



Article

Socioeconomic determinants of entrepreneurship motives among household heads in Chihuahua, Mexico

Determinantes socioeconómicos de los motivos emprendedores de los jefes de hogar en Chihuahua, México

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Abstract: This study investigates the socioeconomic factors influencing entrepreneurship among household heads in Chihuahua, Mexico. Using data from the National Survey of Occupation and Employment (ENOE), a comprehensive analysis was conducted on 312 variables from 323,549 observations, focusing on 22 key variables related to entrepreneurship. The analysis was restricted to working-age heads of households. Findings reveal that age (15-55 years), gender, educational level (primary to professional), presence of children, and monthly income significantly increase the likelihood of entrepreneurship by 2.62%, supporting the pull effect theory that higher income encourages entrepreneurial activities.

Keywords: Entrepreneurship, Socioeconomic Factors, Heads of Households.

JEL Classification: L26.

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Resumen: Este estudio investiga los factores socioeconómicos que influyen en el espíritu emprendedor entre los jefes de hogar en Chihuahua, México. Utilizando datos de la Encuesta Nacional de Ocupación y Empleo (ENOE), se realizó un análisis exhaustivo de 312 variables de 323,549 observaciones, centrándose en 22 variables clave relacionadas con el emprendimiento. El análisis se limitó a los jefes de hogar en edad de trabajar. Los hallazgos revelan que la edad (15-55 años), el género, el nivel educativo (primario a profesional), la presencia de niños y los ingresos mensuales aumentan significativamente la probabilidad de emprendimiento en un 2.62%, lo que respalda la teoría del efecto de atracción de que los ingresos más altos fomentan las actividades empresariales.

Palabras clave: Emprendimiento, Factores Socioeconómicos, Jefes de Hogar.

Clasificación JEL: L26.

1. Introduction

Entrepreneurship drives economic growth, which in turn enhances the economic development of a region or country by increasing productive capacity and improving quality of life and well-being (González-García et al., 2018). Correspondingly, entrepreneurship is influenced by macroeconomic factors that create a favorable environment for entrepreneurs (Flores et al., 2011). Recent studies have shown a strong correlation between business creation dynamics and the economic environment of a region or country. Understanding these dynamics is complex and requires localized studies to identify the unique economic relationships within each region (González-García et al., 2018). A positive economic context encourages entrepreneurship, while factors such as economic growth, inflation, and fiscal policies significantly impact business creation and development (Vallmitjana, 2014).

To understand the entrepreneurial activity, a look back to main theoretical postulates seems pertinent. Entrepreneurship theories are varied, allowing researchers to choose those most relevant to their topics. Basic theories are essential for most research. Schumpeter's theory highlights that new businesses and innovations drive a capitalist economy. Low and Macmillan (1988) advocate for an interdisciplinary approach, considering socio-cultural, personality, network, ecological, and economic factors. Globalization and economic changes influence entrepreneurial decisions. Theories of entrepreneurial behavior identify motivating factors, both positive and negative, internal and external. Díaz-Casero (2003) categorizes entrepreneurship theories into economic, psychological, sociocultural, and managerial approaches. Vallmitjana (2014) further classifies them into explanatory, predictive, and normative theories.

The relationship between company creation and the economic environment gives rise to the hypotheses of recession or unemployment push and the Schumpeterian effect or pull effect. On the one hand, Shapero (1985) stated that the decision to create a company is influenced by perceptions of convenience and feasibility, shaped by cultural, educational, and socioeconomic factors. Marulanda-Valencia et al. (2018) described entrepreneurship as a multidimensional process involving various sociodemographic variables, including personal, social, and cultural aspects, which motivate individuals to undertake entrepreneurial activities. Research has identified key characteristics and traits of entrepreneurs, including demographic factors, personal perceptions, and experience-related variables. Educational background influences entrepreneurial motivations, which can be intrinsic (personal interests) or extrinsic (rewards). Education, especially experiential learning, helps individuals overcome challenges and promotes entrepreneurship. Experience is crucial in entrepreneurship, reducing uncertainty and boosting confidence through prior learning. Those from entrepreneurial families are

more likely to start businesses due to relevant experience. Income is essential for acquiring capital and serves as a motivation for entrepreneurship. In addition, economic factors are crucial, as entrepreneurs seek financial success and social security for their families. Nonetheless, female entrepreneurship can be discouraged by societal perceptions and family responsibilities.

