competitiveness for industry, science and education

José Sánchez Gutiérrez
coordinator

Paola Irene Mayorga Salamanca
Elsa Georgina González Uribe
Juan Gaytán Cortés
Juan Antonio Vargas Barraza
assistant coordinators

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Núcleo Los Belenes
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45100, México
Tel-fax: +52 (33) 3770 3343 ext. 25608.

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Introduction

This book try to integrate different work papers, considering key elements of science applied to industry and education, and how these affect the competitiveness.

The first work analyzes the elements from the marketing mix that impact on the competitiveness of SMEs Metal-mechanic and plastic industries in Guadalajara, applying EQS to find the correlation between the variables.

Next work evaluates the influence of marketing tools in the competitiveness of SMEs manufacturing industry in Aguascalientes. With a sample of 288 SMEs, a linear regression analysis was achieved, finding that the Marketing Mix has a significant influence on the competitiveness in this industry.

The purpose of next paper is to describe the internationalisation of SMEs as a strategy for generating social value to promote development and combat poverty. An exhaustive study was performed on the study population, and therefore a statistical sample was not used. The research methods used were: questionnaire, systematic observation over five years, and review of documents. Guatemalan companies were found with the same study profile as those in Mexico, Argentina and Spain, but due to their geographic position the local impact was greater.

Following, it's presented a study of the European chemical industries and focuses on the top fifteen companies of this region, and the current problems facing in Europe and shows how the region and the top companies are investing in R&D to bring innovation to overcome the current challenges, presented that the R&D spending in absolute term has remained similar over the years and it is still globally the largest investor for the R&D activities.

Immediately, the work evaluate higher education quality improvement, using variables that determine quality according the students,

faculty and staff's opinion in the Instituto Tecnológico Superior Purhépecha, show that the variable direction and management is showing the highest correlation with the dependent variable and subsequently human resources.

The Tourism sector represents a great importance for global economic growth and development, therefore, the study aims to analyze the level of innovation in marketing in order to know the relationship to the competitiveness of the hotel industry in Guadalajara, Mexico, having reviewed the theoretical contributions of several authors, a construct and a questionnaire, was properly applied to 5 starts and luxury category hotels, and a statistical analysis for testing the hypotheses is carried out.

The information and communication technologies (ICT) are producing new and innovative forms of teaching-learning process in higher education, so the research question is: What are the determinants of Mobile-Learning as Conceptual Model of Learning Innovation for higher education in Guadalajara Metropolitan Area, Mexico? This research is aimed to respond it, based on documentary study to select the variables with 5 specialists in mobile-learning (mL) from Guadalajara Metropolitan Area, Mexico using Analytic Hierarchy Process (AHP). The final determinants, were: the Professor (P), the Student (S) according its role; the Contents (C); the Technology (T) with a Final Questionnaire designed with 60 Indicators grouped, according the principal authors to describe mL.

The results obtained with manufacturing SMEs of Ciudad Sahagun, Hidalgo, from the perspective of having more than 5 years old and more than 11 workers, showing that they have on past the critical period of subsistence in relation to the development of a strategic model through which allows them to increase their competitiveness and grow logically, using the method of Spearman's rank correlation between business competitiveness and growth was got, which allowed the study to determine which indicators have greater impact on the company.

Otherwise, the study identify the logistical capabilities that have the pharmacies in Ciudad Victoria, Tamaulipas, with a sample of 70 companies, collecting the information through the implementation of a survey of pharmacies' managers, with 24 items, using Likert scale, showing that pharmacies are implementing logistics capabili-

ties according to the literature review, these being the order delivery, technology, quality, service logistics and process flexibility.

Moreover, the change and innovation in the accounting profession detect the active response towards professional competitiveness in regional and international economic environment, in the work using a historiographical method, the development of the most representative professional associations in Sonora as faithful actors of evolution, institutional innovation and competitiveness of accounting, in a region with significant local participation in agriculture, mining and ranching is reviewed, particular qualities involving training and professional response capacity.

Finally, interpersonal influence and word-of-mouth (WOM) are ranked the most important information source when a consumer is making a purchase decision, the study analyzes the importance of social networks and viral marketing processes that occur within them —electronic Word-of-Mouth messages (eWOM)—, in the context of digital marketing, and investigates how particular motivations and message characteristics are associated with eWOM and a theoretical construct is tested empirically to discover some of the motivations of users to transmit viral marketing messages in their Facebook personal pages, the responses from a sample of 201 Facebook were collected through an online survey, and the results showed that cognitive and affective characteristics of messages were linked to different motivations to engage in eWOM.

Last work, it analyzes the influences of marketing and social responsibility in the competitiveness of manufacturing industry SMEs in Morelia, Michoacan, through the development of research scientific quantitative, multivariate analysis with correlational and cross-sectional, the survey was applied to Directors/Managers.

This book tries to present the last findings about the market advantage, key factor in Marketing, Innovation, Social Network, Business Internationalization, and their impact on competitiveness.

Jose Sanchez-Gutierrez

1
The Marketing as a factor for competitiveness inside the Metalworking and plastics industries in Guadalajara

Juan Antonio Vargas-Barraza[1]
Jose Sanchez-Gutierrez
Paola Irene Mayorga-Salamanca
Oscar Alejandro Espinoza-Mercado

Abstract

Marketing is the social and managerial process where a group or individuals get what they need by generating, sharing and offering products with value for the consumers. In this work we detect which elements from the marketing mix will impact on the competitiveness of SMEs in Guadalajara, especially in the Metal-mechanic and plastic industries. To validate the hypothesis presented Quadratic equations were used and the results are shown with their respective statistical values.

Keywords: marketing, competitiveness in SMEs, plastic industry, metal mechanic industry.

1. Centro Universitario de Ciencias Económico Administrativas-Universidad de Guadalajara.

Introduction

Among the links that form the value chain, marketing is a key factor to reach consumers and provide products and services. This discipline has evolved to meet the demands of consumers, which in turn are demanding products and services that companies offer.

It is essential to meet the demands of the most discerning customers even for the small and medium enterprises, so they have to reinvent and/or adjust their offers to continue to exist, in other words to be competitive, and marketing may become a competitive factor that will set the tone for continue to market. Proper identification of problems and/or obstacles faced by SMEs will empower the correct application of marketing tools and bring solutions to meet the challenges that the market demands of the XXI century.

The paper analyzes SMEs in the metalworking and plastics industries in the metropolitan area of Guadalajara (ZMG), emphasizing competitiveness as a trigger for companies to cope with environmental changes that may occur and thus be able to excel in the market in which they are competing. It is here where marketing becomes a vital tool for business success as it is everything that companies do to reach your potential customers is what makes consumers know they have the solution to your needs. With this work, what is sought is to highlight the benefits that marketing can bring to companies in the following industries through an analysis of its most important processes in the management of information and integration between areas and communication.

Marketing and competition

Technological development has brought that SMEs can participate in international markets, not only compete in the local market but it can compete with big corporations (Cho & Tansuha, 2013).

Today all organizations have international connections regardless their size due to the globalized world, because most of the products or supplies used and/or sold are imported, and its competitors may be foreign (Risko & Wiwczarosk, 2014). To please the customer and have

a better status than competitors is the marketing function; to make the brand always in the minds of consumers (Keller, Parameswaran & Jacob, 2011). The good relationship helps to learn and gain valuable information about them and this information is valuable for marketing strategies (Radu, 2013).

When you reach the point that you can understand customers, competitors and the external environment helps to develop strategies in the marketing planning. The marketing plan is the interaction of the elements of the Marketing Mix (Zempual, 2015). Marketing strategies are essential for any organization that wants to reach the consumer; this should be a budget for these activities it organized, so that they can make such strategies (Sirkis, 2009).

Research and development institutions should offer new products and services to meet the current market demands; organizations must develop human resources, information systems and technological capabilities (Bermudez et al., 2013)

Increasing competitiveness takes a more important role in the business environment, this is due to the current economy is related to the process of globalization. In the case of SMEs this is for a great importance in today's economy and also important in the economic development of countries partly because they are a source of employment and contribution to GDP. Previously SME production activities of large companies were complementary; currently they are developed to such a degree that develop autonomous activities related to the social sector which are developed though this entails an imbalance in the possibility of developing (Reyes et al., 2014). Competitiveness is the main element that marks the success or failure of a business, why organizations are looking to develop the best strategies for competitiveness to obtain a privileged position in the branch or industry to which they belong.

The market must be made by entities that develop and innovate new products that meet the needs and expectations of consumers. To do this you must find and/or develop the best human resources, information systems and technological capabilities, which together enable it to compete in the global market (Fernandez, Curtain & Gravel, 2014).

Competitiveness has become very important in recent years, is a leader in the business success as it is a key factor, this is determined on the basis of other concepts.

Currently competitiveness is essential because we are in a globalized world where new competitors appear every day which requires a quick action to not disappear, this makes competitiveness a key part of the success of international trade (Valencia, 2014). In addition to marketing, financial information and innovation are two key factors that must be analyzed to develop strategies that allow for greater competitiveness. The financial information provides insight into the performance of the company, and recently innovation is considered an important point that determines the competitiveness of the entity (Rangel, Aguilera & Gonzalez, 2015).

All organizations are different, so their way of seeing the market varies in each onr; each has its own systems and objectives. Therefore competitive differences exist ie every company can compete in a different way; competitiveness can be seen from different perspectives depending on the characteristics of the organization (Cedeño, Acevedo & Gomez, 2013).

Business competitiveness has been described in terms of four different factors. The first is the ability for innovation. Second are the external and internal relations. The third is reputation. And the last is the strategy. In this context, competition has expanded to take in the count of the main tangible and intangible resources that provide a competitive advantage (Hamel & Prahalad, 1989). Furthermore competitiveness has to have these factors for more capabilities of the companies; dynamics such as flexibility, quality and market adaptability (Barney, 1991), given this competitiveness is the ability of companies to design, produce and market products of superior quality compared to competitors who always counting in price as a primary factor (D 'Cruz & Rugman, 1992).

The same competitiveness, studied by other authors including marketing as one of its variables, considering this as a process of improvement and innovation where clear strategies were applied in an adaptive environment for innovations to meet the specific objectives (monitor report cited Franco, Restrepo and Sanchez, 2014). To be competitive we must have a well-established base productivity since one depends on the other (Suarez cited by Saavedra, 2012).

There are indicators showing the competitiveness of businesses related to actions they can take to achieve success. Some authors reflect different perspectives on such indicators as shown in Table 1:

Table 1
Indicators of Competitiveness

Indicator / Author	*Rubio and Aragon cited by Saavedra (2012)*	*Solleiro and Castañon quoted by Flores et al. (2015)*
External indicators		X
Technology	X	X
Innovation	X	
Marketing	X	X
Human resources	X	X
Direct Capabilities	X	
Financial resources	X	X
Culture	X	
Quality	X	X
Production		
Logistics		
Internal organization		X
Procurement		X
R&D		X
Interaction with suppliers and customers		

(Compiled taken from Saavedra et al., 2012)

As shown in the table, each author considers different indicators to measure the competitiveness, but it is notable that most indicators falls in technology, marketing, human resources, finance and quality. These indicators are very important to measure the levels of competitiveness that companies should have, these are reflected in the price, product quality and the flexibility and elasticity of supply (Liana and Nicoleta, 2014).

For this research we considered the following variables for competitiveness: financial performance, technology and costs, in addition to the four Ps of marketing: price, place, product and promotion. These variables are explained as follows:

Cost competitiveness

The costs were presented as a tool to be more competitive. One way to achieve competitiveness is to reduce costs, but doing that has some

cost for competitiveness. One of the major challenges faced by organizations is to optimize resources, lowering the costs of the various activities in order to remain in a highly competitive market (Mejia, 1999). One of the elements of greater relevance and meaning in the competitiveness of a company are its prices, previously was thought that low prices were synonymous with poor quality, but the foray into the new economy opened up a scenario in which you can get products market at low prices, excellent quality and good specifications, what brought that belief has in the market.

Financial Performance

Companies interested in measuring their performance, usually measuring profitability by using components that are common to measure profitability as revenues and costs. All organizations are different, so their way of seeing the market varies in each; each has its own systems and objectives (Cedeño, Acevedo & Gómez, 2013). Therefore competitive differences exist, so every company can compete in a different way; competitiveness can be seen from different perspectives depending on the characteristics of the organization. Valencia (2014) indicates that the profitability of a company indicates its competitiveness since both elements are linked to the operation of the company; the company is able to offer competitive products and services and more accessible than the competition.

Technological Innovation

So that SMEs have a competitive success they have to develop a range of resource and internal factors such as technology mainly because this will help streamline production processes, better management control, management capacity, financial aspect, culture and product quality or service. These resources if used correctly offer better opportunities to achieve business goals that are proposed (Flores, Vega and Chavez, 2015).

The marketing mix: Price, Place, Product and Production

Neil Borden developed the concept of marketing mix; initially being a list with twelve elements and latter simplified only by "Four Ps": Product, Price, Place, and Promotion. This simplification is attributed to McCarthy in the early 1960s and is described as a set of tools that a company uses to achieve its marketing objectives (Espuga-Condal, 2015). It is therefore the marketing mix a combination of a product, how and when distributed, as promoted and its price. Together, these four components of the strategy must meet market needs or target markets and at the same time achieve the objectives of the organization (Martinez et al., 2015). From the above it can be concluded that the marketing mix or marketing mix is the means by which the organization can achieve its goal, through the union of product, price, place and promotion also known as the 4P Marketing.

The plastics industry

The term "plastic" is of Greek origin and means "that can be molded by heat", plastics are also called "polymers" because they are organic carbon based and long chain molecules. Most plastics are derived from chemical waste; they are therefore a product of fossil fuels. The dependence of this industry in everyday life is so deep that almost everyone consumes products containing plastics are like shoes, clothing, household goods, electrical industry, and construction industry, among others; today it is hard to find an activity without an instrument which the content is made of plastic.

Currently the consumption of plastic by Mexico exceeds 45 kg/inhabitant. As to international statistics, Mexico ranks 12th in the ranking of the major consuming countries plastic, while the Asian giant, China, is number 10 (Reporte de Monitoreo Sectorial, 2010). However, it ranks first in Latin America, still above countries like Chile and Brazil, where the plastics industry is very important for the economy of these countries.

In our country, the plastics industry is as important as it amounts to 3.6% of GDP (Gross Domestic Product) in 2006 and national manufacturing totaled $ 5.411 billion (Reporte de Monitoreo Sectorial, 2010).

The plastics industry consists of 4,500 processing plants which proportional around 180,000 jobs. It should be noted that total employment is distributed according to the size of the companies, of which 84% of these are micro and small enterprises, 12% and 4% medium-large; we can find the main distribution center for the plastics industry within which focuses mostly in the Federal District with 55% of production units, followed in importance by the state of Jalisco with a concentration of production units 13% and Nuevo Leon with 12%. Distribution centers are also in the states of Baja California, Chihuahua, Tamaulipas and Coahuila. However, the domestic industry of plastic household has experienced a loss of national market share, mainly due to the presence of imported product, which has caused a drop in production levels, sales, employment and utilization of installed capacity (sectoral monitoring report, 2010). This industry achieved gradually excel internationally without either true that they are more imports, exports have achieved a stable increase in number and average 9.67% annually.

Metalworking sector

Information in the Ministry of Economy said that the metalworking industry contributes 14% of manufacturing GDP in Mexico. The companies in this sector, according to data Canacintra, a chamber grouping all industries in which its activities are related to the processing, metal rolling or extrusion. In this sense, the engineer Marco Antonio Ruiz Alonso, president of the Metal National Sector of Canacintra said that the vision of growth in the engineering sector in Mexico may be interesting, "as they have heard many statements regarding investment national and international large corporate Mexico, this because our country has once again pose an interesting and profitable market for investors (metalmecanica.com, 2015).

The metropolitan area of Guadalajara, and more broadly the state of Jalisco, forms an industrial region in western Mexico. His most intensive development began in the 1950s under the weight of the

general characteristics of Mexican capitalism stunted. This area of West specializes in a commercial function as administrative center, in the production of consumer goods with diversified industrial plants and mainly with small-scale production units.

The branch mechanical and metal in other contexts has been the basis for quantitative and qualitative growth of productive forces emerged, like the rest of Jalisco industries, in small workshops. Artisanal ways and mostly focused on repairs or services with imported machinery but without a proper initial dynamism, and their proliferation.

The metalworking industry is the sector that includes industrial machinery and tools providers to other metal parts industries, and its basic input metal and iron alloys for use in productive capital goods, related to the branch.

Metalworking, studying everything about metal industry from obtaining the raw material to its conversion into steel and then the industrial transformation process for obtaining sheets, wire, plates, etc. This can be processed to finally obtain a product of everyday use.

Metalworking equipment produces TV, radio and communication. It is important to clarify that when we talk about the production of electronic devices, may be diverted to what is the definition of metalworking. However, according to the classification these devices are included, even some fully electronic and an LCD TV.

The most important primary industry which provides inputs to the metalworking industry is mining, and the most benefited sectors of metalworking inputs are manufacturing, which consumes almost 50% of the derivatives, including construction and agriculture, in Overall, consume 30% of mechanical metal inputs produced in the country.

The most developed countries in the metalworking industry in the world are the United States, Japan, China, Germany and Spain, which have subsidiaries of multinationals in several countries to import their machinery and the implementation of cutting-edge technology to further industrial development in this key branch of mining (metalmecanica.com, 2015).

Methodology

The surveys were conducted in 500 manufacturing SMEs in Guadalajara, Mexico, from March to July 2013. Surveys were 500, and the number of employees was 11 to 250, simple random sampling was used, and the universe was 2847 SMEs.

In addition, there are eight hypotheses that contribute to this research:

H1: better product development, better market effect.
H2: better price, better market effect.
H3: Best strategy Plaza, the better the effect on the market.
H4: Best strategy to promote better impact on the market.
H5: Level of higher financial performance, better competitiveness of businesses.
H6: upper level cost reduction, improved competitiveness of enterprises.
H7: higher level use of technology, improved competitiveness of enterprises.
H8: Best marketing strategy, improved competitiveness of enterprises.

All items are based on a 5-point Likert scale with 1 = strongly disagree and 5 = strongly agree as limits

A confirmatory factor analysis (CFA) with maximum likelihood method was performed, was used to measure the reliability and validation of the level of intellectual capital and business competitiveness through EQS 6.2 software Bentler (2005), Brown (2006) and Byrne (2006).

Analysis and discussion

Table 2 shows the Cronbach's alpha and IRC exceeds the recommended value of 0.70 by Nunally and Bernstein (1994), and variance extracted index (VEI) for the model variables are calculated, resulting in a higher value 0.50 (Fornell and Larcker, 1981). And the evidence of convergent validity, the CFA results indicated that all elements related factors are

significant ($p < 0.001$) and the size of all standardized factor loadings are greater than 0.60 (Bagozzi & Yi, 1988).

Table 2
Internal consistency and convergent validity of the theoretical model

Variable	*Indicator*	*Factorial load*	*Robust Value T*	*Cronbach's alpha*	*IRC*	*VEI*
Product	MPP4	0.625 *	1,000 *	0.783	0.771	0.513
	MPP6	0.633 *	12.456			
	MPP8	0.654 *	14.389			
	MPP10	0.690 *	12.110			
	MPP13	0.652 *	10.315			
Price	MPR2	0.688 *	1,000 *	0.717	0.710	0.547
	MPR3	0.644 *	10.967			
Place	MPL1	0.617 *	1,000 *	0.875	0.873	0.519
	MPL2	0.652 *	15.632			
	MPL3	0.658 *	14.782			
	MPL4	0.624 *	13.855			
	MPL5	0.644 *	14.306			
	MPL6	0.605 *	15.135			
	MPL7	0.648 *	13.418			
	MPL8	0.669 *	15.462			
	MPL10	0.684 *	15.443			
	MPL11	0.653 *	12.705			
Promotion	MPO1	0.704 *	1,000 *	0.898	0.892	0.514
	MPO2	0.699 *	20.012			
	MPO3	0.733*	16.611			
	MPO4	0.781 *	19.124			
	MPO5	0,753 *	19.614			
	MPO6	0.692 *	17.194			
	MPO7	0.776 *	19.679			
	MPO8	0.686 *	18.428			
Performance	FP1	0.692 *	1,000 *	0.823	0.851	0.533
	FP2	0.786 *	16.985			
	FP3	0.761 *	15.814			
	FP4	0.723 *	14.210			
	FP5	0.729 *	11.197			

Variable	*Indicator*	*Factorial load*	*Robust Value T*	*Cronbach's alpha*	IRC	VEI
Costs	PC1	0.625 *	1,000 *	0.743	0.747	0.519
	PC3	0.644 *	10.245			
	PC4	0.703 *	10.723			
	PC5	0.656 *	10.186			
Technology	ST1	0.774 *	1,000 *	0.883	0.887	0.544
	ST2	0.787 *	21.899			
	TE3	0.781 *	22.271			
	TE4	0.766 *	21.418			
	TE5	0.715 *	17.888			
	RE6	0.788 *	21.352			

S BX^2 (df = 1354) = 1922.741 (p < 0.0000); NFI =.846; NNFI =.943 CFI =.956; RMSEA =.032
* = Parameters in identifying processes.

Table 3 shows the resulting two-way action. First the estimated factors correlated with a confidence interval of 90% according to Anderson and Gerbing (1988) is shown. Second, the extracted variance between the pair of constructs must be greater than the index of variance extracted (IVE) according to Fornell and Larcker (1981).

Table 3
Discriminant validity of the measures in the theoretical model

Variables	*Product*	*Price*	*Place*	*Promotion*	*Financial Performance*	*Costs*	*Tecnology*
Product	*0.513*	0.512	0.457	0.392	0.346	0.132	0.421
Price	0.381, 0.644	*0.547*	0.283	0.292	0.345	0.142	0.198
Place	0.334, 0.576	0.188, 0.395	*0.526*	0.614	0.374	0.175	0.584
Promotion	0.269, 0,496	0.173, 0.399	0.465, 0.766	*0.531*	0.412	0.183	0.589
Financial Performance	0.237, 0.435	0.234, 0.447	0.262, 0.474	0.286, 0.514	*0.559*	0.237	0.772
Costs	0.162, 0.219	0.049, 0.234	0.062, 0.244	0.071, 0.272	0.139, 0.341	*0.521*	0.716
Technology	0.298, 0.537	0.066, 0.305	0.448, 0.729	0.433, 0.731	0.598, 0.934	0.546, 0.879	0.563

The hypotheses were tested model using Structural Equation competitiveness and EQS 6.1 software as established by Bentler (2005) Byrne (2006) (Brown, 2006) and shown in Table 4.

Table 4
Results for the theoretical model of Marketing and Competitiveness

Hypothesis	*Structural Relationship*	*Standardized Coefficient*	*Robust T Value*
H1: better product development, better market effect.	Product → marketing strategy	0.285***	9.425
H2: better price, better market effect.	Price → marketing strategy	0.298***	11.542
H3: Best strategy Plaza, the better the effect on the market	Place → marketing strategy	0.315***	12.193
H4: Best strategy to promote better impact on the market	Promotion → marketing strategy	0.345***	16.369
H5: Level of higher financial performance, better competitiveness of businesses.	Financial Development → Competitiveness	0.193***	15.116
H6: Upper level cost reduction, improved competitiveness of enterprises.	Costs → Competitiveness	0.112***	10.771
H7: Higher level use of technology, improved competitiveness of enterprises.	Tecnology → Competitiveness	0.201***	21.622
H8: Best marketing strategy, improved competitiveness of enterprises.	Marketing strategy → Competitiveness	0.445***	16.342

S BX^2 (df = 1354) = 1922.741 (p < 0.0000); NFI =.846; NNFI =.943; CFI =.956; RMSEA =.032

The Table 4 in relation to the H1 results get a β = 0.285, p <0.001, indicating that the product obtained has significant effects on marketing strategy. Regarding H2, one β = 0.298, p <0.001 is obtained, suggesting that the price has significant effects on marketing strategy. The H3 obtained β = 0.315 p <0.001, suggesting that Square has an effect on the marketing strategy of companies. H4 has the following results: β = 0.345, p <0.001, indicating that promotion has significant impacts on marketing strategies pair wing SMEs analyzed.

Regarding the H5, H6 and H7 hypotheses they indicate that the financial performance, cost reduction and use of technology also have significant effects on the competitiveness of the company. Finally the

results of the H8 hypothesis $\beta = 0.417$, $p < 0.001$, representing the marketing strategy have a significant impact on the competitiveness of SMEs.

Limitations

Major limitation is that the questionnaire was applied to managers or general managers, so the results may vary when considering other levels in the organization. It is recommended that future studies include the views of customers and suppliers to get results and have a bigger picture of what happens in business. Finally, according to the results, it is recommended to implement marketing strategies to improve competitiveness.

Conclusions

The objective of this research was indeed demonstrate that by generating development and implementation of marketing mix tools, will be a fantastic improvement in competitiveness and market position in the short and long term future of SMEs in the metropolitan area from Guadalajara. This work shows that SMEs in the industries of plastic and metal-working in Guadalajara have a broad correlation between variables mkt in levels of competitiveness, as shown in the results there is a consistency between the four Ps of mkt and performance financial, cost and technology. Those variables related to competitiveness can be used for management considers the financial performance of sales, financial results, good investment return, reduced debts over a period of three years, etc. However it is important to mention that within those variables there are elements that are not considered, especially in the area of marketing, such as brand identity, the brand on their products, developing new product lines or services, so that directly affects the competitiveness. It's important to mention that SMEs have a trained staff with knowledgeable, also high competitive advertising campaigns then the right and the most channels of communication resources to a market designed. Because of the above is very easy to see an increase in sales of all advertising campaigns.

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2
The influence of marketing mix in competitiveness of SMEs manufacturing of Aguascalientes

Luis Aguilera-Enriquez[1]
Marcela Vera-Gálvez
Octavio Hernandez-Castorena

Abstract

The purpose of this research is to evaluate the influence of marketing tools taking as "4P" in the competitiveness of Small and Medium Enterprises (SME) manufacturing state of Aguascalientes. For this, a linear regression analysis using the SPSS V21 program, where a sample of 288 SMEs in the manufacturing sector was considered state of Aguascalientes, Mexico stratified proportionally to the size and business sector performed; with a significance level of 95%. The results show that the Marketing Mix has a significant influence on the competitiveness of manufacturing SMEs, for which you must highlight the importance of implementing the 4Ps, with the product, price, Place and Promotion for greater competitiveness in the Financial Performance, Cost of Production and Technology.

Keywords: Marketing mix, Competitiveness, SMEs.

1. Universidad Autónoma de Aguascalientes.

Introduction

In its broadest sense an SME is, „an economic unit that produces goods and services directed by her owner, in a personalized and autonomously, as small-scale a number of employees and market coverage“ And his Stratification is micro, small and medium enterprises, depending on the number of workers and sales made annually (Condusef, 2013).

At present the benefits the SMEs are very important to the country by the high rate job creation and contribution to Gross Domestic Product (GDP), that is why this type of companies are considered a central part of the country (Ochoa, Leyva and Lopez, 2014). Is research focuses primarily on the manufacturing sector SME status Aguascalientes, accounting for 9% and maintaining 32.7% of employed persons (INEGI, 2014).

While we must acknowledge that these economic entities face different circumstances of somehow remain competitive, one of the most worrying factor is the market due they lack previous nowledge of potential buyers and coupled with this product they are not tailored to meet their needs, and they expect customers go and make their orders rather than they themselves grow their market (Zapata, 2004).

That‘s why this research will focus on identifying the level of influence of themarketing mix ompetitiveness of manufacturing SMEs in Aguascalientes. Understanding marketing mix as one technique where four variables used are: product, price, place and promotion (Morales, 2006) competitiveness indicators used in this work are: financial performance, production costs and technology implementation (Demuner, Aguilera and Hernandez, 2010).

Literature Review

Manufacturing smes

The importance of SMEs has been increasing and has been widely recognized, given the impact practicing in the economy of a country with job creation and economic contribution (Cardozo, Velásquez & Rodríguez, 2012). In Mexico SMEs are the backbone of the national economy, the high rate of job creation and the contribution to the Gross

Domestic Product (GDP) (Ochoa, James Leyva and Lopez, 2014). Based on Statistics National Institute of Statistics and Geography in 2009, SMEs represent andl 4.8% of all companies, generating 26.4% of Gross Domestic Product (GDP) and 31.2% of employment nationally (Rangel, Aguilera, and Fernandez Gonzalez, 2014).

According to thrown by the economic census figures conducted by the National Institute of Statistics and Geography (INEGI) in 2014, nationwide there are a total of 5´664,515 economic units having 29´893,584 employed persons of which 8.5% ,(482.247) of the anufacturing sector are 5'004,479 of employed persons, 16.7% of the total (INEGI, 2014). In the case of the state of Aguascalientes are 62.066 economic units with a total of 380,689 employed persons; of which 9%, ie 5,586 are in the manufacturing sector with 124.485 of employed persons, 32.7% (INEGI, 2014).

Also manufacturing subsectors that account for a larger share of employment in Aguascalientes is ten. First, manufacturing of transportation equipment with a share percentage of 25.8%; the second, the manufacture of computer hardware, communication, measurement and other equipment, electronic components and accessories with 14.2%; the third industry food with 14.8%; the fourth, the manufacture of garments with 12.1%; the fifth, the fabricated metal products 7.2%; the sixth, the manufacture of furniture, mattresses and blinds with 4.4%; the seventh, the manufacture of machinery and equipment by 3.1%; the eighth, the manufacturing textile products, except clothing 3.0%; the ninth manufacturing products based on nonmetallic minerals with 2.8% and finally the tenth industry beverages and snuff with 2.8% (INEGI, 2014).

Marketing Mix

At present, the increase of technological change, globalization, the enhancement competition, plus multiple options that include consumers, businesses should seek and create competitive to survive in the market (Ortiz, 2014) benefits. The Marketing is a discipline that provides lines of action needed to be competitive in el business world, to have the right to know the markets activities, and based to thereby create products and / or services to be offered to consumers (Rojas Briceño, 2007).

One of the techniques used are the marketing mix, one of the central concepts Modern marketing, because it is derived from everything that can make the company influence the market demand for your product (Morales, 2006); this concept arises in 1962 by Jerome McCarthy, defining it as the " assembly means that a company uses to achieve its objectives, classifying into four product groups, price, place and promotion" (Espuga, 2015). Also it is known as "the set of controllable tactical marketing tools product, price, place and promotion company that mixture to produce the response it wants in the target market" (Rojas, et al., 2007).

Significantly currently marketing mix to refer to other terms are also used, as Representing an important factor for the companies can achieve their objectives, the desired level of sales (Morales, 2006) and Fisher a higher level of satisfaction compared to the competition (and Mariher Morales, 2006). The following describes each of the variables that make up the marketing mix:

Product

The product variable marketing mix, which includes goods and services (Rojas et al., 2007), encompassing physical objects, services, people, places, organizations and ideas; a business It offers consumers to purchase, use or consumption to satisfy a want or need (Kotler and Armstrong, 1993). However, the product must have qualities lmake you different and unique, because with the emergence of similar products, they must have with attributes that attract consumer attention, such as the brand, color, size, label and packaging (Torres, 2009).

Price

Price is the second variable of the marketing mix, and is the amount of money required for purchase a product and / or service (Morales, et al., 2006), and through the sum of values, which are performs an exchange (Rojas, et al., 2007). But we must remember that it is not a simple task pricing, because it must take into account factors such as the mixing tools, the company costs, competitive prices and also due to know the market, and whether it is willing to pay a high price for the product or failing or consume more if it has a lower price (Torres, 2009).

Square

The square is the third variable, and refers to the distribution channel, which is the set of necessary to transport the finished products for the various outlets and activities This is done using intermediaries, ie with people in charge of getting the products and / or consumer services (Morales, et al., 2006). It should highlight its importance because markets are constantly changing and increasingly more demanding consumers, that is why the time of transfer of the product, the distribution channel should answer questions what, how, when and where to make the consumer (Salom and Sepulveda purchase, 2012).

Promotion

Promotion is the fourth and last variable, where use of advertising techniques done, promotion and direct marketing for attaining the relevant objectives (Rojas et al., 2007). This variable has four main elements, the first advertising: being any form of non-personal presentation and promotion of ideas, goods and / or services; the second the sales promotion: they are short-term incentives to encourage the purchase or sale; the third the unpaid advertising: that is the motivation of the demand for the product and / or service achieved put in print, radio, television etc. Provided they do not generate any cost; Y personal sales finally: which is the oral recommendation to buyers to achieve Sale (Kotler, et al., 1991).

The competitiveness of manufacturing SMEs

Today the constant change and globalization have resulted in markets grow day by day, and with it, consumers are more demanding and selective. Consequence the above companies should focus on their products, so that they are of better quality and have a competitive price in order to position itself in the market (Ortiz, 2014). Entering the conceptualization of competitiveness is evident that the term is very complex, It has been studied from the viewpoint of different disciplines, but has not reached a and only accepted concept (Soleiro and Castañon, 2005).

However, it is important to note that competitiveness is a concept that comes to the pair science of economics, and it has evolved as time passes; Adam Smith said, for countries to be competitive was the reduction of costs through the division and specialization of labor, but for David Ricardo competitiveness is harnessing more profitable than its competitors on the market For Guzman (1997) lto competitiveness is represented by the ability of a company to sustain and maintain a prominent position (Demuner, et al., 2010) and (Franco, Restrepo and Sanchez, 2014) innovation, business resources, human resources, nagement skills, resources financial, culture and quality of product or service. To (Demuner, et al., 2010) companies They should focus their attention on leverage their economic, technological and human resources; for (Saavedra y Tapia, 2012) „The company ‚s competitiveness depends on productivity, participation in domestic and foreign markets, the inter- relationships, the sector and regional infrastructure" and for Aragon (2005) companies must have the ability to acquire and coordinate resources and capacities (Aguilera et al., 2011). In this paper factors competitive analysis are: financial performance, production costs and technology implement manufacturing SMEs in the state of Aguascalientes.

Production costs:
We understand costs as "the set of elements that seek to achieve the most ideal possible costing of the outputs of the system in accordance with the objectives of planning and control" (Garcia Marin and Martinez, 2006), the importance is that the prices of products the company offers, suffice to cover production costs and turn a return on capital invested, then profitability will be reflected and will have a greater market presence (Licona, et al., 2014).

Financial performance:
To make the company competitive and thus be successful, you need a high level of performance Financial, namely that SMEs have a short-term financial planning to avoid any liquidity problem and thus have a solid financial base (Aragon, 2005).

Technology:
Importantly, all companies regardless of their size make use of technology, and are rudimentary methods or edge (Demuner and Mercado, 2011). For Bell and Pavitt (1995) Technology is going to see reflected in the routine production and management (Demuner and Mercado, 2011). However, SMEs need to keep up on the subject of technology and implement the necessary prior knowledge, because this will help them improve their products, raise productivity and increase economic benefits (Arroyo, Quezada and Vasquez, 2012), but must be careful not to adopt the technology just because the competition is working for you, but should contextualize to the company but will fated (Rubio, et al., 2006).

Our hypothesis for this work that we will see the influence of the marketing mix on the competitiveness of the SME manufacturing the state of Aguascalientes, they are as follows:

H1: The greater the identity of the product in the consumer greater financial performance of manufacturing SMEs.
H2: A better price, higher financial performance of manufacturing SMEs.
H3: A greater control of plaza, greater financial performance of manufacturing SMEs.
H4: The greater dissemination and promotion, greater financial performance of manufacturing SMEs.
H5: The greater the identity of the product in the consumer, lower production costs of manufacturing SMEs.
H6: A *better* price, lower production costs of manufacturing SMEs.
H7: A greater control of the square, lower production costs of manufacturing SMEs.
H8: The greater dissemination and promotion, lower production costs of manufacturing SMEs.
H9: The greater the identity of the product in the consumer greater vision in integrating technology SMEs *Manufacturing.*
H10: A best price, the greater vision in integrating technology manufacturing SMEs
H11: A greater control of plaza, greater vision in integrating technology manufacturing SMEs.
H12: A wider dissemination and promotion, greater vision in integrating technology manufacturing SMEs.

Table 1
Data Sheet

Indicator study	*Description*
Universe	Small and medium enterprises in the manufacturing sector las which they are between 11 and 25 employees
Geographic ambit	Nacional
Population size	442
Simple size	288
Procedure showsl	Stratified sampling proportional to size and sector company
Error showsl	+/- 8
Confidence level	95 %; Z = 1.96; p = q = 0.5
Period of the fieldwork	August to December of 2013

Source: Made by ourself.

The measuring instrument was applied to manufacturing SMEs in Aguascalientes is contained the following blocks: Marketing to block took into account four basic factors: product composed of 13 items; price consists of 7 items; square composed of 11 items; And promotion consists of 8 items, measured 1-5 Likert scale which are operationalized from total disagreement to total agreement, same as shown in Table no. 2: Adapted from Buckley et al. (1988) and Chang, et al., (2004) ranging from total disagreement to total agreement, it shown in Table 2:

Table 2
Assessment Scale Marketing (product)

MPP1	It has an identity or brand of their products.
MPP2	Constantly developing new products.
MPP3	Developing new product lines and services.
MPP4	It has changed product lines or emergency services.
MPP5	Compared with the competition, my company is often the first to introduce new Products or services.
MPP6	It is distinguished by the quality of their products.
MPP7	It is distinguished by the expertise in their products.
MPP8	It focuses on maximizing the needs of its customers in terms of the requirements their products.
MPP9	It focuses on maximizing the needs of its customers in terms of the requirements their products.

MPP10	Invest resources in developing new products or services
MPP11	Conducts market research for the development of new products or services.
MPP12	It is very sensitive to how the customer evaluates its products and services, so if required changes are made immediately.
MPP13	It has a brand design, logo, symbol, slogan, packaging, etc. Their products and services to maximize their image and marketing.
MPR1	Influences or controls the distribution channels for its products.
MPR2	The prices of our products are lower than those of competitors
MPR3	The prices of our products are suitable according to the costs that have
MPR4	The prices of our products vary depending on the number of products we buy.
MPR5	We apply a policy of cash discount.
MPR6	We apply a pricing strategy
MPR7	Commonly we negotiate the price of our products to our customers.
MPL1	Influences or controls the distribution channels for its products.
MPL2	Develops and implements innovative distribution techniques.
MPL3	Use highly skilled and efficient sales agents.
MPL4	It has products that are widely accepted by intermediaries canal.
MPL5	Efficiently solve their logistics problems.
MPL6	It has a flexibility in their logistics processes.
MPL7	Properly managed supply chain.
MPL8	It stays permanently in touch with distributors.
MPL9	Uses software to control orders and deliveries.
MPL10	It has a system to control the perception of brand value of their products by your intermediaries and distributors.
MPL11	Often outsourced distribution activities and logistics.
MPO1	Take every communication tool to promote your products or services.
MPO2	He has a responsible person capable of monitoring the promotion of its products or services.
MPO3	The advertising we do is better than making the competition.
MPO4	The media we use are adequate.
MPO5	The investment we make in advertising is right.
MPO6	The advertising we do is aimed at our target market.
MPO7	We carry out promotional campaigns constantly our products.
MPO8	We carry out promotional campaigns constantly our products.

