

The Impact of Technological Innovation on the Financial Performance of Companies: A Logit Analysis*

El impacto de la innovación tecnológica en el desempeño financiero de las empresas: un análisis logit

Ana Karen Romero Sainz¹ , Deyanira Bernal Domínguez² 
Heilder Octavio Angulo Trujillo³ , Lidyeth Azucena Sandoval Barraza⁴ 

¹Universidad Autónoma de Sinaloa, Sinaloa-México, anaromero@uas.edu.mx, ²Universidad Autónoma de Sinaloa, Sinaloa-México, berde@uas.edu.mx, ³Universidad Autónoma de Sinaloa, Sinaloa-México, heider.angulo@uas.edu.mx, ⁴Universidad Autónoma de Sinaloa, Sinaloa-México, azucena_sandoval@uas.edu.mx

How to cite

Romero Sainz, A. K., Bernal Domínguez, D., Angulo Trujillo, H. O., & Sandoval Barraza, L. A. (2025). The Impact of Technological Innovation on the Financial Performance of Companies: A Logit Analysis. *Revista CEA*, 11(27), e3377. <https://doi.org/10.22430/24223182.3377>

ABSTRACT

Objective: To identify how technological innovation contributes to the financial performance of Small and Medium-Sized Enterprises (SMEs), offering a comprehensive perspective that underscores the importance of adopting this approach to enhance competitiveness in today's markets. This paper also seeks to examine how sector, firm age, and workforce size relate to increases in sales and assets.

Design/Methodology: The study followed a quantitative approach with an explanatory, correlational, cross-sectional, and descriptive scope, focusing on SMEs located in Sinaloa, Mexico. Data were collected through surveys administered to 149 companies. Pearson's correlation analysis and a logit model were applied to analyze the data and identify the relationships between variables and their influence on financial performance.

Findings: The results show that the companies under study attach significant importance to technology, as evidenced by their continuous adoption of technological innovations. It was also found that their employees possess technological knowledge and skills, which is positively associated with financial performance. Additionally, firms with a larger workforce tend to exhibit higher levels of technological competence.

Conclusions: SMEs acknowledge the relevance of technology for their growth and financial outcomes. This awareness stems from the social and economic changes brought about by globalization and the digital age, which together drive the use of emerging technologies that strengthen business management.

* The article is based on doctoral research on the influence of dynamic capabilities on organizational business growth, conducted at the Autonomous University of Sinaloa and funded by the Mexican Secretariat of Science, Humanities, Technology, and Innovation (Secithi).

Originality: This study provides empirical evidence that technological knowledge and skills, as well as a positive perception of technological innovation, are key factors contributing to strong financial performance, as reflected in higher income and asset growth.

Keywords: predictive models, technological innovation, financial performance, SMEs.

Highlights

- SMEs are a vital component of the global business ecosystem; therefore, promoting their development through technological innovation is essential for sustaining steady growth.
- Evidence suggests that SMEs integrating technological innovation into their strategic processes tend to perceive stronger financial performance.
- In Sinaloa, Mexico, organizations consider that continuous technology adoption and employees' technological competence are critical factors driving ongoing development and improving the financial performance of small enterprises.

RESUMEN

Objetivo: identificar cómo la innovación tecnológica contribuye al desempeño financiero de las pymes, al ofrecer una perspectiva integral que resalta la importancia de adoptar estas herramientas para fortalecer su capacidad de competir en el mercado actual, además conocer cómo se correlaciona el sector, la antigüedad y el número de trabajadores con el incremento en ventas y en activos.

Diseño/metodología: el estudio tuvo un enfoque cuantitativo, con un alcance explicativo, correlacional, transversal y descriptivo y se centró en las pymes de Sinaloa, México. La información fue recabada mediante encuestas aplicadas a 149 empresas; para el tratamiento de los datos se emplearon análisis de correlación de Pearson y un modelo logit, con el objetivo de identificar relaciones y explicar la influencia de las variables en el desempeño financiero.

Resultados: los hallazgos indican que las empresas le otorgan importancia a la tecnología, lo que se refleja en su adopción constante en innovación tecnológica. Asimismo, se identificó que los empleados poseen habilidades y conocimientos tecnológicos y ello se relaciona positivamente con su desempeño financiero. Finalmente, un número mayor de trabajadores se asocia con mayores habilidades tecnológicas.

Conclusiones: las pymes reconocen la importancia que merece la tecnología para su crecimiento y su desempeño financiero. Esta percepción responde a los cambios sociales y económicos derivados del proceso de globalización y el surgimiento de la era digital, lo cual impulsa el uso de tecnologías emergentes que fortalezcan la gestión empresarial.

Originalidad: el estudio aporta evidencia de que los conocimientos, las habilidades y la valoración positiva sobre la innovación tecnológica son factores que contribuyen a un correcto desempeño financiero que se manifiesta en un aumento en ingresos y activos.

Palabras clave: modelos predictivos, innovación tecnológica, desempeño financiero, pymes.

Highlights

- Las pymes constituyen una parte fundamental del tejido empresarial en el mundo; de ahí la relevancia de impulsar su desarrollo mediante la innovación tecnológica, que les permita mantener un crecimiento constante.
- Se ha demostrado que las pymes que incorporan como parte de su estrategia la innovación tecnológica tiene una mejor percepción en su desempeño financiero.
- Las organizaciones en Sinaloa, México, consideran que aspectos como la adopción constante de tecnología y el conocimiento tecnológico por parte de los empleados son factores que inciden en un desarrollo constante y mejoran en el desempeño financiero de las pequeñas organizaciones.

1. INTRODUCTION

Globalization has brought about profound transformations in societies, markets, and competencies, directly affecting organizations and forcing them to prioritize efficiency in their processes and optimize resources (Macías Loor et al., 2022). The effects of globalization are far-reaching and span political, social, economic, cultural, and technological dimensions, resulting in significant changes in both the business sphere and across countries as a whole (Radulović & Kostić, 2024).

The elimination of trade barriers between countries and the reduction of transportation costs associated with distance are prominent effects of globalization that have facilitated global business location and relocation processes. These modifications have been enabled by advances in transportation systems and the evolution of Information and Communication Technologies (ICT) (Luna et al., 2023).

In addition, globalization has driven a radical technological shift that compels companies to adapt rapidly to remain competitive. In other words, it has become a key factor enabling the swift adoption of new technologies (Eltayeb Elfaki & Ahmed, 2024). Complementarily, technological development has emerged as a fundamental tool for organizations, promoting their growth and facilitating their integration into a globalized environment (Correa-García & Vasquez-Arango, 2020).

