Determining factors in the closure of MSMEs in the municipality of San Pedro Cholula: an analysis of the effect of innovation strategies.

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Abstract - *MSMEs represent a valuable source of employment; however, they are adversely affected by their high closure rate. Typically, these enterprises tend to lack strategic planning and competitiveness. Furthermore, the lack of managerial skills on the part of senior management can weaken the ability of MSMEs to face market challenges, adapt to changes, and maintain competitive advantages. In the present study, the innovation strategies employed by directors of MSMEs in the Municipality of San Pedro Cholula, Mexico were analyzed, comparing open and closed businesses. The results demonstrate statistical differences in the means for items related to the innovation of their organizational structure, the incorporation of customer suggestions in the development of innovative products or services, participation in events and activities related to the business, and particularly in the offering of innovative products or services that allow them to stand out in the market.*

Key Words: Innovation, MSMEs, Closed enterprises, Open enterprises, ANOVA,

1.INTRODUCTION

The economic development of Latin American countries is characterized by persistent inequality, an intrinsic phenomenon in this region [1]. Micro, small, and medium enterprises (MSMEs) undoubtedly emerge as a driving force in the economy, not so much in terms of the number of economic units or the volume of employed personnel but for their significant role in consolidating the efforts of numerous micro-entrepreneurs who have managed to survive constant environmental changes [2].

Although it is undeniable that MSMEs constitute a valuable source of employment, they are affected by their closure rate [3]. According to the National Institute of Statistics and Geography (INEGI) [4], between May 2019 and June 2021, a total of 1,200,000 small and medium enterprises were established in Mexico, while 1,600,000 closed their doors permanently. These data reveal significant sustainability challenges in MSMEs. Additionally, data provided by the Center for the Development of Business Competitiveness reveal that a concerning 75% of Mexican micro, small, and medium enterprises permanently close before reaching two years of operation [5]. This high rate of business mortality highlights the need to comprehensively address and analyse the factors contributing to the failure of these enterprises.

These alarming figures underscore the need to identify and comprehend the specific challenges faced by MSMEs in Mexico, to provide them with more effective support and promote their long-term survival and growth.

It is important to highlight that many Latin American MSMEs lack access to updated and accurate data on market demand and trends, which hinders strategic decision-making. Additionally, the inability to leverage economies of scale and the lack of access to new technologies and organizational methods also impede the growth and competitiveness of MSMEs [6]. The adoption of new technologies, such as e-commerce and automation, can enhance the efficiency and productivity of these enterprises, but their implementation is often limited due to financial constraints and a lack of knowledge.

In addition to these barriers, excessive bureaucracy and rigid labor markets also pose significant challenges for MSMEs in Latin America [7]. Complex and costly bureaucratic processes hinder the establishment and operation of new enterprises, leading to the prevalence of informality and tax evasion. Furthermore, labor market rigidity limits hiring and firing flexibility, making it difficult for businesses to adapt to changes in demand and market conditions. These institutional and regulatory barriers need to be addressed to foster an enabling environment for the development of MSMEs and job creation in the region [8].

It is important to note that these barriers also hinder the promotion and expansion of export capabilities for MSMEs, relegating them to remain as small-scale business entities that face high transaction costs and elevated insolvency rates [9].

Therefore, conducting an analysis of internal factors within organizations could provide them with a crucial strategic capacity to achieve a differentiated position in the market, thereby supporting their survival [10].

In today's business environment, characterized by its dynamic and uncertain nature, companies are compelled to develop and implement more effective strategies across their various functional areas, with a focus on aspects such as growth, social responsibility, and innovation [11].

However, MSMEs are the ones in a more vulnerable position and face greater uncertainty when dealing with these

changes. Despite their crucial role as an engine of the economy and job creators, these enterprises often lack strategic planning and competitiveness. As a result, in many cases, they experience premature closures even before reaching five years of operation. In the context of the current globalization and trade openness, MSMEs in the service sector face intense competition [12].

