\beta}_6 Sur\_Yr\_2008 + \hat{\beta}_7 Sur\_Yr\_2009 + \hat{\beta}_8 Sur\_Yr\_2010 + e_i \quad [1]$$

Where $\hat{\beta}_i$ are the coefficients that will be estimated on the basis of the selected sample. We used the coefficient of determination R2 to identify the amount of variability that the linear regression model is able to explain; also we did not identify any problems with heteroskedasticity.

b) Binary logistic regression model

With respect to innovation, it was defined that:
the likelihood of innovating in products is $p_{inpd} = p\ (ProductInnovation)$
the likelihood of innovating in processes is $p_{inpc} = p\ (ProcessInnovation)$
the likelihood of innovating in strategy is $p_{ines} = p\ (StrategicInnovation)$

Where the model that describes the likelihood of innovation is:

$$ln\left(\frac{p_{in}}{1-p_{in}}\right) = \hat{\alpha}_0 + +\hat{\alpha}_1 Novel + \hat{\alpha}_2 ExtractionS + \hat{\alpha}_3 TransformationS + \hat{\alpha}_4 BusinessServS + \hat{\alpha}_5 Sur\_Yr\_2006 + \hat{\alpha}_6 Sur\_Yr\_2007 + \hat{\alpha}_7 Sur\_Yr\_2008 + \hat{\alpha}_8 Sur\_Yr\_2009 + \hat{\alpha}_9 Sur\_Yr\_2010 \quad [2]$$

Where p_{in} represents the likelihood of innovating in any of the three types analyzed in this study: products, processes and strategy. For Export, we recurred to the same procedure, using the following model to describe a company that exports:

the likelihood of being a company that exports is p_{ex} = p (export)

$$\ln\left(\frac{p_{ex}}{1-p_{ex}}\right) = \hat{\alpha}_0 + \hat{\alpha}_1 \text{Novel} + \hat{\alpha}_2 \text{CompanyAge} + \hat{\alpha}_3 \text{ExtractionS} + \hat{\alpha}_4 \text{TransformationS} + \hat{\alpha}_5 \text{BusinessServS} + \hat{\alpha}_6 \text{Sur\_Yr\_2006} + \hat{\alpha}_7 \text{Sur\_Yr\_2007} + \hat{\alpha}_8 \text{Sur\_Yr\_2008} + \hat{\alpha}_9 \text{Sur\_Yr\_2009} + \hat{\alpha}_{10} \text{Sur\_Yr\_2010} \quad [3]$$

Where $\hat{\alpha}_i$ are the coefficients that will be estimated on the basis of the selected sample.

As per the binary logistic regressions applied to the previous models, we used the Maximum Log Likelihood and the Pseudo R2 methods to find out how much variability these models can explain.

In both the linear regression and the binary logistic models, we eliminated the likelihood of suffering multicollinearity issues by applying the Variance Inflation Factor (VIF), using the criterion that this value is not higher than 3. No model in the study indicated the presence of multicollinearity (Greene, 2008).

Results and discussion

Table 1 presents the results obtained from the models used in this research. The *Stata* statistics program was used to generate the models.

Table 1
Regressions

	Linear Regression	*Logit Regression*			
VARIABLES	*MODEL 1*	*MODEL 2*			*MODEL 3*
	Employment	*Prod Inn*	*Proc Inn*	*Stra Inn*	*Export*
	β	*β*	*β*	*β*	*β*
Novels	-0.9493***	0.0194	-0.6828***	0.0856	-0.0153
	(0.2919)	(0.0858)	(0.1173)	(0.1203)	(0.0919)
Extraction S.	0.6889	-0.2916	-0.4275	0.2748	0.0172
	(0.6589)	(0.1811)	(0.3008)	(0.2118)	(0.1686)
Transformation S.	0.4501	-0.0602	0.2030	-0.2915**	-0.0212
	(0.2782)	(0.0972)	(0.1366)	(0.1419)	(0.1051)

	Linear Regression	*Logit Regression*			
VARIABLES	*MODEL 1*	*MODEL 2*			*MODEL 3*
	Employment	*Prod Inn*	*Proc Inn*	*Stra Inn*	*Export*
	β	*β*	*β*	*β*	*β*
Business Services S.	0.0412	-0.0487	0.1053	-0.1437	0.3338**
	(0.3754)	(0.1044)	(0.1504)	(0.1460)	(0.1071)
Survey Year 2006	0.3578	0.3879	-0.4953	0.0075	0.8922***
	(0.4300)	(0.1472)	(0.2868)	(0.2009)	(0.1506)
Survey Year 2007	0.5368	0.7978**	1.0130***	0.3219	1.0747***
	(0.3805)	(0.1346)	(0.2009)	(0.1812)	(0.1395)
Survey Year 2008	0.2054	0.3494***	0.5252**	-0.0763	1.0282***
	(0.3301)	(0.1376)	(0.2053)	(0.1889)	(0.1354)
Survey Year 2009	-1.1472***	-0.0126**	1.0503***	0.0135	0.6106**
	(0.3090)	(0.1763)	(0.2237)	(0.2254)	(0.2772)
Survey Year 2010	-1.0527**	-0.5390**	-2.7330	-0.1417	1.0765**
	(0.4760)	(0.2297)	(0.2842)	(0.2648)	(0.3753)
Constant	4.1079***	-1.9161***	-2.7330***	-2.5278***	-1.4255***
N	4564	4574	4532	4610	2528
VIF	1.45	1.51	1.51	1.51	1.51
F - Test	5.65	80.14	113.80	17.46	90.41
Log Likelihood		2020.2624	-1135.474	-1229.9539	-1621.5062
R2	0.0079				
Pseudo R2		0.0194	0.0477	0.0070	0.0271
R – Adjusted	5.55				

Source: Author's own research

This table reports the non standardized β coefficients. In parenthesis the standard error. The significance levels * : p < 0,1 ; ** p: < 0,05 ; *** p:< 0,01

Model 1 Employment

H1. It was hypothesized that novel entrepreneurs have a greater impact on employment than entrepreneurs with more established SMEs. However, according to the results no evidence was found to confirm the existence of any comparatively superior effect over employment of Spanish SMEs during their first year of existence. This agrees with the results from Audretsch and Thurik study (2001) regarding the management of resources when companies are started, as well as their contribution.

Also, contrary to the hypothesis, it was observed that when an SME gets older, the number of employees increases. So, we can deduce that entrepreneurs have a tendency to hire more employees once they have gained some experience and operational knowledge in their industry. This would support the organizational learning postulation.

We did not identify any effect in the group of control variables categorized as 'industry'. As for the second group of control variables, identified as 'survey year', we were able to note the effects of the economic downturn of the last two years.

It is important mention, even when we tried to obtain better results using different techniques, the data sample did not allowed identify the real contribution to employment in this analysis. So, this model represents a weakness that we will use as a future line of research on this document.

Model 2. Innovation

Product Innovation

The results from the second model, using product innovation as dependent variable, did not generate any evidence that support **H2a,** so it cannot be confirmed.

As opposed to the literature, the results led us to deduce that product innovation is equally as likely to occur within novels SMEs as with entrepreneurs with incumbent SMEs. This is because the absence of significant differences in the results, where product innovation is the same for both types of firms. Therefore features of both Neo-Schumpeterian and Organizational Learning theories would seem to influence product innovation when analyzing our Spanish sample.

In this model, the control group variables by sectors do not present any heterogeneity effect to indicate that there is any influence by product innovation. However, when controlling by survey year, the presence of the economic cycle is noted.

Process Innovation

In this second model, using processes innovation as dependent variable gives a significant and negative result. This would mean that process innovation is more frequent among incumbent SMEs. These results therefore

fail to confirm hypothesis H2b, which proposed that process innovation for entrepreneurs with SMEs in its first year of operation is higher.

It is assumed that this negative effect could be due to an insufficient management of technology acquisition, even though recently created companies are free to apply new technological solutions. Another issue could be cost limitations, because the investments financing sometimes can represent a bigger problem for newly created firms (García & Calantone, 2002); being, therefore, the Organizational Learning theory which stands for this variable.

The control variables, identified as a 'survey year', suggest a behavior defined by a high degree of heterogeneity. For the group of control variables by sectors do not present any heterogeneity effect to indicate that there is any influence by process innovation.

Strategic innovation

For the final approach using the second model, strategic innovation was used as the dependent variable. This variable did not generate any evidence that could give support to the hypothesis **H2c,** which states that novels entrepreneurs have a greater impact on strategic innovation than entrepreneurs with more established SMEs.

However, it cannot be identified from the data presented whether the higher contribution comes from novels or established entrepreneurs, this lead us to deduce that novels and incumbent entrepreneurs have the same level of strategic innovation. Again, results support the evidence that both novels and incumbent firms are guided by Neo-Schumpeterian and Organizational Learning theory.

For the different industrial sectors, only the transformation industry sector showed effects related to strategic innovation. As for survey year, the control variables did not confirm any tendency for strategic innovation or the presence of economic cycles.

Model 3. Export

The results from the third model, using Export as dependent variable, did not produce any evidence supporting hypothesis **H3.** This state that novel SMEs entrepreneur have a lower impact than incumbent entrepreneurs on export activities.

However, for this model, the results showed there are no differences between the novels SMEs and incumbent entrepreneurs. This is due to the high level of homogeneity shown in the results.

In this last model, the control group variables by sector only the business sector industry showed effects related to export activity. However, the variables controlling by survey year, indicate the presence of an economic cycle.

Conclusions and implications

This study tries to determine when entrepreneurs promoting SME ventures make their biggest economical contribution in relation to employment, innovation (product, processes, strategic) and export. Is this during their first year of operation or at a later stage?

In order to do this, we used data collected from Global Entrepreneurship Monitor (GEM) Spain, considering a six-year period between 2005 and 2010. Linear and logistic regression techniques were used to analyze the data.

From the sample analyzed, the results showed that recently created Spanish SMEs do not necessarily have a higher economic impact. Entrepreneurs with older companies are just as important as newly created SMEs. This is contrary to what is often stated in the literature.

Different studies have included innovation as part of process of business creation and hence assume that they are innovative from the outset and they will immediately create jobs. However, this study suggests that this is not the case for the Spanish SMEs sample. It confirms that for Spanish SMEs, their economic contribution is often a long-term process.

However, this finding does not reject the fact that the SMEs are a primordial element for the country's economic engine. Therefore, the postulates toward the economic impact of business creation of the Neo-Schumpeterian theory are complimented by those forwarded by Organization Learning theory.

