

Business Competitiveness small entrepreneurship in the Commerce Sector in northern Mexico

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Abstract— *Business competitiveness represents a key factor for the sustainability of organizations in dynamic and globalized markets. Furthermore, most businesses worldwide are micro, small, and medium-sized enterprises, and in some contexts, they determine the competitiveness of countries. Additionally, competitiveness has gained importance as markets become increasingly demanding. For this reason, this study analyzes the influence of five internal variables—constant training, business management, logistics, access to financing, and the use of technology—on the competitiveness of small businesses in the retail sector in the state of Nuevo León, Mexico. This is a quantitative, descriptive, correlational, and explanatory study. An instrument was designed to measure the study variables and was applied to a sample of 166 companies. The results indicate that training, business management, and access to financing have a positive effect on competitiveness, whereas logistics and the use of technology did not show a significant influence in the model. This study provides relevant empirical evidence to strengthen strategic management in small commercial ventures in the region. Keywords—Entrepreneurship, business competitiveness, Mexico, small enterprises.*

I. INTRODUCTION

Business competitiveness has been recognized as a fundamental element for the survival and growth of organizations in dynamic and globalized environments. Conceptualized as a company's ability to maintain or increase its market share through innovative strategies, productivity growth, strategic alliances, and adaptation to government policies, its study has gained relevance across different sectors and contexts.

Various authors highlight that factors such as costs, quality, and profitability, as well as financial performance, human capital, innovation, strategy, and corporate social responsibility, are key determinants in strengthening competitiveness. Empirical evidence further confirms the importance of variables such as productivity and green innovation in strengthening business performance.

In this context, the objective of this study is to determine the influence of continuous training, operational business management, logistics, access to financing, and the use of technology on the business competitiveness of micro and small enterprises in the sector located in Northern Mexico, specifically in the state of Nuevo León, Mexico. Based on the aforementioned, the general hypothesis proposed is that these five factors have a positive and significant influence on business competitiveness, with specific hypotheses formulated for each independent variable.

II. LITERATURE REVIEW

A. Dependent Variable (Y) Business Competitiveness

Business competitiveness has been conceptualized as an organization's ability to maintain or increase its market share through innovative strategies, productivity growth, strategic alliances, and adaptation to government policies [1] [2]. This definition integrates internal and external dimensions, establishing itself as one of the most comprehensive.

Business competitiveness involves costs, prices, quality, and profitability [3], as well as effectiveness in the supply of goods and services against the competition [4]. Furthermore, it possesses a comparative nature, which varies depending on the urban, national, or international context [5].

Various studies have shown that competitiveness is influenced by factors such as financial performance [6], human capital and product quality [7], innovation and strategy [8], as well as corporate social responsibility and green innovation [9]. Similarly, productivity shows a significant positive relationship with competitiveness in the agro-industrial context [10].

In another study, reference [11] developed a systemic competitiveness index applied to 77 Colombian family businesses, identifying human capital, competitive strategy, product quality, innovation, and supplier-client networks as key factors [12].

A study conducted in Aguascalientes, Mexico, examined the use of operations management techniques and their impact on company performance. The study involved 317 surveys of managers in manufacturing companies, employing a quantitative, cross-sectional approach. Linear correlation analysis was performed to measure the variables. The study found that managers in manufacturing companies perceive that these management techniques have a positive impact [13].

In the agro-industrial sector of South Africa and Zimbabwe, partial least squares structural equation modeling was used to identify a significant positive relationship between productivity and competitiveness $\beta=0.684$; $p \leq 0.01$) [13].

A further study conducted using multiple regression identified that green innovation positively impacts business

competitiveness ($\beta=0.545$; $p<0.001$), consolidating the empirical evidence on the importance of innovative internal factors in strengthening the competitive position of companies [14].

