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EDUCATION AND FISCAL CULTURE AS DETERMINING FACTORS IN THE FORMALIZATION OF MEXICAN MICRO AND SMALL ENTERPRISES

EDUCATION AND FISCAL CULTURE AS DETERMINING FACTORS IN THE FORMALIZATION OF MEXICAN MICRO AND SMALL ENTERPRISES

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Abstract -- This study analyzes the relationship between the educational level of entrepreneurs and the formalization of micro and small enterprises (MSMEs) in the municipality of Jerez, Zacatecas. A quantitative approach was used, with a non-experimental, cross-sectional, and correlational design applied to a sample of 327 local entrepreneurs. A 15-item Likert-type questionnaire was used for data collection, and its reliability was assessed using Cronbach's alpha coefficient ($\alpha = 0.83$). The Shapiro–Wilk and Kolmogorov–Smirnov normality tests showed that the variables did not follow a normal distribution ($p < 0.05$), so the inferential analysis was performed using Spearman's nonparametric correlation (ρ).
The results revealed a positive and significant correlation between the educational level of entrepreneurs and the degree of business formalization ($\rho = 0.389$; $p < .001$), indicating that the higher the level of education, the greater the likelihood of complying with administrative, tax, and legal procedures. Likewise, it was observed that entrepreneurs with upper secondary and higher education show greater progress in accounting records, tax obligations, and access to government programs.
These findings reinforce the importance of education as a determining factor in the transition to formality and suggest that public policy should incorporate financial and tax education as key components of business strengthening. It is concluded that promoting fiscal and administrative literacy can increase the competitiveness, sustainability, and permanence of MSMEs in local contexts. Future studies could incorporate additional variables such as fiscal culture, professional advice, and business experience to broaden the understanding of the factors that influence formalization.

Keywords: fiscal culture, business education, informality, microenterprise, public policy.

Abstract -- This study analyzes the relationship between entrepreneurs' educational level and the formalization of micro and small enterprises (MSEs) in the municipality of Jerez, Zacatecas. A quantitative, non-experimental, cross-sectional, and correlational design was used, applied to a sample of 327 local entrepreneurs. Data were collected through a 15-item Likert-type questionnaire with a Cronbach's alpha reliability of 0.83. The Shapiro–Wilk and Kolmogorov–Smirnov tests indicated that the variables did not follow a normal distribution ($p < 0.05$), therefore the non-parametric Spearman correlation analysis was performed.
The results revealed a positive and significant correlation between entrepreneurs' educational level and the degree of business formalization ($\rho = 0.389$; $p < .001$), indicating that higher academic training increases the likelihood of complying with administrative, tax, and legal procedures. Entrepreneurs with upper-secondary and higher education showed greater progress in accounting registration, tax obligations, and access to government programs.
These findings highlight education as a determining factor for the transition toward business formalization and suggest that public policy should integrate financial and fiscal education as key components of entrepreneurial strengthening. It is concluded that promoting fiscal and administrative literacy may increase the competitiveness, sustainability, and permanence of MSMEs in local contexts. Future research could incorporate variables such as fiscal culture, professional advisory, and entrepreneurial experience to broaden the understanding of the determinants of business formalization.

***Key words* –** Entrepreneurial education, fiscal culture, informality, microenterprise, public policy.

INTRODUCTION

Micro, small, and medium-sized enterprises (MSMEs) are a fundamental pillar of economic development and job creation in the municipality of Jerez, Zacatecas. However, a significant proportion of these economic units operate informally, a phenomenon that restricts their access to structured financing, legal protection, and government support programs. This condition perpetuates a cycle of low productivity and vulnerability. In light of this problem, this study focuses on the relationship between the human capital of entrepreneurs, specifically their educational level, and the propensity to formalize their operations. It is based on the premise that academic qualifications have a direct impact on the understanding of regulatory structures, tax benefits, legal responsibilities, and administrative procedures associated with compliance.

The overall objective is to analyze the correlation between the academic degree of owners and the legal and fiscal formalization status of MSMEs in the municipality of Jerez de García Salinas, Zacatecas.

The specific objectives are:

1. To diagnose the correlation between the educational level of the entrepreneur and the implementation of formal processes (accounting, tax, and legal) in MSMEs.
2. To characterize the economic units that operate formally in the region.
3. To design and validate a measurement instrument to capture the variables of educational level and degree of business formalization.
4. Process and statistically analyze the data collected.
5. Test the research hypotheses using statistical correlation techniques.

