

Determining factors in MSMEs success: An empirical study in Mexico

Factores determinantes del éxito en las MIPYMEs: Un estudio empírico en México

Rubén Molina-Sánchez^a , Domingo García-Pérez-de-Lema^b , Alejandra López-Salazar^{c,*} , Roberto Godínez-López^d 

a, c, d) Universidad de Guanajuato - Celaya, Guanajuato (Mexico)

b) Universidad Politécnica de Cartagena - Cartagena, Murcia (Spain)

* Primary Contact: lopez.alejandra@ugto.mx (Alejandra López-Salazar)

Abstract

This work empirically analyzes the competitive factors that help make micro, small, and medium enterprises (MSMEs) successful. To do this, an empirical study with a sample of 614 companies in Guanajuato, Mexico, has been carried out. The results of the binary logistic regression analysis show that quality, technology, and innovation are the main variables that determine a company's success. These findings could provide guidelines to help MSMEs improve their competitiveness, and they could help public administrations better support MSME growth.

Keywords: MSMEs; success; quality; technology; innovation

JEL Classification: L15; L23; L25; M10; O30

Resumen

Este trabajo analiza empíricamente los factores competitivos que llevan a la MiPYME al éxito competitivo. Para ello se realiza un estudio empírico a partir de una muestra de 614 empresas del estado de Guanajuato en México. Los resultados muestran, a partir de un análisis estadístico de regresión logística binaria que la orientación hacia la calidad, la tecnología y la innovación son las principales variables que determinan su éxito. Estos hallazgos pueden ser de utilidad para los propietarios de las MiPYMEs para favorecer su competitividad y para la administración pública en su papel de promotora del crecimiento de la MiPYME.

Palabras clave: MiPYMEs; éxito; calidad; tecnología; innovación

Clasificación JEL: L15; L23; L25; M10; O30

How to cite this article

Molina-Sánchez, R., García-Pérez-de-Lema, D., López-Salazar, A., & Godínez-López, R. (2022). Determining factors in MSMEs success: An empirical study in Mexico. *Small Business International Review*, 6(1), e384. <https://doi.org/10.26784/sbir.v6i1.384>

Copyright 2022 Rubén Molina-Sánchez, Domingo García-Pérez-de-Lema, Alejandra López-Salazar, Roberto Godínez-López

Published by AECA (Spanish Accounting and Business Administration Association) and UPCT (Universidad Politécnica de Cartagena)

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

1. Introduction

A company's success depends on its ability to identify and take advantage of opportunities (Hernández Girón et al., 2007). The companies that are the most innovative, flexible, and can adapt the most quickly to their environment and the needs of society are those that generally achieve the best results (Drucker, 1985; Miles et al., 1978). Researchers are currently interested in discovering what leads companies to competitive success and longevity. The literature dealing with business success is abundant and generally examines success in terms of the theory of resources and capabilities or the theory of industrial organization (Pérez et al., 2002; Rubio Bañón & Aragón Sánchez, 2002; Estrada Bárcenas et al., 2009; Shappo & Knuth, 2014; Pratono & Mahmood, 2015; Rocca Espinoza et al., 2016; Ippinnaiye et al., 2017; Hernández-Linares et al., 2021).

The current dynamic business environment makes it necessary to understand organizations well and identify the factors and variables that are key to competitive success (Van Auken et al., 2008). MSMEs must face many market challenges to be competitive and survive. They have to adjust their strategies and organizational capacities to the changing, uncertain, unstable environment of local, national, and international economies. Even though the study of business success and failure has always been present in research, generating models that identify companies possessing the characteristics of success could be very useful. The literature has established a set of characteristics that determine the likelihood of business success (Zaridis & Mousiolis, 2014). However, it is necessary to delve deeper into these success factors due to the complexity of MSMEs and the heterogeneity of sectors, cultures, and countries. It is difficult to find a general model of resources and factors that influence company success, and the literature is inconclusive (Adeola et al., 2021). Specifically, there is a gap regarding competitive factors in emerging countries (Idrissi Fakhreddine & Castonguay, 2019). This study aims to help MSMEs better understand how to become more competitive and successful.

We analyze the factors that explain MSMEs success in Guanajuato, Mexico. The research questions we attempt to answer are: What are the competitive capabilities of the most successful MSMEs?; Do innovation and quality determine competitive success?; What competitive factors are the most important for micro-enterprises? To answer these questions, we have carried out an empirical study using a sample of 614 companies in Guanajuato (Mexico). Specifically, we have analyzed technological capability (the ability of companies to efficiently use technological knowledge), innovative activity (differentiating between innovation in products, processes, and management), quality (if companies have quality certification), strategic planning, the use of information and communication technologies (ICTs), and cooperative agreements. Studying Guanajuato is especially interesting because it is in sixth place in terms of contributing to Mexico's GDP (INEGI, 2020). Secondly, Guanajuato's logistic infrastructure facilitates the movement of people and goods, as it is located in the center of the country (Gobierno de la República & CONACYT, 2014). And thirdly, the region has been given an Índice de Especialización Local (IEL), which measures a region's level of specialization (Gobierno de la República & CONACYT, 2014), highlighting its leisure and cultural services and manufacturing.

This research contributes with new empirical evidence to the resource and capability theory literature, demonstrating the needs MSMEs have to strengthen their strategies to become more successful in an emerging country. This is especially important because MSMEs located in emerging countries still have difficulties adequately managing their resources (Sengupta & Sena, 2020). The results obtained from our study are especially useful for entrepreneurs since they show that when MSMEs develop innovative activities in a coordinated way, with adequate technological capability and quality, they are more competitively successful.

This article is structured in the following way. First, we determine the theoretical framework, review the empirical literature, and pose our hypotheses. Then, we explain the methodology, the characteristics of the sample, and the justification for the variables used in the analysis. Third, we analyze the results, and finally, we present our conclusions.

2. Literature review and hypotheses

2.1. Technological capabilities and MSME performance

Managerial and technological capabilities help companies achieve their goals (Gonsen, 1996; Velarde López et al., 2012). Technological capability, as an intensive knowledge-based resource, mobilizes scientific and technical resources, allowing companies to develop innovative production processes and new products to fill the needs of the market (Prasanna et al., 2019). This favors competitive strategies that create value (Prahalad & Hamel, 1990; Grant, 1999; Miller & Shamsie, 1996; Wiklund & Shepherd, 2003; Ali Qalati et al., 2020). Companies need to acquire the necessary capabilities to use, adapt, and modify technology. These capabilities may or may not be present in individuals, and they are the basic elements of technological capabilities (Marcelle, 2007). Technological capabilities are intangible, and they refer to technical abilities as well as

managerial and institutional ones that permit productive companies to use their technology efficiently and to even create new technologies and develop new products and processes (Haque et al., 1996).