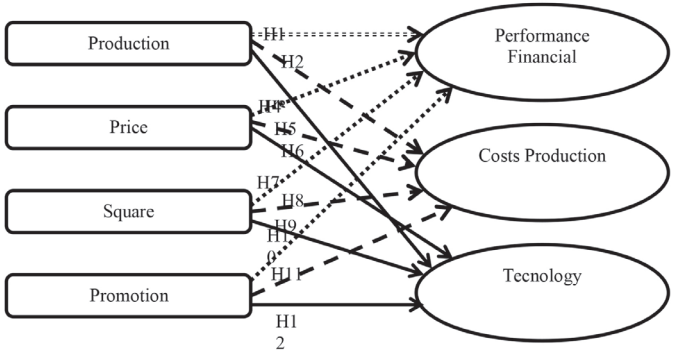
And finally, for the second block, measuring the level of competitiveness is taken into account three elementary factors: financial performance consists of 6 items; reducing costs Shopping composed of 6 items; and using technology consists of 6 items, adapted Buckley et al. (1988) and Chang, et al., (et al.) (2005) ranging from total disagreement to total agreement, same as shown in table 3:

Table 3
Scale to measure competitiveness

FP1	Our return on investment has been very good in the last three years
FP2	Our sales have been very good in the last three years
FP3	Our financial results have been very good in the last three years.
FP4	Our profits have been good in the past three years
FP5	Our debts have declined significantly over the last three years
FP6	Loans contracted in the last three years have been at preferential rates.
PC1	The costs of coordination with our suppliers are low
PC2	Costs orders with our suppliers are low
PC3	Transportation costs are low with our suppliers
PC4	The costs of deliveries of products with our suppliers are low.
PC5	The costs of raw materials and inputs with our suppliers are low.
PC6	Production costs of our company are low
TE1	Development of technologies
TE2	Development of products and / or services
TE3	Development of production processes and / or services
TE4	Project Planning
TE5	Improvement of machinery and equipment
TE6	Development of information technology

Then in Figure no. 1 The theoretical model designed for this work is shown research and measuring the influence of marketing on the Competitiveness of SMEs Manufacturing Aguascalientes:

Figure 1
Theoretical Model of the Research



Results and discussion

A multivariate analysis was applied through the statistical technique of linear regression low the method of successive steps through the IBM SPSS Statistical Software V21, in order to test the research hypothesis. Next, the summary of each of the models presented, being These 12. Table 2 summarizes the first model is presented, in which a value of R was obtained of 763, and an R2 of 0.424, indicating that the production variable is related in 65.1% with variable Financial Performance and structure of the theoretical model explained in 42.4%.

Table 2
Summary of first modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	.651[a]	.424	.366	.69651	1.419

a. Variable predictoria: (Constant). Production
c. Dependent variable: Financial performance
Source: Compiled from data obtained in the SPSS software version 21

In Table 3, the second model concerning the relationship of price and performance ariables

Financial, in which a value of R of .652 and .425 R2 was obtained, indicating that ye Pricel

Financial performance are correlated in 65.2% and a theoretical model 42.5%.

Table 3
Summary of the second modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	.652[a]	.425	.396	.69138	1.640

a. Variable predictoria: (Constant). Square.
c. Dependent variable: Financial performance.
Source: Compiled from data obtained in the SPSS software version 21.

In Table 4, the third model concerning the relationship of the variables Plaza and Financial Performance, in which a value of R of .467 and .218 R2 was obtained, indicating that the Plaza and Performance Financial correlate in 46.7% and a theoretical model 21.8%.

Table 4
Summary of the third modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	.467[a]	.218	.153	.81252	1.174

a. Variable predictoria: (Constant). Square.
c. Dependent variable: Financial performance.
Source: Compiled from data obtained in the SPSS software version 21.

In Table 5, the fourth model concerning the relationship of the variables Promotion and Performance Financial, in which a value of R of .354 and .126 R2 was obtained, indicating that the Promotion and financial performance are correlated in 35.4% and a theoretical model 12.6%.

Table 5
Summary of fourth modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	.354[a]	.126	.076	.85685	1.093

a. Variable predictoria: (Constant). Promotion.
c. Dependent variable: Financial performance.
Source: Compiled from data obtained in the SPSS software version 21.

In Table 6, the fifth model concerning the relationship of the variables Product and Costs Production, in which a value of R of .646 and .418 R2 was obtained, indicating that the Product and Production Costs are correlated by 64.6% and on a theoretical model 41.8%.

Table 6
Summary of the fifth modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	.646[a]	.418	.359	.59522	1.521

a. Variable predictoria: (Constant). Product.
c. Dependent variable: Production costs.
Source: Compiled from data obtained in the SPSS software version 21.

In Table 7, the sixth model concerning the relationship of the variables Price and Production Costs, in which a value of R of .542 and .294 R2 was obtained, indicating that the price and Costs Production are correlated in 54.2% and a theoretical model 29.4%.

Table 7
Summary of the sixth modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	·.542[a]	.294	.258	.65005	1.595

a. Variable predictoria: (Constant). Price.
c. Dependent variable: Production costs.
Source: Compiled from data obtained in the SPSS software version 21}.

In Table 8, the seventh model concerning the relationship of the variables Plaza and Production Costs in which a value of R of .498 and .248 R2 was obtained, indicating that the Plaza and Costs Production are correlated in 49.8% and a theoretical model 24.8%.

Table 8
Summary of the seventh modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	.498[a]	.248	.185	.68289	1.353

a. Variable predictoria: (Constant). Square.
c. Dependent variable: Production costs.
Source: Compiled from data obtained in the SPSS software version 21.

In Table 9, the eighth model concerning the relationship of the variables Promotion and Costs Production, in which a value of R and R2 .555 .308 I was obtained, indicating that the Promotion and Production Costs are correlated in 55.5% and a theoretical model 30.8%.

Table 9
Summary of the eighth modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	.555[a]	.308	.268	.64440	1.495

a. Variable predictoria: (Constant). Promotion.
c. Dependent variable: Production costs.
Source: Compiled from data obtained in the SPSS software version 21.

Table 10 in the ninth model concerning the relationship of the variables Product and Technology, andl an R value of .558 and .311 unaR2 was obtained, indicating that the Product and Technology They are correlated in 55.8% and a theoretical model 31.1%.

Table 10
Summary of the ninth modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	.558[a]	.311	.242	1.11486	1.317

a. Variable predictoria: (Constant). Product.
c. Dependent variable: Technology.
Source: Compiled from data obtained in the SPSS software version 21.

In Table 11, the tenth model concerning the relationship of the variables Price and Technology, an R value of .734 and .539 R2 was obtained, indicating that the price and Technology They are correlated in 73.4% and a theoretical model 53.9%.

Table 11
Summary tenth modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	.734[a]	.539	.519	.90655	1.231

a. Variable predictoria: (Constant). Price.
c. Dependent variable: Technology.
Source: Compiled from data obtained in the SPSS software version 21.

Table 12 in the eleventh model concerning the relationship of the variables Plaza and Technology, in which a value of R of .650 and .422 R2 was obtained, indicating that the Plaza and Costs roduction are correlated in 60.5% and a theoretical model 42.2%.

Table 12
Summary eleventh modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	.650[a]	.422	.374	1.04872	1.211

a. Variable predictoria: (Constant). Square.
c. Dependent variable: Technology.
Source: Compiled from data obtained in the SPSS software version 21.

And finally in Table 13, the twelfth pattern regarding the relationship of the variables Promotion and Technology, in which an R value of .441 and .195 R2 was obtained, indicating the Plaza and the production costs are correlated in 44.1% and a theoretical model 19.5%.

Table 13
Summary twelfth modeloc

Model	*R*	*R squared*	*R squared corrected*	*Standard error of to estimate*	*Durbin – Watson*
1	.441[a.]	.195	.149	1.20328	.961

a. Variable predictoria: (Constant). Promotion.
c. Dependent variable: Technology.
Source: Compiled from data obtained in the SPSS software version 21.

Now, in accordance with the results of the linear regression are presented in Table 14, is concludes that about 45.7% of the financial performance due to manufacturing SMEs Product greater identity in the consumer, it significantly influence with a value of t 2600, a 0.05 level of significance; Price improvement influences so significant at 47.4%, as its value is 3,810 t, to a 0.05 significance level; and Plaza influences control 42%, as its value is 1,909 t, a level of significance 0.5; and the dissemination and promotion influences 3.8%, as its value is 14,440 t, a level significance 0.05.

Table 14
Results Multiple Linear Regression Analysis

Variables	*Financial Performance*	*Results*
Product	0.457** (2.600)	R^2 Ajustada= .366 Valor de F= 7.294
Price	0.474** (3.810)	R^2 Ajustada= .396 Valor de F= 14.465
Square	0.420** (1.909)	R^2 Ajustada= .153 Valor de F=3.324
Promotion	0.038** (14.440)	R^2 Ajustada= .076 Valor de F=2.514

***P ** P < 0.05
Source: Compiled from data obtained in the SPSS software version 21.

Also, according to the results of the linear regression are presented in Table 15, is oncludes that about 38.8% of the decrease in production costs of SMEs manufacturing is due to a greater identity of the product in the consumer, so this influence significant, with a p value of .059, a 0.05 level of significance; Price improvement influences at 44.6%, as its value is 5,114 t, to a 0.05 significance level; control Square affects 41.5%, since its value is 13,927 t, to a 0.05 significance level; and the Dissemination and Promotion influenced by a 1.99%, since its value is 15,421 t, a level of significance.

Table 15
Results Multiple Linear Regression Analysis

Variables	*Production Costs*	*Results*
Product	.388** (4.059)	R^2 Ajustada= .359 Valor de F= 7.115
Price	.446** (5.114)	R^2 Ajustada= .258 Valor de F= 8.136
Square	.415** (13.927)	R^2 Ajustada= .185 Valor de F=3.923
Promotion	.199** (15.421)	R2 Ajustada= .268 Valor de F= 7.789

***P ** P < 0.05.
Source: Compiled from data obtained in the SPSS software version 21.

And finally, according to the results of the linear regression are presented in Table 16, is concludes that about 43.7% of the vision in integrating technology SMEs manufacturing is due to a greater identity of the product in the consumer, so this influence significant, with a value of 2,553 t at a 0.05 significance level; Price improvement influences significantly to 66.1%, as its value is 2,968 t, a level of significance 0.05; Square controlling influence 57.6%, since its value is 2,891 t, a level.

Table 16
Results Multiple Linear Regression Analysis

Variables	*Production Costs*	*Results*
Product	.437** (2.553)	R^2 Ajustada= .242 Valor de F= 4.479
Precio	.661** (2.968)	R^2 Ajustada= .519 Valor de F= 22.889
Plaza	.576** (2.891)	R^2 Ajustada= .374 Valor de F=8.704
Promoción	.269** (4.844)	R^2 Ajustada= .149 Valor de F= 4.228

***P ** P < 0.05
Source: Compiled from data obtained in the SPSS software version 21.

Therefore, with respect to the assumptions made in this investigation, we conclude it following:

With respect to the H1, the results in Table 2 ($\beta = 0.651$, $p < 0.05$), indicating that the identity of the product in the consumer has positive effects on the financial performance of manufacturing SMEs, influencing 65.1% therefore H1 is accepted. The H2, the results in Table 3 ($\beta = 0.652$, $p < 0.05$), indicating that improved price has positive effects on the financial performance of anufacturing SMEs, affecting 65.2%, therefore it is accepted H2. The H3, the results in Table 4 ($\beta = 0.467$, $p < 0.05$), indicating that control of the Plaza has positive effects on the financial performance of manufacturing SMEs, influencing 46.7%, therefore it is accepted H3. H4, the results in Table 5 ($\beta = 0.354$, $p < 0.05$), indicating that the dissemination and promotion has positive effects on the financial performance of manufacturing SMEs, affecting 35.4%, thus accepting H4.

The H5, the results in Table 6 ($\beta = 0.646$, $p < 0.05$), indicating that the identity of the product in the consumer has positive effects on the production costs of manufacturing SMEs, influencing 64.6% at H5 both it accepted. H6 , the results in Table 7 ($\beta = 0.542$, $p < 0.05$), indicating that improved price has positive effects on the production costs of manufacturing SMEs, influencing 54.2%, therefore it is accepted H6. H7, the results in Table 8 ($\beta = 0.498$, $p < 0.05$), indicating that control of the Plaza has positive effects on the production costs of manufacturing SMEs, influencing 49.8%, therefore accepts H7.

The H8, the results in Table 9 ($\beta = 0.555$, $p < 0.05$), indicating that the dissemination and promotion has positive effects on the production costs of manufacturing SMEs, influencing 55.5%, therefore it is accepted H8. The H9, the results in Table 10 ($\beta = 0.558$, $p < 0.05$), indicating that the identity of the product in the consumer has positive effects on the integration of technology manufacturing SMEs, influencing 55.8% so H9 both it accepted. The H10, the results in Table 11 ($\beta = 0.734$, $p < 0.05$), indicating that improved price has positive effects on the integration of technology manufacturing SMEs, affecting 73.4%, therefore it is accepted H10. The H11, the results in Table 12 ($\beta = 0.650$, $p < 0.05$), indicating that control of the Plaza has positive effects on the integration of technology manufacturing SMEs, influencing 65%, therefore H11 accepts.

And in H12, the results in Table 13 ($\beta = 0.441$, $p < 0.05$), indicating that the dissemination and Promotion has positive effects on the integration of manufacturing SME Technology, 44.1% influencing the-

refore H12 is accepted. Finally, the equations shown regression for the following twelve models, where are divided into three sets with their respective variables. The first set the value of Y1 represents the financial performance of SMEs manufacturing of Aguascalientes, in the second Y1 represents production costs and in the third Y1 represents the integration of technology. The first model is a function of the variable identify of the product in consumer.

$Y1= \beta_0 + (\beta_1 *$ identity of the product in consumer) $\pm e$

Financial Performance = 0.619 - X1 (0.160) + X2 (0.196) + X3 (0.20) - X4 (0.14) + X5 (0.46)
+ X6 (0.119) + X7 (0.195) + X8 (0.062) + X9 (0.96) + X10 (0.94) - X11 (0.109) + X12(0.125)
+ X13(0.053) + ℓ
The second model is a function of the variable price improvement.
$Y1= \beta_0 + (\beta_1 *$ price improvement) $\pm e$
Financial Performance = (0.721) + X1 (0.155) + X2 (0.269) + X3 (0.274) + X4 (0.047) + X5
(0.073) + + X6 (0.017) – X7 (0.095) + ℓ
The third model is a function of the variable square control.
$Y1= \beta 0 + (\beta 1 *$square control) $\pm e$
Financial Performance = (2.550) + X1 (0.023) + X2 (0189) - X3 (0.059) - X4 (0.003) - X5(0.115) - X6(0.015) + X7 (0.154) - X8(0.026) + X9 (0.197) + X10 (0.010) - X11 (0.039) + ℓ

The fourth pattern is a function of promoting the diffusion variable
$Y1= \beta 0 + (\beta 1 *$ square control) $\pm e$

Financial Performance = (3.333) + X1 (0.209) - X2 (0.039) + X3 (0.117) + X4 (0.204) - X5(0.001) - X6(0.123) - X7(0.196) -X8 (0.125) + ℓ

For the second set where Y1 represents production costs of manufacturing SMEs Aguascalientes, the fifth pattern is variable depending on the product identity in consumer.

Y1= β0 + (β1 * product identity in consumer) ± e
= Production costs (1,430) - X1 (0.192) + X2 (0.219) + X3 (7.587E005) + X4 (0.027) - X5 (0.130) + X6 (0.045) + X7 (0.125) + X8 (0.083) + X9 (0.097) + X10 (0.002) + X11(0.018) + X12(0.193) - X13(0.008) + ℓ

In the sixth pattern is a function of the variable best prices:
Y1= β0 + (β1 * best prices) ± e = Production costs (1,592) + X1 (0.279) + X2 (0.003) + X3 (0.027) + X4 (0.014) - X5 (0.029) + X6(0.133) + X7(0.032) + ℓ

In the seventh model is based on the variable square control.
Y1= β0 + (β1 * square control) ± e = Production costs (2,465) + X1 (0.142) - X2 (0157) + X3 (0.045) + X4 (0.079) - X5(0.097) + X6(0.199) - X7 (0.022) - X8(0.077) + X9 (0.156) + X10 (0.016) - X11 (0.011) + ℓ
And finally in the eighth model is based on variable spreading promotion.
Y1= β0 + (β1 * spreading promotion) ± e = Production costs (2,677) + X1 (0.332) - X2 (0205) - X3 (0.031) + X4 (0.159) - X5(0.001) - X6(0.0.65) - X7(0.005) -X8 (0.007) + ℓ

And finally the third set where Y1 represents the integration of technology SMEs Aguascalientes manufacturing, the ninth pattern is a function of the variable product identity In consumer
Y1= β0 + (β1 * product identity in consumer) ± e
Technology = - (1,181) - X1 (0.160) + X2 (0.138) + X3 (0174) - X4 (0.100) + X5 (0.106) +X6 (0.228) + X7 (0.169) + X8 (0.243) + X9 (0.035) - X10 (0.149) + X11 (0.013) + X12(0.093)+ X13(0.240) + ℓ
The tenth pattern is a function of the variable best prices.

Y1= β0 + (β1 * best prices) ± e
Technology = (2.465) + X1 (0142) - X2 (0157) X3 + (0.045) + X4 (0.079) - X5 (0097) + X6(0.199) - X7 (0.022) - X8(0.077) + X9 (0.156) + X10 (0.016) - X11 (0.011) + ℓ
-
The eleventh model is a function of the variable square control.
Y1= β0 + (β1 * best prices) ± e

Technology = (0.786) + X1 (0278) - X2 (0026) - X3 (0134) + X4 (0184) + X5 (0.190) - X_6(0.303) - X_7 (0.052) + X_8(0.064) + X_9 (0.152) + X_{10} (0.404) - X_{11} (0.111) + ℓ

Finally, the twelfth pattern is a function of promoting the diffusion variable.
Y1= β0 + (β1 * best pices) ± e

Technology = (1.570) + X1 (0387) + X2 (0.003) + X3 (0089) + X4 (0.374) - X5 (0.079) - X_6(0.279) - X_7(0.034) -X_8 (0.069) + ℓ

Finally, it is important to note that the theoretical model proposed in this study reflects limportance of the marketing mix to manufacturing SMEs in Aguascalientes. That is, for greater competitiveness as enterprise should guide efforts to offer products with which the consumer will feel identified, improve product prices, have increased Control of the square and emphasize the dissemination and promotion of it; which entail having increased financial performance, lower production costs and a vision of integration technology.

Conclusions

The results obtained in this investigation, through regression analysis Onlinel with the help of SPSS V21, show that the marketing mix well yes.

It influences the competitiveness of manufacturing SMEs in Aguascalientes, to obtain data required to accept the twelve assumptions described above. Importantly, as dependent variables to measure financial performance competitiveness was taken, the decrease production costs and technology implementation.

And as independent variables tools focused marketing mix were used SME manufacturing context, the first is to create products which people. They feel identified and that motivates them to consume, but you must first have knowledge of the interaction between business and consumer (Marquez, Molina and Garcia, 2014) i.e. market which is aimed a product and / or service; the second variable is the best price, i.e. it competitive and consumers are not convinced to buy the company and not with the competition; the third variable is the control

of the square, ie maintain distribution channels appropriate to ensure that products arrive on time and to the outlets and finally the fourth variable is the promotion and advertising, all activities of some form encourages people to buy the product and / or service.

It should be noted that of the four variables in the marketing mix that exerts a greater influence on andl financial performance is improving price with a 65.2%, second identity consumer product with 65% in control third place with 46.7% and fourth lto promotion and advertising 35.4%. Unlike minimizing production costs, the variable that exerts the most influence is the identity of the product with 64.6% in the second promotion and advertising with a 55.5% improvement in third with 54.2% price and fourth control of the square with a 49.8%. And finally, in the implementation of technology first the price with 73.4%, in second place with control of 65% in third identityl product with 55.8% and fourthly advertising and promotion with a 44.1%.

And finally, to establish a strategic plan marketing mix will help SMEs manufacturing to meet market and thus their potential to create lines corresponding action to produce a more effective manner, focused to meet the needs thereof, also it helps as needs that should be covered be known, improve Price lI demand products is increasing, greater control of space and make the necessary advertising campaign to sell; which will help SMEs to stay in market and be competitive in a field that is increasingly at odds over by the immense amount producing similar products.

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3
Strategy for generating social value to promote development and combat poverty: the case of Guatemala

Tania Elena González-Alvarado[1]
Sara González-Fernández[2]
V. Ma. Antonieta Martin-Granados[3]

Abstract

The purpose of this article is to describe the internationalisation of smaller companies as a strategy for generating social value to promote development and combat poverty. An exhaustive study was performed on the study population, and therefore a statistical sample was not used. The research methods used were: questionnaire, systematic observation over five years, and review of documents. Guatemalan companies were found with the same study profile as those in Mexico, Argentina and Spain, but due to their geographic position the local impact was greater. These Guatemalan companies direct their social responsibility and value generation activities towards malnutrition

1. Centro Universitario de Ciencias Económico Administrativas-Universidad de Guadalajara.
2. Universidad Complutense de Madrid.
3. Universidad Nacional Autónoma de México.

problems that affect the population in extreme poverty. The main conclusion is that "it is not the amount of development cooperation that provides the greatest impact, but rather it is the way in which these resources are directed and applied." In the case analysed here, the focus on smaller companies in economically poor areas is what allows for the greatest impact.

Keywords: SME, Al-Invest, economically poor areas, rural development.

Introduction

In the last decade, the international cooperation system has considered the use of new types of aid with the participation of new actors (Sumner and Mallett, 2012; Pino, 2012; Cabral and Weinstock, 2010; Berger and Wissenbach, 2007; Grimm, et al., 2009).[4]

Even the first of the 17 Sustainable Development Goals aims to "end poverty in all its forms everywhere" by 2030. The targets aim to eradicate extreme income poverty (measured as less than $1.25 a day), reduce multi-dimensional poverty by half, universalise social protection, guarantee economic rights and strengthen the resilience of vulnerable people (Arriola, 2015).

Despite these changes, economically poor areas continue to receive key aid in the form of basic goods and services that other parts of the world take for granted, such as access to water, food (Berg, 1973) and housing. Studies on this type of development cooperation show that many projects have not been successful due to the lack of strategies that add value that can be shared (Renninger, 2013; Chandy and Kharas, 2011; Bardhan, 1993; Sanyal, 1991).

4. China has cancelled nearly USD 1.3 billion in debt owed by 31 African countries, abolished tariffs on 190 kinds of goods from 29 least developed countries in Africa and promised to do so for more than 400 goods; China's development assistance is set to increase substantially. Since 1956, China has completed some 900 projects of economic and social development in Africa, provided scholarships for 18,000 students from 50 African countries to study in China and it sent 16,000 medical personnel who have treated more than 240 million patients in 47 African countries (Berger and Wissenbach, 2007).

Economic development cannot be approached exclusively using a vision based on aggregate average indicators and the assumption that its operations are regulated only by national states or an alleged, unstoppable globalising logic (Alburquerque, 2001). Similarly, studies on development must go beyond quantifications to identify the "universal" (Perez and Mainwaring, 2015; Canul, et al., 2015, Cortés, 2015), focusing more on the nuances involved in local development which will allow for a greater understanding of different socio-economic realities.

This is the case of the reality of local development in Guatemala (Böckler and Herbert, 1970; Comas, et al., 1998; Bastos and Camus, 2003; Casas, 2007). Without being fully aware of it, societies such as Guatemala are immersed in globalisation. They enjoy the benefits globalisation provides (telecommunications, greater market opportunities), but they do not realise the damage that may be caused to their economy (extinction of companies with a certain level of competitiveness, invasion of foreign products that substitute their own), their culture (prioritisation of consumption, loss of values, loss of culture related to their Maya heritage), their natural resources (exhaustion of resources, climate change, greenhouse effect), to mention just a few (Del Cid, 2013; Chávez, 2015; Gorestein, 2015).

This international presence does not guarantee the sufficient dissemination of technical progress among the various local production systems. Productive linkages with external dynamic activities are reduced, net creation of skilled jobs is limited, and the effects of disseminating innovations in the productive base of each territory are diminished. This makes territorial policies to promote productive innovation and business development necessary, as well as policies to train human resources according to the needs in each local production system, and to ensure conditions of environmental sustainability in the different activities undertaken (Alburquerque, 2001). The important thing is to know how to incorporate this exogenous dynamism as a part of a local development strategy (Alburquerque, 2001; Colina, 2015; Diez, and Urtizberea, 2015).

One of the reasons that explain inequality in Guatemala is its multiculturalism; for decades, conditions have not facilitated the incorporation of all groups into the national education, health and justice systems under conditions that met their needs depending

on their identity. In recent decades, institutional efforts have been made, both by international bodies as well as national organisations, to implement programmes that promote inclusion and adapt to a certain (modest) degree the services offered to the unique characteristics of each group (Del Cid, 2013). The critical situation of the Guatemalan people is reflected in the percentages of poverty in its different regions (called departments). The tendency is for poverty to be concentrated in rural areas. Departments that are more rural have the highest poverty rates (Del Cid, 2013).

Diaz (2015) analysed four Guatemala municipalities. Two were characterised by large-scale production, while the other two had small-scale production. The study concluded that agriculture can be a driver of local development when it is small-scale and oriented toward the market, as occurs in Almolonga and El Progreso. When agriculture is larger-scale, the contribution to local development may be lessened, as was the case in Santa Lucía Cotzumalguapa, or null, as in the municipality of El Estor. Statistical evidence, which was significant, indicates that in Guatemala local development generated by agriculture, especially small-scale agriculture, may contribute to reducing poverty (Diaz, 2015).

Guatemala has the highest population of any country in Central America. In 2011 it had 14.7 million inhabitants, with a population density of 135 inhabitants per km^2. The attached population pyramid shows that the majority of the population is young, as the pyramid has a wide base, and the age groups decrease as age increases. This distribution makes sense if we keep in mind that Guatemala has the largest population growth in Central America, with a rate of 2.4%. Thus, the average age of Guatemalans is barely 20 years old, which is again the lowest in Central America. Forecasts indicate that Guatemala will have 16.2 million inhabitants in 2015, 20.0 million in 2025, and 25.2 million in 2040.

Poverty and population in Guatemala

The distribution of the population by area of residence shows that 42.8% live in rural areas, while 57.2% live in urban areas. Guatemala has the largest indigenous population of any country in Central America; the distribution of ethnicities is estimated to be as follows: 59.4% Ladino, 40.3% Maya, 0.2% Garifuna, 0.3% Xinca, and 0.1% other. Multidimensional poverty increased by four percentage points, rising from 59.5% in 2006 to 62% in 2011. Obstacles to human development are even more severely felt among the indigenous population. 83% experience shortages in the three basic aspects (income, education and health) compared to 49% of the non-indigenous population (Valérie, 2015).

The percentage of dependents is the highest in Central America at 85%, not because there is a high percentage of people over 65 years old (just 4.4%), but rather due to the large numbers of children and adolescents under 14 years old, 41.5% (BCIE, 2012).

Table 1
Mortality rates due to malnutrition, 2005 and 2013

Region	*2005*	*2013*	*Difference*
República	20.7	11.5	-9.2
Guatemala	18.9	13.8	-5.1
El Progreso	10.3	7.3	-3.0
Sacatepéquez	31.3	17.6	-13.8
Chimaltenango	25.2	7.6	-17.6
Escuintla	23.1	11.2	-11.9
Santa Rosa	20.6	7.5	-13.1
Sololá	47.2	10.6	-36.7
Totonicapán	10.1	4.7	-5.4
Quetzaltenango	18.8	12.1	-6.7
Suchitepéquez	16.3	4.1	-12.2
Retalhuleu	7.5	7.9	0.3
San Marcos	26.6	13.5	-13.0
Huehuetenango	14.4	3.6	-10.8
Quiché	16.3	6.3	-10.0
Baja Verapaz	41.0	9.8	-31.2
Alta Verapaz	37.0	25.5	-11.5
Petén	3.3	3.8	0.5

Region	*2005*	*2013*	*Difference*
Izabal	18.8	5.5	-13.3
Zacapa	24.6	5.2	-19.4
Chiquimula	16.5	6.2	-10.3
Jalapa	12.1	3.9	-8.2
Jutiapa	9.7	4.2	-5.5

Source: Instituto Nacional de Estadística (National Institute of Statistics) (2015).
Note: Deaths due to malnutrition in one year, divided by the average population for that same year, multiplied by 100,000.

Malnutrition is a scourge that affects the country and children in particular. Child malnutrition in children under five years old is 49% by height and 23% by weight (BCIE, 2012).

Table 2
Percentage of chronic malnutrition in children under 5 years old by region

Year	*Guatemala*	*Alta and Baja Verapaz*	*Chiquimula, Izabal, El Progreso and Zacapa*	*Santa rosa, Jalapa and Jutiapa*	*Sacatepéquez, Escuintla and Chimaltenango*	*Sololá, Totonicapán, Quetzaltenango, Suchitepéquez, San marcos and Retalhuleu*	*Huehuetenango and Quiché*	*Petén*
1987	44.2	49.8	43.3	54.0	67.4	63.0	67.7	ND
1995	33.5	55.3	43.9	45.4	45.7	59.5	69.9	ND
1998	28.6	56.7	49.1	45.6	45.5	54.8	69.2	46.2
2002	36.1	61.0	39.7	46.6	42.1	58.5	68.3	46.1
2009	20.6	51.1	41.3	33.9	38.5	47.1	64.8	36.6

Source: National Survey on Maternal and Infant Health 2002 and 2008/09.

The housing deficit is high: close to 40.5%, but it is estimated that this problem is much more pronounced in terms of quality (61%) than quantity (39%). With regard to the provision of basic services, a high percentage of homes lack basic services: just 76.3% of homes have running water, just 81.8% have electrical lighting and only 40.3% have a waste removal system. Logically, these shortages are much more pronounced in rural areas than in urban areas (BCIE, 2012).

The country faces high poverty rates and marked income inequality. Poverty affects more than half of the population, 54.8%, while extreme poverty affects almost a third of the population at 29.1%. As with the housing deficit, the phenomenon of poverty is much more pronounced in rural areas, particularly in the country's high plateau, where there is a larger indigenous population, as can be seen on the attached map (BCIE, 2012).

In Guatemala, a third of young people 15 years of age leaves school and takes precarious jobs. To sum up, reducing poverty means eliminating the barriers that prevent people from *flourishing*. Investment and earning power are not enough. Guatemala must recognise its multidimensionality and the diversity of its expressions. This is only possible within the framework of a *country-based* development strategy, aimed at human beings and in the context of a shared, complex and potentially vulnerable planet (Arriola, 2015).

Table 3
Earned income in Guatemala by year for each group (2002-2014)

Year	*Total*	*Male*	*Female*	*Indigenous*	*Non-indigenous*	*From 15 to 24 years old*	*25 years old and above*	*Urban*	*Rural*
2002	1,216	1,412	879	923	1,434	967	1,303	1,597	853
2003	1,424	1,634	1,050	881	1,688	1,068	1,570	1,878	1,019
2004	1,205	1,339	951	817	1,397	1,008	1,269	1,502	820
2010	1,680	1,831	1,393	1,119	2,001	1,214	1,817	2,109	1,133
2011	1,685	1,801	1,443	1,198	1,988	1,229	1,828	2,113	1,223
2012	1,734	1,880	1,465	1,214	2,056	1,241	1,877	2,154	1,258
1-2013	1,917	2,028	1,703	1,325	2,241	1,490	2,039	2,274	1,499
2-2013	1,893	2,006	1,682	1,367	2,236	1,481	2,012	2,242	1,478
1-2014	2,083	2,253	1,758	1,235	2,457	1,492	2,263	2,652	1,345
2-2014	2,207	2,298	2,028	1,561	2,538	1,517	2,401	2,773	1,471

Source: Instituto Nacional de Estadística (National Institute of Statistics) (2015).

Inequality is high, regardless of the indicator used. The poorest decile receives just 1.0% of the national income, while the richest decile receives 47.4%. The Gini coefficient is 0.59. Guatemala has one of the hig-

hest levels of inequality in Latin America and the Caribbean and this region has the highest inequality levels in the world (BCIE, 2012).

Development cooperation and business relations: European Union-Guatemala

Business relations between the European Union and Guatemala have become more important in recent years. Currently, the European Union is the fifth largest receiver of exports from Guatemala, and is the fourth largest importer of goods to Guatemala. More than 172,000 Europeans visited Guatemala in 2009 (EU, 2015).

As a member of the Central American Integration System (SICA, for its Spanish acronym), Guatemala has a wide-ranging relationship with the European Union that includes political dialogue, a far-reaching cooperation agenda and, at the same time, it benefits from a favourable business system under the initiative to promote sustainable development and good governance included in the new Generalised System of Preferences (EU, 2015).

The interest in strengthening business ties between the EU and Guatemala has increased significantly thanks to the Association Agreement between the European Union and Central America (EU, 2015).

During the Fourth European Union-Latin America and Caribbean Summit held in Vienna, Austria in May 2006, heads of state and government from the European Union and Central America made the decision to begin negotiations regarding an Association Agreement, which implies establishing mutual commitments in three complementary areas: political dialogue, cooperation and trade (EU, 2015).

In terms of trade, the Association Agreement provides for the establishment of a free trade area between Central America and the EU, which means the effective implementation of a Customs Union between the Central American countries, a process that has made significant advances recently. Thus, one of the goals of the Country Strategy that provides the framework for European cooperation activities in Guatemala for the period 2007-2013 is to strengthen the country's capabilities in the fields of economic development and trade. Along these lines, the Project to Strengthen Guatemala's Position in International

Markets —Foguami, for its Spanish acronym— (€10 million) aimed to contribute to equitable, sustainable growth in the economy and employment by strengthening foreign trade in regional and European markets, promoting foreign investment, and increasing competition and competitiveness (EU, 2015).

Additionally, the project to Facilitate Guatemala's Participation in the Regional Integration Process and the Association Agreement with the European Union (€6.8 million) aims to improve the capabilities of the Guatemalan government institutions in charge of implementing the commitments arising from the Central American Regional Integration Process and the Association Agreement, and to encourage the participation of civil society in both processes (EU, 2015).

In addition to these bilateral programmes, the European Union finances the Regional Programme AL-Invest IV, whose Central American component includes specific activities for Guatemala (€2.6 million). The programme's goal is to contribute to improving social cohesion in the region (Mexico-Central America) by strengthening SMEs, increasing competitiveness, incorporating new technologies, improving processes and facilitating connections that contribute to better environmental management and internationalisation of products/services so as to take advantage of the opportunities offered by regional integration and free trade and business cooperation agreements with Europe (EU, 2015).

The Guatemalan projects that could avail themselves of the Spanish Carbon Fund encompass a wide variety of technologies, including biomass and agricultural waste. Agricultural waste such as rice hulls, sugarcane bagasse and paper plant residue, among others, are used to generate heat and electricity (Perez, 2012).

There is a Spanish Fund for Latin America and the Caribbean in collaboration with the World Band (SFLAC). This fund is directly related to the International Finance Corporation. This fund is particularly focused on providing better access to financing for micro, small and medium-sized enterprises. It also promotes infrastructure development with participation from the private sector and encourages social and environmental sustainability in the private sector.

Within this framework, the Spanish government has supported the CoST Initiative (Construction Sector Transparency Initiative) in Guatemala. This initiative began in the United Kingdom in 2008 with

the aim of combating corruption in the construction sector. Since then, seven countries have adopted this initiative. They are: Philippines, Vietnam, Tanzania, Ethiopia, Zambia, Malawi and the United Kingdom. Guatemala joined CoST as an associated country in November 2009, with financing from the Spanish government and technical support from the World Bank (Perez, 2012).

In 2008, Spain supported the creation of the Spanish Fund for Social Entrepreneurship (FEES, for its Spanish acronym), managed by the Multilateral Investment Fund (MIF). This fund provides resources to Latin American micro and small enterprises through productive activities and the provision of basic services (Perez, 2012).

The fund is part of the Social Entrepreneurship Programme (SEP) of the IDB, which promotes the development and implementation of financial mechanisms that encourage sustainable solutions to the socio-economic problems that affect poor, marginalised populations. The SEP provides financing through associated local organisations to individuals and groups who would normally not have access to commercial or development loans at regular market rates. Under the programme, the Bank awards loans and donations to private, non-profit organisations and local or regional governmental organisations that provide financial, business and social assistance, as well as community development services to disadvantaged populations (Perez, 2012). This cooperation between small units of production combined with the support provided through development cooperation have enabled economic activities to have a positive impact upon local development in economically poor areas. To better understand this phenomenon, this study used a combination of tools, an overlap of methods and triangulation of results.

Research method

The evidence gathered has been based on companies in the agro-industrial sector that participated in one or more international business fairs. The agro-industrial sector is the most representative in terms of the number of events held by the Eurocentro Nafin in the period between 2002-2009 (seven events of sixteen; of the 2724 companies that participate in the events, 1171 are from the agro-industrial

sector). By number of participants, Mexican and Spanish companies had a larger presence at said events.

European companies were eliminated from the list, except Spanish companies, leaving us with a group of 1112 companies for analysis. This last group was given an exploratory questionnaire that allowed us to identify enterprises that no longer existed so as to perform a second filter. Some directories used for the study were over ten years old (2002). Records of a considerable age were used so as to be able to retrospectively analyse the behaviour of the links between companies and other local agents.

Using this second filter, a group of 476 companies was obtained (42.8% of the 1112) who had a presence in directories; of these, 435 had a website (39.1% of the 1112). The Spanish companies (219) in this sector showed a greater ability for using virtual media: their websites are more visible; their web pages offer greater quality and use of resources, so much so that entering their websites translates into a virtual visit to the company; they have spaces to announce their attendance at fairs, missions and business meetings, describing their experiences at said events and the establishing of new contacts.

A third filter was performed according to the company's age, size, social responsibility, and strategies for creating links abroad. This resulted in a new group made up of 234 companies. Of these, 209 were from Mexico, Spain and Argentina (Gonzalez, 2015). Only 25 of the 234 companies were located in other Latin American countries. In this last group (234), six companies were identified as being the most representative in terms of social responsibility actions that had an impact upon local development (critical cases). Five of these companies were located in countries such as Mexico, Spain and Argentina, and one was located in Guatemala. Thus, the research results direct us to the particular study of Guatemalan companies. There are fewer Guatemalan companies compared to those from the other three countries. However, Guatemala is not as big as the others. This last point leads us to consider Guatemala to be a representative country, with the same importance to the project as Argentina, Spain and Mexico, although without the same ability to draw comparisons on the country level. Therefore, the company is analysed independently and within the framework of the 25 remaining companies.

For a greater understanding of the local economic context of said companies, document analysis was performed. This consisted of searching for written sources on the economic reality of Guatemala written by Guatemalan authors, so that the critical vision of those who were experiencing this reality could complement the analysis of the results obtained in this project. The information collected was used to better understand the current state (Villaseñor, 2014) of the analysis of local development in the country. Two key authors were identified who hold positions at a university in the country in question.

Table 4
Latin American companies with an impact on local development that participated in the study group (2010-2014)

Country	*Number of companies*	*Percentage*
Brazil	2	0.08
Chile	3	0.12
Colombia	4	0.16
Ecuador	2	0.08
Guatemala	5	0.2
Uruguay	5	0.2
Venezuela	4	0.16
Total	25	1

Source: Created by the authors based on the results obtained in the ULSA CA 0012/10 project.

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This first step involved identifying and selecting published sources. Research articles and essays published in open-access journals specialising in economic development, international economics, and

business were used. This media was chosen as it is considered to be the communication channel with the greatest degree of immediacy and precision to reflect how the Guatemalan reality is approached in terms of local development.

Analysis of results

The analysis presented here is focused on a group of companies due to their degree of representability in terms of their representative profile: Guatemala. The study is based on observable reality and focuses on practices that lead to the generation of social value for local systems. The traits identified may or may not coincide with some prescriptive models regarding corporate social responsibility (Gonzalez, 2015). Based on the study group obtained in the second research phase (435 companies), which allowed us to analyse the age and size of the companies, distinctive social responsibility traits were identified for each company. In order to perform an exhaustive study, different open-access sources of business information were used to complement and confirm the information provided by the companies themselves.