From a policy perspective, attention should spread beyond the startup stage to also take incumbent entrepreneurs into consideration. Making a particular perspective, a more enduring assistance should be offered to entrepreneurs in order to ease the process associated with starting a company, as well as for the post-creation process.

This is because in many instances, public administrations are focusing most of their resource on novel SMEs entrepreneurs. However, the studies finding indicate the incumbents also have a strong contribution to make.

Finally, as for future studies related to this research, it would be interesting to replicate the methodology used in other countries, in order to identify synergies with the behavior found for the Spanish sample. It may be interesting to verify whether the industrial sector has any influence on the moment when SMEs have the greatest economical effect. Also, it would be important to identify whether the regional level has some influence.

To measure the same tendency in a microeconomic context would provide the opportunity to analyze the profiles of entrepreneurs and identify whether this has an influence on the economic contribution made by recently created and longer established companies.

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7
The value of CRM on Competitiveness: Service Industry in Guadalajara, Mexico

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Abstract

The organizations are trying to develop their new challenges attending an area of major significance such as customer relationship management in a context of rapid market transformation. The purpose of Customer Relationship Management (CRM) is a strategy to get customer added value in long term, oriented to effectiveness customer satisfaction as organization's culture. The present work is related to an analysis achieving in small and medium service companies in Mexico. The questionnaire was applies to 418 organizations, all of them in Guadalajara, in SMEs service industry. Also used was a statistical analysis using the Structural Equations Model (SEM) software EQS 6.2 finding the correlation between dependent variable: competitiveness and the independent variable: CRM.

Keywords: *CRM, Competitiveness, Service Industry.*

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Introduction

Customer Relationship Management (CRM), has developed into an area of major significance in less than a decade, with the worldwide global market for CRM systems and consultancy estimated to grow to $US 47 billion by 2006 (Gartner, 2003). Although the term CRM is relatively new, the principles behind it are not. Businesses have long practiced some form of customer relationship management. What sets present day CRM apart is that organizations now have an increased potential to utilize technology and mange one-to-one relationship with potentially huge numbers of customers in a context of rapid market transformation.

The purpose of CRM is to efficiently and effectively increase the acquisition and retention of profitable customers by selectively initiating, building and maintaining appropriate relationships with them. CRM is based on the principles of relationship marketing which is regarded as one of the key developmental areas of modern marketing and one which has generated great research interest (Sheth, 2000).

Relationship marketing emerged from work in the 1980s in industrial marketing, (Bund 1985; Levitt 1983), studies of interaction, relationships and networks (Sheth and Parvitiyar 1995) and its origins can be traced back to ancient times, (Gronroos 1994; Berry's,1983), paper launcher the term relationship marketing where he defined it as attracting, maintaining, and enhancing customer relationships.

The origins of CRM can be traced to the relationship-marketing literature. Introduced by Leonard Berry in the early 1980s, the concept of relationship marketing was defined as attracting, maintaining, and enhancing customer relationships (Berry, 2002). Kotler et al. (1999) define CRM as retaining current customers and building profitable, long-term relationships with them. Day (2002) conceptualized CRM as a firm capability that results from a focus on three organizational components working in concert with each other: an organizational orientation that makes customer retention a priority; a configuration that includes the structure of the organization, its processes for personalizing product offerings, and its incentives for building relationships; and information about customers that is in-depth, relevant, and available in all parts of the company.

Theoretical Background

Administrative capacity

Small businesses do not have personnel with experience in the planning, management and financial decision making, and the owner has to make decisions without a solid foundation (Lopez, 2012).

Many ideas come with manageability in an organization because it is very important to determine and limit very clearly the activities and functions to develop to work in all its aspects. (Grant, 1991) argues that an organizational capability is a routine or group of routines that interact.

CRM capability and innovation

The role customers can play an idea generation or product conceptualization is being increasingly acknowledged in the CRM literature (Campbell & Cooper, 1999, Nambisan, 2002). The Marketing Science Institute´s (MSI) 2006-2008 research includes the topic of the customer´s role in innovation as the first research priority. A survey by the MSI shows that "Innovation continues to be viewed as the prime engine of growth, but customers play a much larger role in shaping innovation strategy and execution at the development level, customers insights are needed to drive innovation and product and service design" (MSI, 2006, p. 3).

Danneels & Kleinschmidt, (2001), believe that consumer is in a constantly changing environment, so the ability to innovate is important and should not be overlooked in promoting service innovation.

Therefore Ramani & Kumar, (2008), suggest that the use of CRM to participate in the creation, maintenance and fostering customer relationships and maintaining long-term partnerships useful are important strategic elements for the development of the ability to innovation.

Competitiveness

Business competitiveness is related to the continued presence in the markets, making profits and the ability to adapt production to demand (López & Dones, 2008). In this way, customers feel a greater satisfaction through superior quality products competitive and the service offered product beyond their expectations (Ogbadu & Usman, 2012). So for a company to have competitiveness, necessary management capacity, inno-

vation, customer relationship marketing, long-term planning for market advantage. (Ponraj & Rajendran, 2009).

Problem statement

Small and medium enterprises in the countries with low industrial development have serious limitations such as: inadequate infrastructure, scarce government supports, which hinders the implementation of innovation of marketing in small and medium enterprises. Further, several studies have established that the barriers to innovation among business organizations generally are associated with strategies, costs, human resources, marketing innovations and government policies (Baldwin & Lin, 2002; Mohen & Roller, 2005).

Objective and Hypotheses

The main objective is to analyze than existing relationship between CRM and competitiveness in SMEs in the manufacturing industry in Guadalajara, Mexico.

The hypotheses of the study are:

- **H1:** A higher administrative capacity higher CRM
- **H2:** A higher innovation marketing higher CRM
- **H3:** A higher CRM higher level of competitiveness

Methodology

The study was applied to SMEs in the Service Industry in Guadalajara Metropolitan with a sample of 418 companies.

The questionnaires used Likert scale with 5 points from total disagree to total agree, the CRM was the independent variable with 2 factors: Administrative capacity, and Marketing innovation; the dependent variable was competitiveness considering 3 factors: Financial Performance, Cost, and Technology use.

Analysis and Discussion

The results of the Confirmatory Factorial Analysis (CFA) are presented in table 1 and shown that the measurement model provides a good fit of the data. As evidence of the convergent validity, the CFA indicates that all items of the related factors are significant ($p<0.001$), which provides evidence of reliability and justifies the internal reliability and justifies the internal reliability of the scale of the business competitiveness (Nunally & Bernstein, 1994); Hair et al., 1995) show in Table 1.

Table 1
Internal consistency and convergent validity of the theoretical model

Variable	*Indicator*	*Factor Loading*	*Robust T-Value*	*Cronbach's Alpha*	*CRI*	*VEI*
Administrative Capacity				0.830	**0.735**	**0.483**
	CRM3	0.867	1.000*			
	CRM4	0.845	18.823			
	CRM5	0.682	12.202			
Marketing Innovation	CRI1	0.688	1.000*	0.775	**0.786**	**0.551**
	CRI3	0.783	14.799			
	CRI4	0.753	12.943			
Financial Performance	FP3	0.762	1.000*	0.884	**0.886**	**0.662**
	FP4	0.861	16.895			
	FP5	0.883	16.433			
	FP6	0.740	13.916			
Costs Reduction	PC3	0.922	1.000*	0.935	**0.935**	**0.784**
	PC4	0.964	42.198			
	PC5	0.871	27.602			
	PC6	0.774	19.713			
Technology Use	TE3	0.919	1.000*	0.817	**0.825**	**0.705**
	TE4	0.752	9.793			

S-BX^2 (df 120) =3812.516 ($p < 0.000$); NFI =.946 ; NNFI =.938 ; CFI =.963 ; RMSEA = .068
***= $p < 0.001$.
Source: own elaboration.

With respect to the evidence of the discriminant validity, measurement of the scale of the business competitiveness level was through two ways you can see in more details in table 2. First, the range of 95% of

confidentiality, none of the individual elements of the correlation factors matrix contains the value 1.0 (Anderson & Gerbing, 1988). Second, the variance extracted between each pair of factors is higher than its corresponding VEI (Fornell & Larcker, 1981).

Table 2
Discriminant validity of the theoretical model measurement

Variables	*Administrative Capacity*	*Marketing Innovation*	*Financial Performance*	*Costs Reduction*	*Technology Use*
Administrative Capacity	**0.483**	0.685	0.518	0.300	0.338
Marketing Innovation	0.537 , 0.833	**0.551**	0.393	0.272	0.306
Financial Performance	0.368 , 0.668	0.251 , 0.535	**0.662**	0.103	0.133
Costs Reduction	0.200 , 0.400	0.176 , 0.368	-.009,.215	**0.784**	0.040
Technology Use	0.204 , 0.472	0.176 , 0.436	-0.025 , 0.291	-0.066 , 0.146	**0.705**

Source: own elaboration.

The hypotheses were tested in the theoretical model of CRM and business competitiveness, using the Structural Equations Model (SEM) software EQS 6.1 (Bentler, 2005, 2006; Brown, 2006).

The nomological validity of the theoretical model was analyzed through the performance of the chi-square test, in which the theoretical model was compared with the measurement model, not finding, significant differences (Anderson & Gerbing 1988; Hatcher, 1994). The results of this analysis are presented in Table 3.

Table 3
Results of the theoretical model of business competitiveness

Hypothesis	*Structural Relationship*	*Standardized Coefficient*	*Robust T-Value*	*FITs*
H1: The higher administrative capacity, higher CRM.	Administrative Capacity CRM	0.486	11.320	$S\text{-}BX^2$= 3812.516 df=120 p = 0.000

H2: The higher marketing innovation, higher CRM.	Marketing Innovation CRM	0.439	14.15	NFI =.946 NNFI =.938
H3: The higher CRM, higher level of competitiveness.	CRM Level of Competitiveness	0.553	21.350	CFI = .963 RMSEA =.068

*** = p < 0.001
Source: own elaboration.

Discussion and conclusion

The primary focus of this study was the simultaneous effects of CRM and innovation on firm performance. This study suggests that CRM is an antecedent to innovation, and that CRM and innovation simultaneously contribute to firm performance. The findings provide support for the proposed relationships between CRM, innovation, and firm's superior performance. The results of the theoretical model has developed that an effectively increase in the acquisition and retention of profitable customers is related to marketing innovation activities and are supported by an increase in its administrative capacity. The influence of CRM on the competitive organizations is crucial an relies especially on marketing innovations.

