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ANALYSIS OF FINANCIAL EFFICIENCY IN MSMES IN CHIMBORAZO PROVINCE USING LIQUIDITY AND SOLVENCY INDICATORS IN 2024

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Abstract
This study analyzes the financial efficiency of micro, small, and medium-sized enterprises (MYPIMES) in the province of Chimborazo, Ecuador, by evaluating their liquidity and solvency across key sectors such as services, commerce, manufacturing, and agribusiness. The research adopts a quantitative approach with a non-experimental, descriptive, and correlational design. Financial indicators from 106 companies were analyzed using descriptive and inferential statistics, applying Pearson correlation and linear regression to assess the relationship between liquidity, solvency, and financial stability. The results indicate that the services and agribusiness sectors exhibit a more balanced financial management, characterized by higher liquidity and lower dependence on bank credit. In contrast, the commerce and manufacturing sectors face higher financial risks due to elevated debt levels and reduced operational flexibility. The findings show that firms with greater liquidity achieve higher financial stability, while those with high leverage are more vulnerable to economic fluctuations. The study concludes that improving the financial efficiency of MYPIMES is essential for enhancing their competitiveness and sustainability in the current economic context.

Keywords: Small and medium-sized enterprises, economic efficiency, liquidity, solvency, business financing.

INTRODUCTION

Micro, small, and medium-sized enterprises (MSMEs) play a fundamental role in the global and local economy, contributing significantly to job creation and the productive development of various regions (1), (2). According to data from the Organisation for Economic Co-operation and Development (OECD), these businesses represent more than 90% of the global business fabric and generate between 50% and 60% of formal employment in many countries (3), (4). However, despite their importance, MSMEs face significant financial challenges, mainly in terms of liquidity and solvency, which affects their long-term sustainability and growth.

In Ecuador, MSMEs constitute 83% of all registered businesses, playing a key role in sectors such as commerce, services, manufacturing, and agribusiness (5). Nevertheless, recent studies have shown that these businesses often operate with reduced profit margins, high dependence on bank credit, and limited access to formal financing (6), (7), (8). Furthermore, the post-pandemic economic context and market volatility have increased the vulnerability of these productive units, exacerbating problems of indebtedness and insufficient cash flow (9).

The economic literature has highlighted the importance of analyzing the financial efficiency of MSMEs through key indicators such as the current ratio, the acid-test ratio, the debt-to-equity ratio, and interest coverage (10). Studies have demonstrated that adequate liquidity and solvency management is crucial for the stability and expansion of these businesses (11), (12). For example, Ponce et al. (13) emphasize that MSMEs with

greater liquidity exhibit greater resilience to economic crises, while those with high levels of indebtedness face difficulties accessing new sources of financing.
Despite the relevance of these studies, in the province of Chimborazo, Ecuador, there is little empirical evidence on the relationship between liquidity, solvency, and financial stability in local MSMEs. In this sense, the present research seeks to fill this gap by providing evidence of the financial efficiency of MSMEs in different productive sectors.

Within this framework, the objective of the study is to analyze the financial efficiency of MSMEs in the province of Chimborazo in 2024, through liquidity and solvency indicators, in order to identify challenges and opportunities for business sustainability in the current economic context. Specifically, it seeks to evaluate the impact of liquidity and solvency on the financial stability of MSMEs in Chimborazo and to compare the levels of liquidity and solvency of MSMEs in different productive sectors of Chimborazo.

METHODOLOGY

Research Approach and Design

This study adopted a quantitative approach, based on the collection and analysis of numerical data on the financial indicators of micro, small, and medium-sized enterprises (MSMEs) in the province of Chimborazo. The research design was non-experimental, descriptive, and correlational, as the variables were not manipulated; rather, their relationships and behavior were analyzed within the economic context of 2024.

Population and Sample

The study population consisted of MSMEs registered in the province of Chimborazo in productive sectors such as services, commerce, manufacturing, and agro-industry. Stratified probability sampling was used to select the sample, ensuring proportional representation of each economic sector. The final sample comprised 106 companies, whose financial structures were evaluated based on liquidity and solvency indicators.

Characterization of MSMEs

Table 1 shows the main characteristics of the MSMEs included in the study.