The analysis conducted in 181 SMEs in Valledupar, Colombia, evaluated the influence of internal factors, such as the level of digitalization of the company and the hours of training provided to employees. The information was collected through surveys and analyzed using a multiple linear regression model. The results showed a positive and statistically significant relationship between these variables ($\beta = 0.430$, $p \leq 0.001$; $\beta = 0.290$, $p \leq 0.001$, respectively) [15].

B. Independent Variable (X1) Constant Training

Training is the acquisition and development of employees' knowledge, skills, and attitudes to perform their jobs effectively [16]. Reference [17] qualitatively analyze the relationship between training and competitiveness in construction companies in Singapore and Hong Kong. Using literature review, observation, and semi-structured interview methods, they conclude that effective staff training models could improve competitiveness in the studied regions.

Reference [18], training is considered one of the variables that influence business competitiveness in medium-sized manufacturing companies in the state of Nuevo León. It was accepted that there is a statistically significant influence ($\beta=0.049$, $p=nd$), a result obtained through a multiple linear regression analysis of a 45-question survey administered to a sample of 24 companies in the sector. This study highlights the relationship between these two variables.

A study in Nevsehir, Turkey, examines the influence of effective training on competitiveness in a sample of 646 employees from accommodation companies. Through structural equation modeling, they obtained a value of $\beta=0.281$ y $p < 0.001$, indicating a positive and significant relationship. The authors conclude that effective training influences performance and, consequently, the competitiveness of the companies [19].

Another study, conducted in Surabaya, Indonesia, analyzed through a sample of 10 managers from companies belonging to the Persebaya cooperative, found that constant training significantly and positively influences business competitiveness; thus, the authors conclude that effective training can improve company results [20].

Upon reviewing the literature on training as an independent variable influencing business competitiveness as a dependent variable, the existence of theories revealing theoretical backgrounds on training is observed. Although there is a consensus among authors in defining training, numerous studies include training as part of their study

models. However, few studies present significant statistical methodological rigor.

Based on the above, the following hypothesis is proposed:

H1: Constant training positively influences business competitiveness in small companies in Nuevo León.

C. Independent Variable (X2) Business Management

Business management can be conceived as the skills and aptitudes of the owners or managers of organizations to perform, coordinate, develop, direct, and achieve business objectives, in accordance with the strategies and goals established by the company [21].

In the study conducted in Hermosillo, Sonora, Mexico, the aim was to evaluate the effect of managerial skills on business competitiveness in 108 small and medium-sized enterprises in the commerce and services sectors. The authors concluded that it is relevant to develop future studies addressing these variables in contexts different from the one applied. Compared to other independent factors in this study, a positive influence is not observed in all empirical backgrounds. On the other hand, the study of this variable will attempt to provide support for agency and postmodern administrative management theories [22].

An analysis conducted in Poland aimed to evaluate the role of factors influencing the competitiveness of 67 small innovative companies operating in international markets. Among these factors is company management. In an initial analysis, the method used to verify the relationship between the variables was Spearman's rank correlation coefficient, yielding $r = 0.255$; $p \leq 0.037$, which indicates a positive significant relationship. Subsequently, business advising was included as a moderating variable, and the result was $r = 0.510$; $p \leq 0.000$, concluding that there is a correlation between factors related to management and the competitiveness of small innovative Polish companies operating in international markets [23].

In the study conducted in India, the relationship of management practices as part of the organizational strategy and their influence on the business competitiveness of 103 organizations belonging to the automotive components industry was analyzed. The results demonstrate a significantly positive impact ($\beta=0.570$, $p\leq0.05$) between both variables, indicating that business management influences business competitiveness [24].

In Tarapoto, Peru, the association between business management and competitiveness was examined in 83 micro and small enterprises through the application of a survey and the use of correlational analysis, which determined that there

is a positive and significant relationship between both factors ($r = 0.673$; $p = 0.000$). This analysis in the Latin context serves as a precedent for the use of business management as an influential factor on business competitiveness [25].