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8
The assimilation of CRM in manufacturing SMEs: Determinants on competitiveness

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Abstract

The changing needs of the consumer, has caused great changes in the markets and industries, generating which they must be in constant communication with customers to keep them as allies, this is achieved through new technologies and philosophies that help companies generate innovations that both meet their needs and improve competitiveness in the global market. Therefore, this study investigated 410 manufacturing SMEs in the GMA, in order to analyze the customer relationship management (CRM) and the effect on Competitiveness in the SME's of Guadalajara.

Keywords: *Customer Relationship Management, Competitiveness, Manufacturing SME´S*

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Introduction

Constant changes from consumer needs, new technologies development, and international trades open doors has significantly increased access to information and has produced new markets. This has increased international competitiveness; different companies have as an only option in order to deal with industrial competition, to develop innovative products and processes. Now, the most competitive companies are those with greater capacity for innovation. (Sancho, 2007).

One of the main drivers for firms to innovate are the customers and that they are the industries work, there has been much focus the trend of the consumer, each company is proud to say that giving your customers what they ask (Ulwick, 2002). Industries must focus on CRM where companies' increase the importance of market-oriented relations development in order to achieve profitability and obtaining competitive advantage (Narver & Slater 1990). The key in order to achieve this, is related to the company's ability to detect and respond to the customer needs and preferences all the time. (Cabanelas, Cabanelas & Lorenzo, 2007).

Literature review

A new way of keeping customers happy is to have a close relationship with them, and try to understand their needs and preferences in order to improve and provide better service. To achieve this, we have reviewed the term CRM on the contributions of different authors Some of them see it as a business strategy that should adopt the company (Verhoef, 2003), (Payne & Payne, 2004), (Parvatiyar and Sheth, 2001) while others see it only as a software that helps your store customer data (Zikmund, Raymond & Faye, 2004) but the most interesting definition about this term is given by (Greenberg, 2004), (Bull, 2003) (Bose, 2003). (Chen & Popovich, 2003), (Finnegan and Currie, 2010) which talks about this term as an integral company staff process, that by working together with technology forms an integral process within the company gets a better interaction with customers and their changing needs.

On the other hand, we can say that competitiveness has no standardized definition but most of this eras authors agree that competitiveness is to be the best in the market; manufacturing or country wise. With strong competitiveness manufacturers get more investments and have more pro-

ductivity also lower costs and offers better products. (Padilla & Juárez, 2006; IMCO, 2011; Romo & Abdel, 2005; Haguenauer, 1989).

CRM and Administrative Capacity

Willems & Baumer cited by Huerta 2011, mentions that the administrative capacity refers to the individual, the human resources within each organization and qualities of staff as: kind of education and training, working conditions, selection processes, performance, motivation, among others. Moreover, as for the organization, is determined as an area of intervention to build capacity, is in the same organization and all the organizations with which it relates to function effectively.

According to Blesa (2005), part of administrative capacity are coordinated behavior of the various functions in the organization, which must be directed to seek and gather information from consumers, competition and environment for dissemination in the organization and design and implement a response with the aim of satisfying customers by providing superior value. The implementation of a CRM strategy involves changes both in the way a company is organized, as in their business processes (Sin, Tse and Yim, 2005), therefore it is necessary to include a variable that projects the importance and impact of administrative factors in the success of CRM. It is also essential to analyze the business objectives and organizational culture (Chalmeta, 2006).

Karakostas, Kardaras & Papathanassiou, (2005), concern about how management must have information and knowledge to use in the CRM and ensure that it is effective, with the aim customize, among them mention the following elements:

a) Modify products, innovative services and develop a strategy of "mass customization".
b) Provide a single and consolidated view of the customer
c) Calculate the customer value.
d) Establish a multilateral strategy of communication for the customer
e) Design and develop transactions

Because marketing functions are under increasing pressure to demonstrate their financial performance (Srivastava, Shervani & Fahey, 1998), examines the performance implications of strategic use of CRM, which is conceptualized by the perception of relative performance (before and after the adoption of CRM technology) with the following parameters:

acquisition and customer retention, lifetime value, profitability, service quality and satisfaction (Winer, 2001).

An important factor of administrative capacity is the leadership provided by management and that their support will be a key requirement to establish the philosophy of customer orientation at the corporate level and to support the adoption of a CRM system throughout the organization (Alt and Puschnam, 2004).

CRM and Marketing Innovation

The effectiveness and efficiency of CRM are increasingly recognized as means for developing innovation capability and providing a lasting competitive advantage (Ramani and Kumar, 2008; Sahay and Ranjan, 2008). Marketing innovation, it refers to market research, price-setting strategy, market segmentation, advertising promotions, retailing channels, and marketing information systems (Vorhies and Harker, 2000; Weerawardena, 2003).

With a CRM strategy the company has a 360-º view of their customers, obtaining immediate feedback at each point of customer-company interaction. This information is key to the innovative process and can be transformed into the raw material for the R + D (Bassa & Lafuente, 2011). So can be gain a competitive advantage because it allows the organization to explore and use knowledge of their customers and at the same time foster profitable and long term relationships (Karakostas et al., 2005).

Guests can play a very important role in the generation of the idea or product conceptualization. A survey by the MSI (Marketing Science Institute) shows that innovation is still considered the main engine of growth, as customers involved in shaping innovation and implementation in the level of development, therefore the customer information is necessary to drive innovation and designing products and services (MSI, 2006).

Due to the importance of this factor, several studies have analyzed the impact of innovation on competitiveness of the company and have come to the conclusion that companies that invest in research and development and conduct innovative practices are more likely to remain market and increase their performance (Ahuja and Katila, 2004).

For the purposes of this paper the concept of integrated CRM will be used, as companies need to apply it across the organization, and it is essential that both the technology is implemented as the philosophy

of CRM customer relationship involving all departments the company. Therefore and according to the definition of Chen & Popovich (2003), which includes all the elements of a company such as human resources, processes and technologies, and that the CRM must combine to achieve good implementation and success within the company.

Competitiveness

The concept of competitiveness has been defined in various dimensions and time with inaccuracies (Budd and Hirmis 2004, Porter and Ketels 2003). It has also been determined by the level of research: approaches macro, meso and micro levels, which define it differently, and from the point of view of competitiveness in companies, which are mainly based on the low cost of production. (Buzzigoli and Viviani, 2009).

The Mexican Institute for Competitiveness (IMCO, 2011) defines competitiveness as a measure of the economy relative to others, it's like a race where matter how well it is going to one over the other, in other words competitiveness is the ability to attract and retain talent and investment.

Moreover as regards the competitiveness of an industry, this stems from higher productivity, lower costs facing either to their international rivals in the same activity, or through the ability to offer products with a higher value. In this sense (Haguenauer, 1989) defines industrial competitiveness as the ability of an industry to produce goods with specific quality standards, required by certain markets, using the same resources or less than those who use them like other industries the world at one time.

There are several reliable and important indexes to measure the competitiveness, such as the Mexican Institute for Competitiveness (IMCO), World Economic Forum (WEF), World Competitiveness Yearbook of the International Institute for Management Development (IMD), which give a perspective how countries are at different levels, on competitiveness issues.

Competitiveness and Financial Performance

The competitive advantage is directly reflected in the company´s capabilities to obtain a financial result than its competitors (Arend, 2003). Currently, there is a general indicator used to measure competitiveness,

however, the trend is to use financial indicators such as profitability (Kim, et al., 2008).

The competitiveness is associated with the capacity for action in economic competition, manifested in satisfying the requirements of the market where it competes and economic and social indicators, which produces, (Tapias, 2005).

Some indicators of competitiveness according to Enright, quoted by Labarca (2007), include the profitability of the company, its export ratio (exports divided between production) and participation in the regional market. The performance achieved in the international market provides a direct measure of the competitiveness of a company.

Competitiveness and Costs

The competitiveness is derived from the ability to create, at lower cost and faster than competitors, technologies and essential skills that lead to innovative products. Romo & Musik (2005) argue that an industry is defined as the set of organizations that are engaged in similar business activities, in which competitiveness is derived from higher productivity, lower costs facing either to their national or international rivals in the same activity or through the ability to offer products with a higher value.

Efficient implementation of a manufacturing strategy allows companies to improve among other things, product quality, reduce production costs and have more flexibility, which is reflected in increased competitiveness for the company, (Castañeda, & Martínez Domínguez , 2009)

Some of the ways to measure and define the competitiveness at the industry level are based on quantitative market share, productivity indicators, costs, profit margins, and net benefits (Castilian Castilian & 2010). Other indicators that show (Martin & Stiefelmeyer, 2001) to measure competitiveness are the return on assets; these are used to determine the level of competitiveness at the level of an industry.

Competitiveness and Technology

Currently economic competition is no longer based solely on the availability of natural resources and accumulation of classical factors of production, capital, land and labor, but increasingly supported in the development and economic exploitation of knowledge, so it is essential

to identify and analyze the factors and processes determining the competitive position of firms, regions and national economies, (Tapias, 2005).

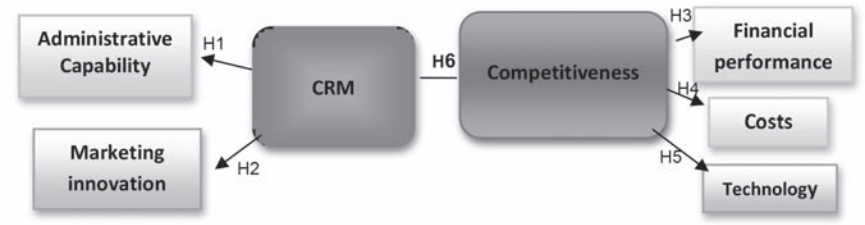
The technological factor along with the ability to innovate is a critical source of competitive advantage (Galende & Suárez, 1999). Consequently, companies to remain competitive, they must continually build skills and technological capabilities in particular to introduce innovations in products and processes that allow them to increase their productivity and differentiation, to build competitive advantage and gain competitive advantage over their competitors (Tapias, 2005).

Several studies have both highlighted a positive relationship between the company technological level and competitiveness, in addition found that firms with higher technological levels, increase productivity and are more likely to compete in more advanced environments (Koc and Bozdag, 2007, Baldwin and Sabourin, 2002).

This model presents the theoretical construction used for the research of manufacturing SMEs in ZMG, showing the factors that were measured in order to study the relationship that keep each other. See figure 1.

Figure 1

Theoretical model from the relation between CRM and competitiveness



Source: author's elaboration.

Method

This study made a research of 410 different SME´s manufacturing industry companies in Guadalajara, Mexico, during January and May 2013.