Tabla 1. Caracterización de las MYPIMES por sector económico

Sector	% of MSMEs in Total	Average Employees	Average Annual Revenue (USD)	Average Age (years)	Access to Financing (%)
Services	35%	10	120,000	8	65%
Trade	30%	15	150,000	10	55%
Manufacturing	25%	25	130,000	12	40%
Agribusiness	10%	20	110,000	15	70%

Source: Authors

Data Sources and Collection Techniques

Financial data were obtained from primary and secondary sources. Financial statements and accounting reports provided by the companies themselves were collected, in addition to information available in public records and institutional databases. Structured surveys were also administered to financial and administrative representatives of the MSMEs to supplement the analysis with information on their financial management strategies and access to financing.

Variables and Indicators

To evaluate the financial efficiency of MSMEs in the province of Chimborazo, three key dimensions were analyzed: liquidity, solvency, and financial stability. Liquidity was measured using the current ratio, the quick ratio, and working capital to determine the companies' ability to meet their short-term obligations. Regarding solvency, the debt ratio and interest coverage ratio were used to assess the level of financial leverage and the companies' ability to meet their long-term commitments. Finally, financial stability was analyzed using indicators such as operational continuity and business profitability, with the aim of identifying the sustainability and viability of SMEs in the current economic context.

Data Analysis Techniques

The collected data were processed and analyzed using descriptive and inferential statistics. Means, medians, and standard deviations were calculated to identify the distribution of financial indicators by sector. Pearson correlation analysis was also applied to determine the relationship between liquidity, solvency, and financial stability. Linear regression was also used to evaluate the impact of debt levels on the profitability and sustainability of the companies.

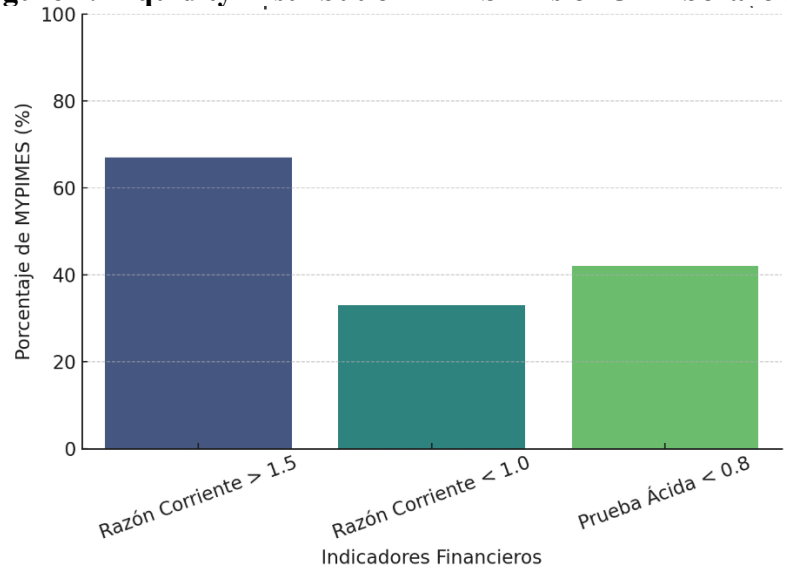
Ethical Considerations

The study guaranteed the confidentiality and anonymity of the participating companies, complying with ethical research principles. Informed consent was obtained from company representatives before data collection, and it was ensured that the information collected would be used exclusively for academic and scientific purposes. RESULTS

Evaluation of the Impact of Liquidity and Solvency on the Financial Stability of MSMEs in Chimborazo

The analysis of liquidity and solvency levels in MSMEs in the province of Chimborazo during 2024 revealed a marked heterogeneity in the financial stability of these companies. In terms of liquidity, it was found that 67% of the MSMEs presented a current ratio greater than 1.5, suggesting an adequate capacity to cover their short-term obligations. However, the remaining 33% showed liquidity ratios less than 1.0, indicating potential difficulties in meeting immediate financial commitments. The quick ratio reflected similar results, with 42% of the companies maintaining an index less than 0.8, which demonstrates a high dependence on inventory to cover current liabilities.