Paula Yugsi et al. (2024) note that, since the early 21st century, technology has experienced unprecedented growth. Its adoption increased even more markedly during the COVID-19 pandemic, particularly in Latin American countries (KPMG Mexico, 2020). Studies such as Zahoor et al. (2022) suggest that agile adaptation and the ability to seize new opportunities were critical for coping with the disruptions brought by the pandemic. Thus, this period highlighted the importance of devising strategies to address crisis-driven challenges, especially those affecting consumers and the financial, technological, human, and operational management areas (Carpio-Gallegos & Miralles, 2021).

Given this context, innovation and technological development emerge as two of the most consequential changes introduced by globalization into the business sphere, forcing organizations to adapt continuously (Vărzaru & Bocean, 2024). Consequently, the cooperation between governments and companies in promoting technological inclusion becomes a key strategy for maintaining competitiveness and mitigating the negative effects of accelerated global change. Research also shows that companies investing in technological innovation are better able to adapt

to their market dynamics and achieve goals related to growth, competitiveness, and effective decision-making (Coello Tenemesa, 2021; Flores & Flores, 2021).

According to Vásquez Hernández et al. (2023), technological development and the advent of the digital era have transformed the world in recent decades. For this reason, the integration of emerging technologies into organizations seeks not only to boost productivity but also to provide innovative solutions and convert large volumes of information into valuable knowledge for decision-making (Paula Yugsi et al., 2024). Moreover, a company's capacity to absorb and assimilate external information strengthens its ability to introduce new products and processes that respond to market needs and sustain competitiveness (Heredia Bustamente et al., 2022).

Nonetheless, not all companies manage to adapt to globalization and adopt new technologies successfully (Skare & Riberio Soriano, 2021). For large corporations, this process is generally more achievable due to their greater financial resources, enhanced organizational capabilities, and advanced infrastructure. In contrast, Small and Medium-Sized Enterprises (SMEs) face challenges stemming from limitations in financial capital, technical expertise, and specialized personnel (Hervás-Oliver et al., 2021; Kim & Jin, 2024). These constraints hinder the implementation of modern technologies, placing many SMEs at a competitive disadvantage.

Sánchez Sulú et al. (2024) point out that SMEs play an important role in adopting new approaches in which technology becomes a key ally. However, not all SMEs have leveraged the opportunities offered by globalization to improve their production processes and outcomes. Many struggle to introduce product or service innovations or to adapt to changing customer demands (Trieu et al., 2023). Therefore, as SMEs are the most dynamic businesses in emerging economies—driving economic growth and job creation—it is essential to address the factors that limit their development, particularly the lack of technical and managerial skills and insufficient innovation, which often result in business failure (Barkley & Jokonya, 2024).

In summary, globalization entails both internal and external transformations that shape organizational innovation and technology adoption across companies of all sizes. Against this backdrop, the present study examines the importance and application of technological innovation in SMEs in Sinaloa, Mexico, through a predictive logistic regression model. The relevance of the study lies in the growing need for SMEs to adopt a strategic approach to innovation—both in developing new products and processes and in enhancing organizational competitiveness locally and internationally. The purpose is to provide a broader perspective on how these companies perceive and adapt to technological innovation, considering the limited number of studies on SMEs that identify the factors driving their growth (Faiz et al., 2024).

2. THEORETICAL FRAMEWORK

Characteristics of SMEs and the Importance of Innovation and Technology

According to data from the National Institute of Statistics and Geography (abbreviated INEGI in Spanish, 2021), SMEs represent 99.80% of all economic units in Mexico, contributing 52% of GDP and 70% of total employment. However, the characteristics of the SME labor market suggest that

employees experience lower quality of life, stability, and security than those in large firms. In addition, a wage gap persists between small and large companies (Prasanna et al., 2019).

Despite their importance, SME survival poses a major challenge in today's highly competitive environment (Olea-Miranda et al., 2016; Ragazou et al., 2022). In this context, several authors underscore the need for public policies that strengthen these businesses, emphasizing the value of promoting innovation, particularly in times of crisis (Baltodano-García & Leyva Cordero, 2020). In fact, innovation is widely recognized as a critical driver of SME growth and sustainability (Benavides Pupiales et al., 2024; Oluwatosin et al., 2024). Thus, the ability to innovate is essential for SMEs seeking to compete with larger and better-resourced companies (Saunila, 2020).

In this regard, Indrawati et al. (2020) identified five major constraints on SME innovation: insufficient government support, limited human resource quality, restricted access to funding, difficult economic conditions, and lack of strategic business partners. These barriers create a substantial gap relative to large firms, which typically possess stronger human and financial resources and, crucially, broader networks of strategic partners. As a result, large companies are better positioned to adopt innovation, supported by organizational capabilities and structures that allow them to overcome these limitations (Omrani et al., 2024).

To clearly address the innovation dimension, it is necessary to adopt a precise definition of the concept. For this reason, the study draws on the Oslo Manual (OECD, 2018), which since 2005 has defined innovation as:

the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations. A common feature of an innovation is that it must have been implemented. A new or improved product is implemented when it is introduced on the market. New processes, marketing methods or organisational methods are implemented when they are brought into actual use in the firm's operations (p. 56).

Cohen and Levinthan (1990), for their part, argue that innovation arises from the search for knowledge in the external environment. Once acquired, organizations combine it with internally developed expertise. In this sense, technological innovation emerges as one of the most relevant and visible forms of innovation, involving the application of technical knowledge to improve products, processes, and organizational structures. Technology has therefore taken on an increasingly important role in business management and has become a key instrument for enhancing competitiveness (Ibujés Villacís & Benavides Pazmiño, 2018). Moreover, its relevance is not limited to the present; it is expected to remain a fundamental tool for business development in the future (Roque Hernández et al., 2017).

Importantly, innovations do not need to be entirely new to the world; they only need to be new to the organizations adopting them, consistent with the Oslo Manual. In other words, product, process, organizational, and marketing innovations should be considered new or improved technologies when viewed from the company's perspective (Stundziene et al., 2024). As technology becomes increasingly widespread, it plays an ever more decisive role in creating business opportunities (Ramírez-Solis et al., 2022).

Technological progress-oriented innovation, in particular, is regarded as a key driver of organizational resilience and growth and as one of the fundamental pillars of business competitiveness (Garrido-Padra et al., 2024; Carvache-Franco et al., 2018). This form of innovation not only enhances operational efficiency and adaptability but also enables organizations to anticipate changes and respond agilely to the challenges of the global market. From this perspective, technological innovation is a strategic necessity for organizations aspiring to long-term survival.

Technological Innovation and Financial Performance in Organizations

Technological innovation is a strategic factor for organizational transformation and long-term sustainability, as it enables process optimization, creates added value, and enhances business competitiveness (Hamdouna & Khmelyarchuk, 2025). It is also closely linked to planning and financial performance because it supports more informed investment decisions, efficient resource allocation, and effective cost control—elements that strengthen organizational operations (Alvarez-Aros et al., 2022).