Also, there are seven hypotheses that will contribute to this research:
H1: A Higher level of Administrative Capacity, higher CRM.
H2: A Higher level of Marketing Innovation, higher CRM.
H3: A Higher level of financial performance, higher competitiveness.
H4: A Higher level of cost reduction, higher competitiveness.
H5: A Higher level of technology use, higher competitiveness
H6: A Higher level of CRM, higher competitiveness.

In order to measure competitiveness level, it is considered three factors proposed by Buckley, Pass & Prescott, (1988):
1. Financial performance,
2. Costs reduction, and
3. Technology use, all measured by 6 items, each.

CRM Furthermore, considered two factors, the authors (Karakostas, Kardaras and Papathanassiou, 2005), (Boulding, Staelin, Ehret, and Johnston, 2005), (Winer, 2001), (Lafuente & Bassa, 2011), (MSI, 2006):
1. Management capacity
2. Marketing Innovation, with 5 and 4 items.

All above elements were measured with Likert scale of five level positions, as 1 = strongly disagree 5 = strongly agree as limits.

Also in order to assess scales reliability and validity on measuring the level CRM and business competitiveness, a Confirmatory Factorial analysis (CFA) was used with the method of maximum likelihood and EQS 6.1 software (Bentler, 2005;) Brown, 2006; (Byrne, 2006). Statistical adjustments rates that were considered the NFI, NNFI, IFC and RMSEA (Bentler & Bonnet, 1980;) Byrne, 1989; Bentler, 1990; Hair, Tatham & Black, 1995; Chau, 1997; (Heck, 1998).

Analysis and Discussion

The results from the Confirmatory Factorial Analysis (CFA) are shown in table 1 and shows that the measurement model provides a good data fit. As a convergent validity CFA evidence, indicates that all items from the related factors are significant ($p < 0.01$), (Bagozzi y Yi, 1988), which provides evidence of reliability and justifies the internal reliability scale

of the business competitiveness (Nunally & Bernstein 1994); (Hair et al., 1995) show in table 1.

Table 1
Internal consistency and convergent validity from the theoretical model

Variable	*Indicator*	*Factor Loading*	*Robust t-value*	*Cronbach´s Alpha*	*CRI*	*VEI*
Administrative Capacity	CRM1	0.780***	1.000*	0.817	0.822	0.607
	CRM3	0.837***	15.641			
	CRM4	0.715***	11.962			
Marketing Innovation	CRI2	0.619***	6.171	0.708	0.703	0.503
	CRI3	0.670***	6.072			
	CRI4	0.685***	6.562			
Financial Performance	FP1	0.753***	1.000*	0.833	0.833	0.505
	FP2	0.772***	13.859			
	FP3	0.715***	10.413			
	FP4	0.738***	11.672			
Costs Reduction	PC2	0.573***	9.820	0.760	0.762	0.500
	PC3	0.776***	16.971			
	PC4	0.741***	16.218			
	PC5	0.566***	10.634			
Technologhy Use	TE1	0.673***	1.000*	0.848	0.849	0.508
	TE2	0.761***	14.920			
	TE3	0.721***	14.515			
	TE4	0.724***	14.305			
	TE5	0.618***	11.182			
	TE6	0.670***	12.673			

Source: own elaboration.

About the evidence for the discriminant validity, business competitiveness scale measurement level was through two ways, which you can see in more detail in Table 2. First, the range of 95% of reliability, none of the individual elements of the correlation factors matrix contains the value 1.0 (Anderson & Gerbing, 1988). Second, the variance extracted between each pair of factors is higher than its corresponding VEI (Fornell & Larcker, 1981). Therefore, based on these criteria we can conclude that the different measurements made on the scale show enough evidence of reliability and convergent and discriminant validity.

Table 2
Discriminant validity from the theoretical model measurement

Variables	*CRM*	*Competitiveness*
CRM	**0.555***	0.310
Competitiveness	0.192 - 0.372	**0.520***

*These values show the estimation between the correlation factors with a confidence interval of 95%.
Source: own elaboration.

The hypotheses were tested in the theoretical model of innovation and business competitiveness, using the Structural Equations Model (SEM) software EQS 6.1 (Bentler, 2005;) Byrne, 2006; (Brown, 2006).

The nomological validity of the theoretical model was analyzed through the performance of the chi-square test, in which the theoretical model was compared with the model measurement, and not finding significant differences (Anderson & Gerbing, 1988;) (Hatcher, 1994). The results are presented in table 3.

Table 3
Results from the theoretical model about business competitiveness

Hypothesis	*Structural Relationship*	*Standardized Coefficient*	*Robust t-value*
H1: Higher Administrative Capacity, higher CRM	Administrative Capacity CRM	0.478***	13.802
H2: Higher Marketing Innovation, higher CRM.	Marketing Innovation CRM	0.462***	6.268
H3: Higher Financial Performance, higher Competitiveness	Financial performance Competitiveness	0209***	11.981
H4: Higher Cost Reduction, higher Competitiveness	Cost Reduction Competitiveness	0.169***	13.411
H5: Higher Technology Use, higher Competitiveness	Technology Use Competitiveness	0.223***	13.519
H7: Higher CRM, higher level of Competitiveness	CRM Competitiveness	0.470***	10.035

S-BX^2 (df = 503) =1235.7893 ($p < 0.0000$); NFI = .862 ; NNFI = .845 CFI = .861 ; RMSEA = .060
*** = $p < 0.001$
Source: own elaboration.

The table 3 shows the results obtained from the Structural Equations Model, regarding the H1 the results obtained, $\beta = 0.478$, $p < 0.001$, indicates that administrative capacity has significant effects with the CRM in manufacturing firms. Also for hypothesis H2, the results obtained, $\beta = 0.462$, $p < 0.001$, suggest that marketing innovation have significant effects in the CRM too. And hypothesis H3 the results obtained, $\beta = 0.209$, $p < 0.001$, suggest that financial performance also has significant effects in manufacturing companies. About hypothesis H4 the results obtained, $\beta = 0.169$, $p < 0.001$, indicate that the cost reduction has significant effects in competitiveness level. In hypothesis H5 the results obtained, $\beta = 0.223$, $p < 0.001$,), suggest that technology use also have significant effects on business competitiveness. Finally, the results obtained in the hypothesis H7, $\beta = 0.470$, $p < 0.001$, presented that the CRM has significant effects on business competitiveness too.

Limitations

Like all researches have its limitations this one is no the exception, as when performing such work must define your universe, leaving behind other possible key factors for research, in this case only were taken small and medium manufacturing enterprises from Guadalajara, excluding micro and large firms, and other municipalities were excluded from Jalisco too. This increase to new researching which can include all businesses of all sizes in order to apply the same concepts to companies missing or different economic companies sectors to take a broader view of the concepts outlined above.

Conclusions

Based on the results obtained in the study, it can be said that the CRM is defined in different ways, either as a software that helps companies to store customer data, to others as a philosophy that is implanted in the company, changing the mentality and way of working of employees to be customer oriented and finally, as a concept that integrates the two previous to create a new vision for the company, which is aimed at staff with a philosophy directed to the customer and with the help of technological tools, such as databases CRM, for with this to get companies are up to

date and make better decisions based on accurate data and good training of participants of the company, generating an advantage to competitors and customers having satisfied.

In this research and analysis of statistical data of manufacturing SMEs in the GMA, it was concluded that the CRM Competitiveness and are important in the manufacturing industry, finding that there is a positive correlation between these two variables, which means that if companies continue to implement and improve the CRM, succeed in having high levels of competitiveness. This has been demonstrated in companies that have currently implemented the CRM.

Although research in positive results regarding the implementation of CRM were obtained also showed that manufacturing SMEs have some shortcomings, which provides areas of opportunity for these companies and indicates a diagnosis of how the variables currently addressed in this research.

Manufacturing SMEs must improve regarding financial matters such as debts, credits, production costs, as these are affecting them in their competitiveness in the use of technology showed that meet a good standard, only have to keep improving. Regarding the CRM, although its implementation has not yet shown the best results, because the data obtained from customers has driven companies to radically improve their products or services, so do not use these advantages for enter new markets.

In conclusion we can say that SMEs in the manufacturing sector of Guadalajara, a good correlation was found between the CRM as an independent variable versus competitiveness as dependent one, the same goes for the other factors mentioned in the theoretical model that comprise each of the variables. SMEs are choosing the use of the information provided by the CRM, in order to innovate the market and within the company, creating a new organizational environment where all these are involved of information for each other, creating value for the company.

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9
Financial performance in the sector of manufacturing SMEs[1] in the metropolitan area of Guadalajara

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Abstract

The purpose of this research consisted in determining the mathematical relationship of internal control and investment with the financial performance in the manufacturing SMEs of the metropolitan area of Guadalajara. The collected information is analyzed; the mathematical relationship is identified; the results are interpreted and finally some proposals to support the operational activity of the SMEs competitiveness in the manufacturing sector are offered. The financial performance was the dependent variable and by means of the Spss software version 20.0, the mathematical relationship exercised by investment and internal control – as independent factors – was determined. The mathematical model and the empirical study factors were used in researches that are mentioned in the theoretical frame.

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1. SMEs = Small and Medium-Sized Enterprises (*Pequeñas y Medianas Industrias*, in Spanish, or PyME).
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Key Words: *financial performance, investment, internal control and manufacturing SMEs.*

Introduction

The studies on financial performance at the manufacturing SMEs of the metropolitan area of Guadalajara are fundamental. The lack of a robust model that explains the relationship between investment and internal control on financial performance within the Mexican organizations, and particularly on the SMEs of the manufacturing sector, justify this research.

This research determines the mathematical relationship of two factors that influence the financial performance and the entrepreneurial competitiveness in two aspects: investment and internal control.

In order to achieve the fulfillment of the goals, we resort to employing documentary and field research techniques, as well as a descriptive, co relational, qualitative, quantitative and inductive/deductive researching method; the statistical analysis is carried out through the Spss software, Version 20.0, for social sciences, thus providing the necessary bases to approve or to reject the formulated hypothesis. The research conclusions present direct, concrete and logical solutions.

Approach to the problem

Manufacturing industries are formed by economic units that are mainly dedicated to the mechanical, physical o chemical transformation of materials or substances, in order to obtain new products.

Mexico increased its exportations of the electronic and automotive manufacturing industries thanks to the NAFTA, leaving behind those of the agricultural and manufacturing industries. As a consequence, the levels of employment fell and those industries were closed, in part due to the lack of economical support and counseling.