On the other hand, the theory of marginalization suggests that entrepreneurship often begins with a critical life event (Brunet & Alarcón, 2004). Kirzner's (1985) theory emphasizes identifying and acting on business opportunities with innovative potential. Thus, entrepreneurship is influenced by triggering events and gender, with men often driven by professional frustration or financial goals, and women by unfavorable employment situations.

The Global Entrepreneurship Monitor (GEM) defines nascent and established entrepreneurs based on the duration of their business activities. Entrepreneurs are driven by opportunity or necessity, with opportunity-driven entrepreneurship linked to economic growth and necessity-driven entrepreneurship to survival. Resources and self-efficacy play crucial roles in entrepreneurial decisions. Opportunity entrepreneurship promotes economic growth, while necessity-driven entrepreneurship is more common in developing countries and less impactful on economic growth. Opportunity-driven entrepreneurs seek growth and innovation, while necessity-driven entrepreneurs focus on survival.

In Mexico, many businesses begin to supplement family income or due to lack of employment. Higher education increases the likelihood of starting a business. Age and gender also play an important role, since younger individuals and men are more likely to become entrepreneurs. In addition, socio-cultural factors and training are important, particularly for female entrepreneurship, providing greater opportunities in the labor market.

In developing countries, necessity-driven entrepreneurship is more prevalent due to poverty and social vulnerability. This type of entrepreneurship primarily supports individual and family subsistence and does not significantly contribute to economic growth, although it can temporarily reduce unemployment rates (López-Vera & Apolinario-Quintana, 2019).

There are few state-level studies in Mexico, and it is problematic to establish public policies related to entrepreneurship without prior analysis and understanding of population behavior. Studying each region is a challenging but essential task that helps to understand and improve public policies that support and encourage entrepreneurs. Conducting an analysis and identifying the most influential factors for a specific population provides valuable information for the effective creation of economic policies within the state.

Hence, this paper explores the socioeconomic factors influencing entrepreneurship among heads of households in Chihuahua, Mexico. The head of the household is defined as the individual with the highest income within the household. Key socioeconomic factors considered include education, age, gender, presence of children, marital status, educational level, and monthly income.

Our objectives were to determine the socioeconomic factors influencing entrepreneurship among heads of households in Chihuahua, to compare the factors influencing entrepreneurship between men and women, to verify whether the number of children affects the decision of heads of households to become entrepreneurs, and to analyze the causes of entrepreneurship among heads of families in Chihuahua. The research problem primarily addresses the lack of knowledge about small-scale entrepreneurship factors.

This research utilizes data from the National Survey of Occupation and Employment (ENOE), analyzing 312 variables from 323,549 observations, focusing on 22 variables related to entrepreneurship among working-age heads of households in Chihuahua. The methodology employs a binary choice logit model to determine the factors influencing independent entrepreneurship, with explanatory variables reflecting individual characteristics and resource access. The findings provide insights for further

research that could inform economic, political, and social strategies at the state level, particularly concerning heads of households.

2. Literature review

Research on entrepreneurship has progressed from Schumpeterian theories to modern studies that include technological innovations, aiding the growth of small and medium-size enterprises (SMEs) and national economies. In Mexico, microenterprises, mostly family-owned, employ a third of the workforce and contribute 14% to economic production (López-Fernández et al., 2016). Entrepreneurship is driven by both favorable economic conditions ("pull effect") and adverse conditions like economic crises ("recession push"). Thus, positive factors such as opportunities and fulfillment, and negative factors like unemployment, influence entrepreneurial activities. On the other hand, individual characteristics and social influences, particularly family, significantly impact entrepreneurial intentions (Palma-Ruiz et al., 2019).

The most recent studies related to the factors of entrepreneurship, including necessity and opportunity-driven entrepreneurship, are varied. The following literature review highlights the most relevant research on the socioeconomic factors that influence the decision to undertake entrepreneurship by heads of households. Some regional studies linked to this topic have analyzed common factors and variables, which are relevant to review their results and methods.

Ramos-Guerrero y Quintero-Hernández (2012) explored the factors that affect the decision to start a business and the appropriate model for entrepreneurship support. The variables considered were gender, age, marital status, level of education, work experience, existence of family business, and access to support networks.