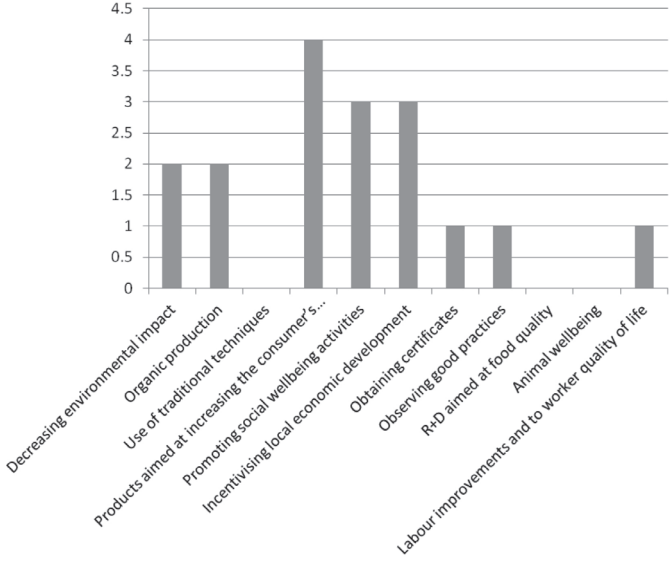
When a research project on *n* observable realities (each company represents a single reality) lasts for several years, the group of companies studied tends to naturally diminish. Including new companies to maintain the same number would be a detriment to the coherence of the study. This research project aims to understand the unique features of each case, and therefore a natural reduction in the study group is preferable, as there is more space to investigate the phenomenon more in depth. Therefore, this analysis phase includes five companies within the study (table 1).

Using descriptive statistics, tables have been created so as to understand the traits that identify companies as socially responsible. Some of these traits may coincide with other models, but not necessarily. These overlaps are due to the fact that the company is influenced in one way or another by the models prescribed by international bodies. However, as these companies are also sensitive to local needs, they also include subtle nuances in terms of social responsibility, given that they link said responsibility more to providing value at a local level over receiving international certifications and/or marketing.

There are traits that are extremely specific because they respond to the unique needs of the company's own reality. They even include traits that the prescriptive models do not consider to be part of social responsibility, which in the academic and regulatory scope would perhaps be placed in other types of models, such as organisational sustainability (Garcia and Mercado, 2013). However, from the company's point of view and based on its local commitment due to its knowledge of and close connection with the area, they are distinctive social responsibility traits.

Graph 1

Activities that generate value and have an impact on local development, according to 5 small Guatemalan agro-industrial companies (2010-2014)



Source: Created by the authors based on the results obtained in the ULSA CA 0012/10 project.

Given that descriptive statistics have been used, an effort has been made to ensure that the sub-groups do not sacrifice the unique features of the cases studied.

For the five companies studied, their *connection with the local area is a common distinguishing feature* (appendix). This refers to the close

work that the company performs with the community, which can be seen in their clear knowledge of the area's needs and the corresponding mechanisms that enable the company to participate in the response to those needs.

Table 5
Actions that companies take to generate value for local development (2010-2014)

Company code	*Decreasing environmental impact*	*Organic production*	*Products aimed at increasing the consumer's quality of life*	*Promoting activities for the social wellbeing of the local area*	*Incentivising local economic development*
ALI574	1	1	1	1	1
ALI575		1	1		
ALI576	1		1		
ali578			1	1	1
ALI579				1	1

Source: Created by the authors based on the results obtained in the ULSA CA 0012/10 project.

For these companies, the following traits which had been identified in other companies and which only company ALI576 considered were removed: obtaining certifications, observing good practices, R&D aimed at food quality, labour improvements and worker quality of life. None of the five companies included practices on the use of traditional techniques.

The main action carried out by these companies is to provide the local area with *products that increase the consumer's quality of life in terms of wellbeing*. According to Diaz (2015), there are two types of agriculture in Guatemala: "large-scale" and "small-scale." The first is practised on large plots of land and is generally linked to traditional exportation products, such as sugar and bananas. In economic organisation terms, it is commercial agriculture based on large companies. On the other hand, "small-scale" agriculture is carried out on small areas of land, generally less than 10 hectares, and production is aimed

at the internal or external market. This type is based on small companies, often family-owned, and includes the cultivation of corn, beans, and vegetables (Diaz, 2015).

The five companies studied can be placed in the second group described; only a percentage of their production was destined for international markets. This situation allows us to understand the business vision of "increasing the population's quality of life through the products offered."

In situations of extreme poverty like those faced in these companies' local areas, food security is essential; therefore, the quality of agro-food products comes before quantity. In these companies, the main activity that generates value is precisely their offering products that increase quality of life. On the other hand, and in contrast to the results presented by Diaz (2015), these companies do not only focus on national consumption. The youngest company is 24 years old and the oldest 38. This shows that they are relatively young companies, whose international activities have developed in parallel with national activities.

There are two activities that are close behind providing products that increase the consumer's quality of life for these companies: promoting social wellbeing activities in the local area and incentivising local economic development.

Conclusions

The reality regarding economic development is determined by the heterogeneity of each local area. In turn, understanding economic development in economically poor areas of Latin America allows us a greater understanding of the way in which instruments and techniques that aim to incentivise development and fight poverty in these regions should be adapted. The same occurs with programmes aimed at the business sector and local economic units. These instruments will be more efficient in "terms of competitiveness for local development" if they are adapted to local patterns instead of standardising the local area to good international practices regarding social responsibility, sustainability, generation of value for the region, and other related aspects.

Smaller companies that operate internationally generally maintain closer links to local agents, and therefore have a better understanding of what the community needs. Tracing international cooperation-local cooperation, business-business cooperation, business-government cooperation is viable when the focus is put on smaller companies that are already catalysing local development. Given that it is not the amount of aid that provides the greatest impact, but rather it is the way in which these resources are directed and applied, in the case analysed here, the focus on smaller companies in economically poor areas is what allows for the greatest impact.

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Appendix. Profiles of each company

Company code	ALI574
Informant	General manager
No. of employees	45
Years in operation	24
Details on international collaboration	Since 2003 the company has successfully exported its products to the Central American, Mexican and American markets. In 2006, with the aim of more efficiently serving the Mexican market, it formed a distribution company in Mexico. It is a company that is open to forming *ties with other organisations that share its values*. In recent years, thanks to its solar energy plant, it has had close relations with international organisations that promote the use of renewable energies.
Product or service	Company specialised in the production, marketing, and exportation of dehydrated foods.
Contribution or generation of value for the local community	Within the strategy of sustainable development, the company's sustainability policy has three facets: the environmental facet, the social facet, and the economic facet. The company's policy regarding the environmental facet establishes a serious commitment to decreasing the environmental impact of the company's operations. Specifically, the company plans to make a change in technology so as to use solar energy as a heat source for dehydrating fruit.

Results analysed in the ULSA CA 0012/10 project.

Company code	ALI575
Informant	Manager
No. of employees	75
Years in operation	38
Details on international collaboration	
Product or service	Company that produces nutritional and healthy foods, such as grains, biscuits, toast, granola bars, oats.

Results analysed in the ULSA CA 0012/10 project.

Company code	ALI576
Informant	Manager
No. of employees	70
Years in operation	33
Details on international collaboration	Production is aimed at satisfying the local market, both in supermarkets as well as the retail market, and exports to Central America, Mexico, the United States and the Caribbean.
Product or service	High-quality salty and sweet snacks that are 100% natural, fried or baked, and extruded products that combine local and imported raw materials with certified origins, both in terms of where they come from and their composition, which is combined with a production process that is especially concerned with the results of the products.
Contribution or generation of value for the local community	Production and packaging processes backed by the strictest health standards and commercial certifications. ISO 9000 certified suppliers. Production based on GMP (Good Manufacturing Practices), application of HACCP hygiene regulations, in addition to parameters established by international entities, the FDA (USA Food and Drug Administration), the Ministries of Health, Farming and Food and the Environment, as well as audits by our business partners. Application of the HACCP (Hazard analysis and critical control points) food safety system, a concept that covers biological, chemical, and physical risks in food production. Master cleaning plan and standard operating procedures (SOPS). We were chosen along with 9 other food companies to participate in the Cleaner Production Programme (backed by the Swedish government along with the Guatemalan Chamber of Industry).

Results analysed in the ULSA CA 0012/10 project.

Company code	ALI578
Informant	General manager
No. of employees	200
Years in operation	24
Details on international collaboration	Suppliers to the main fast food and hotel chains in the world.
Product or service	Supplier of products for the food industry such as: natural juices, pasteurised juices, soft drinks, soda, tomato sauce, dairy products, ice cream mixes, sauces and dressings, honey. It also has its own R&D department, which allows the company to develop products in accordance with the specific needs of its clients.
Contribution or generation of value for the local community	It has several social programmes. They established an alliance with the Secretary of Social Works of the President's Office, which helps the company to carry out said programmes. Their human team includes a person with a minor mental disability and a deaf-mute employee. The latter was hired through an alliance with the Pro Blind and Deaf-Mute Association. Furthermore, the company supports local schools through different activities and providing materials so that the community can grow along with the company. The company is also a member of the United Fund, Corporate Social Responsibility Association, Businesses for Education, the Guatemalan Solidarity Union, and the Association of Exporters of Guatemala.

Results analysed in the ULSA CA 0012/10 project.

Company code	ALI579
Informant	General manager
No. of employees	110
Years in operation	32
Details on international collaboration	The company began by exporting products for Nicaraguans in Florida. Then they expanded to a Guatemalan community and worked with an El Salvadoran company which they exported to. In 1996 they exported 30 to 50 boxes a week by plane, and in 2010 they exported approximately 12,000 boxes a week via containers.
Product or service	The company provides fruit preserves and frozen fruit.
Contribution or generation of value for the local community	On June 1, 2011 they began their second literacy course, backed by Conalfa (Ministry of Education). The number of participants doubled to 33. The programme will finish in mid-2012. This second intensive course covers the content of 2nd, 3rd, 4th, and 5th grades of primary school. The programme lasts approximately three years, and offers participants the chance to obtain their 6th grade diploma.

Results analysed in the ULSA CA 0012/10 project.

4
Innovation policy of large European chemical companies

Ignasi Brunet-Icart[1]
Supriyo-Das[2]
Carlos Alberto Santamaría-Velasco[3]

Abstract

According to Arora et al. (1998), the chemical industry is one of the largest and most R&D-intensive manufacturing sectors in all the advanced economies, and its innovative patterns and productivity growth processes can have profound impacts on economic growth as a whole. The European chemical industry supplies to virtually all sectors of the economy and accounts for 17.8% of the total chemical sales in the world. This chapter gives an overview of the European chemical industries and focuses on the top fifteen chemical companies of this region. It gives an idea about the current problems this industry is facing in Europe and shows how the region and the top companies are investing in R&D to bring innovation to overcome the current challenges. The study shows that the R&D spending in absolute term has remained similar over the years and it is still globally the largest investor for the R&D activities. BASF has been making the largest R&D

1. Universidad Rovira i Virgili, España.
2. Universidad Rovira i Virgili, España.
3. Centro Universitario de los Valles-Universidad de Guadalajara.

spending followed by Bayer and Syngenta while the R&D intensity is highest for Syngenta and Bayer. BASF and Bayer top the list in patent application and number of granted patent.

Keywords: Innovation, Competitiveness, Technology, Patenting, Chemical Industry.

Introduction

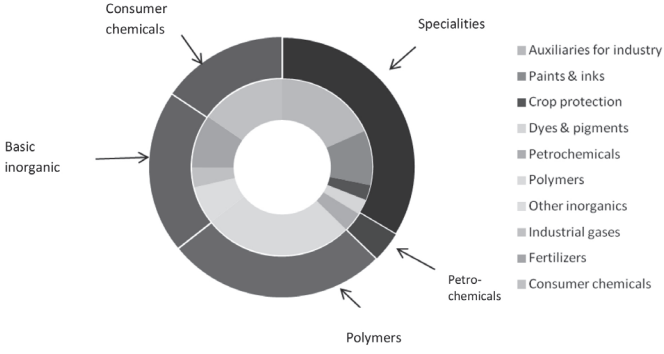
The European chemical industry is a key to economic development and wealth. It creates modern products and materials, and provides virtually all sectors of the economy with technical solutions (Arora et al., 1998). The European chemical industry supplies virtually all sectors of the economy and accounts for 17.8% of the total sales of chemicals in the world (Cefic, 2014). It is one of the largest and most R&D-intensive manufacturing sectors in all the advanced economies, and its innovative patterns and productivity growth processes can have profound impacts on economic growth as a whole. In a recent study, Tullo (2013) shows that 19 of the top 50 global chemical companies are headquartered in Europe (Table 1) and they make 14.5% of all sales of chemicals in the world. The current chapter provides an overview of the status of the European chemical industry and the problems it currently faces. According to specialists, innovation and research are keys to securing the future of the European chemical industry. Research and development is one way in which companies can ensure future growth by developing new products or processes to improve and expand their operations. The chapter discusses investment in research and development in the European chemical industry in general and also in the top fifteen European chemical companies in particular. In order to understand research strategy and trends in innovation, we analyze R&D investment and the patent landscape of chemical companies.

The European Chemical Industry: An Overview

The European chemical industry is a robust, world-leading sector in terms of productivity and employment. But it is also at the root

of all other industries. The European chemical industry is based on the following six categories of products: basic chemicals, specialty chemicals, petrochemicals, polymers, pharmaceuticals and consumer chemicals. The industry has an extremely broad range of customers. Only 30% of the combined output of the chemical and pharmaceutical industries is sold to private households and other end users.

Figure 1
The product mix of the European chemical industry

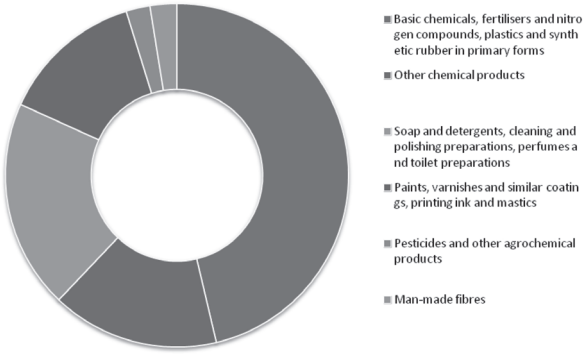


Data source: Cefic (2014). Graph: Author.

With a workforce of 1.2 million and sales of €642 billion, it is one of the biggest industrial sectors and an important source of direct and indirect employment in many regions of the European Union (Cefic, 2013). Figure 2 below shows how the direct work force is distributed among the various products. It can be seen that the bulk of the work force is employed in producing basic chemicals and related products.

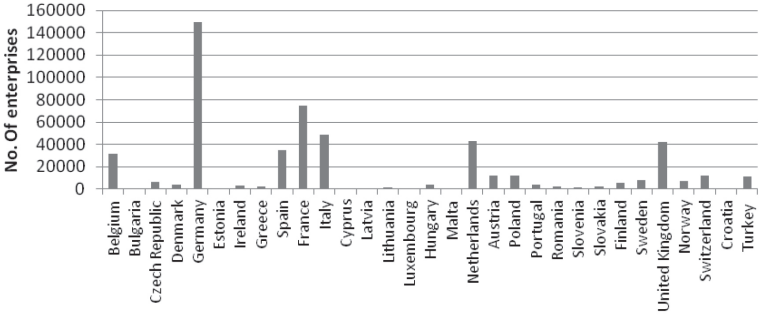
Most European chemical companies are located in seven EU countries: Germany, France, Italy, UK, Netherlands, Spain and Belgium. Of these, Germany has most with more than 140,000 companies followed by France and Italy.

Figure 2
Percentage of employees in each sector of the European chemical industry



Data source: Eurostat (2013). Graph: Author.

Figure 3
The number of chemical companies in EU countries

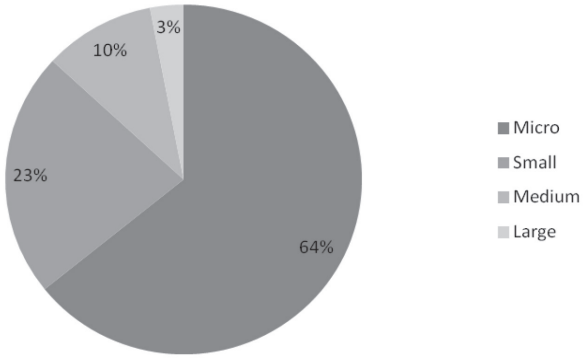


Data source: Eurostat (2013). Graph: Author.

In the EU, there are around 29,000 semi-medium, medium and large chemical companies which employ a total staff of about 1.2 million. This is equivalent to 4% of the manufacturing industry's overall workforce. Employment in the industry has decreased by 2% annually over the past ten years. A total of 4% of all chemical companies have more than 250 employees and these are responsible for 72% of all sales and 65% of total employment (Eurostat, 2013). They make a major contribution to the transfer of innovation generated upstream in

the chemicals value chain to downstream manufacturing industry. As producers of basic and specialty chemicals, large chemical companies often supply SMEs and are sources of innovation.

Figure 4
The percentage of different-sized companies in Europe



Data Source: Eurostat (2013). Graph: Author.

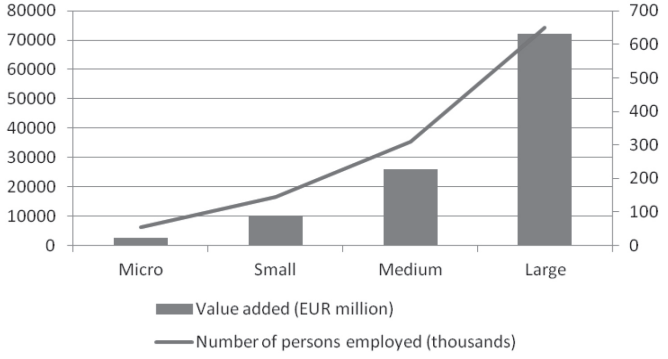
Even though large chemical companies are only 3% of the total number of chemical companies, they make a significant contribution because they are the largest supplier of products and also the biggest employers. The companies are classified as one size or another on the basis of the following criteria:

- small enterprises: 10-49 employees
- medium-sized enterprises: 50-249 employees;
- large enterprises: 250 or more employees.

Figure 5 shows that large chemical companies in Europe bring most value to the chemical industry and justify the focus of the current research.

For the current study, financial and non-financial data about innovation in the European chemical industry were collected for the last 5-10 years. Table 1 shows the top nineteen chemical companies headquartered in Europe according to total chemical sales.

Figure 5
The value addition of different sizes of EU companies and the number of employees in each size



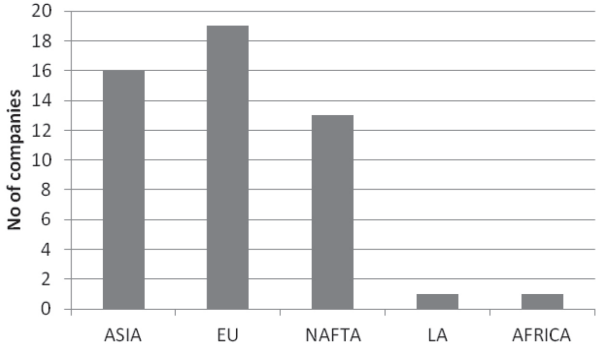
Data Source: Eurostat (2013). Graph: Author.

Table 1
The top 19 chemical companies in Europe for the year 2012

	Company	*Headquarters*		*Company*	*Headquarters*
1	BASF	Germany	11	Yara	Norway
2	Shell	Netherlands	12	DSM	Netherlands
3	LyondellBasell	Netherlands	13	Lanxess	Germany
4	Bayer	Germany	14	Syngenta	Switzerland
5	Ineos Group	Switzerland	15	Borealis	Austria
6	AkzoNobel	Netherlands	16	Arkema	France
7	Air Liquide	France	17	Eni	Italy
8	Evonik	Germany	18	Styrolution	Germany
9	Solvay	Belgium	19	Total	France
10	Linde	Germany			

Data source: Tullo (2013). Table drawn up by the author.

Figure 6
Distribution of world´s top 50 chemical companies according to geographical regions



Data source: Tullo (2013). Author's calculation and graph.

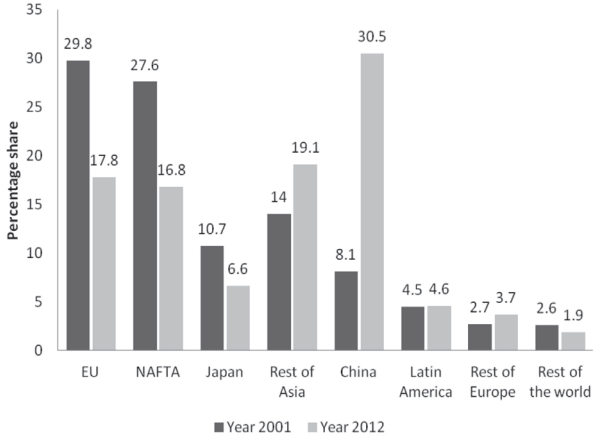
The chart above (figure 6) shows the distribution of the world´s top 50 chemical companies according to geographical regions. It is interesting to see that the EU is still home to most of them, with 19 headquartered in this region followed by Asia with 16.

Problems of the European chemical industry

Over the years, the European chemical industry has shown considerable resilience, strength and adaptability. In 2007, 12 of the 30 leading chemical companies in the world were headquartered in Europe, representing 10 percent of the world's sales of chemicals while in 2012, 11 of the top 30 global chemical companies were from Europe (Cefic, 2013). Like virtually every other industry worldwide, the European chemical industry has felt the full force of the recent global recession. At its lowest point in March 2009, the industry saw a monthly year-on-year decline of 13.2 percent, a figure that if annualized would represent an output decline of approximately EUR 56 billion (Cefic, 2013). In Europe, the chemical industry saw massive reductions in demand for plastics, paint and man-made fibers, especially in key markets such as automotive and construction. This fall in demand led to

severe destocking by many companies, some of which saw their own output decline by 30 to 60 percent. Many large companies are finding major credit lines both difficult and expensive to obtain. The European chemical industry is currently facing the unprecedented challenges of strong competition from emerging countries, notably Asia, the Middle East and Russia; and the decline in their share of world chemical sales from 29.8% in 2001 to 17.8% in 2012, which means a 34% decline over a period of 10 years (figure 7).

Figure 7
Contribution of each region to global chemical sales for the year 2001 and 2012

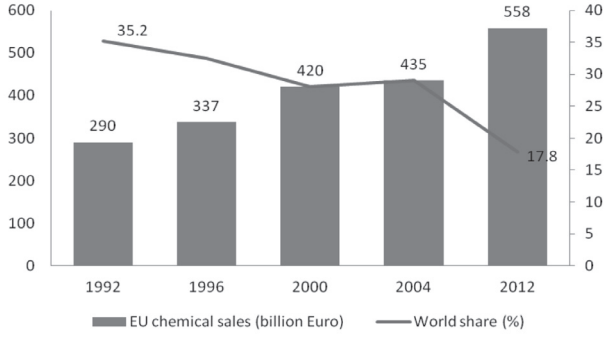


Source: Cefic (2014).

The graph below (figure 8) shows that even though EU sales of chemicals have increased over time, the world market share has decreased so the sales of other areas have increased at a much faster rate.

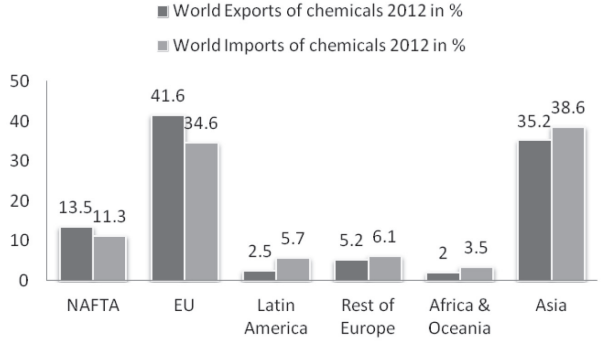
Although Europe is losing its position in terms of global sales of chemicals, in terms of trade balance it is doing well: exports are 7% higher than imports. Although Asia is reducing the gap between exports and imports, it is still importing more than it is exporting (figure 9).

Figure 8
EU chemical sales over time and the declining percentage of total world shares



Data source: Cefic (2014).

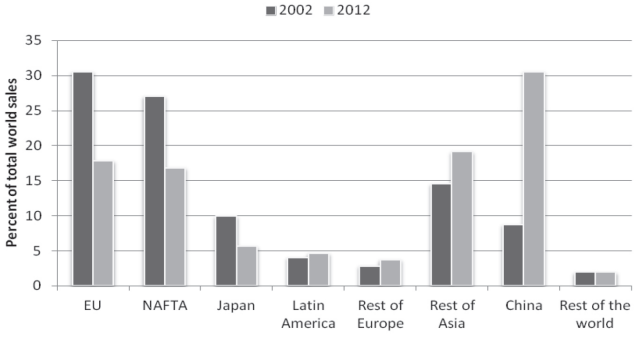
Figure 9
The export and import of chemical products for different regions



Source: Cefic (2013).

Figure 10 shows how the global market share of the chemical industry changed from region to region between 2002 and 2012. Neither the EU nor NAFTA have the largest percentage share any longer. They have been surpassed by China and the rest of Asia.

Figure 10
Distribution of sales of chemical products over different regions



Data source: Cefic (2013). Author's calculation and graph.

In 20 years, the EU's share of the chemical market nearly halved. In 1991 the European Union was in a much stronger position than in 2011 with sales of €295 billion, 36 per cent of world sales in terms of value. Sales constantly grew throughout this period, the total increase being 83%. However, the level of world chemical sales increased threefold in the same period (€819 billion in 1991 and €2,744 billion in 2011). As a consequence, the EU chemicals market share nearly halved in 20 years, from 36 per cent in 1991 to 20 per cent in 2011 (based on raw data in Cefic, 2013).

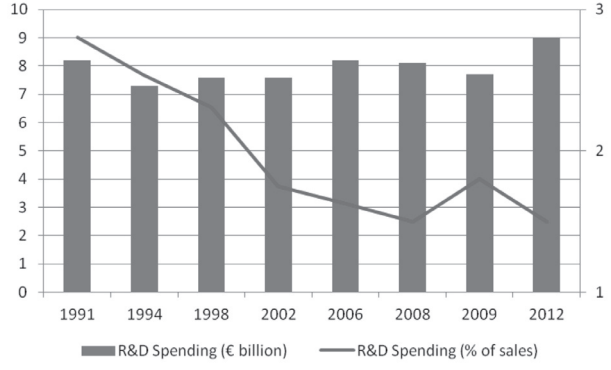
Investment in research & development

While innovation is more than research and development, the link between research in chemistry and innovation is particularly strong in the chemicals industry. Overall, the amount of research being done needs to be increased. In general, companies are urged to review their R&D plans and to extend corporate research programs to medium- and long-term objectives.

The European chemical industry is therefore uniquely placed to grow in the internal market as well as develop a global competitive advantage in development-driven and breakthrough innovations.

Europe must retain a strong base in this sector, not only because of its economic weight, but also because of its ability to continually generate innovation critical to meeting the major challenges of modern societies. In the European Union, R&D spending in terms of absolute value has remained almost constant while R&D spending as a percentage of sales has steadily declined (see figure 11).

Figure 11
R&D spending and R&D spending as a percentage of total sales

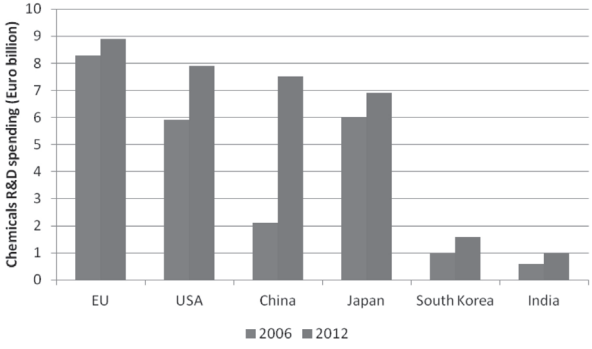


Data source: Cefic (2014). Graph: Author.

Even though R&D spending in absolute terms has remained almost the same over the years, it is still way ahead of other geographical regions. In China there was a three-fold increase in R&D investment in 2012 compared to 2006. For other regions, R&D spending has slightly increased.

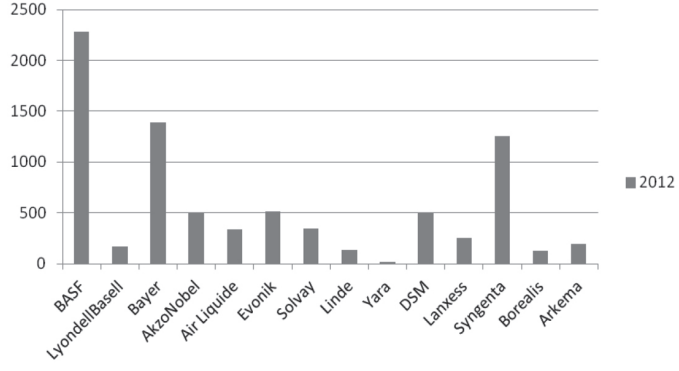
It is interesting to follow the strategy of the large European chemical companies through their investment in R&D. BASF are the leader followed by Bayer. The other top investors in R&D are Syngenta, Evonik, DSM and Akzo Nobel.

Figure 12
R&D spending of different geographical regions in 2012 compared to 2006



Data source: Cefic (2014).

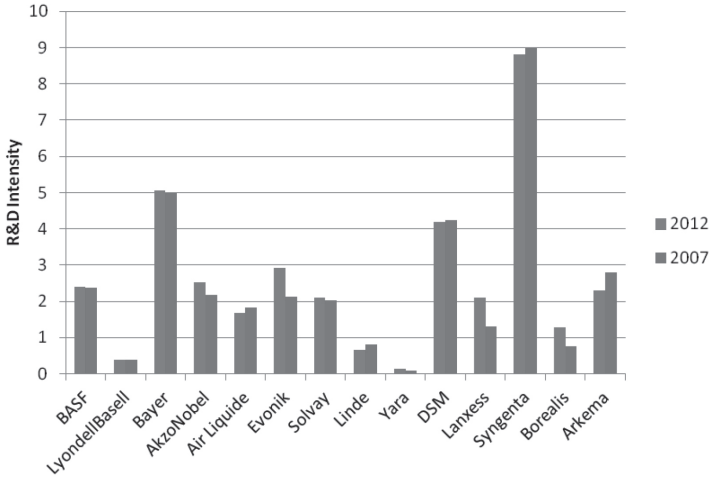
Figure 13
Investment in R&D for the top European chemical companies



Data source: Davis (2013). Author's analysis.

R&D intensity is the ratio of R&D investment to total sales expressed as a percentage. It is another measure of efficiency of R&D activities. Syngenta has the highest R&D intensity followed by Bayer and DSM.

Figure 14
R&D intensity of the top chemical companies in Europe



Data source: Davis (2013). Author's analysis.

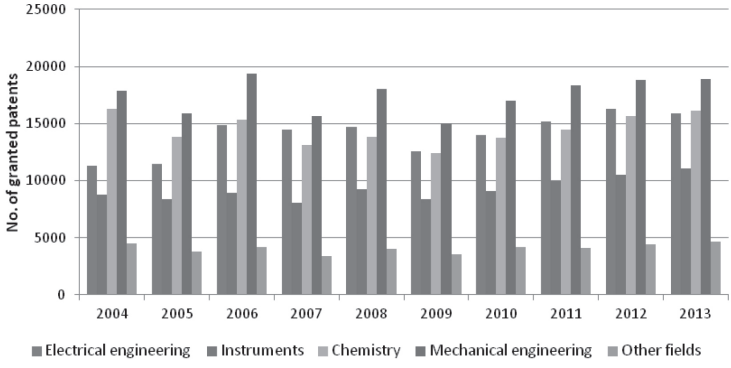
Innovation trend of the top European companies in terms of patenting activity

Patents are undoubtedly one of the instruments that firms use to capture income from innovation. Of the few indicators on technology output that are available, patent-based indicators are probably the most frequently used. The most commonly used indicators are counts of patent families that share a number of common elements. This section studies the patent landscape of the top chemical companies in Europe. The list of the top nineteen chemical companies includes three oil companies. So as not to mix up chemical patents with other patents, these three companies are ignored in this study.

Figure 14 compares the patents granted to the chemical and chemical-related industry with other leading industries in Europe (electrical engineering, instrumentation and mechanical engineering. The bar graph shows that mechanical engineering has the highest number of patents granted while chemical engineering and electrical enginee-

ring are a little behind in second and third place. It also shows that the number of patents granted to the chemical industry was lowest in 2009, which is when the global economic crisis hit and the chemical industry was badly affected.

Figure 14
Number of patents granted by the European Patent Office to various sectors



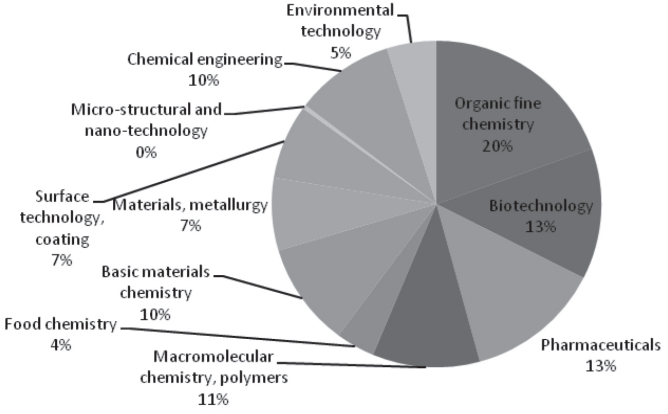
Data source: European Patent Office (2014). Graph: Author.

According to the European Patent office, the chemical or chemical engineering sector consists of eleven subsectors. Figure 15 shows how the total number of patents granted for 2013 were distributed among various sub-sectors. Fine organic chemistry has the highest share of chemistry patents followed by pharmaceuticals and bio-chemistry. We shall further discuss patenting in this sector below. Patents in the basic materials sector also make a significant contribution to the total number of patents. On the other hand, research into food chemistry, environmental technology and nanotechnology was insignificant.

Figure 16 shows the patent applications made by these companies to the leading patent authorities throughout the world over the last ten years. In order to avoid counting the same patent applied for in two countries more than once, we counted patent families instead of the number of actual patents. A patent family is a set of patents taken out in various countries to protect a single invention (when the initial application in one country —the priority— is then extended to other countries). In other words, a patent family is the same invention

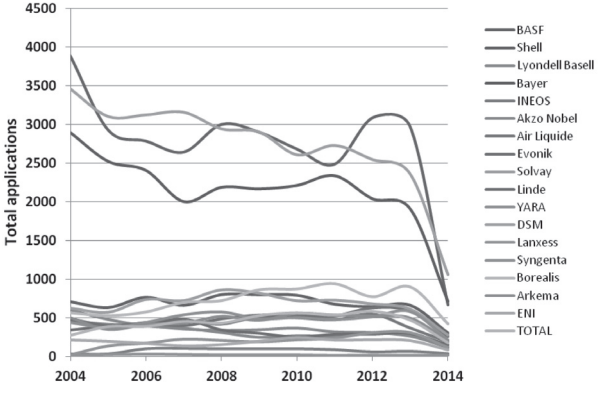
disclosed by a common inventor(s) and patented in more than one country. BASF, Bayer and Lyondell Basel are the leading applicants. All other companies made considerably fewer applications, while Solvay showed an upward trend. So these three companies are at the forefront of research and development.

Figure 15
Patents granted by the European Patent Office to various sub sectors of the chemical industry in the year 2013



Data source: European Patent Office (2014). Graph: Author.

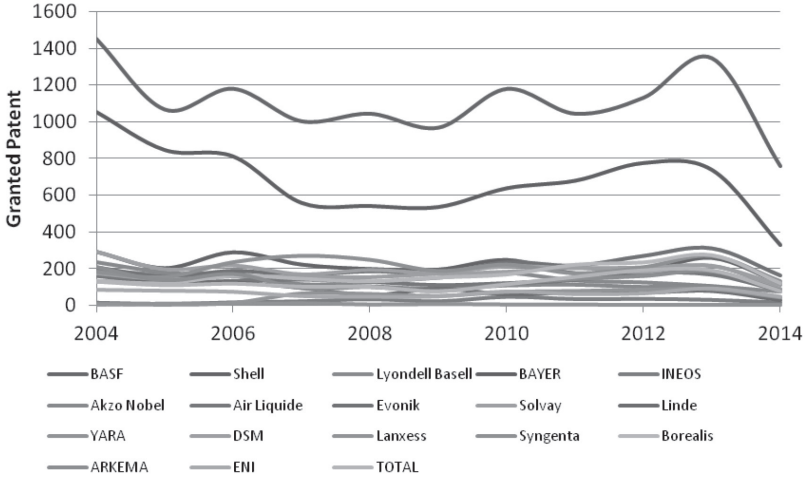
Figure 16
Global patent application and publication of patent-related documents



Data source: Thomson Innovation (2014). Author's analysis.

The graph below (figure 17) shows the number of patent families granted to the top fifteen chemical companies in Europe. The patents granted were searched for in the database of the most important patent authorities: US, Europe, Australia, Canada, Germany, China, India, Japan, Korea, Singapore and Vietnam. On the basis of the patents granted, the companies can be divided into highly patenting companies, medium patenting companies and low patenting companies. BASF has highest number of patents granted followed by Bayer. Likewise, in both cases, there was a fall in the number of patents granted between 2004 and 2009. Then they seem to have recovered. For the year 2014, we have considered data until the middle of the year. Many of the companies fall in the range of 150 to 250 patents granted, which we can consider as medium innovative companies. In this study we also found some companies that have paid very little attention to patents, and have, therefore, had very few patents granted.

Figure 17
Patents granted to the top chemical companies
by the leading patent offices

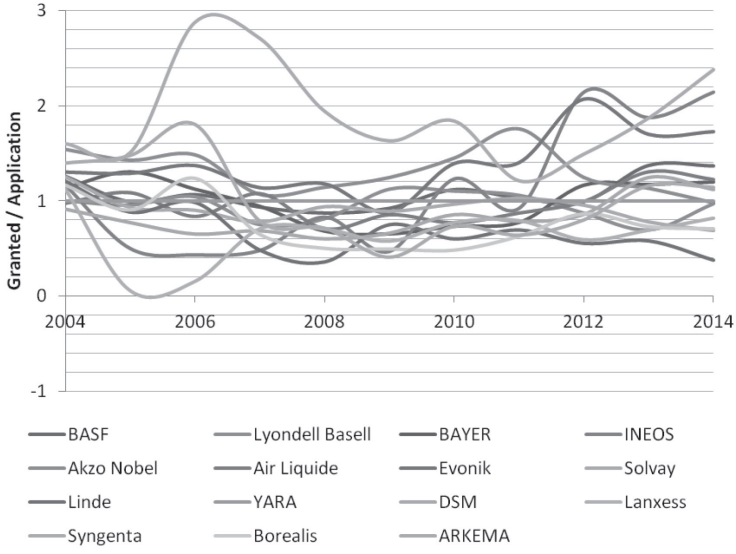


Data source: Thomson Innovation (2014). Author's analysis.

It is generally believed that the more research companies do, the more patent applications they will make. It is also believed that the

quality of research can be judged by the number of patents granted. Figure 18 below shows the ratio of patents granted to patents applied for in one particular year. It can be seen that in most cases the ratio is between 0.5 and 1.5, which suggests that both the research and the patent applications are of high quality. In many cases the ratio is above one. This is because a patent application can take a few years before it is granted. So in some cases the number of patents granted is higher than the number applied for in one particular year.

Figure 18
Ratio of applications to patents granted for the top chemical companies in Europe

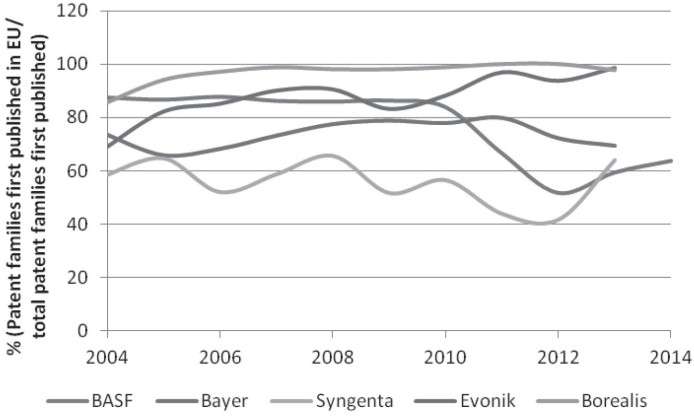


Data source: Thomson Innovation (2014). Authors' analysis.