In recent years, SMEs have faced challenges such as the COVID-19 pandemic, which forced them to accelerate the adoption of technological innovations to mitigate negative impacts on financial performance (Malpica-Zapata, 2021). As technological influence on business activities continues to extend, organizations are compelled to evaluate the benefits of adopting new technologies (Awwad et al., 2025). The results of such evaluations must be based on indicators such as financial soundness, efficiency in achieving objectives, effective use of resources, and productivity in internal processes.

Financial planning, in this regard, involves projecting and strategically coordinating revenues, expenses, and investments to expand the organization's assets while ensuring operational feasibility (Bodie & Merton, 2004; Gitman & Zutter, 2016; Perdomo Moreno, 2002). The integration of technological tools into business processes, combined with adequate financial analysis and planning, helps companies anticipate market risks, maximize profitability, and adjust to current market conditions. Accordingly, technological use, mastery, and adoption are essential for companies seeking to adapt to changes in their environments (Remedi-Rumi & Arzuaga-Williams, 2024).

Therefore, financial planning and performance are closely related to SMEs' ability to achieve their financial objectives, including profitability, growth, and labor and innovation performance (Navarro Pérez et al., 2024). In addition, financial strategies and financial performance boost SMEs' competitiveness and productivity (Molina Ayala & Piedra Aguilera, 2024). Consequently, positive managerial perceptions of financial performance are associated with increased revenues and asset growth.

Similarly, aligned with Teece et al. (1997), organizations' capabilities to acquire new knowledge and develop competencies maximize their likelihood of improving financial performance, particularly in volatile and competitive environments. Recent studies likewise show that innovation is a key determinant of financial performance (Huang & Hui, 2018; Rosyidiana & Narsa, 2024).

Despite its importance, however, many SMEs remain resistant to change, especially when it comes to adopting new technologies. This resistance often stems from fears of job obsolescence and a limited understanding of the benefits offered by technological tools (Galarza-Sánchez, 2023). These challenges are further compounded by managerial barriers that, in many cases, hinder effective decision-making around technology adoption.

For this reason, SMEs must adopt innovation processes continuously, as their survival and growth depend directly on their capacity to adapt to dynamic and highly competitive environments (Nguyen et al., 2021). This adaptive capacity is ultimately reflected in financial performance indicators over time (Farida & Setiawan, 2022).

3. METHODOLOGY

In the first phase, a sample of 383 SMEs distributed across multiple municipalities in the state of Sinaloa, Mexico, was selected. The sample size was determined using the finite population formula, considering the 134,354 companies registered in the National Statistical Directory of Economic Units (abbreviated DENUE in Spanish) and classified according to the criteria established by the Official Gazette of the Federation. A 95% confidence level and a 5% margin of error were applied, assuming maximum variability ($p = 0.5$; $q = 0.5$). This formula yielded the required sample size, as shown in Equation 1:

$$n = (e^2(N - 1)) + (Z^2 * p * q)N * Z^2 * p * q \quad (1)$$

Where:

N : population size under study (134,354)

Z : confidence level (95%)

p : probability of success (0.5)

q : probability of failure (0.5)

e : estimated error (0.05)

n : sample (383)

In the second phase, a survey was administered to decision-makers from an intentional sample of companies. Although the target sample size was 383 companies, only 149 responses were obtained, representing 38.9% of the estimated total. This shortfall is primarily attributable to limited respondent availability and time constraints during data collection. However, these difficulties were exacerbated by the heightened insecurity in the state of Sinaloa, which intensified after September 2024 and restricted access to certain areas. Nonetheless, based on the results of this initial phase, subsequent stages of the study may expand the sample to reduce the margin of error and increase the precision of the findings.

Data collection was carried out using a structured nine-item questionnaire, designed and administered via Google Forms. The instrument was distributed to SME owners and managers who were knowledgeable about the requested information. The sampling frame was obtained from the database of INEGI, which provides updated company-level data by state, as well as DENUE, which includes information on sector, number of employees, company size, geographic location, and specific contact details such as responsible personnel, address, and email.

- A value of 1 was assigned to companies reporting improved financial performance based on both sales and assets. If both responses were positive, a value of 1 was recorded.

- A value of 0 was assigned to companies that did not report improved financial performance based on both sales and assets. If one or both responses were negative, a value of 0 was recorded.
- The independent variables included in the model, derived from technological innovation, were measured using a Likert scale.
- The moderating variables comprised the number of employees, company age, and economic sector.

Table 1 shows the questionnaire used.

Table 1. Questionnaire administered

Tabla 1. Cuestionario aplicado

Dimension	Item	Definition	Measurement
Financial performance	-The organization's revenues increase consistently each year. -The organization's assets have grown in proportion to its sales.	Effective management of resources across all areas of the organization to support informed decision-making and the achievement of objectives.	Yes = 1 No = 0
Technological innovation	-The organization consistently adopts technological innovation. -Employees possess technological knowledge and skills. -The organization recognizes the importance of technology for adapting to market changes. -The organization is competitive in technological innovation.	Innovation refers to the implementation of a new or significantly improved product (good or service), process, marketing method, or organizational method in business practices, workplace organization, or external relations.	<ul style="list-style-type: none"> • Strongly disagree • Disagree • Neither agree nor disagree • Agree • Strongly agree.
	- Number of employees		<ul style="list-style-type: none"> • 1 to 5 • 6 to 10 • 11 to 50 • 51 to 100 • More than 100
SME characteristics	- Company age		<ul style="list-style-type: none"> • 1 to 5 • 6 to 10 • 11 to 15 • 16 to 25 • More than 25
	- Economic sector		<ul style="list-style-type: none"> • Primary • Secondary • Tertiary

Source: Author's own work.

Subsequently, in the third phase, the instrument was subjected to expert evaluation using the Lawshe method. Through this technique, specialists assessed the relevance, clarity, and coherence of each item. The evaluation panel included national and international researchers from institutions such as the Universidad Nacional de Colombia and the Universidad Michoacana de San Nicolás de Hidalgo. After completing the expert review, a pilot test was conducted, followed by an assessment of the instrument's reliability.

Table 2 presents the content validity index for each item. As observed, all items achieved an acceptable level of agreement among expert judges, with acceptance rates ranging from 75% to 100%, which was sufficient to support their inclusion in the instrument.

Table 2. Content validity index
Tabla 2. Índice de validez del contenido

Item	Evaluator 1	Evaluator 2	Evaluator 3	Evaluator 4	Agreement	%
The organization's revenues increase consistently each year.	X	X	X	X	SÍ	100 %
The organization's assets have grown in proportion to its sales.	X	X		X	SÍ	75 %
The organization consistently adopts technological innovation.	X	X	X	X	SÍ	100 %
Employees possess technological knowledge and skills.		X	X	X	SÍ	75 %
The organization recognizes the importance of technology for adapting to market changes.	X	X	X	X	SÍ	100 %
The organization is competitive in technological innovation.	X		X	X	SÍ	75 %

Source: Author's own work.