Alvarado-Lagunas et al. (2018) studied the factors that influence the entrepreneurship of a family micro business in Mexico. They used an empirical model to quantify the effects of explanatory variables on the probability that a Mexican microentrepreneur is in a family-associated microbusiness. The independent variables of motivation factors included age, gender, education, marital status, microbusiness by gender, relationship by gender, economic sectors, inheritance of the micro business, whether the micro business complements or improves family income, found business opportunity, profession, experience, low-paid jobs, unemployment, and financing. Data were obtained from the National Survey of Microbusinesses in Mexico (ENAMIN). The main findings indicated that married men are more likely to undertake entrepreneurship, primarily to complement family income. The sectors with the largest family microenterprises were commerce and manufacturing. The most relevant variables were tradition, experience, and training (Alvarado-Lagunas et al., 2018).

Another regional study proposed the hypothesis that environmental factors favor the creation of new companies in Mexico. A quantitative, cross-sectional study was conducted, analyzing regions with data from the Economic Census of Mexico. Fourteen indicators related to three environmental factors for entrepreneurship were used: financing, business support and training services, and the regulatory framework. The study identified three necessary factors for opening new businesses: access to financing, a favorable regulatory framework for entrepreneurship, and training services (García-Macias et al., 2018).

The research by Escamilla-Salazar and Caldera-González (2013) proposed the probability that an individual in Mexico who is developing an activity leading to the start-up of a business, whether a woman entrepreneur or a man entrepreneur, depends on the influence of their level of education, employment situation, age, and income level. The results concluded that for women, the employment situation and self-confidence are fundamental for micro-entrepreneurship, while for men, income level, opportunities, and meeting other entrepreneurs are necessary factors for micro-entrepreneurship.

In the same context, Mungaray-Lagarda et al. (2015) conducted a study to determine the relationship between macroeconomic dynamics, micro-enterprise entrepreneurship, and employment within the

specified period. The study utilized data from INEGI's economic censuses and the ENOE. It first analyzed business strata in relation to income level, employment, and salary; then economic activity, salary, and employment; and finally, the number of companies, economic activity, and real wages by sector. The study found that the generation of microenterprises is explained both in times of economic growth, which favors the formation of microenterprises (pull effect theory), and in periods of economic crisis (recession push), where new microenterprises emerge due to lack of employment (Mungaray-Lagarda et al., 2015).

Another study analyzed the behavior of the state of Colima concerning an increase in the opening of companies. The objective was to identify if this dynamism is due to the recession push theory. Two econometric exercises were estimated using the ENOE database from 2005 to 2017, analyzing employment and unemployment in relation to business stratification, with elasticities over the specified period (González-García et al., 2018). The study concluded that the business dynamism in Colima aligns with the recession push theory. In addition, a decrease in employment in high-strata companies due to an unfavorable economic environment (economic crises) encouraged the entrepreneurship of new companies due to unemployment.

The first hypothesis in this paper proposes that the factors influencing entrepreneurship include recent unemployment, age, gender, educational level, number of children, and salary.

The increase in informality is a consequence of unemployment. When faced with unemployment, individuals often seek alternative sources of income, typically by starting their own businesses, which are generally informal. This leads to short-term economic growth tied to informality, which does not enhance the overall development of the family but merely increases income. Opportunity-driven entrepreneurship, on the other hand, encourages and supports entrepreneurs in creating stable businesses that generate more jobs and foster microeconomic development in the region.

Hence, the second hypothesis states that entrepreneurship among heads of households in the state of Chihuahua arises out of necessity.

3. Methodology

To determine the factors that influence entrepreneurship among heads of households, the National Survey of Occupation and Employment (ENOE) was used. Conducted by INEGI, ENOE is the primary source of labor market information in Mexico, offering monthly and quarterly data, national figures, and data for four locality sizes across each of the thirty-two states (INEGI, 2019).

Several authors have analyzed factors related to different types of entrepreneurship. For example, Alvarado-Lagunas et al. (2018) used an ordered logit model of discrete choice. This model expresses the preferences of individuals when creating a business association, indicating the motives or reasons for this process in an ordinal manner.