Consequently, the following hypotheses are proposed:

- Null hypothesis (H_0): There is no statistically significant relationship between the educational level of entrepreneurs and the formalization of an MSME in Jerez, Zacatecas.
- Alternative hypothesis (H_1): There is a statistically significant relationship between the educational level of entrepreneurs and the formalization of an MSME in Jerez, Zacatecas.

The relevance of the study lies in the need to generate local empirical evidence on the role of education in the transition to formality. In a municipality with a census of more than 2,200 MSMEs, many of which operate outside the legal framework, understanding this variable is crucial for the design of public policies and educational interventions. Formalization generates positive externalities, including the strengthening of the regional economy by broadening the tax base and consolidating an equitable productive environment.

In short, this research posits that educational attainment is a determining factor in the consolidation of formal, sustainable, and socially responsible businesses, contributing to the economic development of the municipality and the state.

The issue raised in Jerez is part of a broader academic debate. Recent evidence converges on the fact that the formalization of MSMEs goes beyond the traditional combination of tax incentives and penalties. This process depends critically on the quality of the institutional environment (regulatory clarity, certainty, digital services), entrepreneurial capabilities (specifically financial and fiscal literacy), and a regional framework that articulates innovation, financing, and education [1]. In contexts of high fiscal uncertainty, even macroeconomic variables and long-term decisions, such as fertility, are affected, discouraging formal investment [2].

At the institutional level, the design of fiscal federalism is a critical factor; the high dependence of subnational governments on federal transfers inhibits their own fiscal efforts and deteriorates the provision of local public goods, eroding confidence and incentives to formalize [3]. Proposals for territorial tax reconfiguration could broaden the base and credibility, provided they are linked to transparency in spending [3]. This framework is weakened by sociocultural factors, such as historical mistrust and perceived corruption, which shape attitudes of reluctance to comply with tax obligations [4].

At the micro level, and in line with the central hypothesis of this article, deficits in fiscal and financial literacy emerge as a significant barrier. Research in Mexican contexts identifies a lack of financial education as a key reason for tax evasion [5] and documents that a high percentage of microenterprises lack tax registration and training [6]. Systematic reviews confirm that knowledge gaps, low confidence, and regulatory complexity are persistent [7]. Conversely, the owner's financial education has been shown to be a significant predictor of business survival during adverse shocks [8].

The second microeconomic barrier is the administrative burden and cost of compliance. Optimizing the tax business environment (clear processes, digital procedures) has been shown to have positive effects on regional innovation [1]. State digitization (e-government) is therefore a key variable; regulatory burdens can erode margins, but digital platforms can cushion compliance costs if they are designed with the taxpayer in mind [9]. This contrasts with purely revenue-driven approaches, as digitization only fosters innovation if the costs of transformation are manageable for MSMEs [10].

In terms of intervention, the literature suggests that tax education should be continuous and applied, using multichannel strategies and ICT [11]; [12]. Policy design solutions Validated digital teaching aids improve self-efficacy in the fulfillment of obligations [13]. However, the Policy design must be precise: the "additionality" of public spending is crucial, as if funds replace local spending rather than complement it, the perceived tax culture is eroded [14]. Likewise, regulation (e.g., environmental) can induce compliance and accounting adjustments [15], provided that enforcement is predictable and non-discretionary [16] (Wu, Sun & Feng, 2024).

The context of MSMEs is dynamic and heterogeneous. The response to external shocks (e.g., COVID-19) is non-linear, requiring fiscal education to be combined with resilience capabilities [17]. The vitality of regional ecosystems, which link universities and industry, also conditions the perceived value of formality [18]. Policy design must therefore overcome linear assumptions [19] and conceptual fragmentation, adapting to sector-specific characteristics, such as tourism [20].

Finally, the formalization agenda is expanding into new frontiers: (i) financial inclusion, which requires social mediators so as not to exacerbate vulnerability [21]; (ii) sustainability reporting, where accounting firms (SMPs) will act as "translators" of standards for SMEs [22]; and (iii) social enterprise law, which offers new corporate forms to align formalization and purpose [23]. The use of modeling and simulation is also emerging as a methodological tool for the ex-ante evaluation of these comprehensive policies [24].

DEVELOPMENT

Methodology.

This study was conducted using a quantitative, non-experimental, cross-sectional, and correlational approach, with the aim of analyzing the relationship between the level of education of entrepreneurs and the formalization of micro and small enterprises (MSMEs) in the municipality of Jerez, Zacatecas, Mexico.