Hypothesis 1: *Technological capabilities have a positive influence on MSMEs success.*

2.2. Innovation, ICTs, and MSME performance

Innovation shows the readiness of an organization to experiment and take risks (Yeung et al., 2000). It helps boost economic recuperation and job creation (Jiménez-Zarco et al., 2012), and it dynamizes economies and promotes flexibility in the production sector (Peñaherrera León & Cobos Alvarado, 2012). Innovative MSMEs design and develop quality products and services, gaining better performance and competitiveness (Nicolás Martínez & Rubio Bañón, 2020). Innovation in MSMEs is generally carried out through a series of small changes that lessen the risks brought about by the cost of innovation. These changes can occur directly, or they can be the consequence of clients' wishes, criticisms, or needs. These needs are then transformed through the company's knowledge and implementation. In addition, innovation in MSMEs takes place without a structured R&D department, unlike in large companies (Julien & Molina, 2012). Innovation is a complex process that is supported by an effective information system able to capture new ideas. In this process, thanks to their organic nature and personalized relationships, many MSMEs innovate by taking advantage of small niches left uncovered by large companies, or they compete directly with these companies. The particular capacity MSMEs have to innovate should be maintained and stimulated in the new knowledge economy. The essence of this new economy is to work as an innovative system (Julien, 2003). Innovation is a first-order competitive factor that favors improved performance in MSMEs (Chang et al., 2014; Edeh et al., 2020; Donbesuur et al., 2020; Shameem et al., 2021). When MSMEs focus on innovation, they achieve a competitive advantage (Shameem et al., 2021).

Hypothesis 2: *The degree of innovation influences positively in MSMEs success.*

In addition, digitalization provides an opportunity to develop company longevity (Weller, 2020). The digital economy offers a wide range of opportunities in situations of slow economic growth and labor market transformation brought about by technological change and value chain reorganization (Bensusán Areous, 2020). Through the use of information and communication technologies (ICTs), MSMEs can innovate more efficiently, which directly impacts their growth and performance (Cuevas-Vargas et al., 2016). Many studies confirm that digitalization and the use of ICTs improve MSME performance (Jingtao et al., 2013; Cuevas-Vargas et al., 2016).

Hypothesis 3: *The use of ICTs influences positively in MSMEs success.*

2.3. MSME quality management and performance

Many studies agree that the abilities linked to quality are fundamental for company competitiveness and success (Nee & Abdul Wahid, 2010; Lakhal, 2014; Ochieng et al., 2015). Placing importance on quality enhances employee motivation and trust (Cárdenas Gómez & Fecci Pérez, 2007). Furthermore, quality management is often necessary since many MSMEs must establish quality systems to qualify as suppliers to client companies, especially in the automotive industry (Demuner Flores, 2011). Quality certification is a factor that could determine a company's survival and ability to satisfy clients' demands. Obtaining an ISO 9000 quality certificate promotes better quality and less waste. Companies thereby decrease costs and improve performance (Ataseven et al., 2014). Studies have confirmed that acquiring ISO 9000 standard certification improves performance in SMEs (Bayati & Taghavi, 2007; Mokhtar & Muda, 2012; Starke et al., 2012). Quality certification also significantly influences innovation in MSMEs, which results in better performance (Quintero et al., 2016). All the reasons above lead us to the following hypothesis:

Hypothesis 4: *There is a positive association between quality management and MSMEs success.*

2.4. Strategic planning and MSME performance

Strategic planning (SP) is a process in which the actions that cause a company to create competitive advantages are defined, taking the company's resources, capabilities, industry, and environment into account. The SP process is composed of three elements: an analysis of strategic position, choosing a strategy, and implementing the strategy (Johnson et al., 2006). In practice, companies do not follow this process linearly. It is more an interconnected process where decisions are made considering a company's environment, strengths, opportunities, strategic options, structure, and company culture. SP helps MSMEs plan their future, analyze their competitors, get to know their clients, evaluate their performance, and assess alternatives, resulting in better decision-making. Therefore, formulating and implementing strategies should be a continuous practice in MSMEs. This should be done without concerns about timeframes or planning structures since the objective is for management to reflect and analyze company strategies to enable the company to adapt to a changing environment (García Guiliány et al., 2019).

According to Majama and Magang (2017), SP helps companies identify and analyze alternative strategies. It promotes better task coordination and gives companies more control over their activities. SP makes company goals clear to employees and shows them how their actions contribute to reaching these goals (Srinivasan & Swink, 2015), boosting employee motivation and commitment (Dubihlela & Sandada, 2014). SP helps companies become more efficient and, therefore, it has a direct effect on organizational performance.

Previous studies have analyzed the impact of SP on MSME performance. Agyapong et al. (2021) show how SP positively influences financial performance (sales, profits, ROI, and ROS) and the ability to fulfill client demands in African MSMEs. A similar study of MSMEs in the United States showed that strategic planning development, implementation, evaluation, and control positively impact financial and organizational performance (Gomera et al., 2018). Mora-Riapira et al. (2015) also found that SP had a positive impact on the competitive level of MSMEs in the commercial sector of Bogota. These studies have demonstrated the benefits that SP can provide to MSMEs. SP has an even greater impact on MSME success when activities are coordinated, knowledge is socialized, and there is effective communication between management and the other areas of the company (Garcia Guilianny et al., 2017). Based on the information presented above, we propose the following hypothesis:

Hypothesis 5: *There is a positive association between strategic planning and MSMEs success.*

2.5. Cooperative agreements and MSMEs performance

During strategic development, companies analyze whether they have the capabilities necessary to carry out the strategies they are considering. MSMEs are becoming aware of the need to develop cooperative strategies and join forces with clients, suppliers, and other organisms to reach a common goal. According to Hardy et al. (2003), cooperative strategies help companies gain advantages that would be difficult to obtain otherwise since all companies do not have the necessary resources and capabilities to remain competitive. By collaborating, they can take advantage of everyone's resources. There are different reasons why companies incorporate collaboration into their strategy. Learning new production techniques, generating scaled economies, sharing marketing costs, entering new markets, and creating new products and services are some of them.

Strategic alliances are one of the types of collaborative agreements organizations often use. However, alliances are rarely established by contract in MSMEs. They are typically made informally through verbal agreements that lay out the commitments of each of the parties and the way to combine their resources to achieve the desired benefits. Cooperation among MSMEs is based on trust, reciprocity, prestige, solidarity, and mutual knowledge (Kliksberg & Tomassini, 2000). As Molina and Contreras (2017) mentioned, social capital determines companies' willingness to collaborate. It determines the rules and conditions of the association and defines the relationships of dependence in a project. Some studies have found that companies that make collaborative agreements with other companies improve their performance (Werastuti et al., 2019), and the benefits gained from the alliance depend on the reasons for creating it, as well as the dynamism of the industry and the business strategy followed. However, what is clear is that some benefit is always obtained (Koka & Prescott, 2008). For this reason, we make the following hypothesis:

Hypothesis 6: *There is a positive association between cooperative agreements and MSMEs success.*

3. Research methodology

3.1. Sample

A stratified random sample was made from companies in Guanajuato, Mexico, according to the following sector classifications: Commercial, Construction, Manufacturing, and Services. Company size was also classified: Micro (5 to 10 workers), Small (11 to 50 workers), and Medium (51 to 250 workers). In each stratum, random sampling was carried out to construct the sample.