Worldwide, micro, small and medium-sized enterprises represent the segment of economy that provides the greater number of economic units and employed personnel; therefore, those companies are invested of a great importance and there is a need to strengthen their performance, because they fundamentally influence the global behavior of national

economies; in the year 2009 there were 5,144,056 enterprises in Mexico. Out of them, 99.8% were micro, small and medium-sized enterprises, which were involved in the economical activities in the following way: 47.1% offering services, 26% trading, 18% in the manufacturing industries, and the rest of the activities were the remaining 8.9%, they included 78.5% of the employed personnel. (Ministry of Economy, 2011).

Large companies increasingly focus their investment decisions on including advanced technology and on intensive general capital; they are able of growing, of updating and of exporting without having to increase their number of workers in an equivalent way (Lozano, Cisneros, Niebla, 2009).

In our current globalized world, the tendency towards the industrial manufacturing development is every time more frequent, thus becoming a characteristic of the post-modern human being, seeking for their own satisfaction over social and economic interests.

It is like this, that arises the need to know in which way internal control and investments are related to the financial performance of the SMEs, and as a consequence, the need to know what their relationship to competitiveness of manufacturing companies is.

Understanding the manufacturing companies' financial demands, knowing and identifying the mathematical relationship of the independent variables over the financial performance; in this research we consider independent variables: investment and internal control.

Investment is represented through the purchasing or net acquisition of active assets, or through the collection of actives that the company has historically accumulated.

The internal control system includes the plan of the organization, as well as all the methods and measurements that are adopted within an enterprise with the objective of:

- Protecting actives
- Verifying the accuracy and reliability of accounting data and of information management
- Promoting operational efficiency
- Complying with the prescribed policies and with federal and state regulations

In order to collect information on internal control, mixed techniques of information collection will be used – for instance content analysis and analysis of data base information.

Theoretical Framework

Mexico has experienced a structural change due to the implementation of economic reforms and to the signature of trading agreements since 1980, with the objective of supporting entrepreneurial and competitive development in our country.

The North American Free Trade Agreement (NAFTA) and globalization have offered the opportunity to innovate and to purchase new technology, for starters, thus offering at some point the chance to change some business models, and at some other time they have forced the generation of proprietary technology and innovation.

Productivity and competitiveness in the companies are not only related to great enterprises – in Mexico, the SMEs are a fundamental base of the economic development. The SMEs are involved in the globalization of markets. Their updating must take place in a faster manner, with support and counseling through training and systems. They need to update their management and production by using technologies that may help them compete in the future, and they need as well to include systems that can improve their functions in order to become more productive. Their functions could be affected by the lack of new technology for managerial information and for the production process, hence being in danger of becoming less competitive in terms of prices and costs. This can cause the loss of competitiveness of their employees in the market. (Aguilera-Enríquez, González-Adame, & Rodríguez-Camacho, 2011).

Modernization and the use of new technologies is fundamental for the SMEs to thrive in Mexico. Financial economic support for this kind of enterprises is scarce as well; therefore it must be managed in an optimized and justified way.

We can appreciate some variables when addressing some of the topics dealing with the competitiveness of companies when facing their peers. Such variables direct our attention towards the aspects of the business that must be taken care of – those aspects that point out the standards that we must take into consideration when comparing our companies to others in different sectors they belong to the companies, the economic condition and affect the competitiveness of the company.

Both, businesses and their strategies – including people, their consumption preferences, and competitive advantage points – are rapidly and unexpectedly arising, turning this one into a completely uncertain globalized market. Therefore, one of the key strategies to be followed is

organizational awareness in order to face the needs and changes inherent to the whole process of becoming competitive.

In this way, the factors that have to do with competitiveness can be grouped, mainly those factors that take place outside the company, without leaving behind internal factors, of course. Referring to the capacity of a company to achieve goals in comparison to other accomplished companies in the same sector, would represent the competitive level of such company.

The results that may be achieved by companies during the process of competitive rivalry depend on three factors;

1. Macroeconomic factors.
2. Sectional or industrial factors.
3. Internal factors.

Macroeconomic factors

These are all of the factors outside the internal environment of the company, which are linked to national economy and to the general economic and social situation of the place where the company is established. The situation of international competing markets is also included.

Sectional or industrial factors

It refers to the divisions or sections to which a company belongs. It is important to know them, because the company's success or failure is a consequence of what each market has to offer, taking into consideration that only the most competitive companies will prevail in the sector.

Investment is also influenced by the kind of sector and by the way in which the market is structured, as well as by internal competition. Porter (1990,) mentioned that the capacity that companies have to earn greater rates of return of investment than the cost of capital as an average will depend on the intensity of the existing competition in their sector. He mentions as well that those sectors in which there is a high rivalry among enterprises, as they are subject to an elevated threat by the entrance of new competitors, facing powerful and demanding customers and whose products or services have a high number of substitutes in other industries – as an average – offer low opportunities to get benefits. (Acosta, 2007).

Internal factors

A sustained competitive advantage can be created by using the resources, abilities and capacities owned and used by the company, in order to determine its competing strategy in the sector in which it operates.

Internal factors are a key point to achieve competitiveness in the sector, and particularly in the financial area a vision beyond just making money must be kept. Instead of that, we must solve sets of problems that will lead the company to successfully achieving competitiveness and development. In the long term this will give the company more than what was expected in the short term. That is the reason why in this research two aspects are addressed in regards to the financial competitiveness topic: investment and internal control.

Investment

Investment can be represented by the purchase or net acquisition of new actives, or by actives that were physically donated or invested by the shareholders.

Alfredo M. Bobillo, J. A. Rodriguez Sanz and F. Tejerina Gaite (2006), mention that those enterprises that are characterized by their intensity of capital, tangible actives and unitary labor costs, present a high level of importance and they show a positive sign in the profitability equation. Since this is the main objective when making the decision of investing, it will depend on how the managers evaluate the qualitative aspects. (John, 2009).

Investing is strongly connected to profitability – money is invested and spent in the hope of generating profits. Forecasting is achieved by supporting decisions on indexes that can provide more safety. Investing is of great importance to any entrepreneur, that is the reason why they must be constantly learning about the evolution of their internal and external environments.

Direct foreign investment has an impact on the formation of capital in a direct way. As investment increases, the GDP increases as well. It also increases in a indirect way due to supplementary domestic investments. (Ronderos, 2010).

Investment money is that part of the production that is not assigned for immediate use, but it is assigned to the production of new consumption goods. The objective of the investment is to keep and to increase the

production of consumption goods. To this end, it is necessary to replace the merchandise of capital that is used during the production process, in addition to increasing such merchandise.

Danielson and Scott (2007) suggest that an excessive investment could take place when companies do not have a concentration of the property and when they manage in a deficient way the structures of control. This provides sufficient reason to consider carrying out additional research with the objective of clarifying such relationship.

It would all be much easier if the companies had a less restricted access to credit markets in order to obtain the monetary amount required for their investment.

Internal control

The internal control system includes the plan of the organization, as well as all of the coordinated methods and measurements that are adopted in a company with the objective of: protecting actives, verifying the accuracy and reliability of accounting data and of management of information of another kind, promoting operational efficiency and complying with the prescribed policies and with federal and state regulations

Romero and Croes (2008), say that internal control must exist for the banks to be able to correctly perform their operations, because it provides the reliability of the top levels of management to know how efficiently their processes are being executed. In that way they can detect those practices that affect their company's capital, in addition to the fact that they are necessary in any organization in which decisions must be made. Internal control is also necessary to eliminate the opportunist behavior of area managers inside the organization. (Baiman, 1980).

All of the objectives the company may desire can be easily achieved with the help of an internal control system. With the help of such tool, both the investors and the creditors can realize if they have any deficiency in the follow up of their investments in their internal controls; therefore, many credit companies stay away from the organization, because their financial statements would prove to be of a low quality. Keeping an internal control system is extremely important in order to control the company's actives and to see clearly when taking a look at the financial systems.

At the SMEs it is basic to keep a financial standard in order to become a competitive company, providing strength to the short and long

term planning, decreasing the uncertainty in the investment and facilitating the internal control for small companies.

Internal control can tell us that a company has better planning and a better structure, and that such company is able to decrease its costs. It means a company that is financially competitive. Just as this factor, there are more that help us understand a company's competitiveness and financial situation.

Financially speaking, another important factor in competitiveness is related to prices and costs – so long as the prices being offered are lower than those offered by other competing companies. About sale prices, we can observe the influence on the costs of factors, which are connected to the working force, raw materials, etc. They lead as well to the reduction of financial cost, and in a close connection, the growth of productivity and the development of new power sources, less dependant on traditional sources.

Another aspect related to the companies' competitive success is internationalization – being able to get into new markets, and to keep on competing in a global market. Additionally, the financial capacity in which a SME can be perceived is crucial, since it may or may not keep these new businesses depending on the correct functionability of its financial strategy.

Developing a learning of foreign markets can be created as a consequence of the competitive success offered by exporting to different places.

Being able of exporting is an indicator of the existence of a competitive success. Hence, we consider that the most competitive enterprises are those that can stand the competitive intensity of these markets. First of all, it shows that in addition to leaving the barriers of differences between those places behind, and also that their needs can be adapted, and in second place it has the capacity – both in form and financially – to be able to do it.

However, in order to become a competitive generator in a market, we must be able to implement the extension of our own companies. Gambling on growth is a fundamental part of the process towards success, including scenes open to change, willing to be innovative without leaving aside the idea of keeping an internal financial balance, and taking advantage of the environment that markets can throw at us depending on the location where they are.

Starting a business environment with a local intention – and of course, international – along with the proper strategies, means that the

company's adaptability increases to become more competitive and flexible, in order to enter such environment with an advantage over other companies, and to be able to cover new markets, thus being able to cut back on costs and risks. Profitability and growth are nothing but the result of the application of all of these actions.

It is fundamental to create a series of values for the company. This will help because it will place the company over its competitors, and it will allow the company to become more competitive and to prosper in its environment, giving it more chances to outlast and to become successful.

Financial performance (Profitability)

The companies' environment, which is characterized by an increasing competitiveness and globalization, makes it difficult for the companies to survive (Sellers y Mas, 2007.) This forces the companies, every time in a more intense manner, to measure the results obtained as a consequence of their activities in determined periods of time, in a way to operate in an organized manner and in the search of complying with several different organizational goals.

Financial performance is represented by profitability, however, defining profitability is a matter that arises discussions and debates between those who study the subject, specially in the financial, accounting and economy areas, specially because of the temporary focus each one of them has, and because they are so different from one another (Vause, 2009). The term profitability may mean different things and it may be formed by different aspects for those different groups of interests within the company – for investors, creditors, clients, competitors, managers, employees, business analysts and investment analysts, etc. each one of them may take a look at it from a different perspective, and depending on their position in the company, of the hierarchy and the department where they work within the organizational structure (Idem,) so trying to provide only one definition of the term profitability would be both complex and excluding.