Unfortunately, many of these companies fail to remain in the market for a long time due to various factors related to their administrative management [13]. In the specific case of MSMEs in Mexico, a lack of competitiveness is evident. These enterprises struggle to sustain themselves in the market because they rely on service quality as their main success factor, neglecting cost reduction and sales growth, to name just a few examples [14].

Because of the aforementioned factors, MSMEs ultimately choose to close, which directly impacts the country's economic recovery capacity. This demonstrates that poor management and the lack of effectiveness in seeking optimal solutions to sustain the operations of these enterprises can quickly lead them to bankruptcy, causing economically and socially negative impacts [15].

Innovation is a complex and systemic phenomenon that involves multiple factors and actors, and it heavily relies on the relationships between them and their ability to interact. Its power and complexity are such that it cannot be analysed in a linear manner, as it goes beyond the mere sum of its individual components [16].

The top management in an MSME has the responsibility to make strategic decisions, establish clear objectives, coordinate resources, and lead the team. Their ability to identify opportunities, manage change, establish strong relationships, and adapt to the business environment is crucial for the long-term success of the company. The lack of managerial virtues or skills from the top management can weaken the MSME's capacity to face market challenges, adapt to changes, and maintain a competitive advantage [17].

The inherent complexity in examining the phenomenon of bankruptcy in organizations lies in the underlying conception of such an event, as well as the difficulties associated with locating business owners and the lack of clarity on the part of entrepreneurs when identifying the reasons or circumstances that led to the bankruptcy or closure of their businesses [18].

The comparative study of innovation strategies employed in MSMEs by their directors, considering both open and closed businesses in the municipality of San Pedro Cholula, is of great importance to both local and state authorities. This research will enable a deep analysis and understanding of the differences and similarities in the innovation strategies implemented by directors. Therefore, quantitative research

on these phenomena can contribute to the formulation of more effective policies and programs to promote innovation in the business sector, by offering a more precise insight into the specific challenges and opportunities faced by MSMEs in the local context [19].

Furthermore, framing the study within the context of a municipality, such as the municipality of San Pedro Cholula, allows us to examine the impact of socio-economic, cultural, and regional factors on the innovation strategies of MSMEs. The comparative analysis between open and closed businesses in this specific geographic context provides a more comprehensive and relevant framework for understanding innovation patterns and dynamics in the local environment [20]. This knowledge can be highly valuable for both entrepreneurs and policymakers, as it facilitates the identification of successful practices and the implementation of appropriate measures to drive innovation and economic growth in the municipality of San Pedro Cholula.

The purpose of this study is to present strategies that enable influencing business growth through the analysis of factors contributing to the sustainability of microenterprises in the municipality of San Pedro Cholula, Puebla, Mexico. To achieve this goal, a sample of 416 companies categorized as open businesses and a sample of 127 companies categorized as closed businesses were established. These companies were administered a questionnaire, from which the 8 items analysed and presented in this study were extracted.

2.METHODS

The present study employed a data collection methodology through surveys to obtain quantitative information, which was later analyzed and presented in the form of statistical tables. The research instrument used in this study was designed by RELAYN (Latin American Network of Administration and Business) and was administered to managers of MSMEs belonging to the municipality of San Pedro Cholula, Puebla, Mexico, who play a key role in strategic decision-making, during the year 2019.

Descriptive statistical calculations were performed to analyze the collected data. Subsequently, a one-way analysis of variance (ANOVA) test was conducted with a 95% confidence level.

To conduct comparative analyses between items, the sample size was determined considering a 95% confidence level and a 5% margin of error, considering a population of 9,018 economic units according to data from INEGI in 2016, located in the municipality of San Pedro Cholula. It was determined that at least 369 valid surveys were required. In the present study, 416 companies were analyzed, encompassing a suitable range of sample size and meeting the minimum sample size requirements. The information from the MSMEs in the municipality was collected using an instrument developed by Posada et al. [21]. The data collection process

was facilitated with the support of a group of students from the *Universidad Politécnica de Puebla* (UPPuebla).