The proposed model seeks to examine the relationship between technological innovation factors and the financial performance of SMEs. Specifically, the model posits that technology adoption, employees' technological knowledge, the importance attributed to innovation, and company-specific characteristics constitute key determinants of improved financial performance. Based on this assumption, the study hypotheses are defined as follows:

- H1:** Organizations that consistently adopt technology are more likely to improve their financial performance.
- H2:** Employees' technological knowledge and skills contribute to improved financial performance.
- H3:** Organizations that recognize the importance of technological innovation for adapting to market changes exhibit better financial performance.
- H4:** Competitive technological innovation fosters improved financial performance.
- H5:** SME characteristics influence financial performance.

Using the survey data, the fourth phase consisted of conducting a logistic regression analysis, which differs from simple regression in that it models the natural logarithm of event probabilities (Manríquez García et al., 2022). Multivariate techniques were also incorporated, as they offer valuable analytical approaches for studies on SMEs by integrating theoretical and statistical perspectives (Álvarez-Perdomo et al., 2022). Additionally, a Pearson correlation analysis was conducted to measure the strength and direction of associations between variables.

The fifth phase is described in detail in the results section, where the binary dependent variable was defined for model construction. The objective was to determine whether, based on technological innovation factors, managers or owners perceive a higher likelihood that their companies will achieve improved financial performance, considering that financial outcomes are today influenced by organizations' capacity to adopt and utilize ICT (Bojórquez Guerrero & Sifuentes Escobedo, 2022).

4. FINDINGS

As explained previously in the methodology, dichotomous items were used to assess respondents' perceptions of financial performance, while Likert-scale items captured their perceptions of technological innovation. The logistic regression model used is expressed as follows:

$$\text{Logit} \left(\frac{\pi}{1 - \pi} \right) = \beta_0 \text{Desempeño Financiero} + \beta_1 \text{adopción constante} + \beta_2 \text{Conocimientos tecnológicos} + \beta_3 \text{Importancia tecnológica} + \beta_4 \text{Competitividad} + \beta_5 \text{Sector} + \beta_6 \text{Antigüedad} + \beta_7 \text{Trabajadores} \dots \dots \dots$$

Where:

- β_0 : Financial performance
- β_1 : Consistent adoption
- β_2 : Technological knowledge
- β_3 : Importance of technology
- β_4 : Competitive technological innovation
- β_5 : Economic sector
- β_6 : Company age
- β_7 : Number of employees

Of the 149 companies surveyed, 10.7% belong to the primary sector, 12.1% to the secondary sector, and 77.2% to the tertiary sector. Additionally, 84.6% employ no more than 50 workers, and 88.5% have been operating for 15 years or less. Table 3 presents the descriptive statistics—specifically, the mean values of the responses. All mean scores exceed the midpoint of the respective scales, indicating general agreement with the statements, particularly those related to technological knowledge.

The descriptive results also reveal that 63.8% of companies report increases in both sales and assets, that is, enhanced financial performance. Moreover, all technological innovation items exhibit means greater than 3, reflecting a positive perception of consistent adoption, technological knowledge, importance of technology, and competitive technological innovation.

Table 3. Descriptive statistics

Tabla 3. Estadísticos descriptivos

	N.º	Minimum	Maximum	Mean	Deviation
Financial performance	149	.00	1.00	.6376	.48232
Consistent adoption	149	1.00	5.00	3.1457	1.36820
Technological knowledge	149	1.00	5.00	3.6510	1.17936
Importance of technology	149	1.00	5.00	3.5705	1.16396

	N.º	Minimum	Maximum	Mean	Deviation
Competitive innovation	149	1.00	5.00	3.6174	1.24985
Economic sector	149	1.00	3.00	2.5497	.76323
Company age	149	1.00	5.00	2.6623	1.34604
Number of employees	149	1.00	6.00	2.8609	1.65747
Valid N.º (listwise)					

Source: Author's own work.

Table 4 reports the model fit assessed using the Hosmer–Lemeshow test, which produced a chi-square value of 8.532 with 8 degrees of freedom and a p-value of 0.383. Because the p-value exceeds the 0.05 threshold, the null hypothesis cannot be rejected, indicating that the model adequately fits the observed data. Similarly, Table 5 shows additional measures of model fit, including a –2 log-likelihood of 149.472 and Cox–Snell and Nagelkerke pseudo R² values of 0.264 and 0.362, respectively. These coefficients indicate that the model accounts for approximately 26.4% to 36.2% of the variance in the dependent variable. Moreover, Table 6 presents the results of the proposed model.

Table 4. Hosmer-Lemeshow test

Tabla 4. Prueba de Hosmer y Lemeshow

Step	Chi-square	df	Sig.
1	8.532	8	.383

Source: Author's own work.

Similarly, Table 5 shows additional measures of model fit, including a –2 log-likelihood of 149.472 and Cox–Snell and Nagelkerke pseudo R² values of 0.264 and 0.362, respectively. These coefficients indicate that the model accounts for approximately 26.4% to 36.2% of the variance in the dependent variable. Moreover, Table 6 presents the results of the proposed model.

Table 5. Model Fit

Tabla 5. Ajuste del modelo

Step	–2 log-likelihood	Cox–Snell R ²	Nagelkerke R ²
1	149.472 ^a	.264	.362

Source: Author's own work.

Table 6. Results of the proposed model

Tabla 6. Resultados del modelo planteado

	B	Std. Error	Wald	df	Sig.	Exp(B)	
Step 1 ^a	Consistent adoption	.516	.214	5.821	1	.016	1.675
	Technological knowledge	.415	.188	4.888	1	.027	1.514
	Importance of technology	.438	.177	6.162	1	.013	1.550
	Competitive innovation	.010	.213	.002	1	.963	1.010
	Economic sector	.060	.266	.051	1	.821	1.062

	B	Std. Error	Wald	df	Sig.	Exp(B)
Company age	-.062	.162	.146	1	.702	.940
Number of employees	.131	.141	.854	1	.355	1.139
Constant	-4.363	1.291	11.417	1	.001	.013

Source: Author's own work.

Based on the results obtained from the proposed model—which was developed to evaluate the relationship between technological innovation and the financial performance of SMEs in Sinaloa—the research hypotheses were formulated and tested. The results were interpreted using the regression coefficients and their corresponding significance values. To begin, the constant (or intercept) represents the odds of the event occurring when all independent variables are equal to zero, and in this context refers to the baseline likelihood of observing improved financial performance.

As shown in Table 6, the model identifies three statistically significant predictors: consistent technology adoption ($B = 0.516$, $p = 0.016$), employees' technological knowledge ($B = 0.415$, $p = 0.027$), and perceived importance of technology ($B = 0.438$, $p = 0.013$). All three variables present $Exp(B)$ values greater than 1, indicating that they increase the odds of companies achieving improved financial performance.