Participants

The study population consisted of 327 owners and managers of micro and small enterprises, mainly in the commerce and services sector. The sample was selected using non-probabilistic convenience sampling, based on the availability and accessibility of participants. The inclusion criteria considered economic units with fewer than 50 employees and a minimum of one year in operation.

Table 1. *Distribution of MSMEs in Jerez, Zacatecas.*

Size	Total	Sample
MSMEs	2,219	327
Micro	2,162	318
Small	50	8
Medium	7	1

Source: Own elaboration (2025).

Instrument

A structured questionnaire with 15 items was applied, designed on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Item 1 measures the entrepreneur's level of education (independent variable). Items 2 to 15 measure the formalization of the company (dependent variable), considering aspects such as municipal licenses, tax registration (RFC), compliance with SAT obligations, knowledge of laws, and perceptions of the benefits of formalization. The content validity of the instrument was evaluated using the Lawshe method (1975), obtaining a Content Validity Index (CVI = 0.90). Reliability was determined using Cronbach's alpha coefficient (α = 0.83), which indicates satisfactory internal consistency.

Procedure

The data were processed using JASP (v.0.19.1) and Microsoft Excel software. Numerical values were assigned to the responses, and the corresponding indices were constructed for each variable according to the following expressions:

$$Índicede\ Educación = X_{1} \qquad \text{Ec. (1)}$$

$$dendice\ Formalizacin = \frac{(\Sigma X_i)}{14},de\ \ i = 2a\ 15 \qquad \text{Ec. (2)}$$

where X_i represents the numerical value assigned to each item of the questionnaire.

Subsequently, measures of central tendency (mean, median, mode) and dispersion (variance, standard deviation, and range) were calculated for both variables. The distribution of the data was verified using the Shapiro–Wilk and Kolmogorov–Smirnov tests, the results of which showed that the variables did not follow a normal distribution ($p < 0.05$). Therefore, nonparametric tests were used, specifically Spearman's correlation (ρ), to test the research hypothesis research hypothesis:

H_1: There is a significant relationship between the level of education of entrepreneurs and the formalization of MSMEs.

DISCUSSION AND ANALYSIS OF RESULTS

Table 1 presents the measures of central tendency and dispersion of the variables analyzed. The level of education obtained an average of 3.861, corresponding to upper secondary education, while the formalization of MSMEs reached an average of 3.249, suggesting a moderate level of compliance with administrative and tax procedures.

Table 2. *Measures of central tendency and dispersion for the independent variable.*

Educational level of entrepreneurs	
Mean	3.861
Median	4.000
Fashion	4,000
Variance	0.701
Deviation	0.837

Source: *Own elaboration* (2025).

Figure 1 shows the proportion of educational levels reported by participating entrepreneurs. It can be seen that the largest group corresponds to level 4 (upper secondary education), followed by level 5 (higher education). Levels 2 and 3 appear in smaller proportions, while level 1 (primary or lower) represents a minimal percentage within the sample.

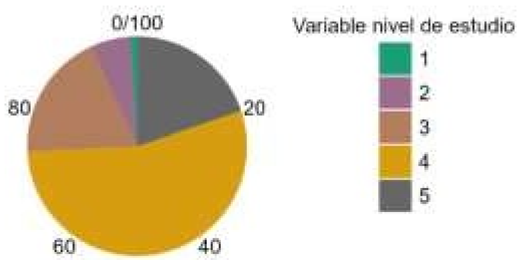

Figure 1. *Distribution of the educational level of entrepreneurs.*
Source: *Own elaboration* (2025)

These results show that most of the entrepreneurs surveyed have at least upper secondary education, which coincides with the average obtained in Table 2 (3.861). This data is relevant because it allows us to anticipate a positive relationship between academic training and business formalization, as confirmed by Spearman's correlation analysis.

Table 3. *Measures of central tendency and dispersion for the dependent variable.*

Formalization of MSMEs	
Mean	3,249
Median	3,360
Mode	3,140
Variance	0.585
Deviation	0.765

Source: *Own elaboration* (2025).

According to the results presented in Table 3, the dependent variable *Formalization of MSMEs* obtained a mean of 3.249, a median of 3.360, and a mode of 3.140, with a variance of 0.585 and a standard deviation of 0.765. These values are at level 3 on the Likert scale, which corresponds to a medium-high level of compliance.