For the companies with the highest number of patents granted, Figure 19 shows the patents from a particular family that were first published in the EU as a percentage of the total published globally as the first patent of that family. In most cases, 50% of first patents are published in the EU, which may be due to the fact that research is mainly being done in EU laboratories or that companies feel that it is more important to protect their technology in the EU market. It

is also interesting to see that BASF's share of the total number of first patents is falling, which may mean that their priorities are shifting to the emerging economies.

Figure 19
Percentage of patents first published in EU compared to the total number of first patents published



Data source: Thomson Innovation (2014). Authors' analysis.

Conclusion

The European chemical industry supplies raw material to almost all industries and is mainly concentrated in six EU countries: Germany, France, UK, Netherlands, Spain and Belgium. The following are the conclusions of the current study:

1. *The European chemical industry is in a difficult situation and is facing unprecedented challenges from other regions of the world.*
The manufacture of chemical products is increasingly moving eastward, drawn by the economic growth and market opportunities in Asia, the Middle East and Russia. Production is getting more expensive due to costs of labor and resources. The European chemical industry´s share of world chemical sales declined from 29.8% in 2001 to 19.6% in

2011, which translates into a 34% decline over a period of 10 years. The value of the stock over the last ten years shows that the financial crisis of 2007-08 has severely affected the chemical industry and particularly the European chemical industry. Since the European chemical industry supplies all EU industrial sectors, including construction, its strategies impact directly on downstream chemical users.

2. Europe still plays a key role in the global chemical industry.
The EU is still the leading world force in the chemical industry: it is home to 19 of the top 50 global chemical companies. Asia is in second place with 16. Data for 2013-14 confirms that the European chemical industry has made a significant recovery. Although China has emerged as the biggest chemical producer, 8 of the top 30 major chemical-producing countries are European, generating chemical sales of EUR 480 billion. In Europe, Germany is the largest producer of chemicals, followed by France, Netherlands and Italy. The European chemical industry is moving towards specialty and consumer chemicals, which in 2011 accounted for 77% of the extra-EU chemical trade surplus. In Europe, even though large companies are only 3% of the total number of chemical companies, they employ 56% of the work force. BASF is the largest chemical company in terms of sales, almost double those of its nearest European competitor.

3. Although the EU chemical industry is shrinking its R&D spending, almost all large chemical companies have been increasing their R&D expenditure.
In the European Union, there has been a decline in R&D spending in terms of both absolute value and percentages of sales but it is still way ahead of other geographical regions. In China there was a threefold increase in R&D investment in 2012 compared to 2006, showing that R&D was being given high priority. For other regions, R&D spending has slightly increased. BASF spends the most on R&D followed by Bayer, a distant second. BASF is the largest chemical company and this high spending on R&D justifies its enormous R&D infrastructure. Bayer invests heavily in research, especially in the pharmaceutical and crop science division. In 2012, Syngenta increased its R&D expenditure compared to 2007 while Arkema and Linde both decreased their R&D expenditure. Yara spent very little on R&D in both the years.

Syngenta has the highest R&D intensity followed by Bayer and DSM. In most chemical companies, R&D intensity is around 2% (for example, BASF, AkzoNobal, Air Liquide, Evonik, Solvay, and Arkema). Bayer also shows a high R&D intensity of 5% which can be attributed to their high investment in crop science and pharmaceutical products. Lyondell-Basell and Yara have very low R&D intensities, which may be due to a very low level of investment in R&D.

Bayer and BASF have a ratio of R&D spending to patent application of around 2 while some companies have a ratio of below one. Companies whose ratio is low tend to show that their R&D is more efficient at generating patent applications or ideas. BASF has been investing in R&D by increasing the number of people devoted to it. It should be noted that just after the financial crisis that hit in 2008, BASF increased its work force in R&D, thus showing their strategy of R&D expansion.

4. *Patents as an innovation indicator did not show an upward trend for most companies.*

Chemistry is the leading technical sector in terms of the number of patents granted by the European Patent Office. The areas that have most patents granted are fine organic chemistry, biochemistry and pharmaceuticals. Only five of the top selling European chemical companies feature in the list of the top 25 patent applications for fine organic chemistry in 2013, which suggests that they are moving into specialty chemicals. The number of patents granted to BASF, Bayer and Akzo Nobel has fallen over the last 14 years, which shows that they are not interested in protecting their technology in this market. Over the years BASF and Bayer have had the largest number of patents granted, which clearly shows their strategy of using patenting as a key tool for innovation and the protection of their technology. For most of the companies that were studied, the first patent of a patent family is applied for and granted by the European Patent Office. Some companies had very few patents granted, thus showing that not all companies have the same focus on innovation or patenting. BASF and Bayer had a downward patenting trend until 2009 and then there was sharp rise in the number of patents granted. This trend was also seen for many other companies analyzed. It can be concluded that the global crisis that hit the economy in 2007-08 had a negative effect on patenting and innovation.

5. The quality of research in most chemical companies is very high.
Large chemical companies have well-developed research and development departments. In most cases the ratio of patents applied for to patents granted for a particular year is between 0.5 and 1.5, which suggests that patent applications are high quality and are readily granted. Research, then, is of a high level.

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5
Science, quality and competitiveness in higher education

Jaime Apolinar Martinez-Arroyo[1]
Marco Alberto Valenzo-Jimenez
Virginia Hernandez-Silva
Irma Cristina Espitia-Moreno[2]

Abstract

In the evaluation of higher education quality improvement, new models have been proposed, focused on learning technology and infrastructure, however, the chain of participants in each process adding value is essential to achieve a quality education system. The debate on the subject is extensive and the pursuit of quality of education has created immense fascination for institutions of higher education. Complacency customer has established itself as a key element in the quality of service, therefore, it is important to evaluate actions to improve the satisfaction of students and staff by providing adequate and consistent standard. In this paper we have used variables that determine quality from the point of view of students, faculty and

1. Universidad Michoacana de San Nicolás de Hidalgo.
2. ic_em_3@hotmail.com

staff. The problem at the Instituto Tecnológico Superior Purhépecha is complicated and reduces the learning center as an academic body with little preparation and take aimed at improving school quality management and decisions. The results show that the variable direction and administrative management is showing the highest correlation with the dependent variable and subsequently human resources.

Keywords: quality, high education, evaluation.

Introduction

In the evaluation of higher education quality improvement, new models have been proposed, focused on learning technology and infrastructure, however, the chain of participants in each process adding value is essential to achieve a quality education system. The debate on the subject is extensive and the pursuit of quality of education has created immense fascination for institutions of higher education. The issue of quality has been a sensitive issue priority in higher education around the world in the last 20 years (Mertová & Webster, 2009). The quality has been part of the public policy agenda of every nation. For example, since 1990, almost every country in the world has developed mechanisms to ensure quality. Recent literature on higher education shows a revitalized interest in quality practices including international rankings of universities and accreditation (Deem, Mok, & Lucas, 2008). In the more mature industrial societies patented constant repeated demonstrations awareness that there is a fundamental relationship between educations, economy and social structure are offered.

This acquires greater intensity and sharpness in developing countries, however, and naturally, they have very specific characteristics, education is adopted as a strategy in those countries determined to increase its economic growth and development, but impact on its progression is very different from each other because, greatly depends on the degree of progress that countries are, as a result the effect is not the case with these countries what happens or occurs with nations from other continents and quite possibly end up importing cleared very educational procedures taught as an educational model in developed countries. The educational

environment is not only extremely dynamic, it is also challenging. Competition is intensifying in the sector of higher education, both public and private institutions (Yusoff, McLeay, & Woodruffe-Burton, 2015). There is no doubt that to achieve its strategic objectives, HEIs are competing globally to attract human talent represented by students and researchers, and a way to fulfill that purpose is offering versatile facilities and high quality services such as education and research (Kärnä & Julin, 2015).There is a consensus among scholars that the quality of service has attracted much attention from institutions of higher education (O'Neill, 2003). Thus, the measurement of customer satisfaction has become a key aspect in the IES to increase and improve their efforts. Therefore, to improve student satisfaction of staff and external actors must deliver a proper standard (Douglas, Douglas, & Barnes, 2006).

This empirical research aims to identify how students and staff evaluate educational facilities and services on the campus of the IES. It is aimed to analyze what factors related to quality of service in the IES, because the impact on student satisfaction and administrative workers, the matter should say that measuring the quality of educational services, can lead to the institution has standardize the service for customers. Notably, the IES extends the value generated external actors to the institution, as the city, region and country (den Heijer, 2011).The Organization for Economic Cooperation and Development (OECD, 1995) defines quality education as one that "ensures all young people acquire knowledge, skills, abilities, and attitudes needed to equipararles for adulthood." The same OECD conducted an assessment of educational policy, science and technology in Mexico in which he describes as "an excellent mix of world-class institutions, future-oriented, coexisting with institutions staffed excess and action poor, inherited. Very polite advanced industries, efficient structures and people with underdevelopment and the proliferation of poverty and illiteracy "" Even so social and economic structure of Mexico as transitional characteristically described combining ". Also mentioned emphatically that if Mexico was to achieve a social and economic level enough to compete with advanced world powers like the United States and Canada, the Mexican government would have to perform and persist in: An extraordinary effort of educational, structural, technological impro-

vement and administrative process must encompass the elements of Mexican society and all aspects of its economy" (OECD, 1995).

In this respect it should be mentioned that the issue of quality has been a key issue on the agenda of higher education around the world for nearly two decades (Mertová & Webster, 2009). Similarly, in recent years, studies on the quality of education have tended to occupy an increasingly important place in Mexican society. However, it is not a fact merely circumstantial, really modern societies renew their faith in education when discovered mired in a crisis, such as in our case (Guevara & De Leonardo, 1998, p. 9). According to Diaz de Cossio (2001) "Education is a deliberate process by which values, attitudes and thinking and learning skills are transmitted". Therefore it is unnecessary to mention that the ability to generate wealth, ie, personal productivity, is in direct proportion, if not that exponential, the level of quality of education and training of each individual. With the appropriate exceptions in both directions, are people with higher educational levels which get higher revenues, which creates greater wealth (Servitje, 1997). It should be noted too, that technological changes have transformed modern societies in complex realities, affected by a strong dynamism that has knowledge and information the engine of economic and social development. In this new context, the expectations of citizens about the role of education and training systems have increased dramatically. In line with this, the search for successful educational policies, more adjusted to the new realities, it has become a general concern of the authorities. Quality education is now at the center of the challenges and opportunities of the XXI century.

The rapid deterioration in the quality of higher education in Mexico. The increasing privatization of higher education enrollment has resulted in a sharp drop in the quality of higher education. "Only 38 of the more than 1,100 private institutions have made inroads in the process of external evaluation and accreditation, but only two reached the threshold set by the SEP to achieve accreditation of at least 75% of their training programs" , stated Deputy Secretary of Higher Education of the SEP (Tuiran, 2007, p. A23) and the same Federation of Private Mexican Institutions of Higher Education (FIMPES), by mouth executive secretary he pointed out that in 1100 private institutions "only 74 have proven academic quality "by that

partnership process itself (Profeco, 2003). The problem of educational management that occurs within the Technological Institute Superior Purhépecha (ITSP), is complex and that affects the learning center itself, as an academic body with limited academic preparation sometimes unable to analyze their problems and take own decisions aimed at improving the management and school quality.

This research aims to identify the variables that affect the quality of education provided at the Instituto Tecnológico Superior Purhépecha, and also the existence of abundant literature shows that quality is constantly subject to a number of investigations and is marked by a large and quoted number of researchers and scholars in the field, as an important factor in improving education. This empirical research is based on the model used by the Department of Pedagogy of the Autonomous University of Barcelona and consists of the following variables: material resources, human resources, management and administrative management, educational aspects (Marquès Graells, 2015) The which will be used to measure and determine the ways in which these impact the educational services provided in the aforementioned institution.

This model is ideal for assessing the quality of education as it adapts to the needs of the institutions to assess their quality efforts in the educational service, this model seeks to transform every institution in quality schools is understood to be, which promotes the progress of their students in a wide range of intellectual, social, moral and emotional achievements, considering their socioeconomic status, family environment and prior learning. An effective school system is one that maximizes the capacity of schools to achieve those results (Mortimore, 1998). This model is very similar to the variables that comprise the European Model for Quality Management, so its application is wide, this model also mentioned some factors that make it inefficient to some institutions of higher education such as: Freedom academic misunderstood. It may be that some do not understand the needs of students or neglect the needs of the organization to which they belong —the absolute lack of control, the uncertainty of the teacher profile—. The lack of definition of the knowledge and pedagogical skills they should have a teacher.

Once mentioned the importance of quality, this research aims to evaluate the quality of an institution of higher education from the perspective of the student, teacher and administrative workers, this study has the opportunity to be replicated in other similar institutions and later and through analysis, to establish a ranking of such institutions, knowing what was done right and what needs improvement, once developed the ranking certain economic incentives could be established to the leading institutions for the improvement and assurance of institutional quality . The rest of the investigation consists of a review of the literature shows the theoretical support of the variables proposed in this research, the methodology used as well as the research model, the results obtained in this investigation conclusions and references.

Theoretical frame

Competitiveness

Universities play an extremely critical role in the competitiveness and sustainability of economic growth (Lin, 2004). In this sense, Levin (2010) mentions that Japan, South Korea, Taiwan, Hong Kong, Singapore, India and China have changed the global balance of power because they have recognized the importance of an educated workforce for economic growth. In addition to its important role in economic development, higher education institutions are also promoters of democracy and nationalism (Suspitsyna, 2012). Like these countries, across the world are competing to have the best universities in the world ranking of universities This ranking reflects the quality of higher education and its contribution to research (Naceur, 2015).

Infrastructure

A college campus can be characterized as a heterogeneous environment and versatile learning with various facilities and various related services are all aimed at achieving corporate objectives (Douglas, Douglas, & Barnes, 2006). In the field of higher education, the

role of infrastructure is to support teaching and enable learning and research (Owlia & Aspinwall, 1996) the value added that the facilities can bring to higher education institutions is associated with student recruitment, by improving the image of a university (Vidalakis, Ming, & Pope, 2013). However, although the relationship between physical infrastructure and student learning is complex, a growing body of evidence establishes the link between the quality of school facilities and learning and student achievement (Uline & Tschannen-Moran, 2008). For example Earthman (2002) found differential estimates between 5 to 17% lower in achieving the objectives of students with poor infrastructure and those who have regular buildings. At least this supports the explanation of the link between the quality of school infrastructure and educational outcomes of students. On the other side, but with the same purpose of evaluating educational services, Elliott & Healy (2001) examined the factors that impact on student satisfaction, they found that the physical facilities of the campus and teaching efficiency are the most influential. In this sense Kok, Mobach, Onno (2011) argue that better infrastructure directly affect the educational process will be potentially greater contribution to educational achievement.

Management Direction

The development objective of the school are the members of management. If the school wants to develop, it must have several objectives for different periods to encourage members of school to work hard. Because members of the school have expectations about the development of the school and their own development, they can have different levels of performance of morality to consider the objectives of the school. So the director has to improve his transformational leadership in the process of school improvement. HEI managers need to create conditions to stimulate and keep employees motivated. All this requires a lot of directors; it should continue to set new goals and choose different behavior for different people; address management plays an important role in those parts to promote continuous improvement and development of schools (Yang, 2014).

Satisfaction is the result of the quality of service (Bolton & Drew, 1991). Therefore, the quality of service related to student satisfaction, Helgesen and Nesset (2007) indicates that the management of educa-

tional institutions should focus on quality of service, information and facilities to increase the satisfaction and loyalty of students. Managing director or leader (Kouzes, 2002) refers to the leadership of the directors who are able to bring to school a new level of school development. HEI not always innovative, different factors and circumstances make the complex process sometimes moving and sometimes stagnates leadership is a fundamental quality of the directors. However, managers are faced with challenges of practical problems which its management capacity is tested. Management focuses primarily on the economic, human, physical resources (infrastructure, buildings, libraries, computer centers, sports facilities etc.) linking the public and private sectors.

The Human Resources

Because of its enormous importance, currently, there is a lot of research that focus on the importance of academic preparation of teachers in higher education, mainly because its effectiveness is the most influential factor in student learning (Gentry, 2007). Many researchers have concluded that focusing efforts on the quality of teaching during the hiring process is an important aspect of improving the quality of school (Pillsbury, 2005) .Teachers qualified and competent are essential to achieve high levels Performance of students (Clement, 2009).

Therefore, with respect to teaching staff in higher education institutions, a bad hiring decision can lead to poor performance of students. Research supports that teachers are the most influential factor in student success. However, the directors have the practice of hiring teachers based on intuition and sympathy, there is no doubt that this activity must change. Given the current period of high demand for talent, directors need assurance that recruited teachers have adequate preparation in terms of degrees obtained, and to meet the needs of students and school goals (Schumacher, Grigsby, & Vesey, 2005). For these purposes the directors have an extraordinary opportunity to influence teaching practices and student learning with particular attention to teacher recruitment process.

Heneman and Milanowski, (2004) suggest that an important for improving student achievement aspect is to align HR practices in the selection and hiring of teachers to improve teacher quality and therefore the quality of the education service HEI. Teaching quality is

analyzed through four main areas which encapsulate the quality of teaching exhibited by teachers: The management and control in the classroom, the organization for instruction, implementation of instruction, monitor progress and potential of student. The control in the classroom relates to the behavior in the classroom by teachers shown, besides maintaining good behavior of the students and to establish a good organization in the classroom and a good climate in the lounge (Stronge, 2007). A classroom is well managed or organized a comprehensive achievement for students (Paciotti & Covington, 2007).

The organization for instruction, teachers focus on maximizing the time to give instruction, setting high expectations for students, planning and preparation for efficient instruction, making conscious decisions, this involves teachers who make a careful effort to develop a coherent system of activities (Panasuk, Stone, & Todd, 2002).

The implementation of the instruction is to effectively use instructional strategies, communicating the program content, the use of appropriate questions. Effective teachers have and use a repertoire of instructional strategies to support student engagement in the learning process (Stronge, 2007). In relation to monitoring the progress and potential of the student focuses on collecting evidence of student learning, the design of appropriate evaluation, aligning teaching strategies evaluations (Schumacher, Grigsby, & Vesey, 2005).Finally, in the global context, higher education institutions must be prepared to create and maintain a high level faculty; quality educational services in much of the IES is contingent largely on the academic level of the teaching staff and educational quality of the institutions where teachers are trained, this is another important indicator. In addition to their high academic, fundamental to the quality of HEI level, another aspect is the number of full-time faculty who are engaged in the academia and research, improving curricula and research.

Pedagogical Aspects

It is indisputable that among the important indicators to be considered by the IES to search for an irrevocable raise their standards of quality are the pedagogical aspects: the initial assessment, update curricula, assessment of quality, adequacy content objectives, and level of utilization of educational resources, evaluation, consulting, and achie-

vement of the objectives. Every public university should revise its policies of entry and stay, providing rigidity and facilities for those requiring such services by universities. It is therefore indispensable institutional support services such as scholarships, library services, medical care, and Internet access, among others. In order that the curriculum proposals are relevant to social demands, it is essential vision and the ability of teachers to be renewed periodically curricula, ensuring that the academic training offered is consistent with the social demands that require in a timely transformation in the global, regional and local level. Similarly, consistency and legitimacy of the methodological processes with a view to rethinking curricular, are crucial. On this subject, Eshiwani (2000), is of the opinion that the universities must ensure that graduates obtain employment, which involves reviewing the curricula and teaching methods, to suit market demands. The quality of universities is also measured by the ability to form the necessary human resources with updated curricula, in order to face the challenges of development optimally. Curricular coherence with the world of work (Badsha, 2000) is fundamental.

Methodology

This article comes from scientific research and has a correlational cross, inductive and deductive qualitative and quantitative descriptive-design hypothetical, since, described the object of study and second because it determines the relationship with the independent variable with the dependent variable quality education, two questionnaires were applied, the first 120 students attending different semesters and which contains 40 questions designed to measure the proposed variables in the model, the second questionnaire was applied to 28 teachers and administrative workers and contains 50 questions.

Figure 1
Variables model

Independent variable	*Dimensions*	*Indicators*	*Dependent variable*
Material resources	Academic infrastructure	Classrooms Computer center library laboratories furniture	Quality in Higher Education.
	Extracurricular Facilities	Patio (Civic Square) Sports facilities	
Human resources	Preparation Human R	Teacher preparation level Experience teacher	
	Attitude of Human R.	Attitudes of teaching and administrative staff Ability to work in team	
Administrative Management.	Administrative Management Efficiency	Communication Staff motivation Human relations Quality assessment Efficient Resource Management Planning and Organization Coordination and Control	
Pedagogical aspects	Expected objectives	Initial assessment Update curricula Adequacy of objectives to contents advisories tutoring	

Source: Research data.

This is the model variables under which this research was conducted, the independent variables are the materials management, human resources, leadership and management and educational aspects, each variable with its respective dimensions and indicators.

The Problem Approach

The problem approach the object of study is as follows:

To what extent the Material Resources, Human Resources Management and Administrative and pedagogical aspects affect the Quality in Education at the Instituto Tecnológico Superior Purhépecha?

General Objective

Determine the extent to Material Resources, Human Resources Management and Administrative Management and pedagogical aspects affect the Quality in Education at the Instituto Tecnológico Superior Purhépecha.

General Hypothesis

Quality in Education at the Instituto Tecnológico Superior Purhépecha is determined by the Material Resources, Human Resources Management and Administrative Management and pedagogical aspects.

Study Object

The October 30, of 2000 activities were initiated in this institution, with a total of 60 students in 2 races, Bachelor in Business Administration and Industrial Engineering, and now this school has an enrollment of just over 800 students distributed in six races P'urhepecha Superior Technological Institute (ITSP) was born as a need to establish an institution of higher level in the heart of the Purhépecha Plateau, in order to boost micro industry development in the region; as well as to prepare people of the same, with the technologies and cutting-edge scientific knowledge to be able to create, run and manage small and medium companies, without having to travel to other cities.

Sample

The sample of students surveyed was comprised 83 women and 37 men with a total of 120 students surveyed was calculated with a confidence level of 95% and a maximum error of 5%, on the other hand, a census was conducted with staff and management with a total of 28 people surveyed were not involved department heads or deputy heads of the campus.

Study Results

After preparing the questionnaire vital aspects are measuring the reliability and validity is said that a questionnaire is reliable when measured with the same precision, it gives the same results in successive applications made in similar situations (Santillana, 1998). The results are shown in Table 1.

Table 1
Reliability of Cronbach Alpha

Element	*Questionnaire applied to teachers*	*Questionnaire applied to students*
Cronbach's Alpha	.945	.942
N° Ítems	50	40

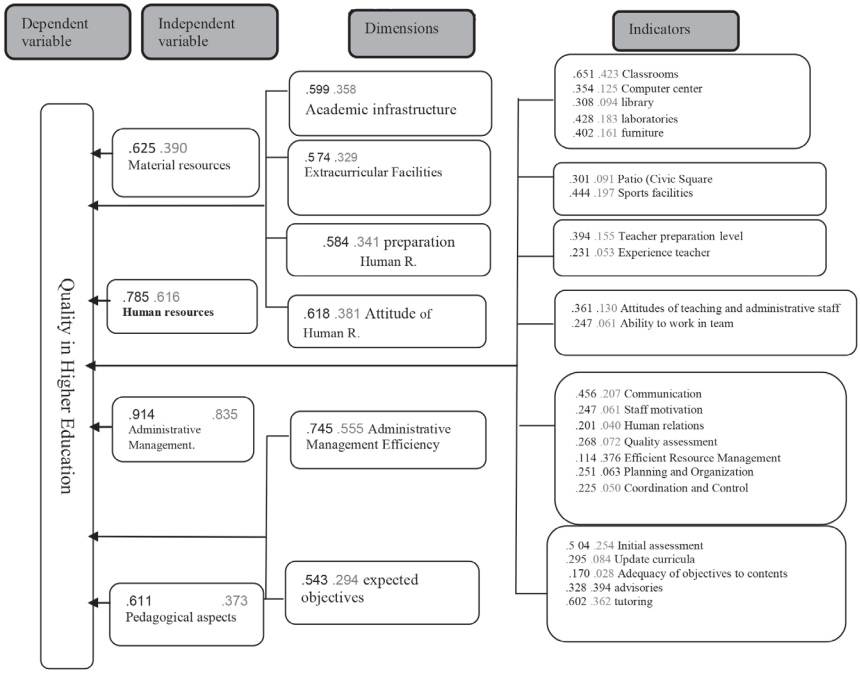
This table shows the Cronbach's alpha of questionnaires used in this research which a reliability of 945 applied to the teaching and administrative staff and students applied sample 942 is observed reliability, which is inferred to be reliable instruments and stable in their training and application containing relative absence of measurement errors, this is more explicitly expressed in percentages observed, so that this measurement may show a precision, homogeneity and internal consistency of the measurement instrument used. Source: research data.

Spearman Correlation Index

The Spearman correlation coefficient is a coefficient nonparametric alternative to the Pearson correlation coefficient, the coefficient of

Spearman rank correlation and linear correlation coefficient between the ranks is defined. The calculation involves applying the simple linear correlation coefficient of Pearson two ordinal variables. This calculation serves to determine the relationship between variables, and among the main benefits of using this tool are the determining how strong the relationship between the variables that are contrasted.

Figure 2
Spearman correlation measurement



In this figure the total measurement of the research model concerning the correlation of Spearman, in the black and the coefficient of determination shown in the red, this allows us to observe the impact of each indicator, size and independent variables on the dependent variable, determining the origin of the factors with the greatest impact on the dependent variable and thus more accurately identify the sources of quality education in the IES. Source: research data.

The overall objective of this research stated as follows; determine the extent to Material Resources, Human Resources Management and Administrative Management and pedagogical aspects affect the Quality in Education at the Instituto Tecnológico Superior Purhépecha. The answer to this approach is given below.

Figure 2 shows the measurement of the correlation of Spearman (black numbers) and the coefficient of determination (red numbers), in the first measurement explains the relationship between the variables and how strong is this relationship further measurement the coefficient of determination indicates the variance of common factors. That is, the percentage of the variation of a variable due to variation of the other variable and vice versa. At this point it is important to mention that traditionally in scientific research the relationship of the dependent variable to the independent variables measured only, this type of measurement is somewhat limited way, in this figure measuring the entire model is shown raised for this research is, what relationship do the measures, dimensions and independent variables with the dependent variable, so that according to these results, it appears that in the variable address and Administrative Management has a correlation of .914 inferring that It is the largest relationship with the dependent variable, the results of the indicators of this variable show a poor performance of the campus principal as almost all results are very low stresses communication as the state with the best result, however, motivation is emerging, human relations and quality assessment are likewise, with a similar result is the HR variable shows a result of .785 emphasizing teacher preparation and staff attitudes as something that needs to be improved for increasing quality. In connection with the educational aspects variable, the indicator of the initial evaluation for admission to the institution students consider important as a factor that would influence the quality of education, mentoring is another indicator that shows good importance as quality factor the service.

It is noteworthy that the main contribution of this work is the measurement model proposed in scientific research, as in the diagram is clearly seen the origin of the findings, to take the measurement at this level of analysis allows us to know and identify results in a very particular way, as shown in Figure 2. It is noteworthy that in reviewing the literature, measurements show only the relationship of the independent variables with the dependent and not a same or similar mea-

surement was found as which was done in this research, therefore, I believe that this model I propose is an innovation in the measurement of the phenomena observed in scientific research and also explains more accurately the results, helping in a major way in the decision making. For example the independent variable Management and administration is the most related to quality shows, the only dimension efficiency in the administration also has an important bearing on the quality indicators and the initial assessment and mentoring are the most concerning this quality allows to know the origin of the quality and particularly not generally known as would be the only independent variable that has the greatest relationship with independent, just as in the rest of the dimensions and indicators it is important to know also what level of relationship with the dependent variable, in this way you can know is right and should be corrected, this allows a decision as mentioned above with greater certainty.

Hypothesis Verification

Hypothesis testing was performed for each of the independent variables, this test was performed with the SPSS software for non-parametric ordinal variables and related samples These contrasts show whether there are differences between the distributions of two populations from two samples related; that is, such that each element of a sample is paired with an element of the other, so that the components of each pair resemble each other as much as possible by making reference to a set of characteristics that are considered relevant.

The dependent variable is the quality of education and independent are material resources, human resources, management and administrative management and educational aspects, as shown in Table 2, according to the results of the test the null hypothesis is rejected each variable level of significance, therefore the four working hypotheses raised in this research accepted.

Table 2
Hypothesis testing

Variable	*Test*	*Significance*	*Decision*
Material resources	Related-Samples Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
Human Resources	Related-Samples Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
Administrative Management.	Related-Samples Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
Pedagogical aspects	Related-Samples Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level es.05
Source: measurement data.

Conclusions

The conclusions drawn by developing this research strengths, and negative, related to the functioning of this institution of higher education met and that proved to be a useful, rewarding and interesting job, including aspects that draw attention, and that is vital for any organization, it is the following. The improvement of quality in higher education institution, necessarily involves the integration of all stakeholders in the organization: teachers, managers and administrative staff, support staff etc., articulated through intensive communication promoted and supported by each of the members, as well as with the use of existing technology today, mainly by encouraging the use of information technology. In Mexico, higher education institutions such as the Higher Technological Institute itself P'urhepecha play a strategic role in the development of our society, since they are practically the only ones with the ability to generate and socialize knowledge holistically. They have a responsibility, which its graduates in the new millennium, combining scientific knowledge achieved without neglecting his humanistic education that enables to adapt creatively to the challenges of the new era.

Special mention is that at the time of this research, and to apply instruments measuring both the teaching and administrative staff and students, there was some resistance and fears to answer them in some of the above.

In relation to the variables in the model used for this research, all of them have a degree of impact, and impact directly on the quality of the education in this institution. However according to the SPSS software, used to manage the information collected, it shows that the correlation is more variable, and therefore which mostly impacts the quality of education is the variable management direction, so this implies and represents for the whole institution, and that management depend address: good communication, labor relations in the school to create the right organizational climate, motivation staff both teachers and administrative and support, which is crucial for improving its productivity, work address in the appropriate and timely management of resources, and to improve the proper functioning of the organization, training personnel required and need to improve the service, etc.

Undoubtedly, the quality of higher education is multifactorial but among the variables that most affect this phenomenon in any university in the world is the academic quality of the faculty, for the relationship and influence that teachers have with students. This forces teachers to better prepare each day. Regarding the results obtained in this research, it is necessary that teachers get better preparation through obtaining higher degrees such as master and doctorate which would open the door to scientific research and to creating new knowledge to propose solutions to the problems of the region and the creation of technological and non-technological innovations.

Another important aspect to note is that traditionally the quality measurement is made from the customer's perspective is the student, this research perspective of teachers, administrative workers and students was measured, which is a measure including stakeholders.

In hypothesis testing allowed the four work and not rejected any as shown by the results, it follows that all these have a relationship with the dependent variable, quality higher education.

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6
Competitiveness in hospitality and its relationship with marketing innovation

Elsa Georgina Gonzalez-Uribe[1]
Jose Sánchez-Gutierrez
Paola Irene Mayorga-Salamanca
Oscar Alejandro Espinoza-Mercado

Abstract

The service sector, especially tourism, represents great importance for global economic growth and development. Therefore, this study aims to analyze the level of innovation in marketing in order to know the relationship to the competitiveness of the hotel industry in Guadalajara, Mexico. Having reviewed the theoretical contributions of several authors, a construct and a questionnaire, was properly applied to 5 starts and luxury category hotels. Once having gathered all of the information, statistical analysis for testing the hypotheses is carried out.

Keywords: marketing innovation, competitiveness, hotel industry.

1. Centro Universitario de Ciencias Eocnomico Administrativas-Universidad de Guadalajara.

Introduction

Tourism has become one of the main players in international commerce, and it represents a major source of income for many developing countries. This growth goes hand increasing diversification and competition among destinations. We can say that innovation is a basic feature for evolution in several areas, it involves improving and / or changing the way of making processes for better results and become more competitive in the sector in which they perform. Nowadays, different companies face increasingly competitive markets by highly innovative companies that design products and sophisticated services, customers have become more aware when it comes down to purchasing a product or service.

Innovation has always been a fundamental basis for the development and competitiveness of enterprises, regions, nations and the whole world (Shepherd, 2012). Furthermore, it boosts changes in different areas in order to get different and better results.

The importance of innovation in industry and the service sector is widely recognized (Sorensen, Sundbo, & Mattsson, 2013), as both are key elements in a country´s economy and in the specific case of the services sector due to increased mobilization of tourists worldwide.

The contribution of tourism to the economic well-being depends on the quality and revenue that tourism offers (Turismo, 2013) to users seeking to acquire and learn new destinations within a given territory.

That is why the importance of assessing the level of marketing innovations in the hotel industry in Guadalajara. By doing so, we learn the fundamentals of this concept and the impact that it is having at a competitiveness level, so companies satisfy the needs and desires of its customers.

Parra (2007) mentioned that countries that spend a greater amount of resources on research and development are the ones that experience better results in economic matters, while Latin American countries allocate a percentage much lower and sometimes insignificant, when it should be conversely, of course, if the objective was to increase levels of competitiveness.

Theoretical concepts

The service industry

It is necessary to recognize that in recent years the service sector has gained importance in the economy as a movement of transition in developing countries, especially since the nineties (Eichengreen & Gupta, 2009). Cruz (2004) argues that this sector has been the one that has generated the majority of jobs and requires highest demand on skilled labor. Services are economic activities that create value and provide benefits to customers in specific times and places and also produce a desired result in favor of the host (Lovelock, Reynoso, D'Andrea, & Huete, 2004) change.

Tourism

Tourism is considered the engine of social progress in many countries; it can reduce poverty and inequality by creating new businesses and jobs. In addition, it is considered a multidimensional activity that can extend opportunities for progress, income distribution and sustainable use of natural and cultural resources (OMT, 2004).

Among the tourist services there are: accommodation, restaurants, bars and nightclubs, theme parks, theaters, sporting attractions, tour operators, travel agencies and transport either by air, sea, road, etc. (Crown & Zarraga, 2014).

Nowadays, tourism is one of the most important businesses of the planet (Morillo, 2007). According to the World Tourism Organization (WTO, 2006) at the dawn of the new millennium, tourism has become the main economic activity in many countries and the fastest growing sector in terms of foreign exchange earnings and job creation, a world exports generator and a major countries´ payments balance factor.

The hotel industry

The hotel sector is the basis of tourism, the dynamics of large corporations is meant due to the profitability promised the shareholders than to the search for consumer satisfaction (the tourist). The nineteenth

century and early twentieth were characterized by European hotels. The second half of the last century was the American hotel and its forms that shaped clearly hospitality and tourism in the modern era (Ramírez & Guzmán, 2013).

The hotel industry in Mexico

The importance of tourism for the Mexican economy is unquestionable; their benefits are reflected not only for being an industry that generates jobs and triggers regional development, but also for spreading cultural and natural attractions (Sectur, 2013). The hosting service is one of the key components of tourism, along with recreational facilities, transport, communications and restoration (Álvarez, 2001).

The hotel industry in Jalisco

According to Sectur (2014) to the influx of domestic visitors amounted up to 20'491,064, while the foreign visitors' turnout was 3'623,335, representing an increase of 2.2 and 3.76% respectively compared to 2013.

Hotel occupancy in Jalisco in 2014 had an average occupancy of 51.23%, with an economic impact of 36 billion 230 million 203 thousand pesos, and 1,647 establishments classified into different groups according to the conditions provided to users.

Innovation

The importance of innovation in such an industry and the service sector is widely recognized (Sorensen, Sundbo, & Mattsson, 2013). Over the past few years the concept has had several changes in its definition and implementation. An objective improvement in the performance of the product only, because definitions and concepts were adapted to be implemented only in the primary and secondary sectors (OECD, 1997).

Innovation can be defined as the ability of the organization to adopt and successfully implement new ideas, processes or products (Hurley & Hult, 1998). It is a source of progress and development. Companies and nations that fail to innovate continuously maintain

economic strength. So, it is not a coincidence that countries where the highest patent activity, or where there is a high intensity related to research and development investments, are leaders in the field of economic development worldwide (Shepherd, 2012).

A more complete definition is the one by the OECD (2005) through the Oslo Manual which states that innovation is the introduction of a new or significantly improved product (good or service), a process, a new method marketing or a new organizational method in the internal practices of the company, workplace organization or external relations.

Based on the above mentioned, it can be defined as a tool to take advantage of changes, developing new and improved goods from the inside and outside of a given organization.

Marketing innovations

Marketing innovation, refers to market research, the strategy of pricing, market segmentation, advertising promotions, sales channels retail and information systems marketing (Vorhies and Harker, 2000; Weerawardena, 2003).

Innovation is also given to reposition the perception of a product or process already established. The innovation consists of finding new ways of doing things and gain strategic advantages, so there will always be room for new ways to gain and maintain these advantages (Parra, Mesa, Corrales and Aguirre, 2007). The difference between marketing innovation and other marketing activities carried out in an organization is that the first one involves the implementation of previously used methods (Rivero and Asenjo, 2010).

In order to consider marketing innovation as such, it is not necessary that marketing activities remain original; chances are they are adaptations of concepts and practices exercised by the same company. Or on the other hand, they can also be marketing practices conducted by other companies including them in their marketing strategies (Medrano, 2011), no matter whether they come from another company, as long as they turn out to be new to the company that is implementing them.

From a theoretical level, Ren Xie & Krabbendam (2009) considered marketing innovation as an appropriate method for companies to achieve sustainable competitive advantage, commenting that some

managers are too blinded with technological innovations, which prevents them from getting competitive benefits through marketing innovation.

The increasing globalization of the economy requires an innovation´s constant effort. Business innovation is a key factor in regional development element and it is one of the most important ones when it comes down to increasing productivity and competitiveness in the enterprise factors (Rodeiro & Lopez, 2007), since companies are exposed to rapid changes. Innovation used to be a competitive advantage, but things have changed, nowadays it is a prerequisite for survival (Guerrero and Molina, 2012).

Barriers to innovation

While innovation should be a constant thing, a well-defined process or methodology to generate the necessary changes in the various organizations, there will be barriers that depend on internal and external factors that reduce the capacity to implement strategies that were already set. However, some of the barriers could somehow let innovation take over, while others could pose adverse effects in the process (Saatcioglu, and Özmen, 2010). Some authors such as Laersen and Lewis (2007) classified the innovation barriers into: financial, marketing, management and personal characteristics among other obstacles. Other studies (Mohen & Roller, 2005; Baldwin & Lin, 2002) show that different innovation barriers are related to costs, institutional limitations, human resources, organizational culture, and information flow and government policy.

Destinations competitiveness

Destination competitiveness has considerable implications within the whole tourism industry, making it a target to public and private tourism stakeholders (Ritchie & Crouch. 2000). Over the past few years there have been numerous definitions regarding tourism competitiveness, for instance, d'Hauteserre, (2000) states that tourism

competitiveness is the ability of a destination to maintain its market position and share and / or improve it over time. Another definition is (Dwyer, 2003) defines tourism competitiveness as the relative ability of a destination to meet the needs of visitors to different aspects of the tourist experience or provide better products and services than other destinations in those areas where experience is considered quite important by tourists.

It is stated that the presence of hotels in a given territory, contributes to the generation of employment and it has an indirect effect on the environment around them; also it supports other tourist activities, improving the welfare of people in such areas and revitalizes a considerable number of economic activities that can disappear without the presence of a hotel (Carmona, 2012).

It is important to stand out that nation competitiveness depends on the performance of their enterprises, wherein hotel industry is considered. This industry benefits from the growth and stability of tourist destinations and the development of communities. However, there are many other factors that determine such competitiveness: processes, outputs, outcomes, etc., (Tsai, Sonh, & Wong, 2009).