It is the benefit of an organization in a determined period of time, and it is the result obtained from subtracting the costs of an organization out of its total incomes (Duca, 1997;) when there is a surplus as a result of such relationship and the incomes are greater than the expenditures, then it is said that the company is profitable, because there is a profit;

when the result is negative, then it is said that the company is not profitable and it generates losses (Vause, 2009.)

Profitability can be defined in several different ways by the company, depending on particular aspects: its line of work, the sector in which it operates, the kind of products or services it provides, the relationships among which it is intended to measure, among others; in general terms, profitability is how advantageous are the results of a specific area of the company, or the results of the whole company; it can be referred to as well as the difference between the capital shown at the beginning of the exercise of some balance of financial statement in comparison to the end of a determined period (Vause, 2009).

Ways in which profitability can be measured. The starting point for your analysis and assessment could be the yearly operational report, since it includes data on the activity and results of the company, and it allows the relationship between the incomes and the expenditures (Idem) which generates profit when the entrepreneurial performance is healthy. It can be represented using the following equation: Profit = Total Incomes – Total expenditures.

To Duca (1997) profitability can be measured by subtracting the total amount of expenditures of a company from the total amount of its incomes, by explaining that incomes or sales are integrated by the product prices and by the quantity of products being sold. On the other hand, the expenditures include nominal fixed prices at real prices adjusted along the time because of the inflation, such as working force costs – hourly compensations times the total number of working hours-time; variable costs not related to the work force, which are real variable costs per out flowing unit, prices along the time and real outflow; the capital's depreciation and the payment of interests to debt creditors; all of the aforementioned elements become the total costs of the company – the expenses related to working costs are considered as a constant proportion, because working hours are generally stable, although this is not a rule.

Incomes are the total amount of sales minus taxes (or similar deductions) over those sales; and costs means all of those expenses that are necessary for the performance of the company's activities, emphasizing that profits or benefits are not the same as profitability, although it is related to the earned profits. Profitability can be measured by using ratios that combine – in many cases – profits with at least another figure of the result statement, of the general balance or of some other part of the annual report (Vause, 2009).

The company and those who are interested in measuring its performance by means of its profitability or by means of any other financial result, generally establish relationships between business indicators, considered ratios, defined as relationships based on components that are commonly used to measure the companies profitability, and they must at least combine the benefits with one or several figures of the income statements (Idem.) There is a variety of ratios, and they are used according to particular calculation needs, since the establishment of relationships can be possible in some companies, but not in others. Therefore, profitability ratio calculation may be adequate but distinctive. Profitability ratios show in which way is the company's management is being carried out regarding its sales, actives, and profits, and they show the company's adaptability to its surrounding (Universidad Autónoma de Madrid, 2011); some ratios that are commonly used to measure entrepreneurial profitability according to Vause (2009) and UAM (2011) are as follows:

- Ratio of net margin or income profitability = (profit/total sales) x (100)
- Ratio of gross profit margin
  % of gross profit margin = 100 x (gross profit/incomes through sales)
- Ratio of the margin of profit operation
  % of the margin of operation = 100 x (margin of operation/incomes through sales)
- Ratio of the margin of profit
  % of the margin of profit before taxes or deductions = 100 x (profit before taxes or deductions/incomes through sales)
- Ratio of earnings per share
  = profit after taxes or deductions/number of issued shares in circulation
- Ratio of Return of Actives ROA (Economic Profitability)
  % of return rate of the active = 100 x (profit/actives)
  % of return rate on capital = 100 x (profit/capital)
- Ratio of Return on Equity ROE (Financial Profitability)
  = Net result/effect of financial leverage

Profitability ratios have been used to measure and to evaluate the financial and entrepreneurial performance (Mok 2007; Sellers and Mas, 2007) because by means of these relationships we can get radiographies that show the economic performance of the company. It is important to emphasize that when using ratios to measure the results of a company,

the economic structure of such company – which is conditioned to the sector's economy – is generally overseen. This makes it difficult to perform comparisons across sectors (*intersectorial*), although it is not impossible to make them.

Research Question

Which is the mathematical relationship between internal control and investment regarding the financial performance of manufacturing companies in the metropolitan area of Guadalajara?

General objective

Determining the existing mathematical relationship between internal control and investment regarding the financial performance of manufacturing companies in the metropolitan area of Guadalajara

Hypothesis

Ha. Internal control has a positive mathematical relationship with financial performance, represented by the profitability of the manufacturing companies in the metropolitan area of Guadalajara.

Hb. Investment has a positive mathematical relationship with financial performance, represented by the profitability of the manufacturing companies in the metropolitan area of Guadalajara.

Methodology

In the documentary research, according to the classification of Münch & Angeles (2009), primary sources with no direct physical relationship to the event – that constitutes the object of this study – were used. However, such sources are related to such event through some intermediate process (Ortiz & García, 2006)

, and the required information is obtained by researching and downloading articles from data bases such as EBSCO, PROQUEST and DIAINET.

In the field research, a representative statistical sample of the manufacturing SMEs of the metropolitan area of Guadalajara was determined, thus defining the number of surveys to be applied within the universe of the manufacturing SMEs.

The survey that was applied as a specific technique of the field research according to Cervo and Bervian, (1998), has as a goal to orderly collect and record the data related to our study object. 29 students applied surveys at the 383 manufacturing SMEs. Those companies are located in the metropolitan area of Guadalajara, Tlaquepaque and Zapopan.

The survey was written in the form of a questionnaire, in order to collect information related to investment and internal control that, in this research, are considered as independent variables.

The questionnaire was prepared using a scale called Likert Scale, also known as a method of summary evaluations. It is a psychometric scale that is widely used for research purposes, mainly in social sciences. When answering a question from a questionnaire prepared with the Likert technique, the level in which a person agrees or disagrees with a statement is specified (an element, an item, a question.) The scale is called like that after Likert, who published a report to described its use in 1932. (Münch & Angeles, 2009).

The questionnaire is supported on the contributions given in regards to the knowledge about finances, and on the different contributions regarding the SMEs competitiveness.

The research was conducted from July 16 to 22 of year 2012, by visiting 418 out of 30,370 manufacturing SMEs located in the metropolitan area, according to the information provided by INEGI (I.N., Classification of the Enterprises, 2009) about the metropolitan area of Guadalajara (Tlaquepaque, Tonalá, Zapopan, Guadalajara.) This number of surveys provides a significant comfort in the range taking into consideration that the calculation of the aforementioned sample indicated that 379 were to be conducted.

$$n = \frac{Z^2.N.p.q}{i^2\,(N-1) + Z^2\,.p.q}$$

$$n = \frac{1.96^2 x(30370)x(.50)x(.50)}{(0.05)2(30370-1) + 1.96^2\ x(.50)(.50)} = 379 \text{ surveys}$$

n= the sample to be found
Z= 95% standard error
N= size of the universe
p= probability that it happens
q= probability that it does not happen
i= 5% error margin

The applied co relational study responded to the formulated research questions. Assessing the existing relationship between internal control and investment in regards to the financial performance, through the electronic program Spss Version 20.0. The main purpose was to know how can a concept or variable behave, knowing the behavior of other related variables: this means to try to predict the approximate value that a group of individuals or phenomena in a variable will have, from the value of the related variables.

The correlation may be positive or negative. If it is positive, it means that subjects with high values in one variable will tend to show high values in the other variable. If it is negative, it means that a subject with high values in one variable will tend to show low values in the other variable. If there is no co relation between the variables, that will mean that they vary without following a systematic pattern with each other. (Hernandez, 2007).

Analysis Of The Results

Independent variables in an experiment are called (factors), and the level of intensity of a factor is referred to as level of the factor. In the calculations that were carried out, the depending variable is represented by the financial performance, and the independent variables were investment and internal control.

In a distribution of frequencies, only one variable at a time is described. A crossed tabulation simultaneously describes two or more variables. A crossed tabulation is the combination of the distribution of frequencies of two or more variables in only one table, and it helps us understand the way in which a variable is related with another one. The categories of a variable are crossed with the categories of another or other variables. Therefore, the distribution of frequencies of a variable is sub-divided according to the categories of the other variables. (Malhotra, 2008).

Cronbach's Alfa

It is the average of all the possible coefficients of divisions by half, resulting from the different ways of dividing the questions of the scale. This coefficient varies from 0 to 1, and a value lower than 0.6 usually means a non-satisfactory reliability of internal consistency. An important property of the alfa coefficient is that its value tends to increase as the number of questions in the scale increases. Therefore, the alfa coefficient may result artificially and inadequately inflated due to the inclusion of several redundant questions to the scale. (Malhotra, 2008).

The reliability of the database, which was created using the results of the survey, was tested with the help of the Spss-Version 20.0 software. Cronbach's alfa test was applied to measure its reliability, taking into consideration the averages of the coefficients. The results are as follows:

Table 1
Reliability Statistics

Cronbach's Alfa	*No. of elements*
.844	18

Source: Data provided by the Spss-Version 20.0 software, using data from the survey.

Table 2
Summary of Data Processing

		N	*%*
Cases	Valid	418	100.0
	Excludeda	0	.0
	Total	418	100.0

a. Elimination by list based on all of the procedure's variables.
Source: Data provided by the Spss-Version 20.0 software, using data from the survey.

The index that is shown in table No. 1 tells us about the reliability in the test of the scales, and Cronbach's Alfa supports it – over 0.7.

Calculation of ANOVA

The Analysis of Variance (ANOVA) is a collection of statistic models and of their related procedures. In it, the variance is partitioned into certain components corresponding to different explanatory variables.

The ANOVA consists of analyzing the variation that there is in a set of answers, and of assigning portions of such variation to each set of variables. The reasoning behind it is that the response variables change as a consequence of the variation in a set of variables.

The objective of the analysis of variance is to locate the important independent variables and to determine how they affect the response. (Wackerly, Mendenhall III, & Richard, 2002).

Table 3
Educational Background of the Managers

		Frequency	*Percentage*	*Valid percentage*	*Cumulated percentage*
Valid	Elementary School	30	7.2	7.2	7.2
	Junior High	56	13.4	13.4	20.6
	High School	66	15.8	15.8	36.4
	Technical Training	247	59.1	59.1	95.5
	BA degree	18	4.3	4.3	99.8
	Master's degree	1	.2	.2	100.0
	Total	418	100.0	100.0	

Source: Data provided by the Spss-Version 20.0 software, using data from the survey.