In Ecuador, a study conducted in manufacturing companies with a sample of 325 managers, through the application of a survey and statistical regression tests, showed that administrative management has a statistically significant impact on business competitiveness [26].

Through an exploratory analysis of studies on the relationship between business management and SME competitiveness, conducted using an advanced search engine in Scopus, empirical evidence was identified that supports the influence of both variables. The analysis of 170 studies, spanning a period of over 40 years, revealed evidence from research conducted in both emerging and developed countries. These findings demonstrate that business management is a factor closely and consistently linked to SME competitiveness [27].

Based on the above, the following hypothesis is proposed:

H2: Business management positively influences business competitiveness in small companies in Nuevo León.

D. Independent Variable (X3) Logistics

Logistics is a process that can originate within companies or be influenced by exogenous factors. The activities within the framework of this variable are divided into two types: controllable ones, which are the operations resolved according to the experience accumulated by the organization, and non-controllable ones, which are activities developed outside the company's routine actions [28].

In Kampala, Uganda, the level of influence of supply chain management practices, capabilities, and logistics integration on the competitiveness of a sample of 204 SMEs was analyzed. They found that supply chain management and logistics integration statistically and significantly influence the competitiveness of small and medium-sized enterprises ($\beta=0.20$, $p=0.004$ and $\beta=0.20$, $p=0.002$, respectively). In the case of logistics capabilities, they discovered that they do have an influence, but not a significant one ($\beta=0.04$, $p=0.570$) [29].

Reference [30] evaluate the relationship between logistics performance and business competitive advantage, for which they propose studying a conceptual model that includes these two variables in the Thai business context; however, the study does not show statistics in this regard, but it does conclude that there is a correlation between logistics performance and business competitiveness.

Based on the above, the following hypothesis is proposed:

H3: Logistics positively influences business competitiveness in small companies in Nuevo León.

E. Independent Variable (X4) Access to Financing

Financing as a phenomenon influencing the competitiveness of companies has been evaluated in different contexts; furthermore, it is included as part of some models that seek to explain the level of business competitiveness in various organizations.

In Lesotho, Southern Africa, using a sample of 384 small and medium-sized enterprises from different business sectors, the existing relationship in financing—separated into four elements: access to financial information, bank and business support services, bank structure, and collateral requirement—on the competitive growth of these companies was evaluated. The applied method was multiple regression analysis, and the results indicated that access to financial, banking, and business information has a unique, statistically significant contributory influence on the competitive growth of SMEs with $b = 0.271$; $p < 0.05$. In conclusion, these authors consider that the access to financing factors affect the capacity of SMEs to achieve competitive growth [31].

In a study conducted in Huánuco, Peru, the causal relationship between bank financing and competitiveness was analyzed in a sample of 91 small and medium-sized enterprises from different productive sectors. Through the application of non-parametric correlation statistics, it was concluded that there is a statistically significant relationship between financing and business competitiveness. This analysis represents additional empirical evidence on the use of these two variables and the correlation that exists between them [32].

Furthermore, reference [33] investigated the influence of access to financing on the competitiveness of coffee companies in the state of Puebla, Mexico. As part of a multivariate regression analysis, they discovered that, in the analyzed business context, financing does positively influence competitiveness ($\beta=0.144$; $p=0.006$). The authors conclude that the difficulty represented by access to financing is considered a problem and relates it to the type of activity analyzed, since most of the companies are in rural areas.

The evidence demonstrates that the variable of access to financing has been addressed as a causal variable of the competitiveness of companies. The results generated by the consulted studies indicate, on most occasions, a significant and latent relationship between these variables. Furthermore, it should be considered that although studies were found during the literature review period, not all studies actually take

financing as a direct study variable; that is, aspects of it and their relationship with competitiveness are evaluated.

Based on the above, the following hypothesis is proposed:

H4: Access to financing positively influences business competitiveness in small companies in Nuevo León.