Factors of competitiveness

Competitiveness and financial performance

Competitive advantage is directly reflected in the capabilities of the company to get a better financial performance than its competitors (Arend, 2003) according to the area which performs its functions, as companies have different performance according to the evaluated period. We can say that maximizing profits is related to the managers who operate in different markets (Rodriguez, 2013), due to the fact that they are able to estimate value, even better than their competitors. This can actually provide a company with a source of sustainable competitive advantage (Halawi & McCarthy, 2005; Clulow and Gerstmann, 2007; Kraaijenbrink, Spender, & Groen, 2010).

Obtaining increased profitability by an organization has been given by the existence of internal resources and capabilities that promote a

better use of the opportunities offered by the environment (Vazquez, 2002).

Competitiveness and costs

In the current globalized world there is a huge competition, therefore, it is necessary to develop competitive strategies which include both price and quality. In order to do so, the only way is by optimizing costs without affecting the quality of the final product, or enhancing it (Gerencie, 2008), as this will depend on achieving high competitiveness. It does not only involve lower input costs, but maintains the quality level. The cost advantage is to achieve a cumulative cost of production per unit lower than that the ones given by other competitors, such as product specifications to conditions, without compromising quality itself (Mejía, 1999). Thus, competitiveness is defined as the ability to generate increased production at the lowest possible cost. Competitiveness is an attribute or quality of companies, not countries (Ahumada, Zarate, Plascencia, & Perusquia, 2012). Enterprises competitiveness is a concept that refers to their ability to produce goods and services efficiently, reducing costs and increasing quality, making attractive products both inside and outside the country. It is therefore necessary to achieve high levels of productivity that increase profitability and generate incremental revenue (IMCO, 2006).

Competitiveness and technology

There are some changes that have had a qualitative impact on the recent experienced changes within a capitalist society among which are: information technology and communications revolution (Guevara, 2013). With the advent of computers and networks a revolution in communication was generated, giving rise to the so-called knowledge economy, in which productivity increased (Dabat, Rivera, & Suárez, 2004). Several studies have shown a positive relationship between the technological level of the enterprise and competitiveness, they have also found that high technological levels companies, increase productivity and they are more likely to compete in more advanced environments (Koc & Bozdag, 2007; Baldwin & Sabourin, 2002).

Innovation and competitiveness

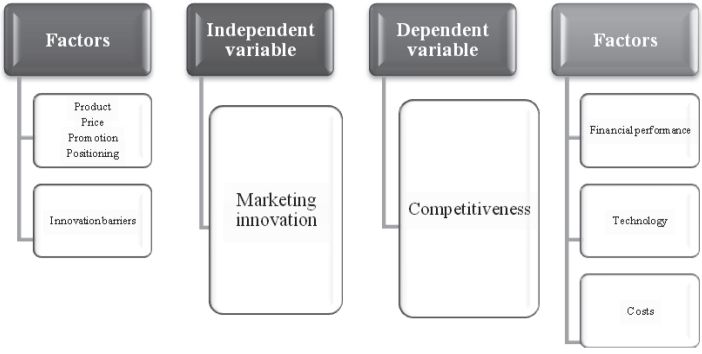
The concepts of competitiveness and innovation have become an interesting topic that needs to be analyzed (Jiménez, Domínguez and Martinez, 2009), and as they say (Solleiro & Castañón, 2005), the analysis of competitiveness has been given a common denominator from any perspective that is focused on "competitiveness depends on the ability to innovate."

Corona (2008) argues that competition is a multifactorial variable that is related to business training, administrative, labor and productive skills, management, innovation and technological development. According to de Costos and Molina (2003) changes in the context in which companies interact have generated the need to design strategies that allow them to be competitive and, therefore, remain in the long term.

Castro & Delgado (1999) consider that in search for competitiveness, innovation plays an important role, provided that it is established in close relation to the strategy. In this sense, innovation is a variable that has acquired an important relevance in recent years, as companies are able to continuously improve products, processes, services, etc., achieve greater competitiveness, as it allows them to cope with changing customer needs and a globalized environment (Tushman & Nadler, 1986; Porter, 1990; Porter, 1991; Grant, 1996; Velasquez & Macias, 2001; Peña, O'Brien, & Farias, 2003; Arbussá, Bikfalvi, & Valls, 2004; Haour, 2005; Aragon & Rubio, 2005).

Considering all of the concepts discussed in the literature review, the following construct where the independent variable is Innovation and determinants are product, price, promotion, positioning and barriers to innovation is developed; the dependent variable is competitiveness which is determined by three factors: financial performance, technology and costs.

Figure 1
Research construct



Source: own elaboration.

General objective

To analyze the relationship between marketing innovation and competitiveness in the hotel industry in Guadalajara.

Specific objectives

1. To check the main contributions to knowledge about marketing innovations and their relationship to competitiveness.
2. To know the level of innovation in marketing of hotel companies in Guadalajara.
3. To identify barriers to innovation that inhibits innovative activities in marketing in the hotel industry in Guadalajara.
4. To analyze factors influencing variables in marketing innovation and competitiveness.

Methodology

A questionnaire designed based on the elements of the construct research was designed, it was divided into four sections with a total

of 46 items and applied in 5 star and luxury category hotels in the Guadalajara, Mexico, within a period of time which went from November 2014 to March 2015.

Analyzing the data obtained through an exploratory factor analysis and the development of a model of causal relationships between selected by Pearson correlation and linear regression variables.

General hypothesis

The higher marketing innovation, the higher competitiveness level.

Specific hypotheses

- The higher marketing innovation, the higher competitiveness in the hotel sector companies in Guadalajara.
- The higher technological development, the higher competitiveness level of in the hotel sector companies in Guadalajara.
- The more barriers to innovation, the lower competitiveness level in the hotel sector in Guadalajara.

Results

In order to establish whether a factorial analysis can be carried out, the correlation between two variables must be analyzed by the time the others´ effect has already been discontinued. There is a couple of methods for analyzing the functional model, the first one is the Bartlett test of sphericity and the second one KMO index calculation (Kaiser-Meyer-Olkin) adequacy of the sample, both are shown in the following table.

Table 1
KMO and Bartlett Test

Kaiser-Meyer-Olkin Adecuacy simple measurement.		.546
Bartlett's test of sphericity	Approximated Chi-square	530.783
	Gl	231
	Sig.	.000

Source: Own elaboration.

The KMO test is a correlation coefficient that measures the correlation between two variables, a statistic that varies between 0 and 1, the closer to one; the more suitable will be the data. Thus, less than 0.5 turns out to be a poor indicator data for factor analysis (Hasan, 2008). As for this investigation the KMO is quite acceptable because it depicts a 0.546 value with a significance of .000, which means that the factorial analysis is a useful technique to apply.

Table 2 shows the values and percentages of the total explained variance, which aims to ensure the significance of the results of the factor analysis.

As for table 2, there are six components wherein component 1 explains 22.6% while component 2 explains 20.33%, followed by component 3 with 12.61%, component 4 with 10.82%, component 5 with 6.79% and finally component 6 with 6.59%.

Due to the fact that the last component explains a little less than the fifth component and fine-tuning for the present investigation it can actually be disregarded, leaving a total variance explained of 73.17% which is still an excellent rate for the current study. Therefore, these five components become appointed as follows: No. 1 component corresponds to the barriers to innovation, component No 2 corresponds to technological development, component No. 3 corresponds to financial performance, component No. 4 corresponds to production and finally the component No. 5 corresponds to innovative activity.

Table 2
Total explained variance

Component	*Initial autovalues*			*Sum of squared loadings extraction*			*Sum of squared loadings of rotation*		
	Total	*Variance %*	*Accumulated %*	*Total*	*Variance %*	*Accumulated %*	*Total*	*Variance %*	*Accumulated %*
1	4.972	22.600	22.600	4.972	22.600	22.600	4.331	19.687	19.687
2	4.473	20.334	42.934	4.473	20.334	42.934	3.675	16.705	36.392
3	2.776	12.617	55.551	2.776	12.617	55.551	2.975	13.521	49.912
4	2.381	10.823	66.374	2.381	10.823	66.374	2.801	12.731	62.643
5	1.495	6.797	73.171	1.495	6.797	73.171	2.198	9.990	72.633
6	1.452	6.598	79.769	1.452	6.598	79.769	1.570	7.136	79.769
7	.916	4.162	83.931						
8	.798	3.626	87.557						
9	.575	2.614	90.171						
10	.488	2.219	92.391						
11	.387	1.759	94.150						
12	.285	1.295	95.444						
13	.231	1.049	96.494						
14	.215	.979	97.473						
15	.166	.756	98.229						
16	.114	.520	98.749						
17	.071	.323	99.072						
18	.060	.272	99.344						
19	.057	.259	99.603						
20	.049	.224	99.827						
21	.024	.109	99.935						
22	.014	.065	100.000						

Source: Own elaboration.

Table 3
Correlations

	Innovative Activity	*Innovation Barriers*	*Financial performance*	*Production Costs*	*Technology*	
Innovative Activity	Pearson Correlation	1				
	Sig. (bilateral)					
	N	31				
Innovation Barriers	Pearson Correlation	-.139	1			
	Sig. (bilateral)	.457				
	N	31	31			
Financial Performance	Pearson Correlation	.281	.114	1		
	Sig. (bilateral)	.126	.540			
	N	31	31	31		
Production Costs	Pearson Correlation	.025	-.144	-.052	1	
	Sig. (bilateral)	.893	.438	.781		
	N	31	31	31	31	
Technology	Pearson Correlation	.375*	-.100	.215	.106	1
	Sig. (bilateral)	.038	.594	.245	.572	
	N	31	31	31	31	31

*. The correlation is significant at the 0,05 level (bilateral).
Source: Own elaboration supported by SPSS.

As fas as it goes to the correlation between innovative activity and financial performance, there is a Pearson correlation that goes up to .281, innovative activity and technological development depicts a Pearson correlation that goes up to .375 and finally innovation and cost production depicts a Pearson correlation that goes up to -.144.

After analyzing such correlations, a linear regression based on the identified components in the SPSS statistical program was carried out. It awarded the R-squared value which by the time is multiplied by 100 yielded the percentage that a variable explains to another and by doing so, it can provide with a suitable answer for the hypothesis previously stated at the beginning.

To sum up, it can be confirmed that came to test hypotheses through factor analysis and then with linear regression where the variables to perform the correlation and linear regression subsequently make the SPSS statistical program to know the impact that

resumed different variables may come to have in the hotel sector in Guadalajara and to compare the results with the hypotheses. The results of the linear regression and its relation to the hypotheses are shown in the following table.

Table 4
Hypotheses' test results

Hypothesis	*Structural relation*	*Explanation percentage*	*Linear regression coefficient in the formula Y=a+bX*
H1: The higher marketing innovation, the higher competitiveness	Innovative activity Competitiveness	7.9%	a= 6.088E-18 b= .281
H2: The higher technological development, the higher competitiveness	Technological development Competitiveness	14.0%	a= 1.102E-16 b= 0.375
H3: The more barriers to innovation, the lower competitiveness	Innovation barriers Competitiveness	2.1%	a= -2.762E-17 b= -.144

Source: Own elaboration.

By giving a glance to the previous table, it is easy to realize that the linear regression confirms its existing relation to the above mentioned hypotheses. Such is the *H1* case indicates that innovative activity has a positive impact which goes up to 7.9% on competitiveness. As for *H2*, it indicates that the technological development has a positive impact on the competitiveness which goes up to 14.0%. Finally, *H3* reflected innovation barriers and depicted a negative effect which goes up to 2.1% on competitiveness. It is worth to mention that the *b* value has a (-) value, representing a cost on the company.

On the one hand, it is proven that the innovative activity variable has positive effects on competitiveness in terms of financial performance and technological development, being the last one the most significant of the study. On the other hand we can say that the existing innovation barriers within the hotel industry in the metropolitan area of Guadalajara have negative effects and certainly significance in production costs, an aspect that should be considered to counter these types of negative effects on companies.

Conclusions

The innovation should be a cornerstone in business life as it currently plays an important role for different sectors because it allows them to embrace changes that are generated in the market as a reason for new trends emergence. Besides, consumers are more informed and their decisions are analyzed in most cases even more thoroughly.

The results of the statistical analysis (factorial and regression) served to corroborate the statements of different authors while replying to raised questions in the current research as well as the hypotheses which mentioned that greater innovation in marketing would enhance the financial performance to some extent by creating a direct relationship between these important variables, as well as innovative activities that have a positive and significant effect on the technological development of the sector. That is why they are closely related, showing their wide importance of being able to apply for an increase in their competitiveness. In the case of the last hypothesis it could also be proven because it depicted that barriers to existing innovation caused some disadvantage to these companies according to the statistical analysis. Their effect reverberated directly in the production costs. However, it is not a problem but it must be seen as an area that should be taken into account so that it does not experience a negative impact on costs that could potentially generate for the organization.

Given this scenario, companies must have a high capacity to identify and embrace generated changes in the market and they should also try to be the first ones on products in order to take advantage of every benefit, anticipating to whatever competitors in the sector do.

The fact that companies strive to offer a unique atmosphere in their stores makes customers perceive it as a place to spend pleasant moments either alone or in company. The atmosphere is directly perceived by senses, which altogether creates an acceptance or rejection of it.

The tourism sector, which is immersed in the hotel sector, is a sector where the client usually does not acquire physical things but intangible, they depend on the physical environment where they are possibly provided, so the environment can easily become a key element to new customer purchases. They are not just services that assess the physical aspect. That is why the statistical analysis resumes such

relevance; they must make changes and improvements in the services. Relevant data is changing and improving promotion channels such as newspapers magazines, radio or television to name a few. They are making improvements in services offered but if they are not appropriately communicated it turns out to be pointless since they should keep up with the strategies and target.

Companies should be aware about the fact that a product has a life cycle that goes through different phases; from its inception until its death with the creation of new and better substitute products that fully meet customers´ needs. They should be aware of trends, or even better, they should anticipate everything with optimal studies of consumer behavior and be open to trying new products.

This research serves as a snapshot of what is happening regarding marketing innovation and its impact on competitiveness in the hotel sector of the metropolitan area of Guadalajara. However, there is a lot to be done in the sector to improve and increase its performance, since 42% of the hotels surveyed are between 12 and 22 years old in Guadalajara. They are relatively young establishments and still under consolidation. It is worth to mention that most of the staff who helped out with the survey were people whose ages went from 24 to 30 years. As for an educational degree, 84% were graduated (bachelor´s degree), meaning they have prepared human capital and youth can consolidate the optimal performance of companies through setting goals for the development of appropriate strategies.

Recommendations

It is highly recommended to keep track of these studies by extending the category of the hotel sector. It can actually be performed in some other sectors where marketing is one of the main lines and could also be applied to other important trading states or geographic regions for a future comparative study within the same so they can be properly compared. By doing so, innovation and competitiveness will be easier to understand since the emergence of new companies cannot be stopped. It is a fundamental task to continue achieving success in the market that makes customers to stick to their preference. Future studies on the same axis could provide important information to establish

primary axes in marketing innovation to increase competitiveness within some other sectors and adapt appropriate strategies.

Opportunities

All of the questionnaire items that were not included in the study by the scarcity of its impact on both the variable innovation and competitiveness in the hospitality sector of the metropolitan area of Guadalajara turn out to be suitable opportunity areas. Just to mention a couple of them they are stated as follows: change or improvement in rooms, change or improvement in reception, change or improvement in rates of service accommodation, change or improvement in the methods of promotion (gifts, discounts, loyalty cards), change or improved sales channels used, perceived risk in innovation, innovation costs, economic turmoil, lack of market information, our earnings have been good in the past three years, our debt has decreased significantly, they have acquired credits to cover current expenses, the costs of our services affect our competitiveness, although supplies are cheap, the quality is high, our costs do not exceed the prices of our services and increased productivity through technology.

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7
Determinants of mobile-learning as a conceptual model of learning innovation for higher education in Guadalajara metropolitan area, Mexico

Juan Mejia-Trejo[1]
Jose Sanchez-Gutierrez
Guillermo Vazquez-Ávila
Jose Alfredo Flores-Mayoral

Abstract

The information and communication technologies *(ICT)* are producing new and innovative forms of teaching-learning process in higher education, so our research question is: *Which are the determinants of Mobile-Learning as Conceptual Model of Learning Innovation for higher education in Guadalajara Metropolitan Area, Mexico?* This research is aimed to respond it, based on documentary study to select the variables with *5* specialists in mobile-learning *(mL)* from Guadalajara Metropolitan Area, Mexico using Analytic Hierarchy Process *(AHP)*.

1. Centro Universitario de Ciencias Economico Administrativas-Universidad de Guadalajara.

The final *determinants* were: the Professor *(P)*, the Student *(S)* according its role; the Contents *(C)*; the Technology *(T)* with a *Final Questionnaire* designed with *60 Indicators* grouped, according the principal authors to describe *mL*.

Keywords: mobile learning, conceptual model, learning innovation, Mexico.

Abbreviations

Abbreviation	*Description*	*Descripción*
AHP	Analytic Hierarchy Process	Proceso Analítico Jerárquico
C	Contents	Contenido
CFA	Confirmatory Factorial Analysis	Análisis Factorial Confirrmatorio
CTLM	Contents Teaching-Learning Management	Contenido Administración Enseñanza-Aprendizaje
CTLS	Contents Teaching-Learning Styles	Contenido Estilos de Enseñanza-Aprendizaje
EFA	Exploratory Factorial Analysis	Análisis Factorial Exporatorio
ICT	Information and Comunnications Technologies	Tecnologías de Información y Comunicaciones
mL	Mobile Learning	Aprendizaje Móvil
P	Professor	Profesor
PIMS	Personalized Intelligent Mobile Learning System	Sistema Inteligente de Aprendizaje Personalizado
PSAA	Professor-Student Assessing Activities	Profesor-Estudiante Evaluación de las Actividades
PSAP	Professor-Student Assessing Participation	Profesor-Estudiante Evaluación de la Participación
PSAQ	Professor-Student Assessing Quality	Profesor-Estudiante Evaluación de la Calidad
PSPF	Professor-Student Perception Feasibility	Profesor-Estudiante Percepción de Facilidades
PSPO	Professor-Student Policies	Profesor-Estudiante Políticas
PSPVC	Profesor-Student Perception Value/Cost	Profesor-Estudiante Percepción del Valor/Costo
P&S	Profesor&Student Rol	Profesor-Estudiante Rol
RQ	Research Question	Pregunta de Investigación
S	Student	Estudiante
SEM	Structural Equations Modeling	Modelo de Ecuaciones Estructurales
T	Technology	Tecnología

Abbreviation	*Description*	*Descripción*
TASY	Technology Asynchronous Communication	Tecnología Comunicación Asíncrona
TFRN	Technology Friendliness	Tecnología Amigabilidad
TMMD	Technology Multimedia	Tecnología Multimedia
TSME	Technology Social Media	Tecnología Redes Sociales
TSYC	Technology-Synchronous Communication	Tecnología Comunicación Síncrona
ZPD	Zone of Proximal Development	Zona Próxima de Desarrollo

Source: Own.

Introduction

The projected growth of education supported by ICT, responds immediately to resolve problems of geography, time and demand. Unfortunately, it has also drawbacks, such as: low intensity on interactivity between professor-student; feedback tends to be very slow; It presents difficulties error correction materials, assessments; there are more dropouts than face teaching; etc. (Gallego and Martinez, 2002). E-learning or online, is defined by the Fundación para el Desarrollo de la Función Social de las Comunicaciones (Fundesco) as: *a system for delivery of distance learning, supported by ICT which combines different pedagogical elements: classical training (classroom or self-study), practical, real-time contact (in person, video or chat) and deferred contacts (tutor, forums discussion, email)* (Marcelo, 2002). In the second decade of this century, due to technological advances, we have a growing number of mobile devices, from smartphones to notebooks, notepads, iPads, tablets in general, etc. even stopping the development of the PC. Even more, according Adskins (2013) *the growth rate for Mobile Learning products and services in the Latin America region is 32.5%, second highest regional growth rate in the world after the Africa region. Revenues will more than quadruple from the $362.3 million reached in 2012 to a staggering $1.4 billion by 2017...for México, is expecting a growing more than 35%* ; finally, *a third of the tablets sold in 2016, will have serious purposes for education issues* (Kaganer et al., 2013). There are several evidences of how m -Learning Improves different educational aspects, in undergraduate students, such as the study of Alexander (2006), Chih-

Ming & Shih-Hsun (2008); Ramos (et al., 2010). Hence, we propose the following Research Question (RQ): *¿Which are the determinants of mobile-learning as conceptual model of learning innovation for higher education in Guadalajara Metropolitan Area, Mexico?*

Methodology

We made a documentary study of mL main factors, among more than 100 works in this regard, proceeding to detect all the variables what are more often mentioned, and by means of AHP (Saaty, 1997) technique, we asked to 5 specialists in m-Learning from Guadalajara Metropolitan Area, Mexico to select the most important variables to use in our conceptual model further discussion. See Table 1.

Table 1
AHP or Saaty's Theorem

Objective	*Mobile Learning (mL)*			
	Variable		*Frecquency*	*AHP weighing*
Alternatives	1	Technology	28	0.23
	2	Contents & Teaching Learning Management	16	0.22
	3	Professor	12	0.19
	4	Student	10	0.13
	5	Innovation	9	0.07
	6	Assessing	8	0.06
	7	Policies	7	0.04
	8	Learning Management	3	0.02
	9	Web Learning	4	0.01
	10	On Line Communities	1	0.01
	11	Multimedia Learning Objects	1	0.01
	12	Augmented Reality for learning	1	0.01
Total			100	1.00

Source: own.

Results and discussion

Evidences about how mL improves the conditions of the environment of education. We have, for instance, the study of Alexander (2006) who considers the older spaces take on new pedagogical meaning. Moreover, since this technology is mobile, students turn *nomad,* carrying conversations and thinking across campus spaces. We have other results with the Chih-Ming & Shih-Hsun (2008) research about how to enhance the environment for English learning, adopting the advantages of the mobile learning to present a personalized intelligent mobile learning system (PIMS) successfully implemented devices for mobile learning for promoting the reading ability of English news. Or the Ramos (et al., 2010) research that presents a multiple case study carried out when mobile learning mL was first introduced to 3.000 freshmen of two university campuses in Mexico, to identify how they help develop cognitive skills in students. The results show that by using mL resources it changes the learning environment by converting any setting into a collaborative and innovative environment. Also it was found that although students are not aware of it, mL resources and the use of mobile devices assists them in developing strategies that promote cognitive skills such as problem solving, decision making, critical thinking, creative thinking among several studies.

Learning Innovation. Lundvall and Soete (2002) argue about the education systems, that people learn specific ways of learning. So, creativity is the first condition for innovation that schools should encourage. The challenge then, is to develop the conditions that favor the development of divergent ideas which, in turn, feed innovation experiences to learn in the schools (Marcelo, 2002).

Learning Management. There are several theories that attempt to explain how people learn. Over 50 ubicables theories are online; however, most of them are variations of the 3 main lines*: behaviorism (behavior), cognitivism (mind and brain) and constructivism (construction of knowledge)*. New theories are evolving around the mL such as: *connectivism (network connections)* and *enactivism (actions based on the body and senses,* Woodill, 2011).

mL. Since the focus has shifted in recent years due to technological advances, so does its definition; see Table 2.

Table 2
m-Learning Descriptions

Author	*Description*
Brazuelo y Gallego, 2011	"*...The educational model that facilitates the construction of knowledge, problem solving learning and development of skills or different skills autonomously and ubiquitous thanks to the mediation of portable mobile devices*".
Traxler & Kukulska, 2005	"*...Any educational process where the only dominant and prevailing technology is provided by equipment type: handheld or palmtop ...*"
Keegan, 2005	"...m-Learning should be restricted to devices based learning where anyone can carry in their pockets"
O'Malley et al., 2005	"*...Any sort of learning that happens when the student is not fixed, or at a predetermined place ... well, is learning happens when students take advantage of the learning opportunities offered by mobile technologies*"

Source: several authors by own adaption.

Consultant or professor tells the students what to do in their learning; in other words, they become in *facilitators* that make the student achieves higher levels of knowledge (Woodill, 2011).

The Contents. People perceive e-learning as a formal course, and not as a tool and an attitude towards lifelong learning to keep the own learning suggests about to get better perceptions of m-Learning innovation with new didactic materials, improvements in their presentation on a large scale, (Cabero, 2012) as shown in Table 3.

Table 3
Differences between Learning Centered in: Content and Activities

Learning Centered Content	*Learning Centered activity*
The student is usually reactive and passive, waiting for what the professor says or decides.	Students have an active involvement in their learning, without waiting for the professor to decide for them;
Decision space student, is small.	Broad freedom for students and space for own decisions as important elements of their learning.
Individual learning is promoted	Learning is promoted in collaboration with colleagues; students have opportunities to be independent in their learning.
Students do not have many opportunities to learn independently.	Process-related skills, with a focus on results, and the search, selection and management of information.

Learning Centered Content	*Learning Centered activity*
Memory replication of content and skills. Personal and professional education often is limited to certain periods of life	Personal and professional education throughout life.

Source: Cabero, 2012, by own adaption.

According to Cabero (2012), an important design aspect is that, there are several types: ranging from the methodologies and strategies that will be used in the virtual action (training design), the type of navigation that allows within materials (navigation design), the chances of students, professor relationship (interaction design); graphic forms in which present the information (navigation design), different evaluation strategies to be permitted and used in the training (evaluation design), and ways of presenting content with forms of construction (design of content).

The Student (S). This topic takes into account, the cognitive, memory, prior knowledge, emotions and possible motivations. The student will assume the commitment with his own learning process and will find out, in the self evaluation the key to discover his own progress, to make choices. (Montoya, 2008); see Table 4.

Table 4
Variable: Student Requirements

Variable	*Example/Description*	*Comments*	*Source*
Previous Knowledge	Tacit and explicit knowledge stored in memory with conditions to be applied in the teaching-learning process	This impacts in how the students are understanding new concepts	Driscoll (2005); Tirri (2003)
Memory	Techniques to successfully encoded with use of signals such as: categorization, mnemonic, tactile, auditory, sensory, etc.	It involves, how multimedia actively encourage the students in their learning	
Context & Transference	Static Knowledge vs Dynamic Knowledge	It involves, how to make students use what they learn to strengthen the memory, understanding and transfer the concepts to different contexts.	Carroll & Rosson, (2005); Driscoll (2005)

Variable	*Example/Description*	*Comments*	*Source*
Learning by Discovering	Application procedures and concepts to new situations; case study	It involves, how to encourage students to develop skills to filter, select and recognize relevant information in various situations	Tirri (2003)
Emotions & Motivations	Student's feelings to perform a task; reasons for their achievement.	Student inclination or ability to adopt an attitude that prepares your emotional state or desire to accomplish a task.	Carroll & Rosson, (2005) ; Tirri (2003)

Source: several authors, by own adaption.

Hence, it described how students use, what they already know and how the information is encoded, stored and transferred; It covers theories about the transfer of knowledge and discovery learning (Carroll and Rosson, 2005). The experience and prior knowledge, affect learning as does the atmosphere of the student. So their application is under the *experiential memory* (Driscoll, 2005). So, it is important the teaching style of professors. They are, explicitly or implicitly, using observation techniques, try to *know their* students (Gallego & Martínez, 1999), discovering *learning styles*. See Table 5.

Table 5
Learning Styles

Learning Styles	*Description*
Activist	Students are fully and without prejudice involved in new experiences. They are grown to the challenges and get bored with long maturities. They are people very group who engage in the affairs of others and focus around all activities
Reflexive	Students learn the new experiences but do not like to be directly involved in them. Collecting data, analyzing them carefully before reaching any conclusions. Enjoy watching the actions of others, listening but not intervene until they have taken over the situation.
Theoretical	Students learn best when they are taught about things that are part of a system, model, concept or theory. They like to analyze and synthesize. For them. if something is logical, it is good.
Pragmatic	Students apply and practice their ideas. They tend to be impatient when people who theorize

Source: Honey y Mumford (1992), by own adaption.

The Professor (P). The concept of Vygotsky (Moll, 1993) having greater recognition and applicability in the educational field is the zone of proximal development (ZPD). This concept *means the individual's actions that he can perform successfully start only in interaction with others, in communication with them and with their help, but can then play in totally autonomous and voluntarily* (Matos, 1995). They are responsible for designing strategies that promote intensive interaction, taking into account the previous level of knowledge of students, from the culture and the meanings they have in relation to what they will learn(Onrubia, 1998). The process is established where a group of professors together: design, teach, observe, analyze, and review one class lesson. See Table 6.

Table 6
Professor Requirements

Indicators	*Example/Description*	*Comments*	*Source*
Informatic Culture	Permanent update of information by using of technology	Attitude and intuitive ability to learn the use of technological resources	Ng & Nicholas (2013); Cabero, 2012
Lection Cycle	Groupal planning / experimental lection/ individual reflection / groupal reflection/ lection refomualeted	Teaching based on enactivism	
Cognitive Objectives	Bloom's Digital Taxonomy	Association with the enactive cognitive objectives, such as teaching: knowledge; comprehension; the application; analysis-synthesis and evaluation.	Bloom, 2012

Source: several authors by own adaption.

The Technology (T). It is considered under the pedagogical aspect of how the *intrinsic features* of the equipment must gather and have intrinsic features such as: *ergonomics, portability, weight, size, weight, design, speed of access to the telecommunications network, processing, storage, capacity growth* and the *extrinsic features* of the equipment, based on provider of telecommunications services such as: *coverage, price, speed of access, availability, compatibility of protocols* among

other features are aimed to improve the teaching-learning process (Shneiderman and Plaisant, 2005).

Policies & Assessing. In order to guarantee the continuity and implementation of mL technology, is necessary to develop institutional policies to provide direction and enough resources to achieve it, included an assessment system to verify since the participation until the activities and quality of the teaching actions and course contents (Garrison & Anderson, 2003). See Table 7.

Table 7

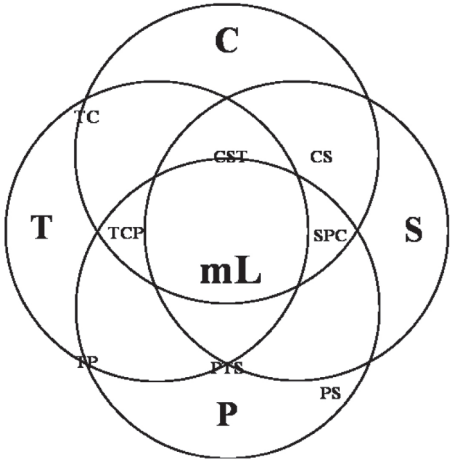
Topics that a policy document and strategic plan should include

1. Vision: – understand background– define core values– describe strategic goals
2. Needs and risk assessment:– identify issues– identify challenges – identify best practices
3. Educational principles and outcomes described
4. Implementation initiatives and strategy: – link to institutional priorities– create a steering committee – identify communities of practice
5. Infrastructure: – design multimedia classrooms– describe administrative processes
6. Infostructure: – design institutional connectivity– create a knowledge management system– provide digital content– create standards
7. Support services: – provide professional development– provide learner support
8. Budget and resources
9. Research and development framework
10. Benchmarking: – establish success criteria– assess progress– communicate direction and accomplishments
11.Assessing

Source: Garrison & Anderson(2003), with own adaption.

According above, we propose the following Figure 1.

Figure 1
Determinants of Mobile-Learning as Conceptual Model of Learning Innovation for Higher Education in Mexico



Notes: Variables: P. Professor; S. Student; C. Contents; T. Technology; Intersection double area Variables, are: TC; CS; PS; TP; AD; DT; TC; Intersection double area variables, CST; SPC; PTS; TSP.
Source: Own.

Results

Table 8 shows the Final Questionnaire with: 3 Factors, and 60 Independent Variables grouped, according the principal authors to describe mL.

Table 8
Final Questionnaire

F5. Factor: Mobile Learning (mL)
Personal Background
If you are a Student: Name of the (mL) course; -What is your occupation? Manager/Employee non-technical/ Employee technical/Teacher or trainer/ Student; -How old are you? 24 or younger /25-29 /30-40 /41-50 / over 50; -Gender? Female / Male; -What is your level of education? High school matriculation/ One to three years of post-secondary education / Four or more years of post-secondary education; -Personal Digital Assistant (PDA) ownership – Do you own? Smartphone/Lap/Palmtop/ Other; - Where did you study the mobile learning course? At home/ At the office or work/ While travelling/ Other. *If you are a Teacher:* Name of the (mL) course;-What kind is your assignment? Social Sciences/ Engineering; -Are you: Instructor/ Assistant Professor/ Associate Professor/ Professor;-How old are you? 24 or younger /25-29 /30-40 /41-50 / over 50;-Gender? Female / Male; -What is your level of teaching? High School/ Undergraduate/ Postgraduate/ ;-Personal Digital Assistant (PDA) ownership – Do you own? Smartphone/Lap/Palmtop/Other;-Where did you study the mobile learning course? At home/ At the office or work/ While travelling/ Other

Factor	*Variable (measured by Likert Scale: Strongly agree/ Agree/ Uncertain / Disagree/ Strongly disagree)*	*Author(s)*
	D1. Technology Friendliness (TFRN)	
Technology (T)	V1.-I need a special training to use my PDA	Ng & Nicholas (2013)
	V2. The screen on the PDA makes it difficult to do my school work.	
	V3. Writing with a PDA is easier than writing by hand on paper	
	V4. With a PDA it is easy to take my school work home.	
	V5. I would recommend mobile learning as a method of study to others	Keegan (2005)
	D2. Technology-Synchronous Communication (TSYC)	
	V6. Chat in mlearning is very useful is better than PC	Keegan (2005)
	V7. IP telephony functions are very well with the mlearning course.	
	V8. The sending of SMS is very useful	Ng & Nicholas (2013)
	D3. Technology Asynchronous Communication (TASY)	
	V9. Communication and sending assignments for submission with the students (or tutor) by e-mail functioned well.	Keegan (2005); Ng & Nicholas (2013)

Factor	*Variable (measured by Likert Scale: Strongly agree/ Agree/ Uncertain / Disagree/ Strongly disagree)*	*Author(s)*
Technology (T)	V10. Writing messages to the Forum functioned well	Keegan (2005)
	V11. Answering assignments for submission applying the mlearning functioned well.	
	V12. Accessing to notes and reading text functioned well.	
	D4. Technology Multimedia (TMMD)	
	V13. Accessing to sound, video and graphical materials functioned well	
	V14. Activities/assignments involving manipulation of graphical materials functioned well	
	D5. Social Media (TSME)	
	V15. To learn (or teach), I tend to be in different networks, in permanent interaction and collaboration	Woodill (2001)
	V16. To learn (or teach), I tend to participate in : gammings, simulations and/or virtual worlds	
	V17. To learn (or teach), I feel I spend a lot of time connected in different networks with scarce results	
Contents (C)	*D6. Teaching-Learning Management (CTLM)*	
	V18. Accessing course content was easy	Keegan (2005)
	V19. Communication with and feedback from the student (or tutor) in this course was easy.	
	V20. Mobile learning is convenient for communication with other course students (or teachers)	
	V21. PDAs help me learn (or teach) my subjects better	Ng & Nicholas (2013)
	V22. There are no disadvantages in using PDAs in the classroom.	
	V23. PDAs make learning (or teaching) more interesting.	
	V24. PDAs help me organise my time better.	
	V25. I feel my learning (or teaching) process is more willing to punishment-reward cycle	Woodill (2001)
	V26. I feel my learning (or teaching) process is more willing to the individual internal brain processes such as: memory, attitude, motivation, self-reflection.	
	V27. I feel my learning (or teaching) process is more willing to "learn how to learn" and I select and decide about how they affordable information responds to my needs when I require it.	
	V28. I feel my learning (or teaching) process is more willing to the sensation to be connected everywhere, every time to the internet affordances	
	V29. I feel my learning (or teaching)process is more willing to respond to the perception of the environment and my actions, through experiencing and doing.	

Factor	*Variable (measured by Likert Scale: Strongly agree/ Agree/ Uncertain / Disagree/ Strongly disagree)*	*Author(s)*
	D7. Teaching-Learning Styles (CTLS)	
Contents (C)	V30. As a student, (or teacher), I feel that the contents are enough to motivate me to: create new forms of knowledge. You are more Reflexive	Cabero (2012); Bloom (2009); Gallego & Martínez (1999); Honey& Mumford (1992)
	V31. As a student, (or teacher) I feel that the contents are enough to motivate me to: evaluate the knowledge acquired. You are more Reflexive.	
	V32. As a student, (or teacher) I feel that the contents are enough to motivate me to: analyze knowledge acquired. You are more Reflexive.	
	V33. As a student, (or teacher) I feel that the contents are enough to motivate me to: apply the knowledge acquired. You are more Pragmatic	
	V34. As a student (or teacher) I feel that the contents are enough to motivate me to: comprehend the knowledge acquired. You are more Reflexive.	Cabero (2012); Bloom (2009); Carrol&Rosson (2005); Gallego & Martínez (1999); Honey& Mumford (1992)
	V35. As a student, (or teacher) I feel that the contents are enough to motivate me to: memorize the knowledge acquired. You are more Pragmatic.	
	V36. As a student, (or teacher) I feel the contents are well designed considering: text, context, colors, PDA's formats, accesability, etc.	Montoya (2008)
Professor & Student Rol (P&S)	*D8. Professor-Student Perception Feasibility (PSPF)*	
	V37. I am motivated about using a PDA for mlearning, because is easy to use and I learn (or teach) better with it.	Ng & Nicholas (2013); Driscoll (2005)
	V38. When I use a PDA I am very intuitive using my memory and my senses	Driscoll (2005)
	V39. Navigation through the mobile learning course was easy.	Keegan (2015); Moll, (1993); Woodill (2011)
	V40. For mobile learning (or teaching) to be effective it is necessary to use graphics and illustrations	Keegan (2015);
	V41. Evaluation and questioning in the mlearning course was effective	
	V42. The use of PDAs have more advantages than a desktop computer.	Ng & Nicholas (2013)
	V43. The PDA that I use has a good relation among hardware, software and connectivity network.	ISO/IEC7498; Shneiderman y Plaisant, 2005; Woodill, 2001

Factor	*Variable (measured by Likert Scale: Strongly agree/ Agree/ Uncertain / Disagree/ Strongly disagree)*	*Author(s)*
	D9. Professor-Student Perception Value/Cost (PSPVC)	
Professor & Student Rol (P&S)	V44. mlearning increases access to education and training. It is still expensive.	Keegan (2005)
	V45. The cost of accessing the mobile course materials was acceptable.	
	V46. The cost of communicating in the mobile learning course with the tutor and other students was acceptable.	
	D10. Professor-Student Assessing Participation (PSAP)	
	V47. Effectively encourage others to learn?	Garrison & Anderson(2003)
	V48. Contribute regularly, at each important stage of the unit?	
	V49. Create a supportive and friendly environment in which to learn?	
	V50. Take the initiative in responding to other students?	
	V51. Seek to include other students in their discussions?	
	V52. Successfully overcome any private barriers to participation?	
	V53. Demonstrate a reflective approach?	
	D11. Professor-Student Assessing Activities (PSAA)	
	V54. Each of the activities and strategies employed to assess student learning has methodological and epistemological shortcomings.	
	V55. All the student products are stored in a Database of learning products	
	V56. The assessment is based on using problem-based learning (PBL) activities in m-learning education.	
	D12. Professor-Sudent Assessing Quality (PSAQ)	
	V57. As a Student (or Teacher) I evaluate the course objectives, activities, contents, technology affordances are aligned and congruent with the tutoring (or goals) of the course.	
	V58. As a student I evaluate the knowledge acquired vs the initial expectations (If you are a teacher: Do you evaluate the knowledge acquired vs the initial expectations of each student?)	Garrison & Anderson(2003**);** Woodill (2001)
	D13. Professor-Student Policies (PSPO)	
	V59. I'm informed (If I'm a Teacher: inform to the students), the security and support policies	
	V60. I'm informed (If I'm a Teacher: inform to the students, the educational principles and outcomes described	

Source: Own.