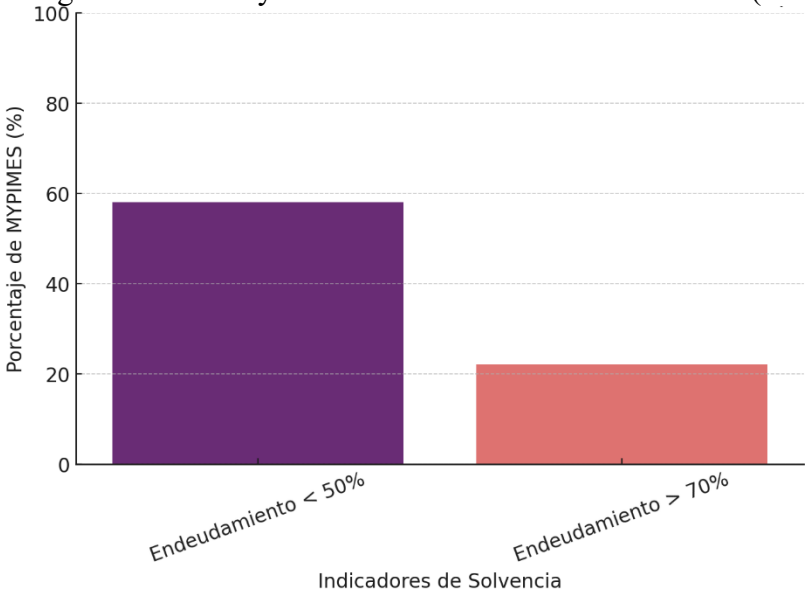
Figure 1. Liquidity Distribution in MSMEs of Chimborazo (2024)



Source: Authors

On the other hand, financial solvency showed a more balanced distribution. 58% of MSMEs reported a debt ratio below 50%, indicating a relatively solid financial structure with a lower risk of insolvency. However, 22% of the companies exceeded a debt level of 70%, which could compromise their long-term stability and hinder their access to new sources of financing.

Figure 2. Solvency distribution in Chimborazo MSMEs (2024)



Source: Authors

Correlation Analysis Between Liquidity, Solvency, and Financial Stability

The correlation and linear regression analysis applied to micro, small, and medium-sized enterprises (MSMEs) in the province of Chimborazo identified significant relationships between liquidity, solvency, and financial stability indicators. The results revealed a moderate positive correlation ($r = 0.62$, $p < 0.05$) between the current ratio and financial stability, measured through operating profitability and business continuity. Conversely, a strong negative correlation ($r = -0.74$, $p < 0.01$) was identified between the level of

indebtedness and the solvency of MSMEs. Specifically, companies with debt ratios exceeding 70% presented greater risks of illiquidity and difficulties accessing new sources of financing. Furthermore, it was observed that sectors with high levels of indebtedness, such as commerce and manufacturing, registered a higher rate of business closures in the last two years compared to less leveraged sectors.

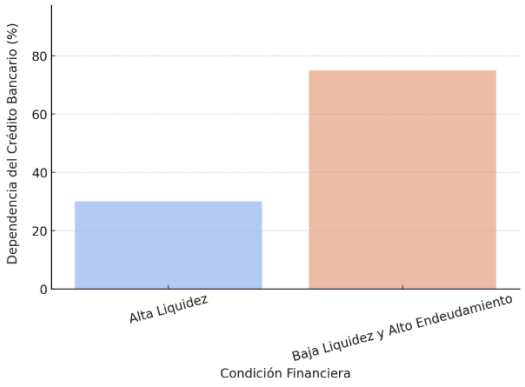
Table 2. Correlation relationships between financial indicators and stability in MSMEs in Chimborazo (2024)

Compared Indicators	Correlation Coefficient (r)	Significance Level (p)	Interpretation
Current ratio vs. financial stability	0.62	< 0.05	Moderate positive correlation
Debt level vs. solvency	-0.74	< 0.01	Strong negative correlation
Debt > 70% vs. risk of illiquidity	-0.81	< 0.01	Very strong negative correlation

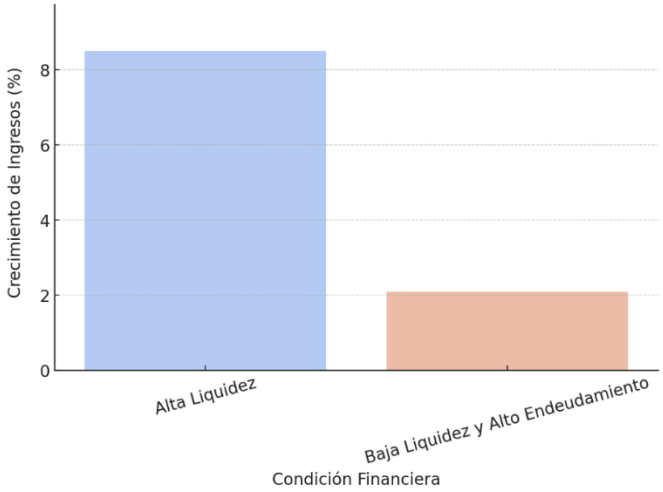
Source: Authors

The trend analysis revealed that SMEs with high liquidity not only maintained greater financial stability but also showed sustained revenue growth and reduced dependence on bank credit. In contrast, those with low liquidity and high debt faced greater difficulties during periods of low demand, which limited their investment and expansion capacity.