Table No. 3 shows that people with educational backgrounds that are mostly in the levels of Junior High, High School and Technical Trainings occupy the managerial positions within the SMEs of the manufacturing sector of the metropolitan area of Guadalajara.

Table 4
Employees

		Frequency	*Percentage*	*Valid percentage*	*Cumulated percentage*
Valid	Up to 9 employees	193	46.2	46.2	46.2
	10 - 19 employees	83	19.9	19.9	66.0
	20 - 29 employees	48	11.5	11.5	77.5
	30 - 39 employees	26	6.2	6.2	83.7
	40 - 49 employees	21	5.0	5.0	88.8
	50 - 59 employees	11	2.6	2.6	91.4
	60 + employees	36	8.6	8.6	100.0
	Total	418	100.0	100.0	

Source: Data provided by the Spss-Version 20.0 software, using data from the survey.

Table No. 4 shows that SMEs that employ up to 10 employees are predominant.

Table 5
Control of Society or Family

		Frequency	*Percentage*	*Valid percentage*	*Cumulated percentage*
Valid	Society	194	46.4	46.4	46.4
	Family	224	53.6	53.6	100.0
	Total	418	100.0	100.0	

Source: Data provided by the Spss-Version 20.0 software, using data from the survey.

Table No. 5 shows that family companies are predominant among the SMEs in the manufacturing industry in the metropolitan area of Guadalajara.

Table No.6 shows the results of the estimates of the model that was previously explained. In it, the relationships among the six measurements of internal control and financial performance are examined (variable calculated in a combined way along with the six financial items of the survey.)

Table 6
Internal Control – Financial Performance Coefficients[a]

Model		*Non-Standardized Coefficients*		*Typified Coefficients*	*T*	*Next*	*Co linearity Statistics*	
		B	*Typ. Error*	*Beta*			*Tolerance*	***IFV***
1	(Constant)	2.273	.106		21.362	.000		
	IC2	.180	.032	.283	5.558	**.000*** **	.776	**1.289**
	IC6	.119	.032	.190	3.745	**.000*** **	.776	**1.289**

a. Depending Variable: FINANCIAL_PERFORMANCE R Adjusted Square = 0.163
(*): p < 0,1; (**): p < 0,05; (***): p < 0,01 IFV: Inflation Factor of the Variance
Source: Data provided by the Spss-Version 20.0 software, using data from the survey.

The postulate enunciated in Hypothesis Ha. Internal control has a positive mathematical relationship with financial performance, represented by the profitability of the manufacturing companies of the metropolitan area of Guadalajara. They are partially accepted, taking into consideration that in the results of the applied correlation, only two out of six items that were considered in the survey show significance and a positive relationship.

The items that relate in a positive way to the financial performance are:
IC2 Establishment of Cost Accounting
IC6 Production Costs at our Company are low

The positive relationship shows that profitability increases as internal control increases at the manufacturing companies of the metropolitan area of Guadalajara. The result shows that the establishment of cost accounting will increase profitability; it emphasizes as well the importance of reducing the costs of the products.

Table 7
Investments-Financial Performance Coefficients[a]

Model		*Non-Standardized Coefficients*		*Typified Coefficients*	*T*	*Next*	*Co linearity Statistics*	
		B	*Typ. Error*	*Beta*				*B*
1	(Constant)	2.639	.128		20.633	.000		
	FA2	.059	.029	.100	2.005	**.046****	.918	**1.090**
	FA3	.061	.029	.107	2.087	**.037****	.871	**1.148**
	FA5	.058	.030	.099	1.956	**.051****	.903	**1.107**

Depending Variable: FINANCIAL_PERFORMANCE R Adjusted = 0.040
(*): p < 0,1; (**): p < 0,05; (***): p < 0,01 IFV: Inflation Factor of the Variance
Source: Data provided by the Spss-Version 20.0 software, using data from the survey.

The postulate enunciated in hypothesis Hb. Investment has a positive mathematical relationship with the financial performance presented by the profitability of the manufacturing companies of the metropolitan area of Guadalajara. It is partially accepted, taking into consideration that the results from the applied correlation show that only three out of the six items that are being considered in the survey show significance and a positive relationship.

The items that are related in a positive way with financial performance are:

FA2 The company has taken over – or expects to merge with – other enterprises in the same line of business

FA3 The increase in the demand has caused a need to purchase more machines

FA5 The machinery used for the production is specialized and different to other ones in the sector

The positive relationship shows us that profitability increases as investment increases at the manufacturing companies of the metropolitan area of Guadalajara. The result shows that profitability will be increased by the merger or acquisition of new enterprises or by the purchase of new machinery, taking into consideration that such machinery is specialized and different from the one used at other manufacturing companies in the metropolitan area of Guadalajara.

Conclusions

The manufacturing SMEs located in the metropolitan area of Guadalajara can be affected by several factors. However, financially speaking, there is a major relationship between the internal and external problems, because they must be connected. If we address the subject of internal control, we can say that:

A greater internal control through cost accounting is positively related to financial performance or to an increase in profitability, and the reduction of production costs is one of the main alternatives of the companies to surpass their competitors in the process of generation of profitability and of increasing their financial performance.

The increase of their financial performance or profitability is also seen as a growth that takes place with resources of their own, for example, by purchasing machinery, through a merger or acquisition of another company in the same line of business, always keeping in mind and taking into consideration how specialized the machinery employed in the creation of their products is.

We conclude that the financial performance of the manufacturing SMEs of the metropolitan area is closely related to internal control and to investment, taking into consideration the importance expressed by growth in the survey that was applied.

Costs are a fundamental part of the financial results, as well as their reduction in internal control – trying arduously to cut back on costs is a must, as well as keeping or installing a system to control the budget, and cost accounting. Clearly that affects the competitiveness of manufacturing SMEs.

Competitiveness in relationship to internal control, financially speaking, shows there are some points to take care of, mainly in maintenance, cost control and their corresponding planning systems, a system to control the budget and correct cost accounting.

Limitations of the study

It is suggested that, when carrying out another study related to this subject, the companies are delimited in sub-sectors. Also, it is suggested for a future research, to identify the significance of the items through structural equations. It is worth mentioning that when we determined the size

of the sample for this research, we did not take into consideration micro and large-sized enterprises.

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10
Capital structure of transformation sector in Mexico: a panel data model

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Abstract

The purpose of this research was to find out the mathematic relation that the country and company factors exert by incorporating debt in capital structure, used for the transformation sector companies in Mexico.

The long-term debt was the dependent variable and through the programs Stata 11th version, a technique known as Data Panel was applied, to determine the mathematic relation that independent factors exert. The mathematic model and empiric study factors were used in investigations mentioned in the framework.

Keywords*: Capital Structure, Company factors, Country factors.*

Introduction

The research arises from the unchecked in the real world of normative capital structure company, rule or model for formation, highlighting and considering the need of theories review, empiric studies, existent hypoth-

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esis, as well as the postulates that based and adopt different approaches in factory studies and its relation when debt is incorporated in capital structure. The result of checking theories and empiric studies gave a solid base to the problem, questions and objectives. Mexican capital structure studies are fundamentals, the lack of a robust model that explains financial decisions in Mexican companies and specifically in transformation sector companies, justify the study.

Framework

The existence of optimal capital structure for the company, as well as the way that this has to be determined, are some of the most controversial topics in the financial literature since Modigliani y Miller (1958), published their paper and mentioned their propositions about capital structure irrelevance in the company value. Has been 54 years since the publications of this seminal that gave rise to nowadays corporative financials and at the same time provoked the study of companies' capital structure, would capture and receive more attention from economy and finance areas. However, the extend investigations realized about capital structure theories, did not provide answers.

Theoretical models developed in the last years has pretend to validate and generalize, sometimes, Modigliani and Miller (1958) irrelevance thesis, or adapt others, maximum indebtedness thesis de Modigliani y Miller (1963). Because of the convergence of both investigation lines in the seventies a renovated capital structure theory was emerged, which postulated the existence of an optimal structure of the posed problem.

In the current investigation the followed theories were reviewed: optimal capital structure, tax based theory, asymmetric information theory, pecking order theory (POT), given by Myers (1984) y por Myers y Majluf (1984) based on Donaldson (1961) preliminary work, agency costs theory and cash free flow theory. Also, the empiric studies that support the below theories were checked, highlighting among others the study realized for Rajan and Zingales (1995), Wald's (1999) study, these studies offered empiric evidence for G-7 companies. Therein company institutional factors are analyzed, such as: firm size, profit, growth rate, and capital. Just like in financial theories study, the knowledge has increase and developed, nevertheless, has not been achieved the construction of a model that includes all the considered factors as determinants in capital struc-

ture in some empiric researches, mentioned between others the realized for Filbeck and Gorman 2000, Bradley, Chung 1993, Van el Der 1989, Kester 1986, Harrel and Kim 1984.

Recent empiric evidence says that besides the specific factors of the company, the macroeconomic or institutional factors of each country are important determinants of capital structure. Booth L., Aivazian, V., Demirguc-Kunt, A. and Maksimovic, V. (2001), Antoniou, Guney, and Paudyal (2008), Gaytán and Bonales (2009), Dias, Thosiro and Cruz, (2009) and Dias and Toshiro (2009). Nevertheless, mostly of the theoretical and empiric discussion about company financing has been conditioned for developed capital market with a well-structured financial architecture, Zingales (2000). Arias, Arias, Pelayo and Cobián, (2009) argued that is necessary to realize an specialized research about this topic in the Mexican companies trying to achieve a better understanding in financial decisions, to effect of designing financial instruments adequate to its needs that allows and makes its growth.

Capital structure and macroeconomics or institutional factors of the country. Recent empiric evidence suggests that specific factors in each country are important determinants of capital structure in emergent markets. Booth, Aivazian, Demirguc-Kunt y Maksimovic, (2001); Antoniou, Guney y Paudyal, (2008); Gaytan y Bonales (2009); Dias, Thosiro y Cruz, (2009); Dias y Toshiro (2009). Suggest that specific factors in the explanation about indebtedness decision of companies are linked with economic environment and country's institutional mechanism, such as financial sector structure, tax system, legal system tradition, and accounting practices generally accepted.

In studies about countries particular characteristics, is shown that have a significant impact as determinant factors in Mexican companies capital structure, include: i) inflation, ii) interest rate free risk, and iii) exchange rate. That's why in this study of the transformation sector are considered the macroeconomics or institutional factors of the country, that were prior mentioned.