Discussion

We respond RQ showing the Figure 1. Determinants of Mobile-Learning as Conceptual Model of Learning Innovation for Higher Education In México and the Table 8. Final Questionnaire with 60 Indicators. As we see, the first factor T, most be described in pedagogical affordable terms; so, the friendliness of the mL devices are based on the *intrinsic features* of the equipment must gather and have intrinsic features such as: *ergonomics, portability, weight, size, weight, design, speed of access to the telecommunications network, processing, storage, capacity growth* and the *extrinsic features* of the equipment, based on provider of telecommunications services such as: *coverage, price, speed of access, availability, compatibility of protocols* (Ng & Nicholas, 2013; Keegan 2005; Shneiderman y Plaisant, 2005, Woodill, 2001). About C factor, we show the need to be well designed on terms to be accessed (Montoya, 2008), ensuring the communication in both ways P&S, motivating several aspects in education such as: *memorize the knowledge, pragmatic, reflexive or reactive attitudes* (Cabero, 2012; Bloom, 2009; Gallego & Martínez, 1999; Honey& Mumford, 1992; Woodill, 2001; Keegan, 2005; Ng & Nicholas; Carrol&Rosson 2005; Gallego & Martínez, 1999). The P&S rol, is aimed to encourage and acknowledge the advantages that are included in the mobile devices to P&S, involving a dynamic relationship in both parts (Garrison & Anderson, (2003); Woodill (2001); Ng & Nicholas (2013); Driscoll (2005); Keegan 2015; Moll, 1993; Ng & Nicholas, 2013; Shneiderman y Plaisant, 2005). For further studies we recommend the practice of *Exploratory Factorial Analysis* (EFA) to identify different indicators and gather all of them in *dimensions*, according the authors and a *Confirmatory Factorial Analysis* (CFA) to discover other relationships between the underlying factors as we see in Figure 1 in the intersection of double area variables, such as: TC; CS; PS; TP; AD; DT; TC; and the intersection in triple area variables, CST; SPC; PTS; TSP. For instance, the determinant factor T is related with dimension: *Technology Friendliness* (TFRN) assumed from: Ng & Nicholas, 2013; Keegan 2005; *Technology-Synchronous Communication* (TSYC). The dimensions: *Technology Asynchronous Communication* (TASY); *Technology Multimedia* (TMMD); *Social Media* (TSME), assumed from: Keegan (2005); Shneiderman y Plaisant, (2005) and Woodill, (2001). About determinant factor C, we expect to find the dimension: *Teaching-Learning*

Management (CTLM) assumed from Keegan, (2005); Ng & Nicholas, (2013) and Woodill, (2001); the dimension: *Teaching-Learning Styles* (CTLS) assumed from: Cabero (2012); Bloom (2009); Gallego & Martínez (1999); Honey& Mumford (1992); Carrol&Rosson (2005); Gallego & Martínez (1999) and Montoya (2008). Finally, determinant factor P&S Role with dimensions: *Professor-Student Perception Feasibility* (PSPF) assumed from: Ng & Nicholas (2013); Driscoll (2005); Keegan (2015); Moll, (1993); Woodill (2011); Shneiderman y Plaisant, (2005); Woodill, (2001). The dimension: *Profesor-Student Perception Value/ Cost* (PSPVC) assumed from: Keegan (2005). The dimension: *Professor-Student Assessing Participation* (PSAP), *Professor-Student Assessing Activities* (PSAA), Professor-Sudent Assessing Quality (PSAQ), assumed from Garrison & Anderson(2003) and the dimension: *Professor-Student Policies* (PSPO), assumed form), assumed from Garrison & Anderson (2003) and Woodill (2001). We recommend finally the practice of *Structural Equation Modeling* (SEM) as *Confirmatory Factor Analysis*, in order to discover the underlaying relationships among the variables.

Conclusions

The information and communication technologies (ICT) are producing new and innovative of teaching-learning process in higher education in México. This research found a conceptuyal model with the final *determinants,* were: the Professor (P)m and the Student (S) according its role; the Contents (C) and finally, the Technology (T) with a Final Questionnaire designed with 60 Indicators grouped, according the principal authors to describe mL. For further studies we recommend the practice of *Exploratory Factorial Analysis* (EFA) to identify the groups of this indicators in dimensions. We previewed 13 (marked with letter D, in the questionnaire). It's very important to discover precisely how is the relationship of the other underlying indicators, so we propose the *Confirmatory Factorial Analysis* (CFA), through Structural Equations Modeling to get this.

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8
Increase competitiveness and business growth in manufacturing SMEs through a strategic model

Dorie Cruz-Ramírez[1]
Suly Sendy Pérez-Castañeda
Beatriz Sauza-Ávila
Victor Manuel Piedra-Mayorga

Abstract

Through this, the results obtained after working with manufacturing SMEs of the town of Ciudad Sahagun, Hidalgo, from the perspective of having more than 5 years old and more than 11 workers, showing that they have on past the critical period of subsistence in relation to the development of a strategic model through which allows them to increase their competitiveness and grow logically.

For the generation of statistical inference model was applied by the method of Spearman's rank correlation between the variables subject to study (business competitiveness and growth) was obtained, which allowed the study to determine which indicators have greater impact on the company.

1. Escuela Superior de Cd. Sahagún-Universidad Autónoma de Hidalgo.

Keywords: Strategic model, competitiveness, business growth, and SMEs Manufacturing.

Introduction

SMEs in Mexico, is considered fundamental to the economic development element in relation to the contribution to employment, as its contribution to gross domestic product. Such companies represent a highly important in relation to the total of companies registered in the commercial registers percentage. In Ciudad Sahagun (town in the municipality of Tepeapulco, in the state of Hidalgo), manufacturing SMEs is an important organization, which generates income for families of the town and the state, it is necessary to develop studies support the decisions of the State and employers in relation to factors influencing so essential to generate greater business growth.

This research arises from the question that if they are so essential to the country why you're away within the first year of its constitution? After analyzing various studies it determined that there are both internal and external factors that result that these businesses are not competitive and do not innovate, which leads them to disappear. Derived from a statistical correlation analysis using inferential statistics through the Spearman test, developing a bivariate correlation matrix, they determined that indicators of competitiveness and business growth, SMEs in the manufacturing impact of the town. And herein results and generating a strategic model are presented.

Structure of the research project

Title
Ciudad Sahagun, Hidalgo strategic model to boost competitiveness and innovation in manufacturing SMEs.
Goals
General objective

Develop a strategic model to enable SMEs in the manufacturing town of Ciudad Sahagun, Hidalgo, reach the level of competitiveness and innovation required to grow and remain in the market.

Working hypothesis

H_1 Designing a strategic model, which will allow greater innovation and / or competitiveness, greater possibility of business growth in the manufacturing SMEs in Ciudad Sahagun, Hidalgo.

Research variables

Dependent or endogenous variable: Business Growth

Independent or exogenous variables: Competitiveness and Innovation

Theoretical Framework

This section provides an analysis of manufacturing SMEs, as this sector has been considered the "main engine of economic growth and development of the country", quoted by the Centre for the Study of Public Finances (2004, p. 6). So also discussed what were the problems to which these companies have generated a high degree of mortality and in many cases do not reach 5 years of life, they face some authors such as De la Rosa (2000), Carrasco (2005), Cabrera and Marshall (2005) and Hernandez (2009), agree that some factors that influence the development and business growth of SMEs such as lack of inputs, lack of market, customer problems , excessive competition, lack of sources of funding, lack of financial information, as well as lack of liquidity, to conclude this section analyzes the situation of this industry in the state of Hidalgo and especially in the Municipality of Tepeapulco, as it is where research is conducted.

Manufacturing SMEs

According to the Center for Study of Public Finance (2004) in Mexico provides that:

> Manufacturing has had a decisive role in the growth and economic development. The Gross Domestic Product (GDP) had a rate of manufacturing growth accelerated to the early seventies when he began recording a lower growth rate of 6.3 percent annual average, while the GDP grew at a rate of 6.7 percent

> annual. Between 1980 and 1990 economic growth in the sector was affected by the economic crisis of 1982 and 1986, so that the average annual growth rate during this period was 2.1 percent, however was slightly higher than that recorded GDP total of 1.9 percent. From 1990 to 2000 the manufacturing GDP grew by an annual average 4.4%, while total national GDP grew by 3.4% (p. 9).

So also mentions that "Manufacturing has contributed to national employment with about 12.1% of paid workers on average since 1980. Annual average rate, the personnel employed in the manufacturing industry grew by 2.3% from 1980 to 2001" (p. 22).

As cited by Paredes, Hernandez and Nava (2011), according to the INEGI (2012), the economic census for 2008, the manufacturing industry in the country recorded a total of 436.851 establishments, representing a considerable increase over the 2003 census, 5.8%.

SME problems

It has carried out an analysis of various authors on the problems that exist in SMEs and some data are:

For Hernandez and Dominguez Vazquez authors (2009), consider that:

> Small and Medium Enterprises have a high mortality rate, 50 percent of businesses fail in just one year of activity and 90 percent of companies die before age 5 due largely to lack of funding to develop and expand (p. 2).

For Carrasco (2005), because the characteristic features of the problem in these businesses are family component, informality and liquidity and solvency problems.

Reports on small and medium enterprises (SMES) can be classified in two types, the reports on statistics and reports on industrial policy. In both recognized that SMEs are important to the economy and developing countries, the number of jobs that are presented and for their contribution to the industry in the market (SBA, 2001).

Franks, Bathrooms, Coke and Perez (2001), claim it is a proven fact that the management of small businesses have little room for research and development (R & D), design or industrial quality. In general, SMEs seeking to exploit competitive advantages based exclusively on the cost of acquiring foreign technology they need to sell a poorly

differentiated products in domestic markets. He adds that this feature set, or more specifically the problem of SMEs, is accentuated in some industrial regions forcing companies to be more concerned about the short term, making very few of them have access to programs designed to now by administrations to improve their competitiveness and innovation. For this reason, training and / or training, it is considered an essential activity today to maintain and improve competitiveness. However, for Aragon, Sanz and Barba (2000), investment in training by firms remains low. According to Casalet (2004), there is little incorporation of ICT in internal and external management of SMEs imbalance between ICT infrastructure and applications, and the weakness of institutional development as determinants of small learning occurs in the use of ICT to raise and extend the competitiveness of enterprises.

Some research in Spain (Zorrilla, Gonzalez and Rodriguez Acosta, 2006) conclude their investigation recommending that SMEs should focus on:

- Improve its financial structure.
- Increase their self-financing capacity.
- Provide access to lines of long-term flexible funding to reduce dependence on short-term bank loans and credit provision, which significantly raise the cost of capital of the company and reduce its future ability to generate resources.

Importance of the manufacturing sector in the State of Hidalgo and the Municipality of Tepeapulco, Hidalgo.

According to data established by the INEGI (2012), the most prominent activities in this sector are: metal products, machinery and equipment, which generate 24.0%. Nonmetallic minerals, except petroleum, had a contribution of 24.7% of the industrial product of the entity.

From the above it follows that the manufacturing industry in Hidalgo is not only linked to the primary production of the state, as in the case of oil refining, but has evolved into the primary independent sectors, as in the manufacture of locomotives, rail cars and trucks in the industrial complex in Ciudad Sahagun, this town has been considered an important industrial corridor of the entity, largely owes its growth to the geographic location of the entity, which places it near the main consumption centers national, as is the Federal District, it is recognized nationally and internationally for the high industrial

diversification, production lines which include the construction of rail equipment, manufacturing and assembly of vehicles and basic industries of iron and steel. Currently the manufacturing industry in the municipality of Tepeapulco, Hidalgo is of great importance at this time are in force according to the INEGI (2012), 287 economic units, SMEs, ranging from 0 to 250 workers this economic sector.

Methodological Research Design

Type of study

The research is mixed rate applicable as employment qualitative and quantitative research to obtain results. It is a qualitative research, because they aim to analyze attitudes. Mendez and Peña (2007) state that one of the concepts related to attitudes are the opinions, thus to begin the research process we will start with this type of research, to do a research tool field was developed by through the application of a questionnaire aimed at staff of SME possessing knowledge of the business development of the company where he works, the above because Jurado (2011) starts from the premise that if you want to know something about the behavior of people within an economic entity, it is best to ask them directly. Therefore the aim is to seek and achieve a new understanding of the situation, experience or process that presents the manufacturing SMEs to innovate and manage to be competitive. And to conclude a quantitative research was conducted because the data have to assign a value to get a result. As stated Rojas (2011), in quantitative research, data are expressed as numbers and statistics to get an objective view and generate an accurate measurement.

The research addressed to the level required for this problem is for somewhat descriptive and correlational, and explanatory study. Hernandez Fernandez and Baptista (2003) established conceptualizations of the 3 types of research, so descriptive research is to describe situations, events and facts, as is done in manufacturing SMEs. A correlational research, as it aims to "assess the relationship that exists between two or more concepts, categories or variables" (p. 121). And the usefulness of this type of research is to identify how it behaves variable knowing the behavior of one or more related variables which

can be positive or negative. And with regard to the explanatory aspect, state that such research "is aimed to answer the causes of events, happenings and physical or social phenomena" (p. 127). Therefore it is to "understand" the variables, in order to meet the "causes" (independent variables) that determine the effects (dependent variable), is required to determine the causes of the problems. Because the study finds more than one independent variable, such as competitiveness and innovation, the level of correlation was measured, taking into account that, even if there are significant levels of correlation between different variables, there may be specifically state that a variable determines the other (causation), but only allow you to say that a factor (independent variable) is in "function" of another (dependent variable) that in the specific case of the research is the growth of manufacturing SMEs.

Research is marked predominantly in the micro-social aspect, because it is oriented to the analysis of administrative units, which are SMEs (11 to 250 employees), the manufacturing sector in the town of Ciudad Sahagun Hidalgo. This is also a non-experimental research, because as quoted Jurado (2011), "is one that is made without deliberately manipulate the variables" (p. 33), as is the case in this investigation. And finally, it is a compromise because research is to study the phenomena at a time late.

Study universe

For this research was determined as an object of study, manufacturing SMEs in Cd. Sahagun, Hidalgo, is substantial mention that the manufacturing industry in the municipality of Tepeapulco, Hidalgo, is of great importance economically since it derived one large number of jobs. Currently are in force according to the INEGI (data through July 2012), 287 economic units. For purposes of the investigation they will only be taken into account the universe of 36 SMEs which meet the following conditions:. Geographic location just in the town of Ciudad Sahagun Hidalgo and who possess a working plant of 11-250 workers.

Sample size

As quoted Avila (2006) "The sample is a small part of the population studied, a sample must be characterized as being representative of the

population" (p. 88), for this particular research subject to analysis total population is 36 economic and employment according to a mathematical formula applicable to a sample for a finite population known, was 32 SME units, which represents 88% of the study universe. And a probabilistic sampling, which again quoted as Avila (2006) was applied, this type of sampling allows knowing the probability that each unit of analysis has to be integrated into the sample by random selection.

Design research instrument

To develop the instrument items research, as we establish Mendez and Peña (2007), took into consideration the following aspects: (1) a clear, direct language and simple phrases, (2) not exceed 20 words, (3) words such as all, always omitted, no, never, (4) denials particularly avoiding double negatives and, (5) and last are written impersonally.

Similarly Mendez and Peña (2007), report that as a prerequisite for the drafting of these items, review bibliographic information, in relation to which has been measured, as measured, and based on that document review will He built the content validity of the instrument, since the said document reflects the domain to be measured, for the above reasons, a literature review of issues relating to the investigation in question was made and concludes by mentioning that there are several authors who have dimensions and indicators established to measure, both competitiveness are (Martinez, 2003; De la Cruz, Morales and Carrasco, 2006; Deloitte and US on Competitiveness in manufacture, 2010, and Rubio and Aragon, 2001), innovation (Gross, 2010 and Acosta, 2006) and in terms of business growth (Martinez, 2010 and Blazquez, Dorta and Verona, 2006).

For purposes of research dimensions to consider are: for competitiveness, it is a combination of various authors, therefore the dimensions used were research and development, technology, infrastructure, bonding, economic certainty, and its management capacity in relation innovation is taken as the dimensions quoted Acosta (2006), and finally to business growth established by Martinez (2010).

Description of the measuring instrument

An initial questionnaire which was subjected to preliminary assessments to determine their degree of reliability through expert analysis and valid through pilot was developed.

Reliability and validity of the instrument

The reliability of the instrument was carried out through the implementation of this, 6 research experts. Each of the experts gives a rating to the items that make up the instrument, according to its consideration and experience, that classification expresses the order of importance (very important with a score of 5 to unimportant 1). The data obtained from the application loaded to SPSS system and analyzed by statistical reliability called Cronbach's alpha, yielding a score of 0.845, taking into consideration that the rule for validation of 0 to 1 and if the score Approaching 1 obtained it is validated as a reliable instrument. The response obtained was within a range of 4 up, what is considered that this valued items important to very important.

Once we evaluated the instrument corrections such as removal of two items that were not considered relevant, and the restructuring of some items regarding the formulation of the questions were made to avoid confusion. To perform the validation of Mendez and Peña (2007) instrument mentioned that the way to validate an instrument is through the application of the 15% of the sample size, which undoubtedly will the validity of the instrument. The questionnaire application 5 SME companies that meet the requirements of the investigation, in order to identify the understanding of the questions, estimate the response time of the instrument was performed, and whether there is resistance on some items by the time of answer them, and to proceed with the validation of the document, again it proceeded to upload the information to the SPSS system, with the following results: The statistical reliability obtained a score of 928 and taking into account the rule set forth above 0 to 1 when the result is closer to 1 is given by the rule fulfilled and this test is considered satisfactory validation.

Questionnaire design

We proceeded to develop the questionnaire again to its final application that is considered the final version of the questionnaire consists of 30 items divided into 4 sections: General Data, competitiveness, innovation and business growth.

Measurement scale

The research instrument was developed taking into account the assessment by Likert scale because it is a ordinal scale level and is characterized by placing a series of phrases or statements selected on a scale, with degrees of agreement / disagreement. With a valuation scale 5-1.

Collection and processing of data

The application of the instrument of research was conducted under the following scheme: phone calls, send email, and last visits to the premises of the companies. All this in order to make known that the intended application of the instrument.

Data processing

Once the questionnaires applied proceeds to capture data using Office (Word and Excel) and PASW Statistic SPSS version 18.

Application Statistics

The indicators analyzed for competitiveness are 7 items and these are: (1) Research and development of new processes, (2) New software for production, (3) New technology equipment, (4) Linking with institutions Higher education, for testing new products and / or processes, (5) Economic Situation company today, (6) organization and current situation (7) Knowledge of roles and responsibilities of each people within the company. Moreover Po indicators being studied to measure

business growth are: (1) satisfaction of market needs, (2) Importance of export products, (3) quality of exported products (4) Appropriate size of the company, (5) Financial Position, (6) The importance of making financial projections (7) Business Location (8) Initial Placement in contrast to the current and last (9) Creation of new jobs.

Descriptive statistics

Through descriptive statistics indicators of both variables were analyzed and observed that the best competitiveness indicators valued by companies are researching and developing new processes and organizational situation awareness of their duties of each member of the organization, and geographic location, developing financial projections, the export of its products as factors that have led to its growth, also the size of your company is not considered appropriate to change important for growth to generate new jobs because they consider it indifferent.

Inferential statistics

Using inferential statistics as a tool to address the research objectives, this will operationalize the data obtained through a Likert scale questionnaire in order to make a proper quantitative statistical analysis is done. He proceeded to convert the research objectives, in statistical terms with the following assumptions: a) Knowing the behavior of the variables b) Meet the dependency ratio and the degree of this (asociación.-correlation) between the variables studied.

Determination of coefficient of Spearman rank correlation (Rho)

Spearman test:
As is known, the Spearman nonparametric test is statistical technique dependence, characterized by the fact that one or more of the study variables stand out as primary dependent. According to Hernandez, Fernandez and Baptista (2010, p. 332), the coefficient Spearman's Rho is a measure of correlation for variables in a level of ordinal measurement, so that individuals or objects in the sample can be sorted by

ranges (hierarchies). "Rank correlation coefficient Spearman ordered, can explain the direction (positive or negative) of a relationship, and the proportion of the variation in the ranges of Y explained by the knowledge of the range of values applies only X. for ordinal variables character "(Garcia, 2009, p. 89).

Spearman coefficient takes values ranging from -1.0 to +1.0. The sign of the coefficient indicates the direction of the relationship (positive or negative), and the absolute value of the coefficient indicates the degree of the relationship between the variables analyzed (in pairs); the largest absolute values indicate that the ratio is higher. A value of zero indicates no relationship. It is noteworthy that the final interpretation of the results allowed determining which combinations of pairs of variables (items) most influential study on the phenomenon are.

Results obtained

One table 2-tailed hypothesis applies (this means that the direction of the relationship is not known, can be negative or positive, one goes the other goes up or goes down again and the other), determining the degree of correlation and the degree of association of the independent variables to the dependent, using the Spearman test, obtaining 625 data array (25 for 25). By contrast the research data: n representing the number of companies surveyed for this research (32 companies), with a significance level of .05, own research in the area of social sciences, it is established that the critical Rho table (Table of critical values Spearman correlation coefficient), the value corresponds (+ / -) 0.350, so that amounts below which appear indicate no statistically significant correlation.

Correlation of competitiveness and business growth

Competitiveness indicators and the degree of correlation are analyzed, with business growth indicators, with the following data: The indicator research and development of new products and links with institutions of higher level to try new products, (independent variable competitiveness) have no correlation with most of the indicators analyzed busi-

ness growth. Likewise, the indicator of the importance of the export of products and considering creation of new jobs (variable business growth), has no correlation with any item of competitiveness, this is not significant either positively or negatively importance. Therefore it states that competitiveness indicators are correlated to business growth by 67% compared to 100% of its indicators.

Regarding the indicators of business growth with respect to competitiveness, the findings also shed that there is no overall correlation, establishing a prediction 44.44% as of 63 data from only 28 of them show a correlation, a factor to consider is that the correlation is positive in all of them, which means that if the indicators of competitiveness increase, so will the business growth.

Testing hypotheses

We proceed to perform hypothesis testing and are performed by converting the working hypothesis in hypothesis correlational statistics.

Working hypothesis:

H1 Designing a strategic model, which will allow greater innovation and / or competitiveness, greater possibility of business growth in the manufacturing SMEs in Ciudad Sahagun, Hidalgo.

Being as follows: Hypothesis correlational statistics:

H1 Innovation and / or are correlated with competitiveness and business growth

Two procedures are applied:

1. Through the Spearman correlation method using compound variables.
2. Through variables Spearman correlation block (this method is best suited, because the correlation is indicative for indicator).

For both methods, the hypothesis was accepted and accepting this, the information obtained in the framework of direct observations by the research instrument in relation to competitiveness indicators are generating business growth for SMEs is confirmed, it remember that the specific situation of Ciudad Sahagun, Hidalgo is analyzed. Allowing

developing a strategic model that aims to help manufacturing SMEs not disappear in the short term and achieve the longed growth.

Proposal of transverse strategic model

To Carminatti (2010), the modeling is considered an art to build, monitor and refine a scheme that allows to capture, interpret and represent the complex structure and interrelationships of variables that influence, condition and determine the behavior of a reality or specific problem and is an indispensable tool that cooperates with the top management of the companies in favor of decision-making, planning, management, control and monitoring; all it integrated into a dynamic process that continuously feeds and perfect as is his committed and persistent use. According to this author finds that there are different stages that lead to the development of a model are:

1. Definition and scope of the problem or reality modeling
2. Understanding and understanding of reality or situation you want to model
3. Recognition of variables and relationships involved and influence
4. Development of the model itself.

Proceed to make a proposal for a strategic model which enables drive business growth in Ciudad Sahagun, attended the above and based on statistical data and observation of the study units.

Indicators that encourage business growth in relation to competitiveness

Through the analysis of a double entry matrix, indicators of competitiveness varies according to the degree of correlation (Rho critical than .350), which have higher positive correlation with respect to each of the indicators of growth, if will impact on this, we observed that the indicator research and development of new processes of competitiveness variable, does not have any degree of correlation in any indicator of business growth and indicators of the variable business growth: Importance of export products and consideration of creation of new jobs in relation to the competitiveness indicators, this is because the manufacturing SMEs in Ciudad Sahagun, show no interest in these areas. Moreover the remaining 6 competitiveness indicators

have at least one or more indicator with a degree of correlation in relation to .350 rho critical, and following Spearman analysis, when the correlation value is close to the unit indicates that there is a greater degree of correlation.

Transversal strategic model to increase business growth

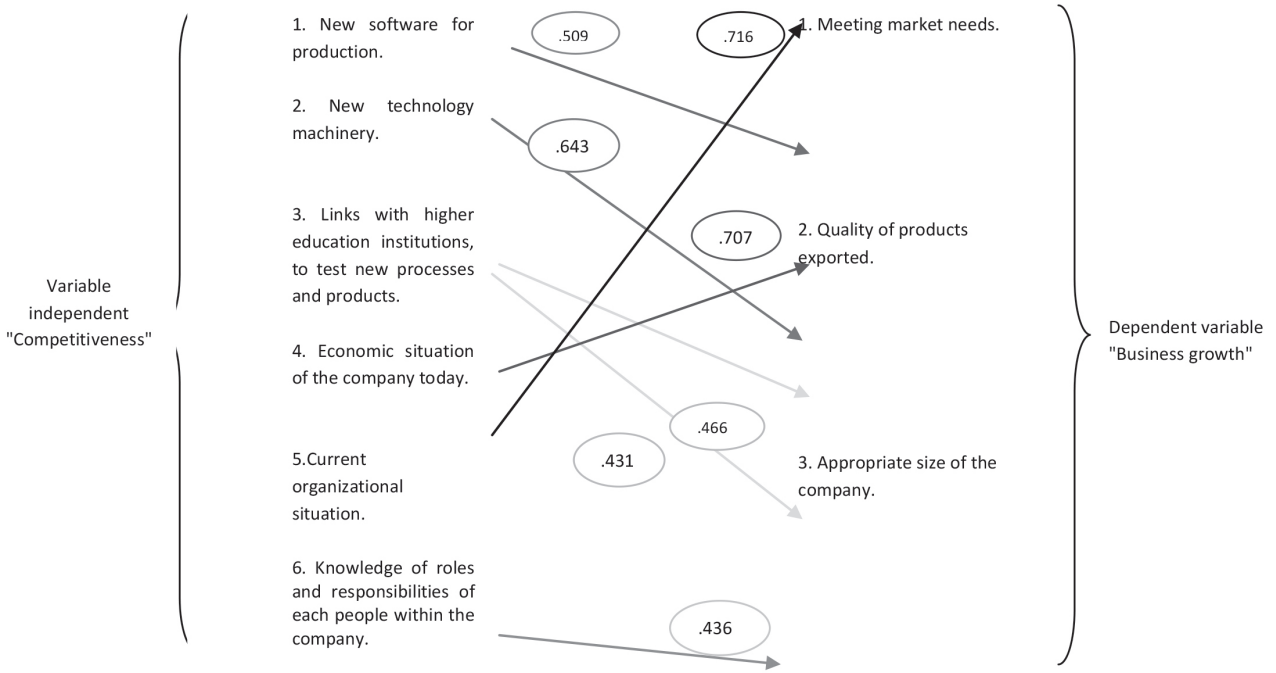
Tinbergen (2014), Nobel laureates in economics (1977) provides that the design and use of models based on experiences and perspectives, analyzes various authors in this area and concludes stating what essentials They should be considered to modeling, as a contribution to economics and the prospect of future implementation and are as follows: (1) Develop a list of the variables to consider (2) Develop a list of equations or relations must obey the variables (3) and verify the validity of the equations, which involves estimating the coefficients.

Analyzing each of the above and in order to make a model to increase business growth in manufacturing SMEs in Ciudad Sahagun, and after an analysis of the correlation coefficients of the indicators of competitiveness variable in relation indicators of business growth, we decided to dismiss three indicators (1 competitiveness and 2 of business growth), because there is no correlation between them and leave only those who have a higher coefficient of correlation to critical rho, which according to statistics is the indicator of the degree of positive correlation, leaving established that when the indicator is closer to unity greatest impact in relation to business growth.

Considering the information obtained from statistical data (for generating reliability information), to increase the business growth of manufacturing SMEs in Ciudad Sahagun, an analysis of indicators developed to generate a proposal establishing strategic model in which aspects should units work in relation to economic competitiveness are in diagram 1.

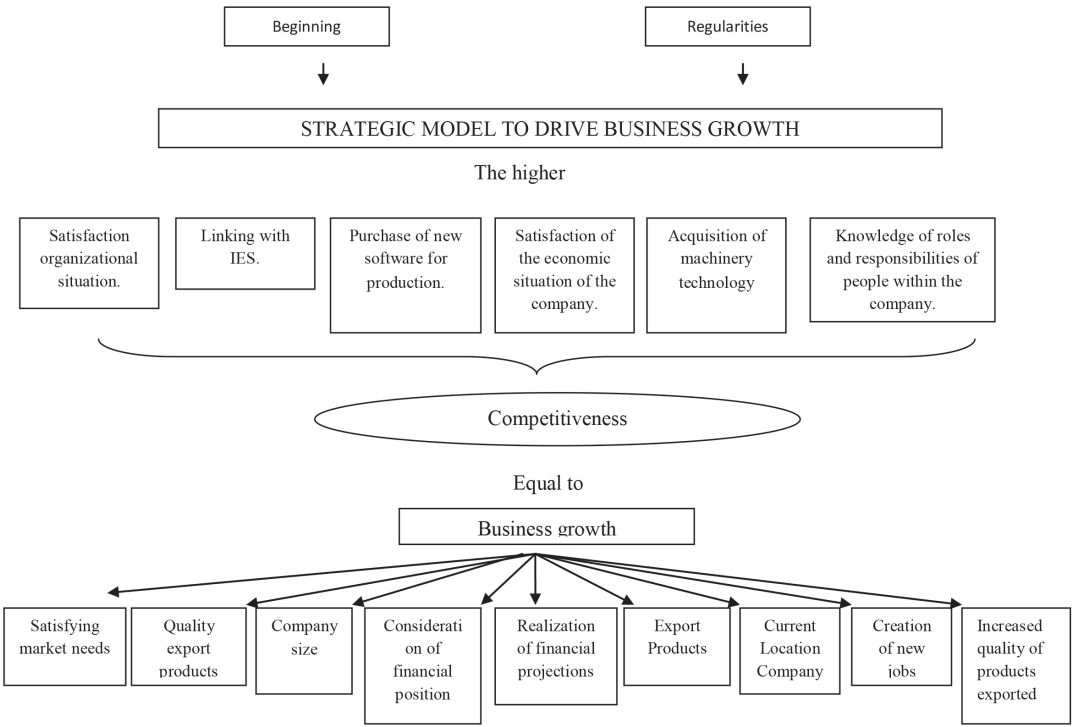
Diagram 1 shows that only 6 indicators of competitiveness are directly correlated positively with 7 indicators of business growth and should reduce these, negatively affect the growth of manufacturing SMEs. That is why the model is as follows in diagram 2.

Diagram 1
Correlation coefficients competitiveness variable in relation to the variable business growth



Source: Prepared according to the SPSS system.

Diagram 2
Strategic Model to drive business growth



Source: Prepared according to the SPSS system.

Explaining the model we have:
The principles refer to the model are: contextualization, environmental influence (political, economic, technological market), internal variables such as the proper administration of the company, its financial management and the handling of their personal and lastly systematicity. And regularities that includes the size of the company and the productive sector to which it belongs.

For a manufacturing SMEs can be competitive in Ciudad Sahagun, you must work with: the links with higher education institutions, that allows updating its processes, its systems, production manuals; and also improve its administrative and decision-making systems, properly organize its organization, its operating procedures, functions and obligations of each of the member countries of the organization; You must bet to invest in acquiring new software and machinery of technology, to enable production of better quality as today's computer systems are revolutionizing the industry; analysis should generate hidden costs that allow them to improve their economic situation. If working with manufacturing SMEs competitiveness indicators, reached an expected business growth to permeate all the indicators analyzed.

Conclusions

A research instrument was used to measure competitiveness and business growth to 32 companies manufacturing SMEs in Cd. Sahagun Hidalgo, in the context of having 11 to 250 employees, and lifetime of over 5 years, so which they are companies that have over passed the critical period of keep going until 2 years after its constitution, which leads us to establish that have experienced growth, both in research descriptive inferential statistics statistics as applied by through the Spearman method, allowing to establish whether there is a degree of association of the competitiveness variable and variable business growth, resulting in that if there is a degree of correlation between the two, considering 16 indicators subject to analysis, although this correlation is not tote the other hand the research hypothesis, which states that competitiveness is related to business growth was found. They had the necessary elements to develop a strategic model to boost competitiveness in the manufacturing SMEs Ciudad Sahagun, provided

it complies with the requirements of the town and the generation of this model can be considered a useful and real element to generating business strategies and to implement policies that support the growth not only of SMEs but of the locality.

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9
Logistics capabilities in pharmacies of Ciudad Victoria, Tamaulipas, Mexico

Francisco Javier Doria-Mendoza[1]
Maritza Alvarez-Herrera
Jesus Lavin-Verastegui
Norma Angelica Pedraza-Melo

Abstract

The purpose of this study is to identify the logistical capabilities that have the pharmacies in Ciudad Victoria, Tamaulipas. It was conducted on a sample of 70 companies, out of a population of 103, for a confidence level of 95%. The approach is quantitative, with a range of explanatory type and non-experimental design. The information was collected through the implementation of a survey of managers of pharmacies, which was divided into three blocks with a total of 24 items, with Likert scale. An exploratory factor analysis was conducted and it resulted in pharmacies in Ciudad Victoria, Tamaulipas, are implemented logistics capabilities according to the literature review, these being the order delivery, technology, quality, service logistics and process flexibility.

1. Autonomous University of Tamaulipas, University Center "Adolfo Lopez Mateos", Ciudad Victoria, Tamaulipas.

Keywords: Logistics capabilities; Pharmaceutical sector; Tamaulipas.

Introduction

Logistics is very important for companies, businesses and society in general, the fact of living in a globalized world creates the need to be prepared to adapt to changes in the market, that's why that person, business or region that is capable of implementing logistics activities or processes undoubtedly is increasing its competitiveness (Christopher, 2006).

In order to develop a high potential for logistics is a competitive business organization necessary to generate flows of goods and industrial activity of companies, industries and production systems.

In the specific case of the pharmacies in Ciudad Victoria, Tamaulipas seeks companies that sector achieve exploit their logistical capabilities and generate good management of pharmaceutical products that allow them to position themselves in the market with high quality products, which will bring as therefore an increase in production and sales gains, besides helping the good care of the health of the population.

Problem Statement

The pharmaceutical sector generates thousands of jobs and millions of profit in the world and the volume of merchandise moved daily, so their demands in the market are very high: logistics, special transportation and handling qualified are some of the requirements this sector of the economy (Jimenez, 2008).

It is for this that the logistical capabilities have assumed importance in companies in this sector, because by engaging in the manufacture of health products and these carry special treatment during transport and distribution, whereby performance the company should be capable to meet these relevant to transport pharmaceuticals aspects (Leyva et al., 2006).

The logistical requirements for the transport of pharmaceutical products are focused on three key areas: security, temperature control and handling of goods; these are the three most important characteristics that must be met for pharmaceutical logistics is successful (Jimenez, 2008).

Other issues that are affecting the pharmaceutical industry are strict regulations, cost pressures, highly competitive and aggressive commitments times to win market delivery without compromising their profits.

Based on the issues raised, it is important to integrate the logistics capabilities of all parts of the supply chain to increase the value offered to the end customer, emphasizing cost reduction, through information management, good management Goods and coordination between the parties in the chain (Bowersox, 2007).

According to the above, Ballou (2007) notes that the integration of the logistics is done in a more agile and efficient thanks to the existence of the information and communications technology way.

The pharmaceutical companies currently are influenced by various factors such as the high standards of safety and handling, the requirements of increasingly demanding industry, changing input costs, the information technology and communication and Local regulations in producing countries (Leyva et al., 2006).

Based on the above, the role of logistics in the pharmaceutical industry has increased considerably for various reasons, the main transport lies in a timely, efficient and safe way drugs. That is why this sector faces major challenges for efficient transport and supply of these products, without leaving behind the large number of regulations in the health system that cause increased pressure in the industry and rising costs (Quiros, 2011).

This requires appropriate by the rapid distribution and logistics companies and infrastructure solutions. In addition we must consider that there is threats of drug trafficking and counterfeit medicines so today have implemented many regulatory changes (Quiros, 2011).

The process of transportation of pharmaceutical products requires certain quality standards, and processes for each stage of transfer, tightened to ensure the quality and stability of products through the supply chain (Quiros, 2011) regulatory requirements.

Additionally, there must be a good product handling and storage temperature control, visibility, cost reduction and management solutions, to mention some of the needs that logistics must meet (Quiros, 2011).

Given the above raised the following question arises:

Research question

What are the logistics capabilities that include the pharmacies in Ciudad Victoria, Tamaulipas?

To answer this question, the next target was raised:

Objective

Identify the logistics capabilities that have the pharmacies in Ciudad Victoria Tamaulipas.

Theoretical framework

Several authors define the term logistics from different perspectives, considering this as a system or a process flow and integration in the supply chain (Christopher, 2006), some as:

Cateora and Graham (2003) state that logistics is a total system, which aims to manage the process of distribution that includes all activities related to the physical movement of raw materials, inventory of goods in process and inventory end product from their point of origin to final point for use or consumption.

For Ballou (2004) logistics is all movement and storage to facilitate the flow of goods and information from the point of purchase materials to the point of consumption and therefore allow providing good customer service at a reasonable cost.

Moreover, Christopher (2006) states that logistics is also a process of strategically managing the acquisition, transfer and storage of

materials, parts and finished products from suppliers throughout the organization and its products marketing channels.

Finally, the definition states that the purpose of logistics is to satisfy the customer requirements, however, logistics itself is not enough to meet the requirements of customers, first and foremost a quality product is required at a reasonable cost (Lambert et al., 1998).

Now if the good or service is not at the right time in the right place and in the amount requested, it will be lost productive effort and the resulting customer dissatisfaction (Ballou, 2004) is generated.

Table 1 shows schematically the evolution of the concept of logistics over time.

Table 1

Summary of the evolution of the concept of business logistics

Time	*Perspective*	*Orientation*
1844-1960	Logistics and physical distribution	Reduce costs
1961-1990	Logistics and material flow integration.	Increase productivity
1991 News	Logistics as integration in the supply chain.	Competitive advantage

Source: Christopher (2006).

Classification of logistics capabilities

It was found that the logistical capabilities can make important contributions to achieving superior performance and sustained competitive advantage. Liu and Luo (2009) state that the logistical capacity of the company is perceived as one of the important parameters to exceed the expectations of customers, improve the market and financial results, through the measurement of product availability, deliveries time and sales growth.

Hafeez et al. (2002) concluded that the capabilities are of strategic value to companies, and in turn define the capabilities as complex bundles of skills and accumulated knowledge, which is exercised through organizational processes that enable companies to coordinate activities and make use of their assets.

As for logistics, the ability encompasses such behaviors and business processes such as customer service, responsiveness to customers, and order cycle time (Daugherty, Stank, and Ellinger, 1998).

Therefore, logistics capabilities are defined in this study as the skills and accumulated knowledge that are used to coordinate the logistics activities and use their resources to fulfill their requirements and improve customer (Chin-Shan and Chi-Chang, 2012; Kim, 2006; Morash and Lynch, 2002).

Consistent with previous research, in Table 2 shows logistics capabilities:

Table 2

Classification of logistics capabilities according to previous research

Variables	*Attributes logistics capacity*	*Previous studies*
Delivery	Delivery time Delivery speed Fast delivery	Hayes et al. (1994), Morash et al. (1996), Fawcett et al.(1997), Morash (2001), Morash and Lynch (2002)
Quality	Consistency in quality control applications Problem avoidance Troubleshooting	Hayes et al. (1994), Fawcett et al. (1997), Morash (2001), Kim (2006)
Customer service	Pre-sale customer service Post-sale customer service Responsiveness to customers	Morash et al. (1996), Morash (2001), Morash and Lynch (2002), Zhao et al. (2001), Kim (2006)
And information technology	Integrated information system Advanced technology Management information system Cargo tracking	Gilmour (1999), Morash (2001), Zhao et al. (2001), He and Lai (2012)
Flexibility	Flexible operation Quick response to requests Delivery time flexibility Volume flexibility	Hayes et al. (1994), Fawcett et al. (1997), Morash and Lynch (2002), Zhao et al. (2001), Sinkovics and Roath (2004)

Source: Compiled from previous authors.