F. Independent Variable (X5) Use of Technology

The use of technology in the company is related to the electronic way of processing, storing, transmitting, and capturing information to facilitate the design of strategies that favor the company's progress.

Since technology is a factor with relatively little analysis, the difficulty of finding classical or older theories that support the use of this variable with a causal approach to the competitiveness of companies was to be expected. However, with the aim of supporting and generating theoretical rigor for the study of this phenomenon, it is related to neoclassical assumptions regarding the use of machines and equipment for the development of activities within organizations [34].

Research in Jordan evaluated 13 e-commerce companies, integrating access to and use of technology into three elements of technological capabilities: infrastructure, business expansion, and proactive posture. These were related to the competitiveness element of threat neutralization through a multiple linear regression analysis, finding a positive and significant relationship with scores for each element of $\beta=0.178$, $\beta=0.2732$, and $\beta=0.1953$ respectively, with $p<0.001$ and an $R^2 = 0.304$, concluding that these factors can improve the competitive advantage of companies and, therefore, their level of competitiveness [35].

Likewise, empirical evidence of the relationship between the variables demonstrates, at least within the scope of this study, that there is a deficiency when conducting relational analyses between these factors. Furthermore, in the findings of some studies, the level of relationship is low, which indicates the need to expand the development of studies that include both variables within their analysis models.

In Aguascalientes, Mexico, the influence of the use of technologies on the competitiveness of a sample of 56 SMEs was evaluated. Through a Spearman correlation analysis, it is identified that there is a positive and significant impact between both variables ($r=0.686$; $p=0.000$). They conclude that by incentivizing the use of information and communication technologies in the company, their competitiveness can be improved [36].

In Indonesia, the impact of technology adoption in the supply chain on competitiveness was analyzed in a sample of

178 manufacturing companies. Through multiple regression analysis, they conclude that the adoption of technology can improve the business competitiveness of these types of companies [37].

On the other hand, in Nuevo León, Mexico, it was identified that among the independent variables affecting competitiveness, the use of technologies is considered. Through a multiple regression analysis, it was determined that there is a statistically significant influence between both factors ($\beta=0.365$; $p=0.000$). The study was conducted on a sample of 581 service companies. In this analysis, it is concluded that the use of technologies in the companies studied influences their level of competitiveness [38].

Similarly, a study using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology conducted a comprehensive literature review, identifying at least 25 scientific articles in which technology implementation was considered a relevant variable for the business competitiveness of SMEs. The results led to the conclusion that, regardless of the country analyzed, technology adoption in companies significantly contributes to strengthening their competitiveness [39].

Based on the above, the following hypothesis is proposed:

H5: The use of technology positively influences business competitiveness in small companies in Nuevo León.

III. METHODOLOGY

This study used a quantitative, cross-sectional, descriptive, correlational, and explanatory approach with a non-experimental design [40]. Documentary, bibliographic, and field techniques were employed. For the latter, a structured questionnaire was used for data collection. This instrument was developed based on the previously presented theoretical framework. It consisted of 34 items designed to measure variables associated with business competitiveness, such as continuous training, operational business management, logistics, access to financing, and technology use. Responses were captured using a five-point Likert scale, where 1 represented "strongly disagree" and 5 "strongly agree," thus ensuring appropriate ordinal measurement [41].

The sample in Mexico was drawn from a population using the sampling formula, resulting in 166 small businesses with entrepreneurial ventures in the commercial sector in the state of Nuevo León, Mexico. Prior to the analysis, a transformation of variables was performed to reduce factors and ensure adequate data distribution. For the results, a multiple linear regression model was applied using the input method in IBM SPSS Statistics version 26 software.

IV. RESULTS

Table 1 presents the statistical data. The analysis yielded an adjusted coefficient of determination (adjusted R²) of 0.591, indicating that 59.1% of the variance in business competitiveness is explained by the independent variables considered. The Durbin-Watson statistic was 2.012, suggesting the absence of significant autocorrelation among the residuals.