Table 1. Stratified random sample contingencies

Economic sector	Company size			Total
	Micro	Small	Medium	
Commercial	53	37	12	102
Construction	30	34	14	78
Manufacturing	105	154	65	324
Services	49	37	24	110
Total	237	262	115	614

Since the questionnaire used in the study includes a wide range of question types, we have created the sample size using maximum error when estimating the proportion of answers to dichotomous questions (the relative frequency of an answer to a question with two possible answers). This is a generally accepted quality criterium.

To determine the population, we used the Directorio Estadístico Nacional de Unidades Económicas (INEGI, 2011) from the Instituto Nacional de Estadística, Geografía e Informática as a source. The inclusion criteria were: 1) companies with fewer than five employees were excluded; 2) companies with more than 250 employees were not considered and; 3) only companies that identified the economic sector they belonged to were selected. With these guidelines, the population consisted of 24,520 companies in Guanajuato and a sample of 1,034 companies, determining a sample error of 3% with a 95% confidence level. Out of the 1,034 companies in the sample, only 614 of the interviewed companies (60%) completely filled out the questionnaire, and therefore, this was the number of companies whose data was analyzed. The final sample was comprised of 614 companies from 19 municipalities in Guanajuato (See Table 2).

Table 2. Distribution of the sample by municipality

Municipality	Companies	Percentage
Acámbaro	8	1.3
Celaya	64	10.4
Cortazar	2	0.3
Dolores Hidalgo	21	3.4
Guanajuato	10	1.6
Irapuato	35	5.7
León	352	57.3
Moroleón	8	1.3
Pénjamo	9	1.5
Purísima del Rincón	9	1.5
Salamanca	7	1.1
Salvatierra	9	1.5
San Francisco del Rincón	31	5.0
San José Iturbide	4	0.7
San Luis de la Paz	3	0.5
San Miguel de Allende	10	1.6
Silao	14	2.3
Uriangato	11	1.8
Valle de Santiago	7	1.1
Total	614	100.0

To obtain the information to establish the variables, a questionnaire was designed to be given to the director, owner, or manager of the company. The questionnaire was jointly drawn up by a research team from Spanish universities (Cantabria, Politécnica de Cartagena, and Murcia) and researchers from universities in Guanajuato (Instituto Tecnológico de Celaya, Universidad de Guanajuato, and Universidad Politécnica de Guanajuato), who adapted it to the Mexican context. The final version of the questionnaire has been designed to be precise and cover all the information necessary while attempting to avoid misinterpretations.

3.2. Variables measurement

3.2.1. Dependent Variable

Firm success. MSMEs success or performance is a broad, heterogeneous concept, and there is no clear consensus in the literature about how to measure it (Estrada Bárcenas et al., 2009; Venkatraman & Ramanujam, 1986). The tendency is to use financial indicators like profitability, productivity, and sales growth (Hudson et al., 2001; Gómez Conde et al., 2015). However, using these measures presents the problem that companies are not usually willing to share this type of information. For some authors, performance measured qualitatively is a more objective way to evaluate performance.

In this research, performance is measured using a five-point Likert scale (1= totally disagree - 5= totally agree) about whether, compared to competitors, the company: a) is growing faster; b) is more profitable; and c) is more productive. Cronbach's alpha was used to verify the reliability of this scale, with a result of 0.859. A factorial analysis was carried out to check the validity of the concept. The factorial loads, the KMO coefficient, and Bartlett's test of sphericity validated the performance indicator. The results are presented in Table 3.

From this information, a cluster analysis was performed to divide this variable into two groups. The final variable is a dichotomous variable: value 1 = successful companies and value 0 = unsuccessful companies. Group 1 is made up of 369 successful companies, and group 0 is made up of 245 unsuccessful companies.

Table 3. Validation of Likert scale

Dependent Variable	Validation
Firm success	Cronbach's Alpha = 0.859 Factorial = 1 Factor Explained variance = 63.54% Bartlett's sig. = .000 KMO = 0.845

3.2.2. Independent Variables

Technological capabilities: to measure this variable, we looked at how companies acquire and develop technology and the advantages they derive from it compared to their competitors. To do this, we separated the companies into four types. Type A companies internally develop technology to achieve better results than their competitors. Type B companies acquire technology to move ahead of their competitors. Type C companies use the same technology as other companies in their sector, and they invest in new technology only when they see that their competitors have obtained good results from its use. Type D companies generally have less efficient and modern technology than their competitors. This variable has been used in previous studies, such as those by Rubio Bañón and Aragón Sánchez (2002) and Rocca Espinoza et al. (2016).

Innovation: companies that have the ability to launch new products and processes, improve them, enter new markets, and establish relationships with new suppliers have greater possibilities of surviving, growing, and becoming successful (Jiménez Jiménez & Sanz Valle, 2006). The function of the variables is based on studies like those by Van Auken et al. (2008). With seven items on a five-point Likert scale, information is obtained about the importance of a company's innovations and improvements over the last two years, specifying whether the innovation has been in products/services, processes, or management systems (management, sales, and marketing).

ICT: to measure this variable, the company manager is asked about the use of ICT tools, using a scale proposed by Valdez Juárez et al. (2017).

Quality: to achieve success in business, quality certificates that guarantee clients will receive quality products and services are essential. Moreover, quality certificates positively impact financial performance as they help companies recuperate their investments quicker (Santos et al., 2018). Quality is a dichotomous variable that takes the value of 1 when the company has or is in the process of obtaining an ISO 9000 certificate or its equivalent, and the value of 0 when it is not certified (Rubio Bañón & Aragón Sánchez, 2002; Rocca Espinoza et al., 2016).

Strategic planning. Designing strategies is vital to establish how a company will compete in the market and create a competitive advantage. To evaluate SP, companies are asked whether they engage in strategic planning processes (1 = they have a strategic plan, 0 = they have no strategic plan), following the study by Estrada Bárcenas et al. (2009).

Cooperative agreements. Cooperation strategies are a way for SMEs to achieve better performance by joining with other companies to collectively take advantage of the strengths of each company (Werastuti et al., 2019). To measure companies' degree of cooperation, they were asked whether they had made alliances or cooperative agreements with other companies in the areas of marketing products, procurement and provisioning, production, logistics, and R&D activities. For these questions, dichotomous variables were used (1 = yes and 0 = no). This variable was measured using the work done by López (2017).