Surveys were administered to the directors of the MSMEs using a probabilistic sampling method to gather information from the MSMEs in the municipality. The instrument used consists of 8 items in total. In this study, a 5-point Likert scale was employed, where the values correspond to the following responses: Don't know/not applicable (1), strongly disagree (2), disagree (3), agree (4), and strongly agree (5).

The variables used in this study correspond to the items extracted from the RELAYN (2019) survey that assess the use of innovation tools in management in the MIPYMES located in the municipality, which are mentioned below:

a) I encourage employees to propose changes in my products, services, and processes.

b) I frequently offer new products or services based on suggestions from my clients.

c) I focus heavily on offering innovative products or services that differentiate the company.

d) I invest or pay to innovate my production or distribution processes. e) I invest or pay to innovate the products or services I offer.

f) I invest or pay to innovate the way I sell my product or service (design, packaging, promotion, quotation methods, etc.).

g) I invest or pay to innovate the way I organize the company.

h) I attend fairs, courses, conferences, or other business-related activities.

For the case of closed businesses, an independent study was conducted, considering a sample of 127 companies that have had to close. They were administered a modified version of the instrument, specifically focusing on innovation. The items related to innovation in the modified instrument were as follows:

a) I encouraged employees to propose changes in our products, services, and processes.

b) I frequently offered new products or services based on customer suggestions.

c) I focused heavily on offering innovative products or services that distinguished the company.

d) I developed or invested in innovation for my production or distribution processes.

e) I developed or invested in innovation for the products or services I offered.

f) I developed or invested in innovation for the way I sold my product or service (design, packaging, promotion, quotation methods, etc.).

g) I developed or invested in innovation for the way I organized the company.

h) I attended trade fairs, courses, conferences, or other business-related activities.

The collected data were subjected to statistical analysis using STATPLUS® version 9.0 software. This software provides the necessary tools for data analysis, including calculations of means, standard deviations, correlations, and statistical mean comparisons.

A one-way ANOVA was conducted for each paired item, comparing the means between open and closed businesses to statistically test the effect of each item. Significance tests were used to determine if there were significant differences in the responses given by the MIPYMES in the municipality for the different items. This methodology allows for evaluating whether there are significant differences in the responses to the various items between open and closed businesses.

3.RESULTS

First, a validation process was conducted to ensure the reliability of the survey results by removing incomplete surveys. After completing the validation process for each survey, measures of central tendency were calculated for each item, segregating the data into results for open businesses and closed businesses.
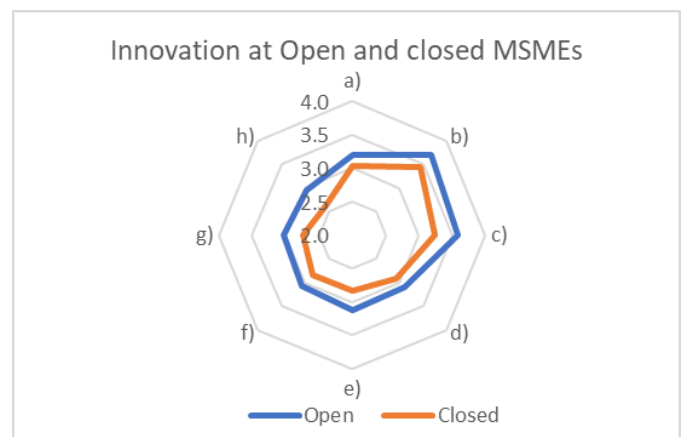

Chart -1: Polar plot showing the averages for each item obtained from the survey of open and closed MSMEs in the municipality of San Pedro Cholula, Puebla, Mexico.