The analysis of the independent variables begins with consistent technology adoption, which exhibits a positive and significant effect. This suggests that organizations are more likely to attain stronger financial performance when they constantly integrate new technologies into their processes. Similarly, employees' technological knowledge emerges as another significant predictor, underscoring the importance of developing human capital competencies related to technological innovation.

Furthermore, the perceived importance of technology also contributes positively to financial outcomes. Particularly, organizations in Sinaloa that place greater emphasis on the role of technology tend to report higher expectations of favorable financial performance. In contrast, competitiveness in technological innovation does not demonstrate statistical significance in the model. Likewise, the variables representing general SME characteristics—economic sector, company age, and number of employees—also fail to show significant effects.

These results allow for the evaluation of the study's hypotheses. H1, which proposed that firms consistently adopting technological innovation are more likely to improve their financial performance, is supported, as the variable exhibits a positive and significant effect ($p = 0.016$). H2 is also supported ($p = 0.027$), indicating that technological skills and knowledge contribute to stronger financial performance.

Similarly, H3 is supported by the results of the model ($p = 0.013$), confirming the positive association between the perceived importance of technology and financial performance. By contrast, H4 is not supported ($B = 0.010$, $p = 0.963$; $Exp(B) = 1.010$), as no statistically verifiable effect of competitive

technological innovation is identified on the financial performance of the SMEs included in the study. Finally, H5, which relates SME characteristics to financial performance, is also rejected.

According to the results presented in Table 7, the Pearson correlation analysis reveals statistically significant associations between the variables that explain technological innovation and the characteristics of the surveyed SMEs. Notably, company age shows a negative correlation with technology adoption (-0.196*), suggesting that older companies adopt new technologies less frequently. In contrast, the number of employees exhibits a positive correlation with technological knowledge (0.162*), indicating that companies with a larger workforce tend to possess greater technological knowledge.

Table 7. Correlations between variables

Tabla 7. Correlaciones entre variables

		Importance Technology	Competitive Innovation	Consistent Adoption	Technological Knowledge	Sector	Age	Employees
Importance Technology	Pearson correlation	1	.509**	.488**	.447**	.044	-.107	.050
	Significance (two-tailed)		.000	.000	.000	.591	.191	.541
	N	149	149	149	149	151	151	151
Competitive Innovation	Pearson correlation	.509**	1	.505**	.500**	.009	-.113	.137
	Significance (two-tailed)	.000		.000	.000	.909	.171	.097
	N	149	149	149	149	149	149	149
Consistent Adoption	Pearson correlation	.488**	.505**	1	.365**	-.039	-.196*	-.084
	Significance (two-tailed)	.000	.000		.000	.633	.016	.310
	N	149	149	149	149	149	149	149
Technology Knowledge	Pearson correlation	.447**	.500**	.365**	1	-.071	-.113	.162*
	Significance (two-tailed)	.000	.000	.000		.392	.169	.048
	N	149	149	149	149	149	149	149
Sector	Pearson correlation	.044	.009	-.039	-.071	1	-.104	-.145
	Significance (two-tailed)	.591	.909	.633	.392		.205	.076
	N	149	149	149	149	151	151	151
Age	Pearson correlation	-.107	-.113	-.196*	-.113	-.104	1	.290**
	Significance (two-tailed)	.191	.171	.016	.169	.205		.000
	N	149	149	149	149	151	151	151
Employees	Pearson correlation	.050	.137	-.084	.162*	-.145	.290**	1
	Significance (two-tailed)	.541	.097	.310	.048	.076	.000	
	N	149	149	149	149	151	151	151

** . Correlation is significant at the 0.01 level (two-tailed).

* . Correlation is significant at the 0.05 level (two-tailed).

Source: Author's own work.

5. DISCUSSION

The resource-based view and the innovation theory provide the foundations for understanding innovation and technology as strategic resources that enable organizations of any size to adapt, differentiate, and achieve long-term sustainability. Accordingly, companies seeking to build competitive strategies must consider the implications of their resources and capabilities to determine how to meet their objectives (Cardona Marín & Franco Ruiz, 2024). The resource-based view, in particular, emerged from the premise that competitive advantage is derived from internal factors (Rueda Sánchez et al., 2022).

Innovation has long been recognized as a strategic driver of growth, sustainability, competitiveness, and enhanced benefits (Beltrán-Ríos et al., 2018; Kato-Vidal, 2019). Technology plays a central role in this process, enabling innovation in products and services—an essential element of differentiation in increasingly competitive markets (Martínez Ávila, 2022). For this reason, competitive pressure becomes a determinant of technological innovation adoption (Frogeri et al., 2021; Ramdani et al., 2013).

Mexico, one of the world's largest emerging economies, has sought to strengthen its economic development by promoting innovation (Martínez Ávila, 2022). Nevertheless, SMEs continue to face challenges in managing innovation and technology, partly due to their resistance to change, which makes them especially vulnerable in a globalized economic environment. As noted by Porto-Gomez et al. (2019), the country still lacks a functional innovation system.

In the case of Sinaloa, Salaiza et al. (2020) report sustained growth in the creation of SMEs focused on providing services, generating employment, and dynamizing the economy. Consequently, implementing strategies that leverage the benefits of innovation is essential. SMEs with strong technological capabilities and those that adopt innovative and sustainable business models tend to be more competitive and profitable over longer periods (Valdez-Juárez & Castillo-Vergara 2021). For SMEs in Sinaloa, an innovation-oriented culture, the generation of new concepts and knowledge, and the integration of technological tools contribute not only to improved financial outcomes but also to enhanced learning processes (Vázquez Rueda et al., 2024).

Given this context, organizations should prioritize strategies such as continuous employee training programs, learning platforms, hands-on workshops on digital skills, and, most importantly, the internal promotion of an innovation culture. Digital transformation, in general, can significantly enhance SMEs' operational efficiency, agility, and ability to adapt to market changes (Morales Pulido & Velázquez Ugalde, 2023). Likewise, the role of employees should not be overlooked: Implementing effective strategies to facilitate their adoption of technological innovation, reduce resistance to change, and optimize financial resources is critical (Maldonado-Nova, 2022). In other words, human capital must be recognized as a key factor in innovation and technology management (Kammerer David & Murgas Téllez, 2024). Consequently, training programs on innovation become essential to meeting evolving market demands (Calle Herencia, 2022).

Thus, the present study confirms the importance that SMEs in Sinaloa assign to technology, as reflected in their increased sales and assets. Thus, the decision to adopt—or not adopt—technology becomes a crucial component of SME growth and survival strategies (Omrani et al., 2024). The

practical contribution of this research lies in its implications for designing public policies aimed at promoting the introduction of technological innovation. The relationships identified among the analyzed variables suggest that innovation development strategies—such as strengthening technological education and creating targeted incentives—may serve as a foundation for fostering technological innovation within organizations (Albarrasin Reinoso et al., 2023).