This means that the participating entrepreneurs have begun the process of formalizing their micro and small businesses, but have not yet completed it. It can be inferred that they have basic knowledge and have made partial progress in terms of legal, tax, and administrative registration, although limitations remain in terms of full compliance with obligations.

In this sense, the average formalization reflects intermediate behavior, characterized by the intention to join the legal and regulatory framework, but also by a lack of continuous monitoring and ignorance of the benefits that formality offers (such as access to credit, legal security, or participation in government programs).

Likewise, the moderate dispersion (SD = 0.765) indicates that there are notable differences between entrepreneurs, some already formalized and others in the initial stages of the process. These results coincide with the empirical evidence reported by [25], who highlights that the lack of tax education and technical advice limits the transition of informal businesses to full formality.

Therefore, it can be concluded that the group analyzed has a medium-high level of formalization, as can be seen in Table 4. This shows progress in the process of legal compliance, although the administrative and fiscal culture still needs to be strengthened in order to reach the maximum level of formalization (level 5 on the scale).

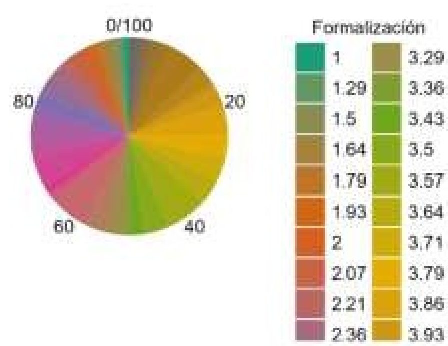

Figure 2. *Distribution of the formalization variable.*
Source: *Own elaboration* (2025)

Figure 2 shows the percentage distribution of the *formalization* variable, where values are concentrated between 3.29 and 3.93, indicating a medium-high level of compliance. This result shows that most micro and small enterprises have made partial progress in their formalization process, although they have not yet achieved full compliance with their legal and tax obligations.

The variance and standard deviation values indicate moderate dispersion in both variables.

Table 4. *Interpretation of the Likert scale.*

Interpretation of Likert scale variable dependent		
1	At this first level, it indicates that the entrepreneurs do not have any procedures for the legal formalization of microenterprises.	Low level of compliance
2	Microentrepreneurs at this level have a basic understanding of the legal requirements for formalization of your company.	Level low-medium compliance
3	The third level of formalization includes microenterprise owners who have begun the process of formalization, without , did not complete the process due to lack of interest.	Upper-middle level related compliance
4	Microenterprises that have the characteristics necessary to be considered formally constituted, however, they do not fulfill their obligations and therefore do not exercise their rights.	High level of compliance
5	A formally constituted company that is in full compliance with its obligations and rights.	Maximum level Compliance

Source: *Own elaboration* (2025).

To determine whether the variables met the normality assumption, the Shapiro–Wilk and Kolmogorov–Smirnov tests were applied (Table 5). In both cases, p values < 0.05 were obtained, indicating that the data are not normally distributed, justifying the use of nonparametric tests.

Table 5. *Normality tests (Shapiro–Wilk and Kolmogorov–Smirnov).*

Variable	Shapiro W	p-value	KS	p-value
Level of education	0.84	0.001	0.31	0.001
Formalization in MSMEs	0.96	0.005	0.10	0.22

with Spearman (ρ) to evaluate the possible relationship between the study variables.

The results of Spearman's correlation show a positive and statistically significant association between the academic degree of entrepreneurs and the level of formalization of their microenterprises. The coefficient obtained ($\rho = 0.389$; $p < .001$) indicates that the relationship is moderate in magnitude, suggesting that as the educational level of entrepreneurs increases, so does their degree of administrative and fiscal formalization. This finding supports the hypothesis and is consistent with the literature, which indicates that academic training contributes to regulatory compliance, proper registration of economic activity, and access to formal business operating mechanisms. The detailed values can

See Table 6, which shows the corresponding coefficients and significance levels.

Table 6. *Spearman's correlation (ρ) between degree of study and formalization.*

Variables related	ρ (Spearman)	p-value
Level of education ↔ Formalization	0.389	< .001

Source: *Own elaboration* (2025).