Morash (2001) stated: "the ability of logistics is the building block for the strategy of the supply chain and a source of competitive advantage for the company's success."

Logistics focuses mainly transport and storage and handling of materials and products, while chain management is higher and also focuses on relations with suppliers and customers (Daniels, et al., 2010).

Logistics then becomes a part of the supply chain, where their job is to move the entire inventory through the chain (Bowersox, Closs, and Cooper, 2007).

Considering the different perspectives of different authors can reach an overall concept of logistics capabilities, defined as the set of skills and knowledge for the coordination of logistics activities aimed at developing the strategy of the supply chain using resources for compliance with the requirements of customers from the point of origin to final consumption point and build competitive advantage for the success of the company.

Methodology

This research was conducted under the quantitative approach, according to Hernández et al. (2007), is the approach using data collection with numerical measurement, with a range of type explanatory through which sought to identify logistical capabilities pharmacies which have Ciudad Victoria, Tamaulipas.

Population and Sample

The population of this research was represented by the number of companies in the pharmaceutical sector in the downtown area of Tamaulipas. These companies are pharmacies established in Cd. Victoria, with a total of 103 establishments (DENUE, INEGI, 2015).

Specified population, statistical formula for determining the sample in finite populations with a confidence level of 95% was used. Therefore, a sample of the population of 70 pharmacies was obtained, so that a total of 70 surveys to obtain the results of this research were applied.

Instrument

To collect data to build a survey was conducted based on the literature review of this research. This instrument was answered by managers or managers of each establishment.

This survey consists of 24 items with a 5-point Likert scale of 1. Strongly disagree to 5. Strongly agree and is divided into four sections, beginning with I. Demographics, followed by II. Logistics capabilities, III. Customer value and IV. Financial performance, taking into consideration the present investigation only Section II. Logistics capabilities.

This instrument was subjected to a pilot and a validation test by factor analysis, and reliability was determined using the coefficient Alpha Cronbach through SPSS version 21, in which a coefficient of 0.869 was obtained, so all components have high reliability reaching a high Cronbach Alpha 0.6 above acceptable minimum required.

Results

The analysis of the results was performed once collected information, an exploratory factor analysis (EPA) was performed as a tool for identifying and measuring the appropriate logistical capabilities variable dimensions. For this purpose the method of main components and Varimax rotation was used.

Study constructs the independent variable: Logistics capabilities

Considering the 15 items that measure logistics capabilities, we determined that the index of sampling adequacy was adequate (KMO) with a value of 0.864 and the test of Bartlett sphericity was significantly higher with a p-value of .000, as observed in Table 3.

Table 3
Kmo and Bartlett sphericity logistics capabilities

Kmo and Bartlett test		
Measure of sampling adequacy Kaiser-Meyer-Olkin.		.864
Bartlett's test of sphericity	Chi-square approximate	156223
	Gl	5
	Sig.	000

In the analysis, considering the 15 items of the variable load factor logistical capabilities were observed low in one of the items which was 0.464, so taking into account that the weight factor must score above 0.65 to be accepted as an element integral factor of a sample of 70 observations, this variable was removed as an explanatory element of the dimensions of the logistics capabilities.

Table 4 shows the matrix components rotated with items grouped variable shown logistical capabilities.

Table 4
Matrix of rotated components of logistisc capabilities

Matrix components rotated [to]					
	Component				
	1	*2*	*3*	*4*	*5*
CL5. Order tracking system.	939	.213	.158	.026	.065
CL4. Order Processing System	.933	.248	.155	.047	.002
CL6. Integration of information	.899	.060	.172	.038	.203
CL7. Quality standards	.115	976	-.039	.067	.013
CL8. Quality inspection	.115	976	-.039	.067	.013
CL9. Returning to suppliers.	.300	.815	-.045	.224	.029
CL10. Customer order	.181	.014	.946	.122	.061
CL11. Adequate supply	.161	-.071	.918	.196	.052
CL12. Compliance orders.	.120	-.061	915	.146	.028
CL1. Order Processing.	.138	.126	103	.9 o'clock	.041
CL3. Receiving the Product	-.009	.163	.115	.856	-.014
CL2. Delivery on time	-.027	.013	.272	779	.271
CL14. Requirements and customer tastes	-.009	-.096	.033	.070	.916
CL15. Modification Order.	.265	.164	.079	.135	.824

Extraction Method: Principal component analysis.
Rotation Method: Varimax.

To explain the internal consistency of the constructs generated, the Cronbach Alpha which analyzes the reliability of the scales, which is considered acceptable with a minimum value of 0.6 (Table 5) was calculated.

Table 5
Results of the validity of the constructs of logistics capabilities (Cronbach Alpha)

Component	*Items*	*Cronbach Alpha*
Logistics capacity of Technology (CLT)	CL5. Order tracking system	957
	CL4. Order processing system	
	CL6. Integration of information	
Quality logistical capacity (CLC)	CL7. Quality standards	.944
	CL8. Quality inspection	
	CL9. Returning to suppliers	
Logistics Service logistics capacity (CLSL)	CL10. Customer order	951
	CL11. Adequate supply	
	CL12. Order fulfillment	
Logistics deliverability (CLE)	CL1. Order Processing	.840
	CL3. Receiving the Product	
	CL2. Delivery time	
Flexibility logistics process capability (PFBC)	CL14. Requirements and customer tastes	.726
	CL15. Modification of order	

As seen in Table 5, all components have high reliability reaching a high Alpha Cronbach above 0.6 acceptable minimum required. Therefore, all the elements that make up the dimensions of logistics capabilities are integrators and explanatory of the same element.

Conclusions

Based on the literature review, information collected and analysis of such information is reached several conclusions, which are aligned with the objective raised at the beginning of the investigation to identify the logistics capabilities they have the pharmaceutical companies in Ciudad Victoria, Tamaulipas.

In relation to compliance with this objective, we found that pharmacies Victoria have five types of logistics capabilities.

These logistics capacities are shown in the literature review by Hayes et al. (1994); Morash et al. (1996); Fawcett et al. (1997); Morash (2001); Morash and Lynch (2002); Kim (2006); Gilmour (1999); Zhao et al. (2001); He and Lai (2012) and the empirical study showed its existence.

According to the order and importance of management by pharmacies practices existing logistics capabilities it is evident, being the most widely used technology for processing, order tracking and logistics updating product information, this order to place orders quickly and reliably.

In the background is the ability to quality, which is also widely used by pharmacies because they have rigorous quality standards and inspection processes for specific products, plus they have the ability to make returns their suppliers if there is any quality problem in the product.

In turn, the pharmacies have a good relationship with its suppliers because they have the capability of logistic service in which attention to orders, fulfillment and delivery of the same is done properly.

With regard to the above, the pharmacies also have by their suppliers with a capacity of delivering orders, ranging from the processing of these, on-time delivery and receipt of products.

Finally, the logistics capacity was found with less handling by the establishments was the ability to process flexibility, in which the main issues is to implement orders based on customer requirements and the ability to to change the volume of an order placed.

Because the main activity of pharmacies is the management and marketing of medicines and health products, it is important to make a special treatment during transport and distribution, so that the sector companies have the capabilities studied logistics must be suitable to meet these important aspects for transporting pharmaceuticals.

It is noteworthy that the results obtained in the present work, work continues on this line of research to identify the effects of these detected in the performance of the companies studied logistics capabilities.

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10
The accounting professional competitiveness, training Professional College in Sonora

Maria Eugenia De La Rosa-Leal[1]
Juan Jose Gracida-Romo[2]

Abstract

The study of change and innovation in the accounting profession detect the active response towards professional competitiveness in regional and international economic environment.

In this study using a historiographical method, the development of the most representative professional associations in Sonora as faithful actors of evolution, institutional innovation and competitiveness of accounting, in a region with significant local participation in agriculture, mining and ranching is reviewed, particular qualities involving training and professional response capacity.

Demonstration of ongoing professional development and competitiveness are given in the narrative of the work, up to contemporary period as the beginning of this line of study.

The conclusions are collegial development strategies in a program of continuing education and professional certification ad hoc

1. Universidad de Sonora.
2. Centro INAH Sonora.

innovation to respond to the exercise of a globally competitive profession.

Keywords: accounting, Sonora, college professional innovation.

Introduction

The history of accounting is one of the historiographical genres, newly under investigation in Mexico, accompanied in parallel by the growing interest in the study of history and entrepreneurs.

The accounting history is more than a review of techniques and accounting practices or customs of notation, it is part of the integration of the economic history of the business providing an irreplaceable source of times data through the customs of record on the books, they interpret economic situation and the timing and context in which they occur.

In recent years research on accounting history around the world has grown significantly as stated by Spanish accounting Esteban Hernández Esteve - spanish accounting historian- observed that in England, Australia, United States, Belgium, France, Italy and Spain It installed as an important line in historical research (Hernández, 2010: 22-28).

In Spain (as an immediate reference to the arrival of double entry bookkeeping to New Spain), the accounting history has become one important aspect of study by the quantity and quality of research undertaken.[3] Meanwhile, in Mexico have emerged in recent years some pioneering researchers in this discipline as Federico Gertz Manero (Gertz, 2006) Maria Eugenia De la Rosa and Juan José Gracida (De la Rosa, Gracida, 2004) with significant holdings in meetings international, lacking in this line an academic event in the country as a genre of national economic history.

In this paper, a part of the research on the strategies and methods of performing research of history of accounting in Mexico is presented, reviewing the guidance and direction of the Mexican Institute of Public Accountants and its federated colleges, allowing recognize the

3. De Computis on-line Revista Española of Accounting History.

speech and justification of Mexican public accountants, in addition to recognizing the influence of the economic variable in the model of intervention counters in each historical period.

Background

Reviewing the history of public accounting in Mexico from the guidance and direction of the Mexican Institute of Public Accountants and its federated colleges allows recognizing speech and justification of public accountants, in addition to recognizing the influence of the economic variable in the model of intervention counters in each historical stage. Public accounting is a social profession. It is the profession of the truth, avoiding the possibility of opacity in financial reporting, which ensures the existence of order in the chaos that permanently exists (Instituto, 2007: 14). Also I could be considered a service activity develops a useful role in society, to provide financial information about an entity (Buentello & Márquez, 1986: 4).

As a discipline Public Accounting develops with the advance of the capitalist system, based on the publication of "Summa" treaty bookkeeping double entry Luca Pacioli in Venice in 1494,[4] more professional and stimulating a "treaty of mathematics" the accounting profession. In this book a description of the practices followed by Venetian merchants at the time, among which the most important was the use of "double registration" is made (Buentello & Márquez, 1986: 6).

In New Spain, the conquest of the Spanish Crown was accompanied with accounting systems in the administration of the colony. There is news that the Royal Decree of 18 August 1596, the keeping of two separate books and manuals prepared to collect Major Charge Data and certain rights over resources (Keil cited by González, 2004), in a single application of double entry. Under the responsibility of first Real Accountant of New Spain: Don. Rodrigo de Albornoz (Pintado, 1998: 32).In 1784 by Royal Order of May 7 it was approved provisionally

4. Lucas Pacioli, *Summa de Arithmeica, Geometría, Proportioni & Proportionalita,* Venecia, Paganino de Paganini. 1492.

introduce the method of double registration in the Hacienda de Indias, to score control of public finances in the colonies.[5]

In these historic times of the beginning of accounting, the fact that some auditing practices were made, although in truth the primitive accounting did not go beyond the formulation of financial statements is detected.

> However, the need for accurate information on the people who undertook long-term business ventures and could not maintain a permanent and effective surveillance over money trusting their partners since ancient times discovered the relevance of monitoring the accounts that should be held responsible for the administration and within the accounting (Pintado, 1998: 32).

For much of the nineteenth and early twentieth centuries, the accounts of foreign companies in Mexico was conducted by American and British accountants, which are recorded in the accounting records as "wore" companies also prepared and signed reports to the Government Mexican, as was the case of the railroad and telegraph companies. In the country, accounting education is imparted to aid of businesses since the mid-nineteenth century, starting in 1845 the teaching of bookkeeping in what would be the School of Business and Management (Carpy, 2007: 6; Pintado, 1998: 80) attached to the National Polytechnic Institute.

A new profession

The presence of national public accounting starts with the establishment of a career in public accounting of Commerce in 1905, the first professional examination Public Accountant Fernando Diez Barroso at the High School of Commerce and Administration in 1907 in Mexico City with the thesis "Mortgage Banks" (Chavez & Meneses, 2007: 4-5; Pintado, 1998: 80). A year later, the first woman accountant in

5. José María González Ferrando, "Estudio Introductorio" in the book of Don Fernando Lopez y Lopez, Accounting History. The Castilian version of the German work of Karl Peter Kheil. "Madrid, Spanish Association of Accounting and Business Administration, 2004, p. XIV.

Mexico: Maria Guerrero. (MIPA: 2007: 5) receives her diploma, she was followed by a long list of accountants of women in the country. At that time, the Public Accounting was directed to bookkeeping and financial statement audit, features that remain in force. The profession developed into the financial management of enterprises (Castelán, 2007: 13).

In years when the Public Accountant career is established and was titled the Mexican first, the first foreign office in the country was installed. Price Waterhouse which began operating in November 1906, which surely encouraged the formation of national accountants (Pintado, 1998: 44).

Until the decade of the twenties, during the construction stage of the economy and society after the 1910 revolution, agriculture, livestock, forestry and some processing industry continued to maintain the economy, helped by the support of accounting. While in the fiscal area a new tax replaces the old system of checkpoints (Pintado, 1998: 25), which opens a new aspect has to cater for accountants.

In 1929, revalidated for Refuge Roman Almonte, the first degree in accounting, in exchange for her diploma Commerce Accountant (MIPA, 2007: 30).

In 1932 the Law on Negotiable Instruments and Credit Transactions, catalyst of the audit of financial statements promulgated (MIPA, 2007:34).

Rafael Mancera, one of the first and most important counters of the country, in an interview said:

> The first Mexican accountants sought to exercise course as independent professionals, but some of them for lack of culture and environment for their work they had to withdraw from the Public Accounting and engaged, whether in business, and the magisterium, and the service of the public administration, and to work as private accountants of some companies. More luck could keep open its then modest offices, but soon realized the need to improve their knowledge, since then, in the School of Commerce was not taught even some elements of audit (Pintado, 1998: 26).

The Institute of Chartered Accountants

That is until 6 October 1923 the Institute of Chartered Accountants of Mexico (ICPTM), antecedent of the Mexican Institute of Accountants

(Pintado, 1998: 52) it is still the first president of ICPTM Fernando Diez Barrozo (1923-1925).

The history of collegiate accounting in Mexico, collected as contracted date 1925, when protocolizes the incorporation of the "Institute" (Murrieta quoted Pintado, 1998: 22) in the city of Mexico, significant moment in which are approved statutes and main mission: professional ethics and respectable union of public counters.

The founders of the new Institute began immediately distributing the operating rules, encouraging research and development of professional standards. Including accounting principles, rules and audit procedures pride independent practice.

The importance of the establishment of the institute is the accounting performance that is achieved in a world in which there are countries where acceptable accounting practices are established and formulated by government agencies, as is the case in France, Spain and Portugal, and some countries in central and South America. Adding to the non-governmental organizations established and developed the accepted accounting practices in England, the United States, Canada and Mexico. (Buentello & Márquez, 1986: 8), in which except the United States, the body is related emitter, organized accounting profession. While in Mexico, he is officially given by the Professions Act.

One year after to the formation of the Institute in 1924, the Law on Income Tax, pointing at thoroughly the various causes of this tax, also publishing the General Law of Credit Institutions public. A year later in 1925, the Institute published the first Code of Ethics.

In the world of accounting, a significant change would come 1934, when the Audits of Corporate Accounts Bulletin is published in the United States. This established for the enterprises listed on the New York Stock Exchange presenting a description of the main accounting practices, which constituted the first published Accounting Principles (Buentello 1986: 6).

At that time, Mexico City was the economic and university center of the country, which is why for nearly 30 years kept the national collegiate privacy. That spread to the states within the country as trade counters, private and public finally emigrated or returned to them, taking each facet particular region according to its economy and particular types of business.

In the 1940s, the first mechanical calculating machines, which are converted to electrical and accounting, emerge. At the same time that accountability registration of transactions with electronic equipment starts.

Gradually public accounting in Mexico was having presence in various states of Mexico including: Mexico City, Jalisco, Puebla, Sonora, Chihuahua, Coahuila, Baja California, Nuevo Leon and Sinaloa. At the same time, universities are evolving the educational profile of CPAs and the participation of public and private institutions in offering a degree in public accounting diversifies.

The importance of the Institute as a professional referee governing body strengthened 1945, with the appearance of the Professions Act as a Law Regulating Article 4 and 5 of the Constitution that revolutionizes the accounting to to award responsibility to the Institute as a collegiate body professional responsible for the accounting profession. Fourteen years after the April 21, 1959, the decree of President Lic. Adolfo Lopez Mateos creates the Federal Fiscal Audit establishing that alone could to rule for fiscal effects were the chartered public accountants, which caused an increase in the formation of schools in the states of the Republic (Pintado, 1998: 18, 32), many of them protected by the Institute.

With the antecedent of the Bulletin "Audits of Corporate Accounts" of the United States, the Institute emits in 1956 the first national version of Accounting Principles and the Code of Ethics in the Bulletin no. 2 Principles of Auditing Commission (Buentello, 1986: 6) as a significant event.

Economic growth of productive activities in Mexico causes the in different schools universities and commerce schools will increase to meet the demand of the Public Accountant career. By then the Institute of Chartered Accountants of Mexico, had initiated the affiliation of state colleges.

In the major cities of Mexico, Schools and Institutes of Public Accountants, which significantly increased the participation of these professionals in the various national forums, with the largest public colleges of the country counters were organized: the College of Public Accountants of Mexico, A. C. (1949) and the Institute of Chartered Accountants of Nuevo León (1948) first latter within the country (De la Rosa & Gracida, 2004: 49). Thanks to the management of the Insti-

tute of Chartered Accountants of Monterrey, the Institute of Chartered Accountants of Mexico changed its statutes in 1955 becoming the Mexican Institute of Public Accountants adding as significant activity counters the opinion of the financial statements (icpnl, 2014).

Several things happened the year of 1959, which decisively influenced the accounting profession: First, external, was the establishment in the United States Accounting Principles Board of the American Institute of Certified Public Accountans, specializing in Accounting Principles, issuing 31 Reviews. Given the relationship that existed with US companies and its offices, these opinions influence Accounting Principles in Mexico; the second, internal was the decision of the Federal Fiscal Audit, the Secretariat of Finance and Public Credit (SHCP), to establish the register of Public Accountants and the provision to rule for fiscal purposes, CPAs should be collegiate. This prompted the need for counters associated with institutes and colleges (MIPA, 2007:70; Pintado, 1998: 52).

The accounting historical setting in Sonora

Until the early twentieth century, the main economic activity was mining Sonora, mainly involved US companies, with their own railroads, banks and various types of companies (Gracida, 2002: 23) its accountants, were mainly Americans they still producing the information to the company and to report to the Mexican government.

Before the outbreak of the Mexican Revolution of 1910, deslindadores and irrigation in the coastal valleys of the Sonoran plains, mainly in the valleys of the Yaqui and Mayo established companies. After the revolution in the thirties and to the effects of the economic crisis of 1929 and its effect on mining, take the road of agricultural development, mainly in the cultivation of the valleys of the plain. Reason why in the forties, because the demand for products of Sonora by the outbreak of World War II, consisting of rice, cotton, flax and vegetables, Sonora is transformed, receiving a large investment for the construction of irrigation works (Gracida, 2002: 26).

Ciudad Obregon is one of the youngest cities in the state, having just reached in 1928 city status, continuing its expansion thanks to the

diversity of business and social projects, which were developed in the Yaqui Valley.

Thus the year 1942 comes the first public accountant Mexico to Sonora: Agustín Caballero Wario, a significant player on the regional public accounting (De la Rosa & Gracida, 2004: 47), he set about to achieve the union of all state counters, mainly in the capital Hermosillo and Ciudad Obregon.

It should be noted that the arrival of CP Hermosillo Agustin Caballero takes a few years after the CP Ramon Cardenas Coronado out of the city of Mexico, settling in the city of Monterrey in 1938 (MIPA, 2007: 48) being pioneers of Mexican public accountants who migrate within the country.

Gradually the economic growth of Sonora, sued local public accountants. So then, Augustin Caballero Wario with visionary spirit focuses on the formation of the School of Accounting in 1944, in the newly formed University of Sonora. Until then, the Institute of Accountants published the first Code of Ethics of accounting activity (De la Rosa & Gracida, 2004: 47).

In 1952, Mexico had entered the period known as "stabilizing development" import substitution model that takes the country down the path of industrialization. Along with the presence of public accountants in the banking industrial enterprises that were established to meet the growth of commerce and financial services.

When the Institute of Chartered Accountants of Sonora born, the state come from the development of the agricultural model of the coastal plains. "The great agricultural expansion" (1940-1955). In which the economic strategy was supported by the federal and state investment in building infrastructure to water and communications, which allowed the expansion of the agricultural frontier. On the other hand the population concentration in the cities of the coastal plain, most agricultural and livestock changes that Sonora had in the second half of the decade of the fifties, promoted agricultural development in the valleys of the Sonoran plain expanding urban centers Caborca, Hermosillo, Ciudad Obregon and Navojoa integrating as trade, services and financial areas around agricultural and agribusiness development developed mills wheat, biscuit industry, the production of pasta soup, textiles, and food as Beer. Alongside growing agricultural activities and

livestock export it stimulating economic boom in urban centers such as Agua Prieta, Hermosillo, Nogales, Ciudad Obregon and Navojoa.

In the northwest, the road to economic growth was the agricultural and fishing, especially agriculture. In the coastal plains of Sonora, developed along with the construction of dams and water works in general, the expansion of the agricultural frontier that allowed the establishment of agricultural enterprises and modern agro cities as Cd. Obregon (Cerutti, 2007). Also adding the growth of Hermosillo, Guaymas and Caborca, the latter by the growth of fishing activity coming from the time of General Abelardo Rodríguez (1943-1948). Activities, which require a special type of accountability.

So, things in the training of university Sonora counters was aimed at responding to the different companies operating in different fields, mainly agriculture, construction, trade and financial. Having as first graduate degree from accounting from the University of Sonora in 1955 to Jesus Hernandez Saucedo, who became president of the nascent Institute of Chartered Accountants of Sonora.

In 1955 in Sonora, south of the state, agricultural business was very strong in the Yaqui Valley because of the expansion of the agricultural frontier by building the dam Alvaro Obregon. Between 1950 and 1955, Cerutti told in this city there were the five most business training (Cerutti, 2011). This allowed Obregon become the seat of various agricultural, industrial and service companies, combined with its position as most important southern state (Gracida, 2002: 26) .What previous city coincided with the changes that suffered the Institute Mexican Public Accountants, to allow in schools and has the institute. So finally, after several attempts the October 11, 1955 in Ciudad Obregon, Sonora Sonoran Institute of Chartered Accountants formed AC Professional association (www.icpnl.org.mx). By then, the growth of business activities had continued, also in Hermosillo driven by the advance of the colonization of the town Miguel Aleman surrounding the city, known as the coast of Hermosillo and the valley of Mayo.[6]

6. The October 11, 1955 before the Notary Public No. 4 the lawyer Pedro Romero, the Articles of Incorporation was signed giving legality to the formation of the Sonoran Institute of Chartered Accountants

   The Institute began with 10 members, including two members residing in Hermosillo, Sonora. These counters are: C.P. Aguayo Mario Ybarra (+), CP Agustin

By then continue to form Public Accountants inside Mexico and Sonora was no exception. 1955 before the economic and business growth of the capital and the coast Hermosillo Sonoran Institute of Chartered Accountants was formed in Ciudad Obregon, chaired by CP Aguayo Mario Ybarra (Cerutti, 2006; IMCP, 2007: 62). That same year, the Institute of Chartered Accountants of Mexico changed its name to the Mexican Institute of Public Accountants.

The Institute of Chartered Accountants of Sonora

The circumstances that led to World War II (1939-1945) stimulated economic growth and demand Sonora modernized product of the town, and coincided with the governor of the former President of Mexico General Abelardo Rodriguez, this event led to the university education of the public accountant in the state of Sonora plus some Mexican immigration CPAs, situations that allowed the group cohesion and the formalization of the College constitutive encouraged by the attendance in 1957 in Mexico City to the First National Convention Institute of Chartered Accountants to celebrate the first 50 years of the profession in Mexico. Upon his return, the counters "Sonora" bring the idea of meeting collegially. Brewing the Institute of Chartered Accountants of Sonora, CA that is in 1958 having as founding president to CP Agustin Caballero Wario. At the same time they are also the Institute of Chartered Accountants of Chihuahua and the Institute of Chartered Accountants of Baja California.

El Chartered de Sonora is affiliated to the Mexican Institute of Public Accountants almost immediately, participating in the creation of the Professional Development Committee of the Northwest (Codapro) of the Public Accountants Northwest (Cocopuno) in 1977

Caballero Wario (+) (Hermosillo, Sonora), CP Juan Pedro Camou Cubillas (+), CP Amavizca Lorenzo Encinas, CP Antonio Quiroga Mazón (+), CP Lemmer Meyer Federico Otero (+), CP Jose Guadalupe Ramirez Lopez, CP Jesus Hernandez Saucedo (Hermosillo, Sonora), CP Jose Maria Badillo Hermosillo (+) and C.P.C. Luis Rolando de la Peña Castillo (+). 11 de octubre de 1955 ante el Notario Público número 4 el licenciado Pedro Romero, se firmo la Escritura Constitutiva, dando legalidad a la formación del Instituto Sonorense de Contadores Públicos, A.C.

with the full support of the CP Mancera Gabriel, president in functions IMCP. Becoming the current Northwest Institute of Chartered Accountants, as a regional cluster of schools in the northwest of the country promoted from the local membership, a ripple effect of accounting bookkeeping of the state, the region and the country, and in reverse (Cocopuno, s/f).

The regions are formed on the initiative of the northwestern region, which was the first who was making attempts to throw the hands, between colleges, like Cd. Obregon with whom he had many crumbs. As was the area that was farther from the center of the country, was very difficult to go back and forth. From this initiative to northwest, the IMCP the decision of the regionalization of the country (Knight, 2008).

In the 60s, professional relations, sponsored by the geographical conditions, idiosyncrasies and friends joined in northwestern existing colleges, beginning in 1966, of Ciudad Obregon and Hermosillo, the First State Meeting of Chartered Accountants, adding to them by invitation in 1971 at the College of Sinaloa and Baja California organized the first time "The Convention of Chartered Accountants of the Northwest" in 1971, which continue to perform in different host cities of the northwest.

The historical approach to regional professional accounting business accounting, management and financial audit as encourage the founders of the Institute of Chartered Accountants of Sonora. Within which its founder president CP Dn. Wario Agustin Caballero, was also the first director of the School of Commerce at the University of Sonora in 1958 (De la Rosa & Gracida, 2004: 22) which joined the ways of accounting organized with the university training of CPAs the region in a formative axis counter-auditor.

The development of the Institute of Chartered Accountants of Sonora, is in many ways common to other schools in the coordinated by the Mexican Institute of Public Accountants country roads. In each period of government of the College acting as distinguished presidents counters of the town, trying during their project management course his vision of accounting and to meet the professional needs of the membership with a clear focus on economic trends and tax. Without being able to depart from the effect of the mixture of a farming culture and mining, together with the particular characteristics of counters

northern border, engaged in export business with the different realities of Cd. De Mexico, located more than 2000 kms away.

In the 1960s the Chartered Accountants of Sonora is going through a period of rethinking professional while in agriculture a technology package developed at the Agricultural Research Center Northwest (CYAN), known as the "green revolution" to think along new wheat varieties used a new farming technology and new processes. This package was highly consumer of agrochemicals and their use affect the sustainability of agriculture in the state. Meanwhile, cattle ranching expand export calves for fattening pens United States and fishing grows in the Sonoran ports, demanding primary accounting models and operating costs for extractive industries.

By the late sixties to the pair of Sonora, the Institute of Chartered Accountants undergoes a major change in their business and professional activities, on the one hand witnessing the establishment of the Maquiladora Industry in 1967 and another product diversification livestock keeping with a new modality imposed by the US market, this starts with the maquiladora industry, which later replaced the agricultural model and pull the interest of accounting expertise to these areas, leading to the accounting system for areas of responsibility.

A brief tour programs Continuing Professional Education of the College of Public Accountants of Sonora, to visualize the latent state in economic activity in the state and country and the interpretation that each of the presidents served in management.

Noting that the historical and geographical relationships between colleges and institutions with the MIPA, have led to a convergence in the internal professional operation of colleges of accountants and their objectives, which in summary are: Connect, perform, monitor, update, promote and disseminate trends and accounting regulations; link with organizations and institutions for training and professional quality accounting ratified with national Professional Certification (INCP, 2008).

Conclusions

The economic development of the regions has led to the promotion and creation of united business professions, such as public accounting,

which in the state of Sonora has been strongly linked to the activities of the region and the intervention of foreign capital , maintaining an institutional relationship with the capital, through the College of Accountants, as they are treated in this work under a historiographical method: the Institute of Chartered Accountants of Ciudad Obregon, Sonora and the Institute of Chartered Accountants in Sonora Hermosillo.

It is observable innovation capacity of the accounting profession to the extent that economic conditions are changing from an agricultural boom, to the creation of a maquiladora corridor, intervention in globalization and today in technology.

The study of these changes go hand in hand giving the study of the economic history of the region and its ability to innovate in competitiveness between local, regional and international businesses. Or vice versa demanding economic history is generating skills and networking professional support to meet the new requirements.

The college model of the accounting profession has been per se mechanism strategic competitiveness of the accounting professional, and left written evidence of regional development.

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Motivations of Facebook users to engage in eWOM and the characteristics of messages. An exploratory study in Mexico

Celestino Robles-Estrada[1]
Karla Cirenia Sandoval-Perez
Belen Sarai Gomez-Gonzalez

Abstract

Interpersonal influence and word-of-mouth (WOM) are ranked the most important information source when a consumer is making a purchase decision. These influences are especially important in the hospitality and tourism industry, whose intangible products are difficult to evaluate prior to their consumption. When WOM becomes digital, the large-scale, anonymous, ephemeral nature of the Internet induces new ways of capturing, analyzing, interpreting, and managing the influence that one consumer may have on another. The first part of the study analyzes the importance of social networks and viral marketing processes that occur within them —electronic Word-of-Mouth messages (EWOM)—, in the context of digital marketing. In the second part the

1. Centro Universitario de Ciencias Economico Administrativas-Universidad de Guadalajara.

study investigates how particular motivations and message characteristics are associated with eWOM and a theoretical construct is tested empirically to discover some of the motivations of users to transmit viral marketing messages in their Facebook personal pages. Six specific motivations and two different types of messages transmitted were evaluated. Responses from a sample of 201 Facebook were collected through an online survey. Results showed that cognitive and affective characteristics of messages were linked to different motivations to engage in eWOM.

Keywords: Word-of-mouth, Motivation, Electronic word-of-mouth, Viral marketing.

Introduction

> [While] word of mouth has always been the most effective form of communication, [nowadays] there is a lost generation of marketers [...] who do not understand the web and social networks (Simon Clift, Unilever Head of Marketing, *Financial Times,* April 6, 2010).

Cyberspace has presented marketers with new avenues to improve the efficiency and effectiveness of communication, and new approaches for the acquisition and retention of customers (e. g., Osenton, 2002; Wind, Mahajan, & Gunther, 2002). One aspect of cyberspace is the phenomenon of *online interpersonal influence* (Senecal & Nantel, 2004). Because a fundamental principle of consumer behavior is that consumers have the ability to exert powerful influences upon each other, it is only natural that marketers seek to manage interpersonal influence (Dichter, 1966; Haywood, 1989), and with the spread of electronic technologies, it is not surprising that virtual interactions among consumers have proliferated (Goldsmith, 2006). Marketers, who have long sought to harness and manage interactions such as these to their own advantage, have recently begun to consider and devise strategies to manage online interpersonal influence (Litvin, Goldsmith, & Pan, B., 2008).

Social networks

Social networks operate as virtual communities where users create public or semi-public profiles to communicate with their network of friends or others with similar interests (e. g., Balas, 2006; Boyd & Ellison, 2007; Kasavanam, Nusair, & Teodosic, 2010). Social networking platforms such as Facebook and Twitter are not a recent phenomenon, but part of a phenomenon of emergence and disappearance of many sites of similar type during the past two decades. However, the increasing availability of access to social media through personal devices such as "smart phones" is a key driver for growth in the formation and use of online communities that have become increasingly active. When users exchange marketing messages, these communities can strengthen social consumption, potentially resulting in increased brand loyalty and use (Kozinets, 2002). Furthermore, social networks can be seen as an emerging and important facilitator of communities that are characterized by "[...] consumers with a shared enthusiasm [...] whose members participate in group actions together to achieve collective goals and/or express feelings and mutual commitments" (Bagozzi & Dholakia, 2006: 45). When these messages refer to positive market messages, these communities are generally organized around a shared appreciation of a particular brand and messages are designed to encourage a collective value within the community (Muñiz & O'Guinn, 2001; Schau, Muñiz, & Arnould, 2009). The simple and asynchronous nature of digital networks is its greatest advantage and thus, this technology has provided a kind of relationships that in the past would have been almost impossible (Boyd & Ellison, 2007; Hara, Bonk, & Angeli, 2000). At the most basic level, interaction with consumers through social media can be seen as an extension of the traditional word-of-mouth (WOM) and thus a hybrid element of the traditional marketing-mix (Mangold & Faulds, 2009). Social media differ from the above channels for marketing communications, in that enables customers to communicate directly and easily with others and to co-create value with an imagined community at a time, place and frequency best suited to individual consumer. Foux (2006) suggests that consumer-generated media are seen as the most honest source of information available. As a result, consumers are turning to social media forums for information

on products and services (Jayanti, 2010; Lempert, 2006) and reducing its dependence on traditional media.

With the advent of these new technologies and platforms, interaction with consumers is becoming easier and more efficient (Yadav & Varadarajan, 2005). At the same time, a new generation of committed and empowered consumers has evolved with increased access and exposure to organizations (Tapscott, 2009). As a result, the emphasis on reason, dialogue and creativity is needed to inspire consumers to co-create value (Arnould & Thompson, 2005) and to provide companies with raw material for the creation, expansion and maintenance of relationships with consumers (Baron, Conway, & Warnaby, 2010).

a. Facebook, the most important social network

Due to its impressive growth, Facebook has become an important channel for eWOM (Wu, Wang & Hsu, 2014). Understanding the connections that are generated in Facebook attracts the attention of researchers from multiple perspectives, (Harris & Dennis, 2011). Researchers have examined many aspects of the network, including capital gains on Facebook (Ellison et al., 2007), self representation in profiles images (Strano, 2008), personalities of Facebook users (Ross et al., 2009), trust / privacy of SNS users (Dwyer et al., 2007; Fogel & Nehmad, 2008; Swamynathan et al., 2008), technology acceptance (Suki et al., 2011), experiences and brand communities (Gummerus et al., 2012; Simon et al., 2013), underlying psychological factors in its use (Toma & Hancock, 2013), credibility of advertising on Facebook (Yaakop et al., 2013), and demographic differences in Facebook using (Junco, 2013) to name some of the relevant research topics, and despite the potential power of Facebook as a social commerce medium is evident (Gongloff, 2011; Trusov et al., 2009), there is little research on the different aspects that affect this phenomenon globally, and more specifically, in Mexico.

b. Word of mouth on social network sites

Word-of-mouth communication by traditional means (WOM), can be signaled as the precursor for eWOM, eWOM is therefore, oral communication between a receiver and a transmitter (Lee & Youn, 2009). In this communication, the source is perceived as a non-commercial message

referring to a brand, product or service (Alon & Brunel, 2006; Arndt, 1967). Wom has been recognized as a key market force as it affects the general consumer attitudes, beliefs and behavior patterns (Bansal & Voyer, 2000; Hennig-Thurau & Walsh, 2004; Sweeney et al, 2011; Mazzarol et al., 2007) and particularly in consumer' product judgments (Bone, 1995; Summers, 1972) and decision (Lampert & Rosenberg, 1975; Lau & Ng, 2001). Westbrook meanwhile (1987: 261) defined wom as 'the informal communication addressed to other consumers about the ownership, use or characteristics of specific goods and services and / or its vendors'.

ewom has been conceptualized as 'any positive or negative statement made by [...] [an individual] that is available to a large number of people and institutions on the Internet (Hennig-Thurau et al., 2004: 39). Stangalin (2013), in turn, defined it as 'the process that consumers held to share information and opinions about products, services and brands independently of any trade or business influence'. Meanwhile, Litvin, Goldsmith, & Pan define it as 'all informal communications to consumers through Internet-based technologies, relating to the use or characteristics of goods and services, or companies that commercialize' (2008).

Through social networks, ewom messages can be changed quickly and easily between a large number of participants, maintaining interpersonal confidence produced by the exchanges in traditional wom (Chih-Lun & Chun-Hung, 2015), Because of this property, given the 'ease of generation and dissemination of ewom' (Gupta y Harris, 2010: 1042) and its impact on consumer buying behavior (Hennig-Thurau et al., 2004), researchers have been generating over the last decade a lot of research on ewom (Gupta & Harris, 2010; Hennig-Thurau et al., 2004; Valck, 2006; Zhang et al, 2010). So far, it has bee examined a wide range of ewom issues, including ewom value for organizations (e.g., Liu, 2006), its links with purchasing decisions and purchase intentions (e.g., Lee & Lee, 2009), its ability to persuade consumers (e.g., Zhang et al, 2010), its background (e.g., Jayawardhena & Wright, 2009; Gruen et al, 2006; Mazzarol et al., 2007; Sweeney et al, 2008) and consequences (e.g., Park & Lee, 2008; Huang et al, 2011; Wangenheim & Bayon, 2004). Despite the considerable amount of studies on different ewom issues, is important to recognize that the ewom remains an area little researched (Zhang et al., 2010), which it is even more evident if we

refer to the study of this phenomenon in Mexico. Specifically, what propels people of this country to participate in different types of eWOM remains virtually unexplored.

c. Propensity to share viral marketing messages in social networks

An important dimension of eWOM behavior is the communication behavior (Norman & Russell 2006). Sun et al. (2006) analyzed the consequences of communication behavior issues such as forwarding messages and online chats between users messages, generated as an eWOM result. They define eWOM propensity as the 'communication exchange behavior' among Internet users on social networks, focusing on products or services. Norman and Russell furthermore propose that the communication behavior is more likely to occur in an online context, and that Internet unique features facilitate the dissemination of information (Norman & Russell, 2006).

Motivations for engaging in eWOM activities

There are previous studies that have suggested a number of reasons for engaging in eWOM (e.g., Dichter, 1966; Sundaram et al., 1998; Hennig-Thurau et al., 2004; Dichter, 1966 y Sundaram et al., 1998). They proposed and empirically tested motivations to eWOM in an online context; proposed (and empirically tested) several reasons why a consumer would participate in communication processes in social networks. This study will focus on six of which have been reported as the most important, namely:

I. *Positive self-enhancement* reflects a consumer's need to share their consumption experience to augment their own image as intelligent shoppers. A desired outcome commonly associated with positive self-enhancement is presenting himself as a smart or discerning buyer (Sundaram et al., 1998; Hennig-Thurau et al., 2004). It is reasonable to suggest that someone on this occasion would be able to produce and transmit a message containing information that may be a sign of knowledge and awareness about an issue (Hennig-

Thurau et al., 2004) or first-hand deposition from the point of view of an 'expert' (Schindler & Bickart, 2005). Previous studies found that when people want to improve their credibility as experts, they tend to use words that express certainty and confidence in their judgment ('very', 'safe', 'definitely' and 'confidence') (e.g., McEwen & Greenberg, 1970; Karmarkar & Tormala, 2010). A well articulated or vividly written message can also be in line with an impression of sophistication (Yap et al, 2013), Suggesting:
H_1: The greater the 'positive self- *enhancement*' motivation, a consumer is more likely to pass messages eWOM with cognitive (H_{1A}) and affective (H_{1B}) characteristics.