For future research, incorporating detailed financial information from SMEs would enable more thorough quantitative analyses based on indicators such as Return on Equity (ROE), Return on Assets (ROA), and Return on Sales (ROS), thereby deepening the assessment of financial performance. It is also recommended to examine specific sectors and expand the sample size to enhance the representativeness and robustness of the results. Furthermore, longitudinal studies would make it possible to determine how these variables evolve over time, offering a more comprehensive understanding of the factors that influence SMEs' adoption of technological innovation.

6. CONCLUSIONS

The main limitations of this study, based on a sample of 149 companies located in the state of Sinaloa, Mexico, arise from the specific characteristics of the sector analyzed and from the fact that the initially targeted sample size was not fully achieved. Nonetheless, given the similarity of the challenges typically faced by companies of this size and the particular conditions of those operating in the state, this study could be replicated in other Mexican states and even in other Latin American countries.

The results provide evidence that SMEs in Sinaloa acknowledge the importance of technology for achieving solid financial performance—particularly in light of the social and economic transformations brought about by globalization and the digital era, which increasingly encourage the implementation of emerging technologies that support improved business management.

The study confirms that SMEs that adopt technological innovation more consistently, and whose employees possess technological knowledge, tend to achieve better financial outcomes. Moreover, the findings indicate that organizations with a larger workforce exhibit higher levels of technological knowledge, highlighting the need to strengthen innovation-oriented cultures in smaller companies.

Finally, business growth and national economic development cannot be fully understood without recognizing the critical role of technology. Innovation not only advances technological capabilities but also improves the production of goods and services; increases the efficiency of machinery, equipment, and personnel; and strengthens commercial relations among companies and countries. More specifically, innovation fosters the development of new organizational capabilities, particularly those related to human capital and employee knowledge.

CONFLICTS OF INTEREST

The authors declare that they have no financial, professional, or personal conflicts of interest that could have inappropriately influenced the results or interpretations presented in this study.

AUTHORS' CONTRIBUTIONS

All authors have made significant contributions to the development of this project, as specified below:

Ana Karen Romero Sainz: Data collection (surveys), writing, data curation, formal analysis, editing, and review.

Deyanira Bernal Domínguez: Data collection (surveys), writing, editing and review of the methodology, and validation.

Heilder Octavio Angulo Trujillo: Data collection (surveys), writing, editing, review of conclusions, and investigation.

Lidyeth Azucena Sandoval Barraza: Data collection (surveys), writing, editing, and review.

REFERENCES

- Albarrasin Reinoso, M. V., Jacome Alarcon, L. F., Mora Carpio, W. T., & Jimenez Gonzales, J. P. (2023). La innovación tecnológica en la transformación hacia modelos de negocios socio productivos y sostenibles. *Journal of Science Research*, 8(CIID-EQ-2023), 46-64. <https://revistas.utb.edu.ec/index.php/sr/article/view/2981>
- Alvarez-Aros, E. L., Bernal-Torres, C. A., & Sánchez Tovar, Y. (2022). Colaboración externa de la innovación abierta y desempeño financiero de las pymes en Tamaulipas, México. *Revista de Administração de Empresas*, 62(3). <https://doi.org/10.1590/s0034-759020220301>
- Álvarez-Perdomo, P. E., Tamayo Saborit, M., & Govea Vilcacundo, J. L. (2022). Técnicas multivariadas: una contribución al análisis económico financiero en PYMES bananeras ecuatorianas. *Revista Universidad y Sociedad*, 14(4). http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2218-36202022000400475&lng=es&nrm=iso
- Awwad, M. S., Abuhommous, A. A., & Adaileh, A. M. (2025). Unravelling the relationship between absorptive capacity, innovation, and financial performance: A longitudinal study. *International Journal of Innovation Studies*, 9(2), 116-128. <https://doi.org/10.1016/j.ijis.2025.02.001>
- Baltodano-García, G., & Leyva Cordero, O. (2020). La productividad laboral: Una mirada a las necesidades de las Pymes en México. *Revista Ciencia Jurídica y Política*, 6(11), 15-30. <https://doi.org/10.5377/rcijupo.v6i11.11228>
- Beltrán-Ríos, J. A., López-Giraldo, J. A., & Vélez-Bernal, O. I. (2018). Relación entre liderazgo e innovación en las pymes de la comuna once de Medellín. *Clío América*, 12(23), 52-61. <https://doi.org/10.21676/23897848.2616>

- Barkley, E., & Jokonya, O. (2024). Factors Affecting SMEs Emerging Technologies Adoption in Developing Countries: A Literature Review. *Procedia Computer Science*, 239, 1966-1973. <https://doi.org/10.1016/j.procs.2024.06.381>
- Benavides Pupiales, L. E., Goyes Eraso, S. L., & López Díaz, V. H. (2024). Estrategias de innovación orientadas a la supervivencia de las pymes en tiempos de crisis: una revisión sistemática de literatura. *Aglaia*, 15(1), 40-54. <https://revistas.uninunez.edu.co/index.php/aglala/article/view/2412>
- Bodie, Z., & Merton, R. C. (2004). *Finanzas*. Pearson Education.
- Bojórquez Guerrero, L. P., & Sifuentes Escobedo, J. J. (2022). El uso de las tecnologías de información y comunicación y su relación con en el desempeño organizacional de pymes del estado de Aguascalientes, México. *Consensus-Santiago*, 6(21), 60-81. <https://pragmatikasolutions.com/consensus/index.php/consensus/article/view/116>
- Calle Herencia, C. A. (2022). Transformación digital y su importancia en las pymes. *Iberoamerican Business Journal*, 5(2), 64-81. <https://doi.org/10.22451/5817.ibj2022.vol5.2.11059>
- Cardona Marín, S., & Franco Ruiz, T. (2024). Ponencia: Teoría de recursos y capacidades. *Revista de Estudiantes de Administración de Empresas*, (13), 185-208. <https://revistas.unal.edu.co/index.php/ensayos/issue/view/6181>
- Carvache-Franco, O., Gutiérrez Candela, G., & Frías Casco, C. (2018). Incidencia de la innovación y la tecnología en el desarrollo competitivo de las pequeñas y medianas empresas (pymes) exportadoras de Guayas-Ecuador. *Revista Espacios*, 39(47). <https://www.revistaespacios.com/a18v39n47/18394737.html>
- Coello Tenemesa, D. D., Santander Macías, K. A., Zambrano Quijije, W. V., & Cedeño Coya, J. Y. (2021). Innovación tecnológica y su impacto en el desarrollo de las microempresas por covid-19. *Ciencia Latina Revista Científica Multidisciplinar*, 5(4), 4576-4590. https://doi.org/10.37811/cl_rcm.v5i4.641
- Cohen, W. M., & Levinthan, D. A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, 35(1), 128-152. <https://doi.org/10.2307/2393553>
- Correa-García, J., & Vázquez-Arango, L. (2020). Desempeño ambiental, social y de gobierno (ASG). *Revista Facultad de Ciencias Económicas*, 28(2), 67-83. <https://doi.org/10.18359/rfce.4271>
- Del Carpio-Gallegos, J., & Miralles, F. (2021). The impact of collaboration networks on technological innovation in firms. *Retos*, 11(22), 315-335. <https://doi.org/10.17163/ret.n22.2021.08>
- Eltayeb Elfaki, K., & Ahmed, E. M. (2024). Digital technology adoption and globalization innovation implications on Asian Pacific green sustainable economic growth. *Journal of Open Innovation: Technology, Market, and Complexity*, 10(1), 100221. <https://doi.org/10.1016/j.joitmc.2024.100221>
- Faiz, F., Le, V., & Masli, E. K. (2024). Determinants of digital technology adoption in innovative SMEs. *Journal of Innovation y Knowledge*, 9(4), 100610. <https://doi.org/10.1016/j.jik.2024.100610>