The equation used to determine Spearman's correlation coefficient is expressed as:

$$\rho = 1 - (6 \Sigma d^2) / [n (n^2 - 1)] \quad \text{Eq. (3)}$$

Where ρ represents the correlation coefficient, d the difference between the ranks of each pair of observations and n the number of participants.
The correlational model representing the relationship between the study variables is defined as:

$$\text{Formalization} = \beta_0 + \beta_1(\text{Grade}) + \varepsilon \quad \text{Eq. (4)}$$

These results allow us to reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1), confirming the existence of a direct and significant relationship between the educational level of entrepreneurs and the degree of formalization of their companies. The finding coincides

As reported by [25] and [26], who highlight that formal education and tax culture have a positive impact on the adoption of administrative and tax practices within MSMEs.
In this study, entrepreneurs with upper secondary and higher education showed a higher level of

Source: *Own elaboration* (2025).

Given that the data do not follow a normal distribution, as confirmed by the normality tests applied, the correlation coefficient of

formalization, suggesting that academic training promotes knowledge of procedures, tax compliance, and access to government support programs. Likewise, the results reinforce the need for public policies to promote

financial and tax education as pillars of business development.
The implementation of training programs adapted to the regional context could raise the levels of formalization and competitiveness of microenterprises. In summary, the analysis confirms that educational level is a determining factor in the formalization of MSMEs. The higher the academic degree, the greater the probability of compliance with legal, tax, and accounting obligations, which has a direct impact on the sustainability and growth of businesses.
The results obtained allow us to conclude that the academic degree of entrepreneurs significantly influences the level of formalization of their microenterprises. The positive correlation identified ($\rho = 0.389$; $p < .001$) confirms that, as the level of education increases, so does the propensity to comply with administrative and tax procedures, thus responding to the central objective of analyzing the relationship between both variables.
These findings suggest that academic training not only provides technical knowledge, but also promotes understanding of legal obligations and the adoption of formal practices that strengthen business operations. Thus, it is evident that education is a key element in promoting formalization processes in contexts where microenterprises with limited administrative structures predominate.

CONCLUSIONS

The results of the study highlight the importance of educational level in the formalization processes of micro and small enterprises within the context analyzed. However, the findings also suggest that this relationship cannot be fully understood without considering in greater depth the mechanisms that sustain it, which opens up a clear field for future research with more precise methodological and contextual approaches.
From a methodological perspective, it is pertinent to move toward mixed sequential designs, in which quantitative analysis is complemented by a subsequent qualitative phase. The incorporation of semi-structured interviews with owners of formalized and informal businesses, as well as with institutional actors involved in regulation and oversight processes, would allow for a more direct exploration of the perceptions, incentives, and barriers that influence formalization decisions. Complementarily, the use of multiple case studies would facilitate the comparison of different business trajectories according to the educational level of entrepreneurs.
On a quantitative level, future research could benefit from the estimation of logistic regression models that allow for the analysis of the probability of business formalization by incorporating variables such as previous experience, access to accounting and legal advice, tax culture, perception of the regulatory burden, and use of government digital platforms. Likewise, the application of multilevel models would offer an adequate way to capture the effects of the territorial environment, simultaneously considering individual and contextual characteristics.
In terms of the context of analysis, broadening the scope of the study to include comparisons between municipalities with different levels of economic development, degrees of urbanization, and productive structures would allow for a clearer assessment of the role played by local institutional conditions in formalization processes. Similarly, the development of longitudinal studies, with follow-up of business units over time, would facilitate the identification of transition trajectories between informality and formality, as well as the stability of these conditions.
This set of approaches would contribute to a more detailed understanding of the phenomenon and provide a more solid empirical basis for the design of public policies aimed at strengthening fiscal and administrative education, particularly in territories where business informality continues to be a structural feature.

ADDITIONAL COMMENTS

This article provides relevant empirical evidence on the role of educational attainment in the formalization of micro and small enterprises in local contexts, contributing to the academic debate and decision-making on economic and fiscal development in Mexico.
The findings support the need to strengthen fiscal and administrative education strategies as public policy instruments aimed at reducing business informality, improving the competitiveness of MSMEs, and expanding their access to government programs.
In this sense, the study can serve as a diagnostic basis for the design of training programs aimed at entrepreneurs with low levels of education, as well as for the implementation of technical support mechanisms that facilitate regulatory compliance. The modifications made strengthen the methodological clarity and applied scope of the work, consolidating it as a relevant contribution to the academic field and to public decision-makers.

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Contribution Role Table

Role	Author(s)
Conceptualization	Garay Castillo Gwendolyn Verónica.
Method	Villegas Berumen Héctor Gabriel- Principal, Núñez Orta María de la Luz-Igual, Garay Castillo Gwendolyn Verónica-Support.
Administration of the project	Núñez Orta María de la Luz-Principal, Villegas Berumen Héctor Gabriel-Support.
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