Control variables. Company *size*, measured by the number of employees, determines the way companies use their resources and capabilities to become successful. Company *age* shows the ability the company has to maintain its competitive advantage during a specific period of time, and it measures the number of years a company has been in the market. Studies have shown that the economic *sector* a company belongs to also determines its maneuverability and can therefore influence company success. In this case, sector is a dichotomous variable that takes the value of 1 when the company belongs to the manufacturing sector and 0 when it belongs to the other sectors. These control variables have been frequently used in the literature on business success (Rubio Bañón & Aragón Sánchez, 2002).

In Table 4, the variables and questions used to measure the variables are presented.

Table 4. Questions used to measure the variables

Variables	Questionnaire questions
Firm success	Compared to your competitors, your company?: 1. is growing faster. 2. is more profitable. 3. is more productive.
Technological capabilities	Which of the following statements most adequately describes your company in terms of technology: Type A. We develop it internally and use it obtain better results than our competitors. Type B. We acquire it and use it to move ahead of our competitors. Type C. It is the same as what most of the companies in our sector use, and we only make new investments in technology when we see that it gives good results to our competitors. Type D. Our main competitors have more efficient and modern technology than we do.
Innovation	In the last two years, has the company carried out the following activities? If so, on a scale of 1 to 5, with 1 being unimportant and 5 very important, indicate how important the following activities are: 1. Changes or improvements in existing products/services 2. Marketing new products/services 3. Changes or improvements in processes of production/services 4. Acquisition of new property or equipment 5. Changes or improvements in management 6. Changes or improvements in procurement and provisioning 7. Changes or improvements in sales
ICT	Please indicate if your company uses ICTs: 1. Do you have a company website? 2. Do you have an email address? 3. Do you sell online? 4. Do you buy online? 5. Do you use the internet for marketing purposes? 6. Do your employees telework?
Quality	Does your company have an ISO 9000 series or its equivalent, or are you in the process of obtaining one? 1. Yes, indicate the certifying body 2. No, but we are in the process of obtaining certification 3. No, and we are not in the process of obtaining a quality certificate.
Strategic planning	Does your company carry out formal strategic planning processes?
Cooperation agreements	Has your company established alliances or cooperative agreements with other companies for?: 1. Marketing products 2. Procurement and provisioning 3. Logistics (transport, warehouses) 4. R&D activities 5. Production
Firm size	Number of employees in your company
Firm age	How many years has your company been in existence?
Sector	Indicate the sector your company belongs to.

4. Analysis of the results

4.1. Univariate analysis

To identify the most relevant factors related to MSME success, we first carried out a univariate analysis to obtain the differences in behavior between the “Successful” and “Unsuccessful” groups of companies. We applied: (1) a Kruskal-Wallis test when the normality hypothesis and variance homogeneity were not found and (2) a contingency analysis based on Pearson’s chi-squared test for categorical variables and a Yates test in 2x2 tables.

Table 5 shows the analysis of the results of the Kruskal-Wallis test for the “Successful” and “Unsuccessful” groups with the variables technological capabilities and degree of innovation. The results show that successful companies had greater technological capabilities (3.10, compared to 2.04 for unsuccessful companies). The significance value is 0.00, which indicates that there is statistical evidence to accept H1. With the degree of innovation variable, we found that the MSMEs in the “Successful” group engaged in more innovation, with an average of 3.11, compared to the “Unsuccessful 0” group of MSMEs, with an average of 1.28 and a significance value of 0.000. There is, therefore, statistical evidence to validate H2. We can thus confirm that innovation and the use of ICTs influence MSME success.

Table 5. Technology and innovation

Variables	Unsuccessful	Successful	Significance
Technological capabilities	2.04	3.10	0.000***
Degree of innovation	1.28	3.11	0.000***

Test to verify the significance of the variables:

For non-normal variables with averages (Likert scale: 1 = Never use - 5 = Always use): Kruskal-Wallis test

In Table 6, we measured the relation between degrees of ICT use and success in MSMEs. We found that 68.6% of “Successful” MSMEs used ICTs to a greater extent than MSMEs classified as “Unsuccessful” (31.3%), with a chi-squared statistical significance level of 0.000. This indicates that there is an association between MSME success and the use of ICTs. We also analyzed the association between MSME success and quality certification. 53.1% of “Successful” MSMEs had quality certificates, compared to 46.9% of the “Unsuccessful” group. The chi-squared statistical significance level is 0.000, which means that there is a relation between MSME success and quality, confirming H4. In terms of strategic planning, the results show that 68.4% of the “Successful” MSMEs had developed a strategic plan, compared to 31.6% of companies in the “Unsuccessful” group. The statistical significance of the chi-squared test is 0.000, which indicates that there is an association between MSME success and strategic planning. Therefore, H5 can be accepted. Concerning cooperation, the results show that 49.0% of the MSMEs in the “Successful” group participated cooperatively with other companies, compared to 51.0% of “Unsuccessful” companies, with a chi-squared statistical significance level of 0.237. This indicates that there is no association between MSME success and cooperation, and H6 is rejected.

Table 6. Quality, Strategic planning, and Cooperation

Variables	Unsuccessful	Successful	Sig.
% of companies that use ICTs	31.3	68.6	0.000***
% of companies that have quality certificates	46.9	53.1	0.000***
% of companies that carry out strategic planning	31.6	68.4	0.000***
% of companies that have cooperative agreements	51.0	49.0	0.237

Test to verify the significance of the variables:

For categorical variables: Pearson’s X^2 test (Yates test for 2x2 tables) *: $p \leq 0.1$; **: $p \leq 0.05$; ***: $p \leq 0.01$

Finally, the control variables are measured, considering company size, age, and sector (Table 7). Company size, measured by the average number of employees, was significant. Successful MSMEs are larger than unsuccessful ones (significant at 5%), and older companies are more successful than younger ones (significant at 5%). The sector the company belonged to showed no significant differences.

Table 7. Size, age, and sector of the MSMEs

Variables	Unsuccessful	Successful	Sig.
Firm size	31.5	36.7	0.016**
Firm age	13.5	15.2	0.034**
% Industrial Manufacturing sector	41.4	58.6	0.682
% Trade and Retail sector	38.2	61.8	
% Services sector	35.5	64.5	
% Construction sector	42.3	57.7	

Test to verify the significance of the variables:

For non-normal variables with averages: Kruskal-Wallis test

For variables with percentages: Pearson’s X^2

*: $p \leq 0.1$; **: $p \leq 0.05$; ***: $p \leq 0.01$

4.2. Multivariate analysis

Lastly, we performed a multivariate analysis to study the possible interrelations among the variables. Logistic regression using the introduction method was chosen. This statistic technique requires the dependent variable to be binary and qualitative, and the independent variables do not have a normal distribution. In the logistic regression model, we have included all the independent variables. The likelihood-ratio test was calculated to determine the validity of the model. To find the most probable estimation for the coefficients, the Hosmer-Lemeshow test for goodness of fit, the global accuracy rate in the classification, and the goodness of fit using Cox and Snell’s R^2 and Nagelkerke’s R^2 have been calculated. The statistical tests confirm the validity of our results (Table 8).