- Farida, I., & Setiawan, D. (2022). Business Strategies and Competitive Advantage: The Role of Performance and Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 163. <https://doi.org/10.3390/joitmc8030163>
- Flores, M. G., & Flores, J. D. (2021). Impacto de la globalización en las estrategias de negocios en las empresas ecuatorianas. *E-IDEA Journal of Business Sciences*, 3(11), 1-11. <https://doi.org/10.53734/eidea.vol3.id88>
- Frogeri, R. F., Pardini, D. J., Cardoso, A. M. P., & Júnior, P. dos. S. (2021). Decision archetypes in the information technology governance: Reflections concerning small and medium-sized enterprises. *REGEPE Entrepreneurship and Small Business Journal*, 10(2), e1912. <https://doi.org/10.14211/regepe.e1912>
- Galarza-Sánchez, P. C. (2023). Adopción de Tecnologías de la Información en las PYMEs Ecuatorianas: Factores y Desafíos. *Revista Científica Zambos*, 2(1), 21-40. <https://doi.org/10.69484/rcz/v2/n1/36>
- Garrido-Prada, P., Romero-Jordán, D., & Delgado-Rodríguez, M. J. (2024). Exploring SMEs' innovation investment strategy to increase innovation output in economic crises. *Journal of Engineering and Technology Management*, 72, 101816. <https://doi.org/10.1016/j.jengtecman.2024.101816>
- Gitman, L. J., & Zutter, C. J. (2016). *Principios de Administración Financiera*. Pearson.
- Hamdouna, M., & Khmelyarchuk, M. (2025). Technological Innovations Shaping Sustainable Competitiveness—A Systematic Review. *Sustainability*, 17(5), 1953. <https://doi.org/10.3390/su17051953>
- Heredia Bustamante, J. A., Aguilar Talamante, P., & Leyva Carreras, A. B. (2022). Principales desafíos de las pymes frente a la crisis provocada por la pandemia de COVID-19. *Revista de Investigación Académica Sin Frontera: División de Ciencias Económicas y Sociales*, 37(15). <https://doi.org/10.46589/rdiasf.vi37.438>
- Hervás-Oliver, J. L., Parrilli, M. D., Rodríguez-Pose, A., & Sempere-Ripoll, F. (2021). The drivers of SME innovation in the regions of the EU. *Research Policy*, 50(9), 104316. <https://doi.org/10.1016/j.respol.2021.104316>
- Huang, J., & Hui, Y. (2018). How resource alignment moderates the relationship between environmental innovation strategy and green innovation performance. *Journal of Business y Industrial Marketing*, 33(3), 316-324. <https://doi.org/10.1108/JBIM-10-2016-0253>
- Ibujés Villacís, J. M., & Benavides Pazmiño, M. A. (2018). Contribution of technology to the productivity of small and medium-sized enterprises in the textile industry in Ecuador. *Cuadernos de Economía*, 41(115), 140-150. <https://doi.org/10.1016/j.cesjef.2017.05.002>
- Indrawati, H., Caska, & Suarman. (2020). Barriers to technological innovations of SMEs: how to solve them? *International Journal of Innovation Science*, 12(5), 545-564. <https://doi.org/10.1108/IJIS-04-2020-0049>

- INEGI. (2021). *El INEGI presenta los resultados del estudio sobre la demografía de los negocios 2021*. Comunicado de prensa núm. 790/21. 21 de diciembre de 2021. https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2021/EDN/EDN_2021.pdf
- Kammerer David, M. I., y Murgas Téllez, B. (2024). Technological innovation from a system dynamics approach. *Región Científica*, 3(1), 2024217. <https://doi.org/10.58763/rc2024217>
- Kato-Vidal, E. L. (2019). Productivity and innovation in small and medium enterprises. *Estudios Gerenciales*, 35(150), 38-46. <https://doi.org/10.18046/j.estger.2019.150.2909>
- Kim, J., & Jin, W. (2024). Impact of digital capabilities on entrepreneurial performance in SMEs. *Journal of Innovation & Knowledge*, 9(4), 100609. <https://doi.org/10.1016/j.jik.2024.100609>
- KPMG en México. (2020). *Panorama de la innovación en México y Centroamérica*. <https://assets.kpmg.com/content/dam/kpmg/pa/pdf/de-panorama-innovacion-mx-centroamerica.pdf>
- Luna, J., Escobar, Á., & Caraballo, A. (2023). La importancia de la innovación en los procesos de relocalización empresarial: una revisión de la literatura. *Encuentros*, 21(1), 74-91. <http://ojs.uac.edu.co/index.php/encuentros/article/view/3010>
- Macías Loor, N., Intriago Cedeño, M. E., & Arteaga García, M. (2022). La tecnología en la producción de las pymes agrícolas de Portoviejo. *ECA Sinergia*, 13(2), 95-106. https://doi.org/10.33936/eca_sinergia.v13i2.4386
- Maldonado-Nova, V. (2022). El Rol del Talento Humano en la Transformación Digital de las Empresas Ecuatorianas. *Revista Científica Zambos*, 1(2), 34-50. <https://doi.org/10.69484/rcz/v1/n2/26>
- Malpica-Zapata, W. A. (2021). Desempeño financiero de las organizaciones en tiempos de pandemia: Evidencia en las pymes del sector construcción colombiano. *Regional and Sectoral Economic Studies*, 21(2), 79-100. <https://www.usc.es/economet/reviews/eers2125.pdf>
- Manríquez García, N., Lara López, F., Quintero Rodríguez, J. O., & Aguirre Rodríguez, T. de. J. (2022). Factores determinantes de la intención de rotación laboral en México: evidencia empírica mediante modelo logit. *Cimexus*, 18(1), 138-152. <https://dialnet.unirioja.es/servlet/articulo?codigo=8827551>
- Martínez Ávila, M. (2022). Competitive advantage and knowledge absorptive capacity: The mediating role of innovative capability. *Journal of the Knowledge Economy*, 13(1), 185-210. <https://doi.org/10.1007/s13132-020-00708-3>
- Molina Ayala, P. C., & Piedra Aguilera, M. A. (2024). Estudio del impacto de estrategias financieras en la sostenibilidad y productividad de las PYMES. *UDA AKADEM*, (14), 11-51. <https://revistas.uazuay.edu.ec/index.php/udaakadem/article/view/832>
- Morales Pulido, M. I., & Velázquez Ugalde, L. (2023). La transformación digital como herramienta para la innovación en una PyME de seguridad tecnológica. *LATAM Revista Latinoamericana de Ciencias Sociales y Humanidades*, 4(2), 5195-5205. <https://doi.org/10.56712/latam.v4i2.976>