Figure 3. (a) Dependence on bank credit according to liquidity and debt, (b) revenue growth according to liquidity and debt



(a)



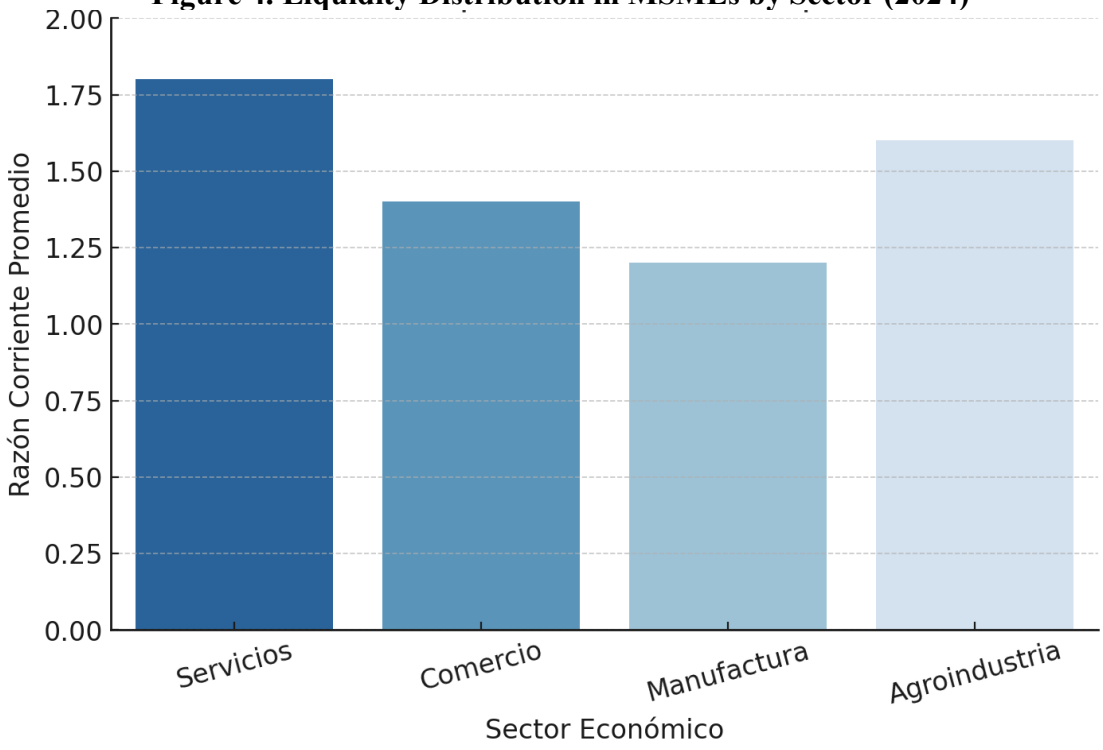
(b)

Source: Authors

Liquidity and Solvency Distribution by Sector

The analysis of liquidity and solvency levels in Chimborazo's MSMEs by economic sector revealed marked differences in their financial capacity. In general, the services sector showed the highest levels of liquidity, with an average current ratio of 1.8, indicating an adequate capacity to cover short-term obligations. In contrast, the manufacturing sector registered the lowest values, with an average current ratio of 1.2, suggesting less financial flexibility in the face of unforeseen events.