II. *Social benefits* occur when a consumer transmits a WOM message for identification and social integration. Hennig-Thurau et al. (2004) associate this with motivation with the need experienced by a person to identify themselves as socially integrated in a community. This motif can manifest itself in different ways. For example, a consumer can initiate an eWOM communication to flag its presence in the community. Alternatively, a consumer can send a message to ingratiate with 'opinion leaders' who decide who is accepted or ignored in the community (McWilliam, 2000). Beuchot and Bullen (2005) found that people, with the aim of making interpersonal connections are likely to reveal details in their online communication, while Luminet et al. (2004) found people share an emotional negative experience by explaining the circumstances of the negative event and describing their own reactions to the event, suggesting:
H_2: The greater the motivation of a consumer to obtain 'social benefits' the greater his propensity to transmit eWOM messages with cognitive (H_{2A}) and affective (H_{2B}) characteristics.

III. *Advice seeking* concerns the need to acquire tips and support from others to better understand and use a product or service. Consumers motivated by 'advice seeking' seek to maximize personal utility by prompting advice or information from others to better understand and use a product or service (Sundaram et al., 1998; Hennig-Thurau et al., 2004). In addition, it is likely the advice- seeking message will contain emotive language as a means of relating

to others and gaining empathy before asking for help (Luminet et al, 2004; Wetzer et al., 2007). Wetzer et al. (2007) suggested that expressions of regret, disappointment and uncertainty might be evident in negative WOM communication that is designed for assistance. Yap et al. (2013) suggest that it is likely that someone who initiates eWOM communication to seek advice offer significant details in his message. A person with this motive initiates eWOM communication either by giving their current views on the service or explaining their predicament, both of which imply the message is likely to contain product-specific information to contextualize their request for help therefore suggesting:
H_3: The greater the 'advice seeking' motivation, the greater the propensity to transmit eWOM messages with cognitive *(H_{3A})* and affective *(H_{3B})* characteristics.

IV. *Concern for other consumers* relates to genuine offers to help other consumers make better purchase decisions. The motivation Hennig-Thurau et al. (2004) termed as 'concern for other consumers' involves an element of altruism, which is a voluntary act for the benefit of others without expecting anything in return (Piliavin and Charng, 1990; Sundaram et al, 1998). Studies suggest that altruistic people recognize that the best way to be helpful in WOM communication is being informative and functional (Sen and Lerman, 2007; Bronner and Hoog, 2011). This suggests that a message born of concern for other consumers, have greater cognitive characteristics. Jeffries (1998) found that altruistic behavior tends to be more intense when the altruistic perceives himself as a defender of justice and can articulate a message passionately drawn to represent the cause. Hennig-Thurau et al. (2004) conceptualize concern for others in terms of help and warn others. Consumers with a positive service experience show concern for helping others to make the right decision. By contrast, consumers with an unfavorable service experience worry and warn others about a bad service provider. Herche and Engelland (1996) warned that this construct does not appear to be unidimensional if communication has written statements both positive and negative, so this motivation is treated as two constructs ('help' other consumers and 'warning' to other consumers), suggesting:

H_4: For positive eWOM messages, the greater the 'helping other consumers' motivation, the greater the: *(H_{4A})* cognitive and *(H_{4B})* affective characteristics of the eWOM message. For negative eWOM messages, the greater the 'warning other consumers' motivation, the greater the: *(H_{4C})* cognitive and *(H_{4D})* affective characteristics of the eWOM message.

V. *Helping the company* relates to a consumer's desire to help a company as a result of a particularly pleasing consumption experience. Motivation to help a company comes from a positive consumer experience and the goal is to reward the company by referring it to others. In doing so, thus, the sender is likely to forward the details of his experience and provide sufficient factual information to justify the recommendation. Isen et al. (1985) and Hand (1997) found that consumers who are happy tend to increase their cognitive deliberation and rigorous analysis, which in turn suggests that this increases their willingness to send eWOM messages with higher cognitive characteristics. Such eWOM messages are also likely to be emotionally drawn to encapsulate consumer reactions of delight and pleasure after consumption (Mano, 1997; Schellekens et al., 2010). In an attempt to help the company in a significant way, the sender is likely to forward a strong sense of conviction, suggesting: *H_5:* When a consumer experiences greater desire to 'help a company', the greater the cognitive *(H_{5A})* and affective *(H_{5B})* characteristics of the eWOM message.

VI. *Venting negative feelings* relates to a dissatisfying consumption experience that results in the consumer wanting to release frustration and anxiety through negative eWOM. By contrast, people who are unhappy with a negative consumption experience may use negative eWOM to convince others to boycott the offending organisation, with the intent to seek revenge and punish the organization (Sundaram et al., 1998; Ward & Ostrom, 2006). To achieve the consent of the other, the communicator is likely to include clear descriptions and detailed examples, improving the logic of his argument appeal (Kowalski, 1996; Schindler y Bickart, 2005). A message of this kind is therefore likely to have significant cognitive content. There is also evidence to suggest that anyone seeking to

punish an organization or vent negative feelings is likely to include in his eWOM message a strong emotional language. Wetzer et al. (2007) and McColl-Kennedy et al. (2009) found negative eWOM messages with venting and vengeance motives are likely to contain expressions of anger, frustration, and irritation, from this emerges the following hypothesis:
H_6: When a consumer experiences greater desire to 'vent negative feelings' resulting from a poor market experience, the greater his propensity to transmit eWOM messages with: (H_{6A}) cognitive and (H_{6B}) affective characteristics.

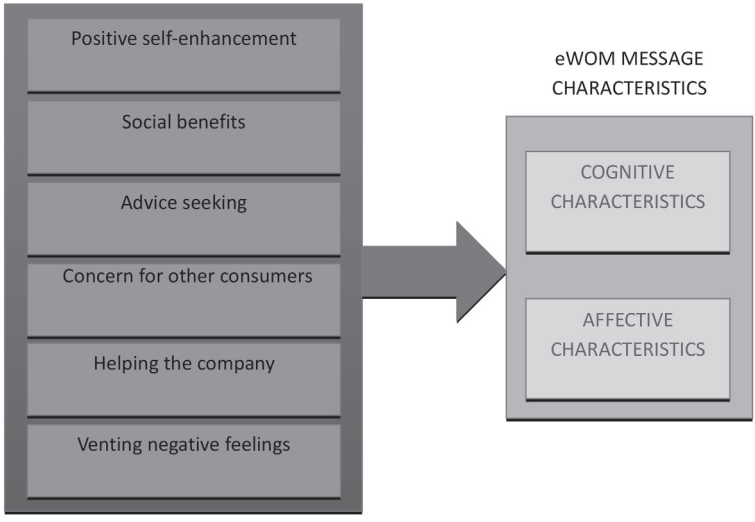
Figure 1 shows the proposed model and the hypothetical relationships between the different variables. The proposed framework emphasizes the importance of understanding the links between the reasons to initiate an eWOM communication and the characteristics of the transmitted messages (Fig. 1). Managers should be aware that knowing some of these motivations can lead to generate more effective digital marketing strategies, to boost communication trugh eWOM messages with the desired characteristics by the company, while minimizing the transmission of unwanted. Therefore, the framework developed in this study should help managers better understand the nature of eWOM communication and assess the extent to which these motives influence the amount of messages transmitted and ultimately in their organization.

Research methodology

These hypotheses were investigated within a context of Mexican undergraduate students who have and actively use a Facebook account. The data used to test the hypotheses were collected through an online survey, which was published in several Mexican walls of Facebook users, in order to have a representative random sample of the Mexican segment active in social networks. The final sample collected totaled 217 valid questionnaires. This sample comprised 61.8% of males and 38.2% females; while 72.35% were aged 18-21 years, 18.89% were aged 21-25, 5.07% were aged 26-30, and only 3.68% were aged 31 years and older. From the sample, 71.43% of respondents have shared

music videos, 60.37% shared funny videos, 37.79% shared video ad films, 33.64% have shared personal videos, 26.63% have shared news or entertainment videos, 22.58% shared political videos, 21.20% have shared videos of commercials, and only 9.68% has not shared any video. Hundred percent used the Internet daily. Median Internet usage was 4.6 h a day.

Figure 1
Conceptual framework



Source: Adapted from Yap, K. B., Soetarto, B., & Sweeney, J. C. (2013).

Construct operationalization

A questionnaire was developed to measure the constructs of interest, adapting the scales developed and validated by Yap, Soetarto, and Sweeney (2013) for the independent and two dependent variables. All the elements were measured by five-point Likert scales (1 = strongly disagree, 5 = strongly agree). 'Positive self-enhancement' factor was measured by 5 items and in the study by Yap, et al., (2013), obtained rates of goodness of fit (one-factor model) of GFI = 0.99 CFI = 0.99.

'Social benefits' factor was determined by three items and scored goodness of fit indices (model of a factor) of GFI = 0.92 CFI = 0.82. To measure 'Advice seeking', 2 items were used, the scale reported goodness of fit indices (one-factor model) GFI = 0.92 CFI = 0.88. For its part, the factor 'concern for other consumers', was measured using 4 items and scored goodness of fit indices (model of a factor) of GFI = 0.88 CFI = 0.50. The scale for 'helping the company' has two items and goodness of fit indices (one-factor model) of GFI = 0.90 CFI = 0.55, while finally the variable 'vent negative feelings' it is determined by measuring four items, according to the scale of these authors.

Motivation to transmit messages was measured by adapting the original eWOM motivation scales developed by Hennig-Thurau et al. (2004), while the cognitive and affective characteristics of eWOM messages were measured using eWOM content scales developed by Sweeney et al. (2012).

Findings

The psychometric properties of the scales were assessed using confirmatory factor analyses. Table 1 shows the results along with a comparison of individual factor loadings for the items reported by Yap, Soetarto, y Sweeney, (2013). As can be seen, it was found that all items contribute to the explanatory model level. Loadings were very similar to those found by Yap, Soetarto, y Sweeney, (2013), and in most cases were differences were found loads in our study were slightly higher, the largest differences were in the 'emotional characteristics' factor, in which some of the factor loadings for the items were considerably lower than those reported by Yap, Soetarto, y Sweeney, (2013), but still but having sufficient explanatory power. The item with the lowest factor loading was 'strength expressed in messages' (0.42), a value high enough for the item to be included in the study, according to the criteria proposed by y Larcker (1981).

Hypothesis testing

For subsequent analysis, each construct was operationalized by the average value of all the corresponding elements listed in Table 1 (Rodríguez-Pinto et al., 2007). Regression analyses were conducted, in which each of the two message characteristics were regressed on motivations to engage in eWOM (see Fig. 1). The analysis was also investigated through correlational analyses.

Table 1
Results of confirmatory factor analysis

Factor	*Item*	*Item loading*	*Item loading reported by Yap et al.*
Personal self-enhancement			
	This way I can express my joy about a good buy	0.83	0.84
	I can tell others about a great experience	0.81	0.84
	I feel good when I can tell others about my buying success	0.84	0.78
	My contributions show others that I am a clever customer	0.70	0.64
Social Benefits			
	I believe a chat among like-minded people is a nice thing	0.83	0.84
	It is fun to communicate this way	0.91	0.83
	I meet nice people this way	0.88	0.77
Advice seeking			
	I hope to receive advice from others to help solve my problems	0.94	0.90
	I expect to receive tips or supports from other users	0.94	0.86
Concern for other consumers			
	I want to help others with my own positive experiences	0.94	0.90
	I want to give others the opportunity to buy the right product	0.94	0.81
	I want to warn others of bad products	0.96	0.95
	I want to save others from having the same negative experiences as me	0.96	0.87
Helping the company			
	In my opinion, good companies should be supported	0.92	0.88
	I am so satisfied with a company and its product that I want to help the company to be successful	0.92	0.82

Factor	*Item*	*Item loading*	*Item loading reported by Yap et al.*
Venting negative feeling			
	I like to get anger off my chest	0.79	0.81
	I want to take vengeance upon the company	0.92	0.81
	The company harmed me, and now I will harm the company	0.90	0.79
	My contributions help me to shake off frustration about bad buys	0.89	0.76
Cognitive Characteristics (I believe the message I posted was. . .)			
	Specific	0.88	0.87
	Clear	0.89	0.85
	Informative	0.64	0.82
	Reliable	0.83	0.79
Affective characteristics (I believe the message I posted was. . .)			
	Delivered in a strong way	0.42	0.84
	Los mensajes que publico en mi muro son expresados de una forma persuasiva	0.61	0.83
	Delivered powerfully	0.57	0.80
	Intense	0.45	0.75
	Delivered using strong words	0.74	0.73
	Reinforcing	0.81	0.70
	Elaborate	0.79	0.60
	Explicit	0.77	0.52

Multiple regression equations were analyzed:

$Y_{1A} = aX_1 + bX_2 + cX_3 + dX_4 + eX_5 + fX_6$

$Y_{1B} = aX_1 + bX_2 + cX_3 + dX_4 + eX_5 + fX_6$

Where;

Y_{1A} = Cognitive characteristics eWOM messages

Y_{1B} = Affective characteristics eWOM messages

X_1 = Positive self-enhancement

X_2 = Social benefits

X_3 = Advice seeking

X_4 = Concern for other consumers

X_5 = Helping the company

X_6 = Vent negative feelings

Multiple regression equations with obtained coefficients:

$Y_{Cognitive} = 3.374 + 0.180X_1 - 0.039X_2 - 0.107X_3 + 0.258X_4 + 0.047X_5 - 0.255X_6$

$Y_{Affective} = 1.935 + 0.135X_1 + 0.008X_2 - 0.107X_3 + 0.243X_4 + 0.010X_5, + 0.093X_6$

For eWOM messages with cognitive characteristics ($r_{cognitive} = 0.384$), the motivation of positive self-enhancement (0.39, 0.37) and for warn to other consumers and for warn to other consumers were significantly associated with cognitive message characteristics (all $p < 0,05$), supporting H_{1a}, H_{4a} and H_{4c} (See Table 2). No significant association was found for other independent variables. For eWOM messages with affective characteristics ($r_{affective} = 0.389$), also the motivation of positive self-enhancement and for warn to other consumers were significantly associated with affective message characteristics (all $p < 0,05$), supporting H_{1b}, H_{4b} and H_{4d}, (See Table 3). In this case, no significant association was found for other independent variables, neither.

Discussion and managerial implications

This study seeks to identify how the motivations of Mexican Internet users to participate in eWOM affect the characteristics of the eWOM posts, particularly in the cognitive and affective components of messages (e.g., Allsop et al., 2007; Mason & Davis, 2007; Yap, Soetarto, & Sweeney, 2013). The findings suggest that cognitive and affective eWOM messages are positively related to the motivations positive self-enhancement and warn to other consumers. These results differ from those published by other authors, which leads us to intuit that cultural differences can play a decisive role in the different relevance of Mexican Internet users about their motivations for sharing eWOM messages on social networks.

Table 2
Correlations between motivations and cogmitive characteristics of eWOM messages

Factor	Cognitive characteristics	Hipótesis	Confidence interval of 95.0% for the intersection		Correlations			Collinearity statistics	
			Lower limit	Upper limit	Zero order	Partial	Semipatcial	Tolerance	FIV
Positive self-enhancement	0.180	H_{1A}	0.10126811	0.37138548					
Social benefits	-0.039		-0.2045899	0.22139883	0.211	0.104	0.098	0.409	2.444
Advice seeking	-0.010		-0.3007769	0.08743591	0.121	-0.033	-0.030	0.385	2.595
Concern for other consumers	0.258	H_{4A}, H_{4C}	0.0265172	0.45963335	0.112	-0.060	-0.056	0.358	2.797
Helping the company	0.047		-0.1932508	0.21250702	0.230	0.156	0.148	0.278	3.602
Vent negative feelings	-0.160		-0.0569477	0.24289883	0.193	0.038	0.035	0.384	2.607
R^2 adjusted to the regresion model	0.118								

Table 3
Correlations between motivations and affective characteristics of eWOM messages

Factor	Affective characteristics		Confidence interval of 95.0% for the intersection		Correlations			Collinearity statistics	
			Lower limit	Upper limit	Zero order	Partial	Semipartial	Tolerance	FIV
Positive self-enhancement	0.135	H_{1b}	0.10126811	0.37138548					
Social benefits	0.008		-0.2045899	0.22139883	0.300	0.114	0.108	0.409	2.444
Advice seeking	-0.107		-0.3007769	0.08743591	0.237	-0.020	-0.018	0.385	2.595
Concern for other consumers	0.243	H_{4B}, H_{4D}	0.0265172	0.45963335	0.222	-0.062	-0.058	0.358	2.797
Helping the company	0.010		-0.1932508	0.21250702	0.246	0.008	0.007	0.413	2.424
Vent negative feelings	0.093		-0.0569477	0.24289883	0.243	0.007	0.007	0.384	2.607
R2 adjusted to the regresion model	0.122								

Conclusions

The rapid rise and transparency of social networking sites offers researchers and managers an opportunity to monitor eWOM concerning their organization. Discussion forums or social networking business page initiated by the organization must allow managers not only to access eWOM communications but also promote social interaction among consumers hoping to create motivations to start socially driven eWOM. These sites should enable consumers to interact with each other socially, ask questions, provide tips and buying advice on a product or service and write product reviews. The expectation is that as people become part of online communities, particularly with the rise of social networking; group norms and personal social agendas as reflected in our motivation set will play a greater role in determining how eWOM messages are worded (e.g. Trusov et al., 2009; Kozinets et al., 2010). As a result, it is increasingly important for managers of social media cam-

paigns understand the social rules of communication in every online community and support a culture of open and constructive feedback.

Limitations and future research

This study is conceptual by nature and has some limitations that suggest opportunities for future research. First, it is important to further analysis to identify other possible motivations that help explain viral propensity behavior. This study focused on some of the main reasons reported in the literature, but is not intended to be exhaustive. Further studies should be done to investigate environmental variables that influence the structure of values underlying motivations (e.g., Culture). The phenomenon of viral marketing in social networks must be faced also from other perspectives, among which by way of example may be mentioned: important features in the transmitted messages using detailed classifications and intrinsic factors of personality of users who transmit eWOM messages. These studies would be very useful for improving our understanding of this complex phenomenon.

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12
Marketing and social responsibility. A look from the perspective of small and medium enterprises

Dora Aguilasocho-Montoya[1]
Evaristo Galeana-Figueroa
Ana Paloma Peña-Ortega

Abstract

The purpose of this document is to know and analyze how marketing influences and social responsibility in the competitiveness of small and medium enterprises (SMES) in the manufacturing industry in the city on Morelia, Michoacan, through the development of research scientific quantitative, multivariate analysis with correlational and cross-sectional; for wich a Likert scale questionnaire was conducted at the General Directors/Managers of a simple random sample of these companies, with a confidence level of 95%.

Keywords: Competitiveness, Marketing, Social Responsibility.

1. Universidad Michoacana de San Nicolás de Hidalgo.

Introduction

According to Molina (2003), changes in the context in which companies interact have generated the need to design strategies that allow them to be competitive and, therefore, remain in the long term.

Physical assets are no longer the only critical resource. Human capital has increased its role, and so does the relational capital becomes revealing when optimal networks of suppliers, partners and in turn are woven, technology sharing. Today, workers are not automata responsible for managing valuable assets, but assets themselves (Rajas & Zingales, 1998, 2000) capable of creating competitive advantages.

Certainly, it is behind the business management model based on profit maximization for shareholders with a short-term vision, it has proven to be not only harmful to society in general, but also for the shareholders, especially those with less power negotiator and long-term interests.

According to Kay (1996), the company is an articulate social institution through a nexus of relationships of trust maintained long term, the above assumes that administrators and managers must preserve and increase the value of assets under its control and not act merely as agents of shareholders; besides having a transformative vision, where the assets are not only tangible but also the skills of employees, the expectations of customers or suppliers, reputation and image of the company in society, among others.

The characteristic of these assets is that they are not in all financial markets pricing in the short term, but they are decisive in the long run. This means, no doubt, take account of the actions that take place in Marketing and responsibility that companies have regarding the context in which they are embedded, society.

A result, the ethical addressing deal with the situations described is generated, has led to the intellectuals, academics, civil society organizations, politicians and governments, show a concern over the role of producer and provider organizations services, national and multinational and will require, directly or indirectly, a different way of acting.

This new status must entail direct business integrated in decision-making and daily operations of the company, in which the different benefits of the various stakeholders are respected management. This will be achieved by creating value in the long term and hence compe-

titive advantages from being identified as the different agents involved. This situation is not exclusive to large companies which will address what position to take small and medium enterprises (SMEs) with respect to the above, as it is considered to have succeeded yet to clarify its action on what they imply be competitive through weave strategies based on a robust marketing and be socially responsible.

The problem

The sustainable development of a region depends mainly on the organisms that interact every day in it, as each one of the actions that they make an impact on the environment in which they are driving, so it is important to know that they are doing businesses in the region to offset the less favorable impacts of their actions (Parra Valenzuela, Rascon Morales Espinoza Morales, & Caballero Gutierrez); and the condition in which they face and solutions to the problems that society presents a daily basis.

Thus research on Social Responsibility (SR) in enterprises has increased significantly in recent years and their scales measure have been developed in the academic literature, it is shown that companies will be able to develop capabilities and unique products that contribute to creating a positive effect on the profitability of the company by integrating business strategy in the SR. The SR is now considered essential to the recovery of corporate credibility and trust of customers, so firms increase social investment to restore his reputation (Pineiro et al., 2009) Thus, since the late nineties have appeared on the international scene various initiatives, codes, aimed at promoting a more ethical behavior, sustainable and respectful of society and the environment business standards; This strategy aims to encourage the development of policies and business strategies that incorporate these arguing their need from different viewpoints criteria: moral, economic and social (De la Cuesta González, 2004).

You need to understand that the actions of Social Responsibility, from the perception represent an intangible value added, you cannot physically see, but people can realize based on what the company does for your environment. Like and as they say Sen et al. (2006: 164).

In an era characterized by globalization and global competitiveness, differentiation between brands is increasingly less time and more confusion, companies must manage and direct tools that go beyond traditional marketing, incorporating corporate or enterprise level those intangibles such as its identity, reputation and value of good corporate governance, and thanks to these values can generate competitive advantages.

Similarly, the case with marketing, which has evolved its approach to the passage of time and has become the proportion of alternatives to improve the quality of life of society and ensure environmental care; generate consciousness and assist in solving community problems, hence a differentiator from the rest of the competition that will materialize in a number of competitive advantages.

According to Grant (1996), it is advisable for companies is to be competitive based on their endogenous factors. The resilience of the business requires a deep knowledge of the environment, but also on the role of management, to what extent organizational culture affects the profitability and profit of the company.

General research question

To what extent the Marketing and Social Responsibility impact on the competitiveness of small and medium-sized manufacturing companies in Morelia, Michoacan?

Specific questions

How marketing affects the competitiveness of manufacturing SMEs in Morelia, Michoacan?

How Social Responsibility impacts the competitiveness of manufacturing SMEs in Morelia, Michoacan?

General objective

Analyze how affects the Marketing and Social Responsibility in the competitiveness of manufacturing SMEs in Morelia, Michoacan.

Specific objectives

Study and analyze how marketing affects the competitiveness of manufacturing SMEs in Morelia, Michoacan.

Identify how Social Responsibility impacts on the competitiveness of manufacturing SMEs in Morelia, Michoacan.

General hypothesis

Marketing business practices and social responsibility positively impact on the competitiveness of manufacturing SMEs in Morelia, Michoacan.

Specific hypotheses

The marketing mix impact positively on the competitiveness of manufacturing SMEs in Morelia, Michoacan.

Social Responsibility strategies positively impact on the competitiveness of manufacturing SMEs in Morelia, Michoacan.

Justification of the investigation

The adoption of the principles of Social Responsibility (SR) by companies represents, without doubt a new paradigm, it leads to a new way of thinking to the company, who runs the business strategies to this new procedure, without rejecting profit, is more in line with the current requirements of society (Server Izquierdo & Capó Vicedo, 2009).

To achieve this integration to carry out the SR in business strategies and stakeholders look identified with them, it will be necessary to have a relationship goes both.

One of the major factors that have triggered social responsibility strategies, are the lack of confidence of consumers; besides not having knowledge of the actions with which organizations are involved; these aimed to have a good image and reputation; in short, it is essential to understand that the actions of SR, represent an intangible value added of what companies can make their environment.

In addition and as noted by Marin & Rubio (2008), "the consequences of CSR are not limited to impact positively on the financial results, but more strategic and long-term perspective by incorporating competitiveness offers as the dependent variable".

Undoubtedly, the conceptual understanding of marketing, has allowed gradually positioning itself as a competitive strategy for organizations, which generates great intangible value. It is imperative to clarify that who can observe and pass the constraints under which it has been encasing the term, will benefit the social and holistic approach it generates. It is for this reason that the term has resurfaced and positioned in a broader sense.

Theoretical framework

Social Responsibility

Since the second half of the twentieth century has been conceptualized as the contemporary period of conception, dissemination and expansion of the SR (Garriga & Mele, 2004; Ariza Gomez & Leon, 2008), and every day a growing interest arises from reflecting on what how social responsibility can strengthen organizations. Undoubtedly, the issue has gained perspective and has had greater disclosure; however, are still very few documents that guide practical, consistent and systematic manner, some ways to manage it in enterprise environments (Herrera & Abreu, 2008).

From this perspective, it is imperative to point out the term, and this is how many authors have made different contributions on the subject, which can be seen in Table No. 1.

Table 1
Social Responsability

Author	*Input*
Commission of the European Communities (2001).	"It is the voluntary integration, by enterprises, of social and environmental concerns in their business operations and in their interaction with their stakeholders."
Spanish Association of Accounting and Business Administration (SAABS), (2004)	"The voluntary commitment of companies to the development of society and the preservation of the environment, from its social composition and responsible behavior towards people and social groups with which it interacts." "Corporate social responsibility is a different way of understanding the company, based on a set of values and in a controllable and measurable assessment".

Source: Own, based on the definitions of the authors.

Strictly, it will emphasize the elements of the definition of the Commission of the European Communities (2001):

- Voluntary and participatory integration, by enterprises, of social and environmental concerns in their business operations and in their interaction with their stakeholders.
- Be proactive with their obligations and not only comply with legal.
- The social responsibility of business should not be considered a substitute to regulation or legislation concerning social rights or environmental standards, neither can ignore the development of new appropriate legislation.
- The economic impact of corporate social responsibility can be broken down into direct and indirect effects and likewise it can be derived from direct and indirect positive effects are achieved.

Expressly, Social Responsibility is defined by the following elements. Observe the following table.

Table 2
Implicit Principles of Social Responsibility

Principle	*Definition*
Transparency	It is based on access to information on the organization provides social behavior and which is permeable to social expectations.
Materiality	It means that the organization must take into account the needs and expectations of stakeholders in decision making, facing all dimensions of CSR, as well as all activities and impacts, direct and indirect.
Verifiability	The socially responsible actions of the entity must undergo external verification. Verifiability is based on the possibility that independent experts can verify the actions of the company.
Broad view	The organization should focus its broader objectives potential liability. You should consider the impact that local, regional, continental and global level, with a clear sense of legacy to future generations.
Continuous improvement	CSR is linked closely to the idea of continuing and innovative management, whose main purpose is the survival of the organization.
Social nature of the organization	CSR is rooted in the belief and recognition of the social nature of organizations, as a value that trumps all other considerations of an economic or technical. It highlights the value and role of human beings as between individual and social, origin and purpose of the organization.

Source: SAABS (2004).

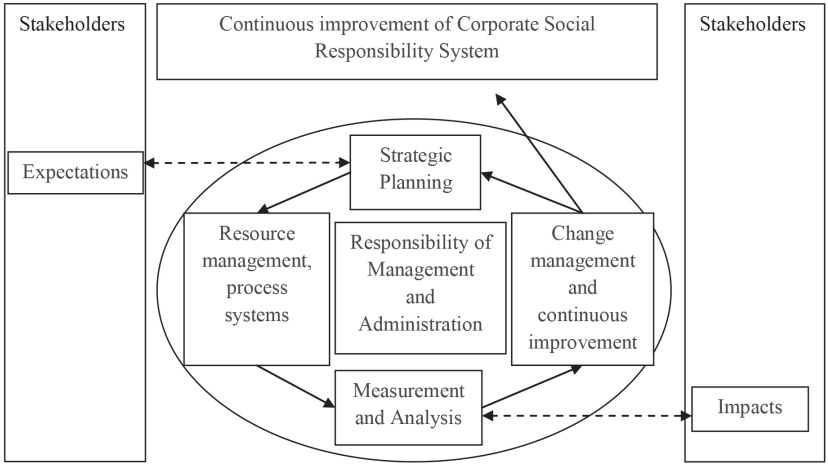
It requires that policies SR are coupled to the culture and strategy business, "the more closely linked this social issue with the business of the company, the greater the opportunity to leverage the resources and capabilities of this for the benefit of society" (Porter & Krame, 2006).

Although CSR is often discussed in the context of large companies, it is also a strategic tool to enhance the competitiveness of SMEs. However, its impact is usually expressed in specific data and demonstrates in the short term (European Commission and Observatory of European SMEs (2002).

The focus of research on large companies assumed that the SR as it is understood is applicable to all companies (Wilkinson, 1999). However, recently it has been argued that the SR as understood for large companies cannot be simply "cut and paste" into the reality of SMEs (Jenkins, 2004). Large and small companies are different in nature (Spence & Lozano, 2000), for example, have structures and management styles (Pérez-Sánchez, Barton, & Pick, 2003) different that can affect the content, nature and scope of SR activities (Sweeney, 2007).

The European Commission's European Competitiveness Report 2008 notes that "the extent to which CSR can drive competitiveness from the perspective of the customer depends on the strategic competitiveness of enterprises".

Figure 1
Incorporation of social responsibility in all areas of the organization



Source: Castka et al. (2004).

The stakeholder theory of Freeman and Evan (1990) notes that taking into account in a balanced way the demands of the different stakeholders, managers can increase the efficiency of your organization adapt to external demands. Best results are obtained not only meet separately bilateral relations with stakeholders but also for coordinating and prioritizing the interests of the multilateral stakeholders.

Marketing

VanSickle (2001); Zapata (2001, 2002) and Hernandez and Dominguez (2003), mention that marketing strategies enable companies to become more competitive through the efficient application of marketing mix,

they indicate which way, companies can achieve more attractive products, you create them qualities for the best price, and place them in places where they are sued. So, marketing is represented as the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfy individual goals and organization (Bennett, 1995), goes beyond a simple transaction. Rather, the goal is to establish lasting relationships and ties (Czinkota & Kotabe, 2001).

Hernandez, Jimenez and Dominguez (2004, 2007) indicate that marketing strategies include the set of decisions about product, price, place and promotion. Nevertheless, the competitive behavior of marketing is the rivalry between companies expressed in market strategies; that is, when a firm reacts to the actions of marketing of a competitor in a certain way.

According to the literature, there are three ways to react or competitive behavior: vindictive, and cooperative or opportunistic basis. The first type of behavior are aggressive responses by an attack, the second consists of shares of the same type and in the same direction, but they are not perceived as aggressive by the competitor and the third behavior occurs when a company reduces its marketing effort and competitors take advantage of that decision (Ramaswamy, Gatignon & Reibstein, 1994).

In the table below, they are denoted; some authors consider marketing capabilities as sustainable competitive advantages in time for organizations.

Table 3
Authors pointing to marketing capabilities
and competitive advantages in organizations

Elements	*Authors*
Marketing capabilities.	Clifford, & Cavanagh, 1989; Huck, & McEwen, 1991; Viedma, 1992; Álvarez, & García, 1996; Luk, 1996; Lin, 1998; Camelo, *et al.,* 1999; *European Foundation for Quality Management*, 2000; Warren, & Hutchinson, 2000; Monfort, 2000; Donrrosoro, *et al.,* 2001).

Source: Own, based on the literature.

Competitiveness

Competitiveness necessarily implies the existence of an agent chooses, defines strategies and tries to control the variables that affect their ability to compete (Marín Rives & Rubio Bañón, 2008). According to Cuervo (1993), there are three levels of analysis in the study of the competitiveness of the company: the general economic framework, industry and the company itself. That is, the competitiveness of the company is determined first by external variables at the country and sector, and then the performance of the company in the process of building resources and capacities; is the heterogeneity of firm's explanation ultimately sustainable competitive advantages and results of each company.

In this regard, small and medium enterprises can be conceived as organizations arising out of necessity, these are determined by their occupational cohesion, division of labor, by having limitations in capacities and resources, and the incipient formalization of its business strategy (Rodríguez Valencia, 2006). The diversity of organizational fabric that is grouped under the category SME is such that the conditions of their characterization in terms of number of employees, assets and income figure varies from country to country.

Analysis and discussion of results

In table 4, statistical reliability is observed; in it is denoted that the instrument with all reagents has a confidence level of 92%.

Table 4
Statistical reliability

Cronbach	*Number of items*
.928	76

Source: Own, based on analysis of the information through the SPSS 17.00.

Table 5
Descriptive statistics

	Average	*Typical deviation*	*N*
Competitiveness	3.2164	.92181	57
Marketing	3.4243	.65294	57
Social Responsibility	2.7251	.92237	57

Source: Own, based on analysis of the information through the SPSS 17.00.

In the following table, the correlations between variables independences (Marketing and Social Responsibility) and dependent (Competitiveness) are noted.

Table 6
Correlations

Dependent variable		*Marketing*	*Social Responsibility*
Competitiveness	Pearson correlation	.435	.018
	Significance (unilateral)	.000	.449
	N	57	57

Source: Own, based on analysis of the information through the SPSS 17.00.

The dimension that have a very low positive correlation with the dependent variable is the social responsibility because denotes a .0.18; moreover the variable Marketing shows moderate positive correlation, 435; indicating that their management practices are best evaluated.

Table 7
Model Summary

Model	*R*	*R squared*	*R squared corrected*	*Std. estimation*
1	.443(a)	.197	.167	.84142

a. Predictors: (Constant), Social Responsibility, Marketing.
Source: Own, based on analysis of the information through the SPSS 17.00.

The model states that the Marketing and Social Responsibility explained 16.7% of the manufacturing competitiveness of SMEs morelianas.

In table 8, descriptive statistics on the size of the variable is recorded marketing.

Table 8
Descriptive statistics

	Average	*Typical deviation*	*N*
Competitiveness	3.2164	.92181	57
Product	3.7018	.69003	57
Price	3.6566	.78053	57
Square	3.3541	.91438	57
Promotion	2.9846	1.17381	57

Source: Own, based on analysis of the SPSS 17.00.

Dimensions of Marketing variable has a low positive correlation with competitiveness variable, because the product denotes a coefficient of .292; Price .395; Square .237 and .348 Promotion.

Descriptive statistics of the variable dimensions of Social Responsibility established in the 10th table.

Table 9
Correlations

Dependent variable		*Competitiveness*	*Product*	*Price*	*Square*	*Promotion*
Competitiveness	Pearson Correlation	1.000	.292	.395	.237	.348
	Significance (unilateral)	.	.014	.001	.038	.004
	N	57	57	57	57	57

Source: Own, based on analysis of the information through the SPSS 17.00.

Table 10
Descriptive statistics

	Average	*Typical deviation*	*N*
Competitiveness	3.2164	.92181	57
Implementation	2.6009	1.38862	57
Actions	2.5714	1.15743	57
Involvement	3.0789	1.21022	57
Agreement	2.6491	1.20810	57

Source: Own, based on analysis of the information through the SPSS 17.00.

The dimension that have a very low negative correlation with the dependent variable is the implementation because denotes a -.159; on the other hand the dimensions of actions, involvement and consistency show a very low positive correlation coefficients expressed as .127, .025 and .089 respectively. This is shown in the following table.

Table 11
Correlations

Dependent variable		*Competitive-ness*	*Implementation*	*Actions*	*Involvement*	*Agreement*
Competitive-ness	Pearson Correlation	1.000	-.159	.127	.025	.089
	Significance (unilateral).	.	.118	.173	.426	.255
	N.	57	57	57	57	57

Source: Own, based on analysis of the information through the SPSS 17.00.

Conclusions and recommendations

The research results denote that the variable Social Responsibility receives no attention by the Directors General / Managers as its dimensions are not met, in particular, indicators of implementation, corresponding to the establishment of social programs, detection of social needs and the system of social program delivery. No business

strategies that address this area, therefore the correlation between this independent variable and the dependent is negative.

In the literature, we have found that the SR, contribye to enhance the resources and capabilities both internal and external to the organization (Maignan et al., 1999; Porter & Kramer, 2006), understood in their different conceptions of employees, customers, reputation and innovation. Ultimately, the SR is seen as a source of competitive advantage, which denotes the ability of a company in the performance of his superior to other competitors (Porter & Kramer, 2002) activity. However in this case, it is clear that no practices that address this dimension, so go wrong evaluated manufacturing SMEs in Morelia, Michoacan.

The literature has also considered the SR as a resource to be used by companies to achieve sustainable benefits in the long term (Bansal 2005) or gazing through its contribution to corporate reputation or contemplating it as a resource in itself (Castelo Branco & Lima Rodriguez, 2006). In the object of study it is not significant because they are not interested project to society as a responsible entity socially therefore made no actions to influence a better picture and have a respectable reputation.

Luo and Bhattacharya (2006), indicate that the implementation of the SR have a positive effect on the value perceived by customers, and that a combination of CSR initiatives and internal corporate abilities generate and maintain a financial value to the company, Maignan (2001) comments that the greater customer loyalty can lead to increased sales and thus improve financial performance. However, when analyzing the results individually, we realize that there is no involvement of the organization with the various actors of the same.

Vargas and Vaca (2005) note that the SR increases the information available to organizations for decision making and enhances the reputation of the company, not yet in manufacturing SMEs not the actions of the SR as strategies are dimensioned to take no important decisions and reputation can be generated around them, for even link the topic with the development of competitive advantages.

On the results obtained with the variable marketing, it is observed that the results are evaluated in a better way by CEOs / managers, this is due in part because they are topics with which managers are familiar and their actions are performed regularly. Looking at the price dimension is that greater weight is about their counterparts. Note that

in general, no highlights in a positive direction; on the contrary, they remain in a neutral scale, they are indifferent to CEOs / managers of manufacturing SMEs in Morelia, Michoacan.

Marketing Researching variable as such, we see that has a better performance regarding social responsibility, as their correlation is moderate, indicating that business practices should be amended and greater attention to them, since there need only be considered when the product is taken as such, but taking into account pre- and post-product stage and take more attention on the needs that are being generated on a daily basis in the market.

Given these results, it is evident that manufacturing SMEs in Morelia, Michoacan not run business actions aimed at Marketing and Social Responsibility, whereby the levels of competitiveness taking these variables do not impact greatly large. It is essential to carry out awareness in CEOs / managers of these companies to socialization in the impacts that would have to take into consideration the indicators of the same.

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This book try to integrate different work papers, considering key elements of science applied to industry and education, and how these affect the competitiveness.

Research includes areas where competitiveness makes a big difference to the current economic growth were collected.

Each chapter in this book ranges from marketing tools, strategies for the internationalization of SMEs, innovation in the chemical industry; fields of knowledge such as the improvement in the assessment of higher education without neglecting the importance of the tourism industry, information technology and communication and logistical capacity in the pharmaceutical business.

It concludes with the presentation of research where two factors are major players presently, marketing and social responsibility.

The main objective of this work is to present the last findings about the market advantage, key factor in Marketing, Innovation, Social Network, Business Internationalization, and their impact on competitiveness.

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