TABLE I
MODEL SUMMARY

Model	R	R ²	adjusted R ²	Standard error of the estimate	Durbin-Watson
1	.777 ^a	0.603	0.591	0.38940	2.012

^a. Predictors: (Constant), X5. Use of Technology, X1. Constant Training, X4. Access to Financing, X3. Logistics, X2. Business Management.

Source: Prepared by the author based on SPSS V26 results

Table 2 shows the regression coefficient results regarding the significance of the predictors. The results show that training ($\beta=0.148$, $p=0.005$), business management ($\beta=0.283$, $p=0.001$), and access to financing ($\beta=0.133$, $p=0.025$) have positive and statistically significant effects on business competitiveness. In contrast, logistics ($\beta=0.093$, $p=0.184$) and the use of technology ($\beta=0.088$, $p=0.056$) did not show significant relationships at the established confidence level.

TABLE II
COEFFICIENTS

Non-		standardized coefficients		Standardized coefficients		t	Sig.
Model		B	Error	Beta			
1	(Constant) ^a	0.942	0.199			4.738	0
	X1. Constant Training	0.148	0.052	0.184		2.828	0.005
	X2. Business Management	0.283	0.08	0.318		3.522	0.001
	X3. Logistics	0.093	0.07	0.107		1.333	0.184
	X4. Access to Financing	0.133	0.059	0.178		2.26	0.025
	X5. Use of Technology	0.088	0.046	0.133		1.923	0.056

^a. Dependent variable: Y. Business Competitiveness

Source: Prepared by the author based on SPSS V26 results

Table 3 explains the analysis of variance (ANOVA), which showed that the regression model is globally significant ($F=48.955$, $p<0.001$), confirming that, together, the predictors used contribute significantly to explaining business competitiveness.

TABLE III
ANOVA

Model	Sum of squares	df	Mean square	F	Sig.
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1	Regression	37.115	5	7.423	48.955	.000 ^a
	Residue	24.412	161	0.152		
	Total	61.527	166			

^a. Predictors: (Constant), X5. Use of Technology, X1. Constant Training, X4. Access to Financing, X3. Logistics, X2. Business Management.

Source: Prepared by the author based on SPSS V26 results

V. CONCLUSIONS

This study confirms that constant training, business management, and access to financing are internal factors that

positively and significantly influence the competitiveness of small businesses in the retail sector in the state of Nuevo León, Mexico. Through multiple linear regression analysis, it was found that these variables together explain 59.1% of the variability in business competitiveness, with business management standing out as the strongest predictor in the model.

Conversely, when analyzing the logistics and technology use variables ($p = 0.184$ and $p = 0.056$, respectively), it was observed that both lacked predictive power regarding business competitiveness in the model. The former was definitively excluded, while the latter remained marginally above the accepted significance threshold. This suggests that, although these factors are relevant in other contexts and sectors, they are not decisive for the small retail businesses evaluated. These findings enrich the literature on competitiveness in regional environments, underscoring that, for this type of organization, professional management and access to financial resources are the truly essential elements.

The findings of this research are consistent with previous studies that have identified the importance of training and business management as drivers of competitiveness in small and medium-sized enterprises. The positive effect of access to financing also aligns with research conducted in similar Latin American contexts, where access to financial resources is a critical factor for competitive growth.

In contrast, the lack of significance of logistics and technology use can be explained by the profile of the companies studied, which belong to the retail sector and likely exhibit low levels of technological integration or less dependence on complex logistics processes compared to industrial or manufacturing sectors. These results suggest the need to foster the development of logistical and technological capabilities in these types of companies as a strategy to enhance their future competitiveness.

Finally, the results reinforce the importance of designing

public policies and support programs aimed at strengthening business training, facilitating access to financing, and

promoting continuous training as effective means to improve the competitiveness of small businesses in the retail sector in Nuevo León and similar regions.

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