Figure 4. Liquidity Distribution in MSMEs by Sector (2024)

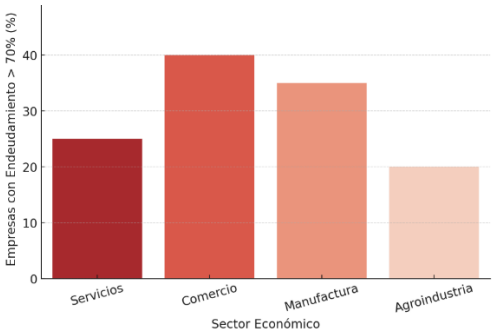


Source: Authors

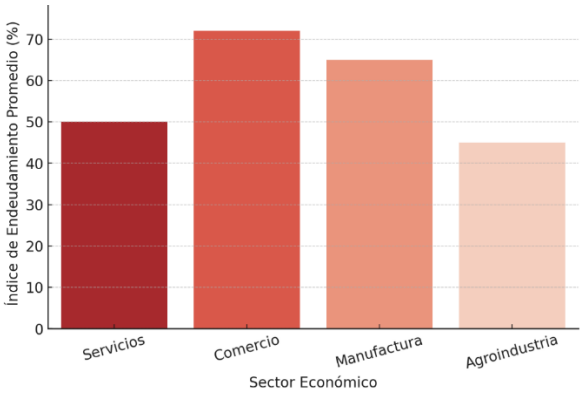
Regarding solvency, the results showed that agro-industrial SMEs had the healthiest levels, with an average debt ratio of 45%, indicating a relatively balanced financial

structure. On the other hand, the commercial sector showed the highest levels of leverage, with a debt ratio exceeding 70% in 40% of the companies evaluated, increasing their vulnerability to fluctuations in demand and credit restrictions.

Figure 5. (a) Percentages of SMEs with high indebtedness by sector (2024), (b) Distribution of indebtedness in SMEs by sector



(a)



(b)

Source: Authors

The comparative analysis revealed that sectors with greater liquidity tend to exhibit greater financial stability, while those with high levels of debt, such as trade and manufacturing, faced greater difficulties in accessing financing and maintaining sustainable operations in the long term. Furthermore, it was observed that agribusinesses, despite operating with tighter margins, managed to balance their liquidity and debt levels through revenue diversification strategies and efficient working capital management.

DISCUSSION

This study aimed to analyze the financial efficiency of micro, small, and medium-sized enterprises (MSMEs) in the province of Chimborazo during 2024, using liquidity and solvency indicators. To this end, the financial performance of different productive sectors was evaluated, comparing their liquidity and debt levels, as well as the risks associated with each financial structure.

It was evident that liquidity and solvency are key factors in the sustainability of these companies, and that their variability across economic sectors has direct implications for their growth capacity and resilience to economic crises. Companies with greater liquidity showed greater stability and less dependence on bank credit, while those with high debt faced greater financial risks, affecting their operational continuity.

The findings of this study revealed significant differences in the financial performance of MSMEs in the province of Chimborazo, particularly in terms of liquidity and solvency. In general, the service and agribusiness sectors showed healthier levels in both indicators, while the trade and manufacturing sectors exhibited higher levels of indebtedness and less responsiveness to economic fluctuations. These results are consistent with previous studies conducted in other regions, such as those by (14), (15), who found that service companies tend to exhibit greater liquidity due to shorter revenue cycles and less dependence on inventory.

Compared to the findings of (10), who analyzed the solvency of SMEs in other regions of the world, a similar trend was identified in which the commercial sector faces a high level of financial leverage, with debt ratios exceeding 70%. In the present study, it was found that 40% of commercial SMEs in Chimborazo exceeded this threshold, suggesting that these companies resort to external financing as a strategy to sustain their operations during periods of low demand. This reliance on bank credit could jeopardize their long-term sustainability, especially in a context of rising interest rates and credit restrictions. National studies have demonstrated the usefulness of business insolvency prediction models in anticipating financial difficulties and preventing the closure of these companies, with an accuracy of 70% to 90%.

CONCLUSIONS

The analysis of financial efficiency in micro, small, and medium-sized enterprises (MSMEs) in the province of Chimborazo revealed that liquidity and solvency are key determinants of their stability and growth. The service and agribusiness sectors showed more balanced financial management, with greater liquidity and less dependence on bank loans, while the trade and manufacturing sectors presented greater financial risks due to high levels of indebtedness and less operational flexibility. It was found that companies with greater liquidity achieved greater financial stability, while those with high leverage faced greater vulnerabilities to economic fluctuations. These findings highlight the need to implement differentiated sectoral strategies, promoting access to sustainable financing and optimizing resource management to improve the competitiveness and sustainability of MSMEs in the current economic context.

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