Chart 1 presents a summary of the statistical means for each item. In the case of companies categorized as open businesses, higher means favor items b) and c), which have means above 3.5 on the Likert scale [b) average: 3.68; c) average: 3.58]. These items correspond to the following: b) *I frequently offer new products or services based on suggestions from my customers*, and c) *I strongly focus on offering innovative products or services that distinguish the company*.

This indicates that within the municipality, directors of MSMEs are focusing their efforts and management strategies on offering innovative products and services, based on the opinions of their customers, and most importantly, to distinguish themselves from the products or services offered by local competitors.

However, the least favored items by directors of open businesses in the municipality were items g) and h), which correspond to the following: g) *I invest or pay to innovate the way I organize the company* [average: 3.04] and h) *I attend fairs, courses, conferences*, or other business-related activities [average: 2.95]. This indicates that directors do not consider promoting business development through innovation in organizational structure or building connections with other entrepreneurs as highly relevant.

On the other hand, when quantifying the average values of the items for closed businesses, we observe a similar trend to that of open businesses, with the highest averages obtained in items b) and c), which correspond to b) *I offer new products or services frequently based on customer suggestions* and c) *I focus heavily on offering innovative products or services that differentiate the company*, as well as including item a) *I encourage employees to propose changes in products, services, and processes*, with a slightly lower average than the previous two [average: 3.04]. This item is related to listening to the voice of the customer for the design of new products or services.

Similarly, items g) and h) showed lower averages in closed businesses [item g), average: 2.74; item h), average: 2.59], indicating that directors of closed businesses in the municipality generally neglect promoting innovation through attending fairs, courses, and conferences where ideas can be shared and management strategies can be contrasted.

It is worth noting that each of the average values of the items obtained in the survey for open businesses were higher than those obtained for closed businesses.

Subsequently, to validate the statistical significance of the observations obtained in Chart 1, a statistical analysis of mean contrasts was conducted using a one-way ANOVA.

The objective of this analysis was to confirm the statistical significance of the results obtained for the contrast between the items for open and closed businesses, considering the size of the analyzed population. These findings are crucial in supporting informed decision-making and the design of effective strategies to drive innovation in companies, thereby promoting their growth and competitiveness in the market.

Table -1: ANOVA Summary of the Statistical Contrast Between Innovation Items in the Survey Conducted in the Municipality of San Pedro Cholula, Calculated between Open and Closed MSMEs. (*), Statistically Significant differences ($p < 0.05$); (**), Highly Significant differences ($p < 0.01$).

ANOVA Summary of Within-Items Comparison: Open vs Closed MSMEs	*Fcalc*	*p-value*
Item a), open vs closed	1.2493	0.2642
Item b), open vs closed	3.9683	0.0469*
Item c), open vs closed	7.1431	0.0078**
Item d), open vs closed	1.7912	0.1813
Item e), open vs closed	4.2863	0.0389*
Item f), open vs closed	2.9526	0.0863
Item g), open vs closed	5.1045	0.0243*
Item h), open vs closed	6.6589	0.0101*

Table 1. Summarizes the ANOVA results for each item, indicating statistically significant differences among the item means. These findings highlight the importance of identifying specific areas of strength and improvement in innovation management within MSMEs. The results in Table 1 indicate statistically significant differences ($p < 0.05$) between the mean values of open and closed companies for items b), e), g), and h). Additionally, it is worth noting that the difference for item c) was highly significant ($p < 0.01$).

The significant difference observed in item b) between open (ongoing) and closed companies suggests that the generation of innovative products can be an important factor in preventing business closure. This finding highlights the potential impact of offering new products or services based on customer suggestions, which may contribute to the sustainability and success of businesses in the long term.

The statistically significant difference observed in item e*) I developed or paid to innovate the products or services offered* indicates that the willingness of directors of micro, small, and medium-sized enterprises to invest time, resources, or money in introducing new ideas, improvements, or advancements in their products or services is a relevant factor. This strategic approach aims to foster innovation and maintain competitiveness in the market. It suggests that companies that actively invest in innovation are more likely to thrive and adapt to changing customer demands and market trends, potentially leading to sustained growth and success.