Capital Structure and the microeconomics factors or company specifics. Has been intensely sought identify the specific company factors that could be significant determinants when the capital structure is decided, as well as theories validation that sustain. Between the company's particular characteristics that can be determinant factors in capital structure, Dias,

Toshiro y Cruz. (2009), Gaytán and Bonales (2009), and Dias and Toshiro (2009), studied the mathematic relation in the company's specific factors between Mexico and Latino America. In the empiric studies that were realized and related with capital structure determinants, were found significant evidence in the followed factors: i) size, ii) profitability, iii) risk, and iv) growth. In this research the above factors were considered.

Hypothesis

Tax rate (ISR), operating profits, exchange rate and capital are factors related negatively, inversely, inflation rate, total assets (size), and the net sales (growth), are factors related positively, by incorporating doubt in capital structure used for Mexican transformation sector companies.

Methodology

The econometric model of panel data was used to calculate the mathematical relationship using the sample information of the factors for a period of time, the technique of this model combines data from cross-sectional and time dimension. The model is also known as longitudinal joint, grouped data, combining data in time series and cross-micropanel data, event history analysis and peer analysis (Gujarati, 2003).

The panel data technique allows developing and testing complex models, according to Carrascal (2004), applies in the following areas: a) sales forecast, b) Studies of cost, c) Financial analysis, d) Prediction macroeconomic e) Simulation, f) Analysis and evaluation of any statistical data. It can also show the causal inferences of independent factors dependent factors, these inferences of causality would be difficult to perceive applying only in isolation technique of "cross-sectional data" or the technique of "time series data". The analysis of panel data (or longitudinal) joint study simultaneously the cross-sectional time series study to capture the heterogeneity of economic agents and incorporates the dynamic analysis. (Rivera, 2007), (Mayorga & Muñoz, 2000).

The key feature of panel data, which distinguishes them from the combinations of cross section, is the fact of having and following the same entities or companies over a continuous period of time (Wooldridge, 2001). The analysis of panel data studies the group putting together the techni-

cal data of cross section with the technique of time series. The available information is processed and presented in two dimensions, generating multiple point observations for each economic unit, enriching the empirical analysis with observations would not be possible if only the methods applied in isolation, (Rivera, 2007), (Mayorga and Muñoz 2000), (Gujarati, 2003), (Mur and Angulo, 2006). (Rivera, 2007).

The model recognizes two effects, first the individual effects which refer to those who are affected unevenly each study agents contained in the sample and second to the temporal effects which affect both all individual units of the study that do not vary with time. This allows to study changes in the benefits of a single company over a period of time and the change in the profits of several companies together (Pindyck, 2001).

Source and Data Recolection

The companies specific variable data was obtained from the financial status published in the financial yearbook from the Mexican stock market they have the obligation to generate reports at the end of every trimester. (Schneider, 2001). The data from the macroeconomic variables were obtained from the data base and from publications done by the Bank of Mexico. The study sample was not random because they were considered all companies in the processing sector that is constantly quoted in the period 1996-2009. All companies are classified as large stratification according to the Official Journal of the Federation of June 2009.

In this research was considered as the dependent variable: The long-term liabilities. As independent variables, were considered 4specific variables from the company: Total Assets(Size of the company), Net sales (grow), Operation utility, Capital (risk) and 4 macroeconomic variables or institutional from the country: Tax Rate (ISR), Interest rate, exchange rate, inflation

Analysis and Results Interpretation

The application of the multivariate technique of panel data, taking into consideration the dependent variable and all independent variables, the result showed the existence of high correlation between independent variables causing multicollinearity. Also, some independent variables

have significance greater than 5% causing not to be possible to reject the null hypothesis. The null hypotheses for each additional hypothesis are defined as follows: Ho: Bi = 0 where i is the independent variable to the significance level of 5%.

Stepwise method. The elimination of multicollinearity required to redefine the model. Stepwise method was used, eliminating the independent variables that showed a high R2. The stepwise method identified the variables that enhance the levels of adjustment and explanation of the model.

Table 1

Output data from stata-11 program, applying the stepwise method

stepwise, pr(.2):reg liabilities_LT net_sales oper_income tot_assets tot_equity parity interest_rate inflation taxes_rate					
	begin with full model				
p = 0.9353 >= 0.2000 removing oper_income					
p = 0.6071 >= 0.2000 removing tax_rate					
p = 0.5524 >= 0.2000 removing inflation					
p = 0.4433 >= 0.2000 removing net_sales					
Source	SS	df	MS		Number of obs = 333
Model	1.1707e+16	4	2.9267e+15		F(3, 26) = 806.92
Residual	1.1897e+15	328	13.6270e+12		Prob > F = 0.0000
Total	1.2897e+16	332	3.8845e+13		R-squared = 0.9078
					Adj R-squared = 0.9066
					Root MSE = 1.9e+06
Liabilities_LT	Coef.	Std. Err	T	P>|t|	[95% Conf. Interval]
Parity	-280699.7	72114.7	-3.89	0.000	-422565.4 -138834
Rate interest	2265761	1556044	1.46	0.146	-795324.2 5326845
Total Assets	0.5674836	0.01366	41.54	0.000	0.5406113 0.5943559
Totl Equity	-0.6956924	0.0235753	-29.51	0.000	-0.7420702 -0.6493147
_cons	2492135	825906.9	3.02	0.003	867392.4 4116878

Source: Based on financial data of the Mexican Stock Exchange for the period of 1996-2009

Proof (VIF). The inflation factor from the variances of the regressor (VIF), was calculated with all the independent variables, and the result is a variance of a inflation factor of 10.08.

The proof of (VIF) was repeated one more time, after the stepwise method was applied and the model redefined. The result showed a decrease of the average of the factor of the variance inflation.

Table 2
Proof of the variance inflation (VIF)

VIF		
Variable	*VIF*	*1/VIF*
Total_Assets	13.92	0.071827
Total Equity	13.80	0.072450
Parity	1.05	0.948167
Mean VIF	9.59	

Source: Own elaboration with the financial data from the Mexican stock market during the period of 1996-2009

Hausman test. It ran a regression with panel data fixed effects, and a panel data regression with random effects in order to generate the necessary information in the Hausman test to test which of the two effects is appropriate. The result of the Hausman test indicates that the fixed effects model is the one that most fits this research

Multivariate Data Technical Panel. The results obtained after adjusting the model and implementing the method econometric through the panel data technique, are shown in Table No.3:

Table 3
Output data from the program stata-11, by applying multivariate techniques Panel Data processing sector

xtreg Liabilities_LT parity total_Assets total_equity, fe			
Fixed-effects (within) regression			Number of obs = 333
Group variable: e			Number of groups = 25
R-sq: within = 0.7628			Obs per group: min = 12
between = 0.9778			avg = 13.3
overall = 0.9030			max = 14
			F(3,24) = 326.96

corr(u_i, Xb) = 0.2732				Prob > F = 0.0000	
Liabilities-LT	Coef	Std. Err.	t	P>|t|	[95% Conf. Interval]
Parity	-263918	69396.71	-3.80	0.000	-400474.9 -127361
Total Assets	0.5769877	0.023102	24.98	0.000	0.5315281 0.6224472
Total Equity	-0.7398791	0.0383098	-19.31	0.000	-0.8152639 -0.6644942
_cons	2819953	697402.4	4.04	0.000	1447624 4192283
sigma_u	791570.53				
sigma_e	1866416.3				
Rho	0.15245003		(fraction of variance due to u_i)		
F test that all u_i=0: F(24, 305) = 1.61 Prob > F = 0.0368					

Source: Based on financial data of the Mexican Stock Exchange for the period of 1996-2009

The multivariate regression panel data fixed effects shows that parity and equity are negatively correlated and that the total assets is positively correlated to incorporate long-term liabilities, showing a model explanatory power of 0.9030

Table 4

Factors that have a mathematic relation by including debt in the capital structure of companies in the processing sector

Concept	*Assets (+)*	*Equity (-)*	*Parity (-)*
Transformation Sector	***	***	***

Source: Based on the results of leaving the program STATA-11 (see Tables No. 4)

Total Assets (Size). In the sector of processing the results obtained in this investigation was a positive mathematical relationship of total assets (size) with long-term liabilities, indebtedness or leverage). The size (total assets) seems to be the most important factor in access to financing, especially for long-term debt (Vigrén, 2009). This result agrees with the results shown in the classic article on this issue internationally, Rajan and Zingales (1995), who nvestigated the determinants of capital structure the company for the Group of Seven industrialized countries (G-7) during the period from 1987 to 1991, finding that the size if it is a factor, so it argued that large companies tend to have a higher level of indebtedness. Other researchers such as Frank and Goyal (2009), As Dias, Toshiro and Cruz. (2009) and Dias and Toshiro (2009), who obtained evidence in

Latin American companies, including Mexican, coincide with the arguments of Rajan and Zingales.

Total Equity. The application of the statistic proves the affirmation that the formulated hypothesis holds, the Total stockholders' Equity is related in a negative way in the decisions that incorporate the debt from the transformation companies. Those results, agree with Mason´s job (1990), Friendly Lang (1988), the important founds that they got from the United States, match with the obtained results in this empiric study, showing negative meaning related to the passive long term.

Parity (changing risk). The result obtained by the application of the statistics proves with the panel data technique, confirms the hypothesis, by showing a negative relation with the parity on the decisions, by incorporating the debt in the used capital structure by the transformation companies.

The traditional economic theory affirms that the increase of the risk exchange rate influences in the company to use less debt in its capital structure. The principles of the proposals from Mogigliani and Miller assumed that the companies face a kind of similar changing risk. However, Kranier (1972) concludes that those principles cannot be applied in case of international environments. In its examined study the pertinence about a multinational company, defends that the existence of the foreign changing is enough to cause two identical kind of company a different risk.

Conclusions

The research complied with its object of study was to determine the mathematical relationship positive or negative quantitative factors with the statistical technique of "panel data", incorporating debt in the capital structure of companies in the transformation sector that constantly quoted in the Mexican stock exchange in the period 1996 to 2009. In the adjusted model was considered the dependent variable: The liability (leverage or gearing of the company) and as independent variables: total assets (firm size), Equity and Parity Exchange.

The results are useful for generating regulations and guidelines, facilitating decision making by incorporating debt capital structure of companies in the processing sector in Mexico. The results will minimize the uncertainty and underpin investment decisions in tangible and intangible investment projects undertaken by companies in the transformation.

Factors emanating from the qualitative characteristics such as culture, power, country risk, and personal values are aspects that can influence and modify the results, which is why we suggest be included in future research.

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