- Navarro Pérez, P. A., Melgarejo, Z., & Vera-Colina, M. A. (2024). Gestión empresarial y desempeño en las Pymes desde la mirada de las finanzas comportamentales. Una Revisión Sistemática de la Literatura. *Innovar*, 34(94), e116809. <https://doi.org/10.15446/innovar.v34n94.116809>
- Nguyen, H., Hoang, T., Tran, M., Hai, T., Nguyen, Y., Dinh, D., & Truong, D. D. (2021). The Influence of Competitive Advantage on Financial Performance: A Case Study of SMEs in Vietnam. *Journal of Asian Finance, Economics and Business*, 8(5), 335-0343. <https://doi.org/10.13106/jafeb.2021.vol8.no5.0335>
- Omrani, N., Rejeb, N., Maalaoui, A., Dabic, M., & Kraus, S. (2024). Drivers of Digital Transformation in SMEs. *IEEE Transactions on Engineering Management*, 71, 5030-5043. <https://doi.org/10.1109/TEM.2022.3215727>
- OECD. (2018). *Oslo Manual 2018*. <https://doi.org/10.1787/9789264304604-en>
- Olea-Miranda, J., Contreras, O. F., & Barcelo-Valenzuela, M. (2016). Capacity of knowledge absorption as a competitive advantage for SME insertion into global value chains. *Estudios Gerenciales*, 32(139), 127-136. <https://doi.org/10.1016/j.estger.2016.04.002>
- Oluwatosin, A.-A., Ogadimma Ihechere, A., & Idemudia, C. (2024). Transformational leadership in SMEs: Driving innovation, employee engagement, and business success. *World Journal of Advanced Research and Reviews*, 22(3), 1894-1905. <https://doi.org/10.30574/wjarr.2024.22.3.1888>
- Paula Yugsi, A. E., Toapanta Tulcan, E. A., & Flores Lagla, G. A. (2024). Tecnologías emergentes para las pymes en los cantones Sigchos y Latacunga. *Visionario Digital*, 8(3), 118-137. <https://doi.org/10.33262/visionariodigital.v8i3.3133>
- Perdomo Moreno, A. (2002). *Planeación financiera para épocas normal y de inflación*. International Thomson Editores.
- Prasanna, R. P. I. R., Jayasundara, J. M. S. B., Naradda Gamage, S. K., Ekanayake, E. M. S., Rajapakshe, P. S. K., & Abeyrathne, G. A. K. N. J. (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>
- Porto-Gomez, I., Zabala-Iturriagagoitia, J. M., & Leydesdorff, L. (2019). Innovation systems in México: A matter of missing synergies. *Technological Forecasting and Social Change*, 148, 119721. <https://doi.org/10.1016/j.techfore.2019.119721>
- Radulović, M., & Kostić, M. (2024). Globalization and economic growth in Western Balkan countries. *Regional Science Policy y Practice*, 16(8), 100031. <https://doi.org/10.1016/j.rspp.2024.100031>
- Ragazou, K., Passas, I., Garefalakis, A., & Dimou, I. (2022). Investigating the Research Trends on Strategic Ambidexterity, Agility, and Open Innovation in SMEs: Perceptions from Bibliometric Analysis. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 119. <https://doi.org/10.3390/joitmc8030118>

- Trieu, H. D. X., Van Nguyen, P., Nguyen, T. T. M., Vu, H. T. M., & Tran, K. T. (2023). Information technology capabilities and organizational ambidexterity facilitating organizational resilience and firm performance of SMEs. *Asia Pacific Management Review*, 28(4), 544-555. <https://doi.org/10.1016/j.apmr.2023.03.004>
- Valdez-Juárez, L. E., & Castillo-Vergara, M. (2021). Technological Capabilities, Open Innovation, and Eco-Innovation: Dynamic Capabilities to Increase Corporate Performance of SMEs. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 8. <https://doi.org/10.3390/joitmc7010008>
- Vărzaru, A. A., & Bocean, C. G. (2024). Digital Transformation and Innovation: The Influence of Digital Technologies on Turnover from Innovation Activities and Types of Innovation. *Systems*, 12(9), 359. <https://doi.org/10.3390/systems12090359>
- Vásquez Hernández, L. A., Díaz Álzate, J. C., Betancur Aricapa, Y. S., & Reyes Rojas, G. E. (2023). Transformación Digital un Reto para las Pymes: Articulación de TIC -Tecnología de la Información- en las Pequeñas Empresas (Pymes) del Sector Manufacturero de Risaralda. *Ciencia Latina Revista Científica Multidisciplinar*, 7(5), 5314-5337. https://doi.org/10.37811/cl_rcm.v7i5.8128
- Vázquez Rueda, L., Martínez Noriega, R. I., & Maciel Soto, C. P. (2024). Factores de innovación determinantes en el desempeño de las pymes de un clúster industrial para escenarios complejos. En J. G. I. Gómez Romero, y F. M. Villarreal Solís (coords.), *Gestión financiera desarrollo económico y sustentabilidad de las organizaciones en la era postcovid* (pp. 81-94). Editorial UJED.
- Zahoor, N., Golgeci, I., Haapanen, L., Ali, I., & Arslan, A. (2022). The role of dynamic capabilities and strategic agility of B2B high-tech small and medium-sized enterprises during COVID-19 pandemic: Exploratory case studies from Finland. *Industrial Marketing Management*, 105, 502-514. <https://doi.org/10.1016/j.indmarman.2022.07.006>

REVISTA
cea | 10
AÑOS

SE PARTE DE
NUESTRA COMUNIDAD EN

 [Sistema de Revistas Científicas ITM](#)

 [@sistemaderevistasITM](#)

 [@sistemaderevistasITM](#)