The highly significant differences observed in item c*) I focus heavily on offering innovative products or services that differentiate the company* indicate that directors of open MSMEs place great emphasis on providing products or services that are original, creative, and unique. This strategic focus allows the company to stand out and differentiate itself from competitors in the market. By prioritizing innovation, these MSMEs aim to capture the attention of customers, meet their evolving needs, and gain a competitive edge. This finding underscores the importance of innovation as a key driver of success and market differentiation for MSMEs in the studied municipality.

4.CONCLUSIONS

It is crucial to emphasize that innovation plays a pivotal role in the development and growth of MSMEs within a municipality. These enterprises constitute a significant economic sector, as they generate employment opportunities and contribute to local development. However, to enable MSMEs to compete effectively within a dynamic business environment, it is imperative to bolster innovation across multiple dimensions.

Significantly, based on the findings of this study, the statistical analysis utilizing mean contrast unveiled noteworthy disparities between the innovation strategies employed by companies that have ceased their operations and those that continue to operate. These disparities signify that the closed companies have struggled to implement effective innovation strategies in comparison to the companies that remain operational to this day.

First and foremost, concerning item b*) I frequently offer new products or services based on customer suggestions*, significant differences ($p < 0.05$) were found between the closed and open companies. These findings indicate that the open companies displayed a higher propensity to incorporate customer suggestions and develop innovative products or services in response. In contrast, the closed companies demonstrated a reduced ability to adapt to shifting customer demands and needs, potentially contributing to their closure.

In the case of item e*) I invest or pay to innovate the products or services I offer*; statistically significant differences ($p < 0.05$) were also observed in the ANOVA analysis. This finding is associated with the greater investment made by the ongoing companies in developing new products or services, as well as in acquiring external innovations to maintain their competitiveness in the market. Conversely, the closed companies demonstrated a reduced inclination to invest in innovation, potentially constraining their ability to provide distinct value propositions.

This strategy of differentiation through innovation has provided them with a competitive advantage and has allowed them to remain viable. In contrast, the closed companies exhibited a lower inclination towards offering innovative products or services, which may have contributed to their closure.

The analysis of item g*) I invest or pay to innovate the way I organize the company*. also revealed statistically significant differences ($p < 0.05$) when comparing the means. This is related to the fact that the ongoing companies demonstrated a greater willingness to innovate in the way they organize their internal structures and processes. These findings provide us with an insight into how these companies sought to adapt their organization to foster innovation and enhance their competitiveness. On the other hand, the closed companies showed a lower inclination to invest in the innovation of their organizational structure, which may have affected their ability to adapt and respond to changes in the business environment.

Statistically significant differences ($p < 0.05$) were observed in item h) *I attend fairs, courses, conferences, or other business-related activities*. In this case, the ongoing companies showed a higher level of participation in events and activities related to the business, such as fairs, courses, and conferences. This increased participation suggests a proactive attitude towards learning, acquiring updated knowledge, and building relevant networks. In contrast, the closed companies exhibited lower participation in these activities, which may have limited their access to new ideas and business opportunities.

Particularly noteworthy are the highly significant differences ($p < 0.01$) found in item c*) I focus heavily on offering innovative products or services that differentiate the company*. The ongoing companies demonstrated a more pronounced focus on offering innovative products or services that allowed them to stand out in the market. This strategy of differentiation through innovation has provided them with a competitive advantage and has enabled them to stay in operation. In contrast, the closed companies exhibited a lower orientation towards offering innovative products or services, which may have contributed to their closure.
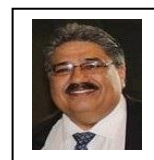
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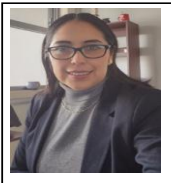
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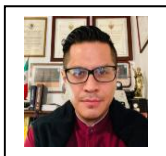
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