The results of the logistic regression are shown in Table 8. The model estimated by the introduction method shows a significant effect on MSMEs performance derived from technological capabilities (Coef. B: -0.461; Exp (B): 0.630; sig: 0.000), innovation (Coef. B: 1.615; Exp (B): 5.027; sig: 0.000) and quality (Coef. B: -0.454; Exp (B): 0.635; sig: 0.001). This means the MSMEs that have more highly developed technological capabilities, are more innovative, and can certify quality are more likely to be successful. These results consolidate on a multivariate level those obtained on a univariate level and confirm that these factors applied together best explain the success of MSMEs in Mexico. However, the rest of the variables (use of ICTs, strategic planning, cooperation, sector, size, and age) have little or no significance in the model, which indicates that they do not have a determining influence on the dependent variable.

Table 8. Wald test for logistic regression -firm success as a dependent variable

Independent variables	B	S.E.	Wald	Sig.	Exp (B)
Technological capabilities	0.461	0.129	12.765	0.000	0.630
Innovation	1.615	0.138	136.766	0.000	5.027
Use of ICTs	0.97	0.261	0.137	0.712	1.102
Quality certification	0.454	0.141	10.304	0.001	0.635
Strategic planning	-0.380	0.256	2.211	0.137	0.684
Cooperation	0.632	0.383	2.720	0.099	1.882
Sector	0.202	0.408	0.246	0.620	1.224
Company size	-0.001	0.003	0.051	0.821	0.999
Company age	0.020	0.011	3.239	0.072	1.021
Constant	-1.800	0.713	6.366	0.012	0.165

Variable introduced in the first step: Technological capabilities

Variable introduced in the second step: Innovation

Dependent variable (Dummy): Successful companies = 1; Unsuccessful companies = 0

Notes:

B: Logistic coefficients were used to measure the changes in odds ratios. A positive coefficient increases the probability predicted, while a negative value reduces the probability predicted.

S.E.: standard error.

Wald: Wald test.

Sig.: level of significance.

Exp(B): exponential coefficient. The statistical significance of the model has been determined using the Hosmer-Lemeshow test for goodness of fit, where a statistical contrast is obtained, indicating there is no significant statistical difference between the classifications predicted and those observed since the chi-squared value is significant (chi-squared: 357.698, sig.: 0.000). As an added goodness of fit measure, we obtained a global accuracy rate of 84.0% if we used the model as a classifying tool. Summary of the model: -2 log likelihood 468.272; Cox and Snell's R²: 0.442; Nagelkerke's R²: 0.597

5. Discussion and conclusions

In this work, we have analyzed the competitive factors that lead to MSME success. To do this, we have used a sample of 614 companies in Guanajuato, Mexico. Our results show that the appropriate combination of technological capabilities, innovation, and quality certification favor the competitiveness and success of MSMEs. First of all, the hypothesis that technological capabilities favor MSMEs success is confirmed. These results support the previous studies carried out by Wiklund and Shepherd (2003) and Ali Qalati et al. (2020). Technological capabilities have been associated with productivity, but overall, with more added value, which leads to greater competitive success (Vicente et al., 2015; Nolintha & Jajri, 2016). Our work also shows that innovation favorably affects MSME success, as was found in studies by Rubio Bañón and Aragón Sánchez (2002), Van Auken et al. (2008), and Rocca Espinoza et al. (2016). Another significant factor was the quality of MSME products and services, as Rubio Bañón and Aragón Sánchez (2002), Mokhtar and Muda (2012), and Rocca Espinoza et al. (2016) found. Quality certificates help satisfy clients' demands and result in cost reductions, giving companies a competitive advantage (Bayati & Taghavi, 2007). Moreover, we have demonstrated the positive influence of ICTs and strategic planning, but only on the univariate level. The use of ICTs was a relevant factor in MSME success on an individual level, as Valdez Juárez et al. (2017) also found. Finally, strategic planning was significant on the univariate level. Planning permits MSMEs to monitor their strategic decisions, and this improves performance. Our results were similar to those obtained by Estrada Bárcenas et al. (2009).

Innovation, quality, and technologies improve companies' abilities to face difficult situations, be more resilient, and diversify their operating models in response to changes in commercial policies and health emergencies like the one we are currently experiencing (Escudero, 2020). The Inter-American Development Bank (Angelelli et al., 2020) highlights the roles played by technology, quality, and innovation to reactivate the economy and generate revenue (Henriquez, 2020). MSMEs that implement innovative measures and strategies can face the challenges of uncertainty with greater success. Innovation, quality, and technology are fundamental to adapting to changes in clients' preferences. Consumers constantly demand new products and services that are better suited to their needs.

This study has important practical implications for MSMEs and public administrations. For managers of SMEs, this research demonstrates the importance of increasing innovative activities and technological capabilities with the uncertainty brought about by the current economic crisis. In tune with our findings, CEPAL (2020) recommends that companies focus on technology and innovation to face new challenges and opportunities. Our results are also useful for public administrations. These administrations could develop programs to promote innovation, digitalization, and technological capabilities to favor MSME competitiveness and survival.

We suggest that governments invest in programs that support MSMEs and thereby help reduce the social consequences of the crisis. This would promote company survival and help them recover more quickly (Esquivel, 2020).

This study has some limitations that could become interesting lines for future research. First, the sample used refers to Guanajuato (Mexico). We do not claim that our results can be generalized to other regions. In future research, it would be a good idea to contrast our results in other regions of Mexico and in different sectors. In this way, it would be possible to advance the knowledge on this topic and strengthen the theoretical model of resources and capabilities and dynamic capabilities considered in this study. Secondly, we have not taken into account external elements that could impact MSMEs. For this reason, future studies could include variables considering environmental dynamism and hostility.

References

- Adeola, O., Gyimah, P., Appiah, K. O., & Lussier, R. N. (2021). Can critical success factors of small businesses in emerging markets advance UN Sustainable Development Goals? *World Journal of Entrepreneurship, Management and Sustainable Development*, 17(1), 85-105. <https://doi.org/10.1108/WJEMSD-09-2019-0072>
- Agyapong, A., Essuman, D., & Afia Kesewa Yeboah, L. (2021). Performance implications of strategic planning and marketing capability in micro and small businesses in an emerging African economy: a contingent resource-based view. *Journal of Small Business & Entrepreneurship*, 33(1), 29-48. <https://doi.org/10.1080/08276331.2018.1507415>
- Ali Qalati, S., Li, W., Ahmed, N., Ali Mirani, M., & Khan, A. (2020). Examining the Factors Affecting SME Performance: The Mediating Role of Social Media Adoption. *Sustainability*, 13(1), 75. <https://doi.org/10.3390/su13010075>
- Angelelli, P., Hennessey, M., Henriquez, P., Benavente, J. M., Radaelli, V., Sasso, S., Anta, R., Crespi, G., Navarro, J. C., & Vargas, F. (2020). *Respuestas al COVID-19 desde la ciencia, la innovación y el desarrollo productivo*. Inter-American Development Bank. <https://doi.org/10.18235/0002347>
- Ataseven, C., Prajogo, D. I., & Nair, A. (2014). ISO 9000 Internalization and Organizational Commitment—Implications for Process Improvement and Operational Performance. *IEEE Transactions on Engineering Management*, 61(1), 5-17. <https://doi.org/10.1109/TEM.2013.2285344>
- Bayati, A., & Taghavi, A. (2007). The impacts of acquiring ISO 9000 certification on the performance of SMEs in Tehran. *The TQM Magazine*, 19(2), 140-149. <https://doi.org/10.1108/09544780710729980>
- Bensusán Areous, G. (2020). *Ocupaciones emergentes en la economía digital y su regulación en México. Serie Macroeconomía del Desarrollo. (203)*. Comisión Económica para América Latina y el Caribe. <http://hdl.handle.net/11362/45481>
- Cárdenas Gómez, L., & Fecci Pérez, E. (2007). Propuesta de un modelo de gestión para PYMEs, centrado en la mejora continua. *Síntesis Tecnológica*, 3(2), 59-67. <https://doi.org/10.4206/sint.tecnol.2007.v3n2-02>
- CEPAL (2020). *Informes COVID-19*. <https://www.cepal.org/es/publicaciones/informesCOVID19>
- Chang, W., Franke, G. R., Butler, T. D., Musgrove, C. F., & Ellinger, A. E. (2014). Differential Mediating Effects of Radical and Incremental Innovation on Market Orientation-Performance Relationship: A Meta-Analysis. *Journal of Marketing Theory and Practice*, 22(3), 235-250. <https://doi.org/10.2753/MTP1069-6679220301>
- Cuevas-Vargas, H., Estrada, S., & Larios-Gómez, E. (2016). The Effects of ICTs As Innovation Facilitators for a Greater Business Performance. Evidence from Mexico. *Procedia Computer Science*, 91, 47-56. <https://doi.org/10.1016/j.procs.2016.07.040>
- Demuner Flores, M. D. R. (2011). Gestión de calidad en PyMEs manufactureras certificadas con ISO 9001-2000. *Revista del Centro de Investigación. Universidad La Salle*, 9(35). <http://revistasinvestigacion.lasalle.mx/index.php/recein/article/view/140>
- Donbesuur, F., Ampong, G. O. A., Owusu-Yirenkyi, D., & Chu, I. (2020). Technological innovation, organizational innovation and international performance of SMEs: The moderating role of domestic institutional environment. *Technological Forecasting and Social Change*, 161, 120252. <https://doi.org/10.1016/j.techfore.2020.120252>
- Drucker, P. F. (1985). Entrepreneurial Strategies. *California Management Review*, 27(2), 9-25. <https://doi.org/10.2307/41165126>
- Dubihlela, J., & Sandada, M. (2014). Impact of Strategic Planning on Small and Medium-Sized Enterprises' (SMEs) Performance: The Role of Employee Participation, Implementation Incentives and Evaluation and Control. *Journal of Economics*, 5(1), 45-55. <https://doi.org/10.1080/09765239.2014.11884983>
- Edeh, J. N., Obodoechi, D. N., & Ramos-Hidalgo, E. (2020). Effects of innovation strategies on export performance: New empirical evidence from developing market firms. *Technological Forecasting and Social Change*, 158, 120167. <https://doi.org/10.1016/j.techfore.2020.120167>

- Escudero, E. (2020, April 2). *Estrategia empresarial ante el covid-19. Énfasis logístico*. <https://thelogisticsworld.com/historico/estrategia-empresarial-ante-el-covid-19-2/>
- Esquivel, G. (2020, April 17). *Pandemia, confinamiento y crisis: ¿Qué hacer para reducir los costos económicos y sociales?*. <https://www.nexos.com.mx/?p=47731>
- Estrada Bárcenas, R., García Pérez de Lema, D., & Sánchez Trejo, V. G. (2009). Factores Determinantes del Éxito Competitivo en la Pyme: Estudio Empírico en México. *Revista Venezolana de Gerencia*, 14(46). <https://doi.org/10.31876/revista.v14i46.10528>
- García Guiliany, J. E., Durán, S. E., Hernández, J. C., & Moreno, M. E. (2019). Estrategias gerenciales para fomentar las competencias laborales en el Sector Hotelero de la Costa Caribe Colombiana. *Revista de Investigación Sigma*, 5(02), 8. <https://doi.org/10.24133/sigma.v5i02.1251>
- García Guiliany, J., Duran, S., Cardeño Pórtela, E., Prieto Pulido, R., García Cali, E., & Paz Marcano, A. (2017). Proceso de planificación estratégica: Etapas ejecutadas en pequeñas y medianas empresas para optimizar la competitividad. *Revista Espacios*, 38(52). <https://www.revistaespacios.com/a17v38n52/17385216.html>
- Gobierno de la República, & CONACYT (2014). *Agenda de innovación de Guanajuato*
- Gomera, S., Chinyamurindi, W. T., & Mishi, S. (2018). Relationship between strategic planning and financial performance: The case of small, micro- and medium-scale businesses in the Buffalo City Metropolitan. *South African Journal of Economic and Management Sciences*, 21(1). <https://doi.org/10.4102/sajems.v21i1.1634>
- Gómez Conde, J., López-Valeiras Sampedro, E., & González Sánchez, M. B. (2015). Sistemas de control de gestión, capacidad innovadora e certificaciones ISO. *Revista Galega de Economía*, 23(1). <https://doi.org/10.15304/rge.23.1.2466>
- Gonsen, R. (1996). Formas de capacidades tecnológicas en la industria moderna de bioprocesos en México. Una reflexión sobre el proceso de aprendizaje. *Revista Espacios*, 17(3). <https://www.revistaespacios.com/a96v17n03/20961703.html>
- Grant, R. M. (1999). The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation. In *Knowledge and Strategy* (pp. 3-23). Elsevier. <https://doi.org/10.1016/B978-0-7506-7088-3.50004-8>
- Haque, I., Bell, M., Dahlman, C., Lall, S., & Pavitt, K. (1996). *Trade, Technology, and International Competitiveness*. The World Bank. <https://doi.org/10.1596/0-8213-3418-2>
- Hardy, C., Phillips, N., & Lawrence, T. B. (2003). Resources, Knowledge and Influence: The Organizational Effects of Interorganizational Collaboration*. *Journal of Management Studies*, 40(2), 321-347. <https://doi.org/10.1111/1467-6486.00342>
- Henriquez, P. (2020, April 29). *COVID-19: ¿Una oportunidad para la transformación digital de las pymes?*. <https://blogs.iadb.org/innovacion/es/covid-19-oportunidad-transformacion-digital-pymes/>
- Hernández Girón, J. P., Yescas León, M., & Domínguez Hernández, M. L. (2007). Factores de éxito en los negocios de artesanía en México. *Estudios Gerenciales*, 23(104), 77-99. [https://doi.org/10.1016/S0123-5923\(07\)70018-9](https://doi.org/10.1016/S0123-5923(07)70018-9)
- Hernández-Linares, R., Kellermanns, F. W., & López-Fernández, M. C. (2021). Dynamic capabilities and SME performance: The moderating effect of market orientation. *Journal of Small Business Management*, 59(1), 162-195. <https://doi.org/10.1111/jsbm.12474>
- Hudson, M., Smart, A., & Bourne, M. (2001). Theory and practice in SME performance measurement systems. *International Journal of Operations & Production Management*, 21(8), 1096-1115. <https://doi.org/10.1108/EUM0000000005587>
- Idrissi Fakhreddine, M. O., & Castonguay, Y. (2019). An exploratory study on how SMEs are open to external sources of information. *European Journal of Innovation Management*, 22(5), 765-789. <https://doi.org/10.1108/EJIM-01-2019-0027>
- INEGI (2011). *Directorio Estadístico Nacional de Unidades Económicas*. <https://www.inegi.org.mx/app/mapa/denue/>
- INEGI (2020). *Banco de Información Económica (BIE). Estimación oportuna del Producto Interno Bruto en México durante el primer trimestre de 2020*. <https://www.inegi.org.mx>
- Ipinnaie, O., Dineen, D., & Lenihan, H. (2017). Drivers of SME performance: a holistic and multivariate approach. *Small Business Economics*, 48(4), 883-911. <https://doi.org/10.1007/s11187-016-9819-5>
- Jiménez Jiménez, D., & Sanz Valle, R. (2006). Innovación, aprendizaje organizativo y resultados empresariales: un estudio empírico. *Cuadernos de economía y dirección de la empresa*, 29
- Jiménez-Zarco, A. I., Torrent-Sellens, J., & Pilar Martínez-Ruiz, M. (2012). Proactive orientation effects on product innovation activities: Empirical evidence. *Innovation*, 14(1), 90-106. <https://doi.org/10.5172/impp.2012.14.1.90>
- Jingtao, Y., Wang, C., & Kafouros, M. (2013). The effects of innovative capabilities on exporting: Do institutional forces matter? *International Business Review*, 22(2), 392-406. <https://doi.org/10.1016/j.ibusrev.2012.05.006>

- Johnson, G., Scholes, K., & Whittington, R. (2006). *Dirección Estratégica*. Pearson Prentice-Hall
- Julien, P. A., & Molina, R. M. (2012). *Una teoría del emprendimiento Regional en la Economía del Conocimiento; una metáfora de las novelas policíacas*. Pearson Prentice Hall
- Julien, P. A. (2003). *Las PYME: Balance y Perspectivas, el Estado del arte de las PYMES en el mundo*. Universidad Icesi
- Kliksberg, B., & Tomassini, L. (2000). *Capital social y cultura: claves estratégicas para el desarrollo*. Fondo de Cultura Económica. <http://www.revistas.unam.mx/index.php/rmcyps/article/view/42545>
- Koka, B. R., & Prescott, J. E. (2008). Designing alliance networks: the influence of network position, environmental change, and strategy on firm performance. *Strategic Management Journal*, 29(6), 639-661. <https://doi.org/10.1002/smj.679>
- Lakhal, L. (2014). The Relationship Between ISO 9000 Certification, TQM Practices, and Organizational Performance. *Quality Management Journal*, 21(3), 38-48. <https://doi.org/10.1080/10686967.2014.11918395>
- López, A. (2017). Estrategias de cooperación: influencia en la innovación y el desempeño de las Mipymes. *Revista Internacional Administración & Finanzas*, 10(3), 17-27
- Majama, N. S., & Magang, T. I. ' (2017). Strategic Planning in Small and Medium Enterprises (SMEs): A Case Study of Botswana SMEs. *Journal of Management and Strategy*, 8(1), 74. <https://doi.org/10.5430/jms.v8n1p74>
- Marcelle, G. (2007). *Technology acquisition and domestic learning. Science and Development Network. Policy Briefs*
- Miles, R. E., Snow, C. C., Meyer, A. D., & Coleman, H. J. (1978). Organizational Strategy, Structure, and Process. *The Academy of Management Review*, 3(3), 546. <https://doi.org/10.2307/257544>
- Miller, D., & Shamsie, J. (1996). The Resource-Based View of the Firm in Two Environments: The Hollywood Film Studios From 1936 to 1965. *Academy of Management Journal*, 39(3), 519-543. <https://doi.org/10.5465/256654>
- Mokhtar, M. Z., & Muda, M. S. (2012). Comparative Study on Performance Measures and Attributes between ISO and Non-ISO Certification Companies. *International Journal of Business and Management*, 7(3). <https://doi.org/10.5539/ijbm.v7n3p185>
- Molina, R., & Contreras, R. (2017). La importancia del capital social, las redes de colaboración y vinculación de las Pymes para desarrollar las capacidades tecnológicas. In *Capacidades Tecnológicas: impacto en la competitividad empresarial*. Pearson Prentice Hall
- Mora-Riapira, E. H., Vera-Colina, M. A., & Melgarejo-Molina, Z. A. (2015). Planificación estratégica y niveles de competitividad de las Mipymes del sector comercio en Bogotá. *Estudios Gerenciales*, 31(134), 79-87. <https://doi.org/10.1016/j.estger.2014.08.001>
- Nee, G. Y., & Abdul Wahid, N. (2010). The Impact of ISO 14001 Environmental Management System (EMS) Implementation on SMEs Performance: An Empirical Study in Malaysia. *Journal of Sustainable Development*, 3(2). <https://doi.org/10.5539/jsd.v3n2p215>
- Nicolás Martínez, C., & Rubio Bañón, A. (2020). Emprendimiento en épocas de crisis: Un análisis exploratorio de los efectos de la COVID-19. *Small Business International Review*, 4(2), 53-66. <https://doi.org/10.26784/sbir.v4i2.279>
- Nolintha, V., & Jajri, I. (2016). The garment industry in Laos: technological capabilities, global production chains and competitiveness. *Asia Pacific Business Review*, 22(1), 110-130. <https://doi.org/10.1080/13602381.2014.990209>
- Ochieng, J., Muturi, D., & Njihia, S. N. (2015). The impact of ISO 9001 implementation on organizational performance in Kenya. *The TQM Journal*, 27(6), 761-771. <https://doi.org/10.1108/TQM-06-2015-0071>
- Peñaherrera León, M., & Cobos Alvarado, F. (2012). La creatividad y el emprendimiento en tiempos de crisis. *REICE. Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación*, 10(2). <https://revistas.uam.es/reice/article/view/3066>
- Pérez, A. L. G., Rodríguez, A. C., & Molina, M. A. (2002). Factores Determinantes de la Rentabilidad Financiera de las Pymes. *Spanish Journal of Finance and Accounting / Revista Española de Financiación y Contabilidad*, 31(112), 395-429. <https://doi.org/10.1080/02102412.2002.10779452>
- Prahalad, C. K., & Hamel, G. (1990). The core competence and the corporation. *Harvard Business Review*, 68(3), 79-91
- Prasanna, R., Jayasundara, J., Naradda Gamage, S. K., Ekanayake, E., Rajapakshe, P., & Abeyrathne, G. (2019). Sustainability of SMEs in the Competition: A Systemic Review on Technological Challenges and SME Performance. *Journal of Open Innovation: Technology, Market, and Complexity*, 5(4), 100. <https://doi.org/10.3390/joitmc5040100>
- Pratono, A. H., & Mahmood, R. (2015). Mediating effect of marketing capability and reward philosophy in the relationship between entrepreneurial orientation and firm performance. *Journal of Global Entrepreneurship Research*, 5(1), 5. <https://doi.org/10.1186/s40497-015-0023-x>

- Quintero, E., Vergara, G., & Bern, B. (2016). Estudio correlacional entre la innovación en productos servicios, procesos, gestión y la certificación de calidad en las MIPYMES. *PRISMA Tecnológico*, 7(1), 35-38. <https://revistas.utp.ac.pa/index.php/prisma/article/view/1262>
- Rocca Espinoza, E., García Pérez de Lema, D., & Duréndez Gómez-Guillamón, A. (2016). Factores determinantes del éxito competitivo en la mipyme: un estudio empírico en empresas peruanas. *Contabilidad y Negocios*, 11(22), 52-68. <https://doi.org/10.18800/contabilidad.201602.004>
- Rubio Bañón, A., & Aragón Sánchez, A. (2002). Factores explicativos del éxito competitivo. Un estudio empírico en la pyme. *Cuadernos de Gestión*, 2(1), 49-63. <http://www.ehu.es/cuadernosdegestion/revista/es/numeros-publicados/articulo?year=2002&vol=2&num=1&o=3>
- Santos, G., Costa, B., & Leal, A. (2018). The estimation of the return on firms' investments - as to ISO 9001. *International Journal of Engineering, Science and Technology*, 4(2), 46-57. <https://doi.org/10.4314/ijest.v4i2.4>
- Sengupta, A., & Sena, V. (2020). Impact of open innovation on industries and firms - A dynamic complex systems view. *Technological Forecasting and Social Change*, 159, 120199. <https://doi.org/10.1016/j.techfore.2020.120199>
- Shameem, A. L. M. A., Nazar, M. C. A., & Hilal, M. I. M. (2021). Exploring the nexus of entrepreneurial orientation and market orientation on business performance and the role of innovation among the MSMEs in Sri Lanka. *Academy of Entrepreneurship Journal*, 27(SpecialIssue 3)
- Shappo, M., & Knuth, A. (2014). *Empirical Factors of SME Development in Belarus: Analysis and Recommendations*. German Economic Team Belarus, IPM Research Center. Policy Paper Series [PP/04/2014]
- Srinivasan, R., & Swink, M. (2015). Leveraging Supply Chain Integration through Planning Comprehensiveness: An Organizational Information Processing Theory Perspective. *Decision Sciences*, 46(5), 823-861. <https://doi.org/10.1111/deci.12166>
- Starke, F., Eunni, R. V., Manoel Martins Dias Fouto, N., & Felisoni de Angelo, C. (2012). Impact of ISO 9000 certification on firm performance: evidence from Brazil. *Management Research Review*, 35(10), 974-997. <https://doi.org/10.1108/01409171211272697>
- Valdez Juárez, L. E., García Pérez de Lema, D., & Maldonado Guzmán, G. (2017). TIC y la gestión del conocimiento como elementos determinantes del crecimiento de la PyME. *Investigación y Ciencia de la Universidad Autónoma de Aguascalientes*, 70, 50-62. <https://doi.org/10.33064/iycuaa2017701828>
- Van Auken, H., Guijarro, A. M., & Lema, D. G. P. (2008). Innovation and performance in Spanish manufacturing SMEs. *International Journal of Entrepreneurship and Innovation Management*, 8(1), 36. <https://doi.org/10.1504/IJEIM.2008.018611>
- Velarde López, E., Martínez, E. D. L. G., & Eunice Coronado Rojas (2012). El desarrollo de capacidades tecnológicas y la vinculación con instituciones educativas y gubernamentales en las pymes de la industria metalmeccánica de la región centro de Coahuila, México. *Revista Internacional Administracion & Finanzas*, 5(2)
- Venkatraman, N., & Ramanujam, V. (1986). Measurement of Business Performance in Strategy Research: A Comparison of Approaches. *The Academy of Management Review*, 11(4), 801. <https://doi.org/10.2307/258398>
- Vicente, M., Abrantes, J. L., & Teixeira, M. S. (2015). Measuring innovation capability in exporting firms: the INNOVSCALE. *International Marketing Review*, 32(1), 29-51. <https://doi.org/10.1108/IMR-09-2013-0208>
- Weller, J. (2020). Las transformaciones tecnológicas y el empleo en América Latina: Oportunidades y desafíos. *Revista de la CEPAL*, 2020(130), 7-27. <https://doi.org/10.18356/ce83a6d1-es>
- Werastuti, D. N. S., Sukoharsono, E. G., Saraswati, E., & Prihatiningtias, Y. W. W. (2019). Are Competitive Strategies and Strategic Alliances Role in Improving Sustainability Performance? *Journal of Environmental Management and Tourism*, 9(7), 1498. [https://doi.org/10.14505/jemt.9.7\(31\).14](https://doi.org/10.14505/jemt.9.7(31).14)
- Wiklund, J., & Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal*, 24(13), 1307-1314. <https://doi.org/10.1002/smj.360>
- Yeung, A., Ulrich, D., Nason, S., Von, G., & Mary, A. (2000). *Las capacidades de aprendizaje en la organización. Como aprender a generar y difundir ideas con impacto*. Oxford University Press
- Zaridis, A. D., & Mousiolis, D. T. (2014). Entrepreneurship and SME's Organizational Structure. Elements of a Successful Business. *Procedia - Social and Behavioral Sciences*, 148, 463-467. <https://doi.org/10.1016/j.sbspro.2014.07.066>