For this research, a binary choice logit model is used to estimate the probability of entrepreneurship and identify the factors that determine these probabilities. The model is proposed as follows:

$$Prob(Y = 1) = F(X, \beta) \quad (1)$$

$$Prob(Y = 0) = 1 - F(X, \beta) \quad (2)$$

where X represents a vector of independent variables, and β represents the parameter vector that reflects the impact on the probability of occurrence.

An important feature of this model is the distribution of data that gives rise to the dependent values. The logistic distribution is often applied due to its favorable mathematical properties. The logistic distribution function is represented as follows:

$$Y = E[y | x] + (y - E[y | x]) = \beta'X + \varepsilon \quad (3)$$

A derivation of this model is defined as a logit model (González-Milán et al., 2016).

For this research, it is considered that a binary choice logit model allows for determining which factors, according to theory, influence the entrepreneurship of a specific group of individuals.

The data used in this study are from the second quarter of the ENOE (2019). To obtain the necessary information, a combination of the databases that make up this survey was utilized, including SDEMT, COE1T, and COE2T. As previously mentioned, the purpose of the research is to determine the factors influencing entrepreneurship among heads of households in the state of Chihuahua. Therefore, only data of the state of Chihuahua were used. The analysis was restricted to heads of households and the economically active population aged 15 to 65 years.

To achieve more accurate results, the expansion factor "FAC" from the ENOE database was employed. This factor stores a six-digit numerical value indicating how many people (population) it represents within the total population.

From the ENOE data for the second quarter, the SDEMT, COE1, and COE2 databases designated as 2019 were combined, resulting in a total of 312 variables with 323,549 observations. Of these, only the variables listed in Table 1 were considered, creating a combination of these databases.

Table 1. Variables of ENOE 1.

Variable	Table	Description
ENT	SDEMT	Entity
PAR_C	SDEMT	Parenthesis
SEX	SUPPRESSED	Gender
CS_P13_1	SDEMT	Up to what grade did you pass in school?
CHILD	SDEMT	Number of children born
E_CON	SDEMT	Marital Status
POS_OCU	SEDEMT	Classification of the employed population by position in the occupation
SEG_SOC	SEDEMT	Classification of the employed population by condition of access to health institutions
MEDICA5C	SEDEMT	Classification of the employed population by health benefits (benefits)
SEDEMT	SEDEMT	Classification of the employed population looking for another job
SEARCH	SEDEMT	Classification of the employed population looking for another job
DUR_DES	SDEMT	Classification of the duration of unemployment
AGE	SDEMT	Classification of the population aged 15 and over
DOMESTIC	SDEMT	Classification of the population aged 15 and over by activity and inactivity
INGOCUP	SDEMT	Monthly Income
P14APOYOS	SDEMT	Classification of the population by economic support
T_TRA	SDEMT	Total number of jobs
EMP_PPAL	SDEMT	Classification of formal and informal jobs of the first activity
Q1C	COE1T	What's the main reason you didn't work last week?
P2_3	COE1T	Have you tried to start a business or carry out an activity on your own without being able to start yet?
P3B	COE1T	Do you engage in a business or activity on your own?
P3G_TOT	COE1T	Sum of the number of workers
P4C	COE1T	What is this business about?

Source: Data from INEGI (2019).

Chihuahua is represented by a total of 3,922,908 observations, of which 1,135,076 are representative observations of individuals identified as heads of household, accounting for 29% of the sample population (INEGI, 2005). Based on the literature review, the explanatory variables were defined and are shown in Table 2.

Table 2. Explanatory Variables.

Variable	Description
SEX	Gender of the head of the household
MARRIED	Married marital status
AGE1	Age group (15 to 25 years)
AGE2	Age group (26 to 35 years)
AGE3	Age group (36 to 45 years)
AGE4	Age group (46 to 55 years)
AGE5	Age group (56 to 65 years)
CHILD	If you have children
N_N	Educational level: none
N_P	Primary education level
N_S	Secondary education level
N_PB	Preparatory or baccalaureate educational level
N_PS	Professional educational level
L_ING	Logarithm of monthly income
TRAB_2	Has two jobs
Q_DOM	Economically active population doing household chores

Source: Data from INEGI (2019).

Finally, the model was based on the explanatory variables in Table 2, and the dichotomous explained variable is defined as E_E where:

1 = He/She engages in a business or activity on their own

0 = He/She does not engage in a business or activity on their own

$E_E = f(\text{MARRIED}, \text{AGE1}, \text{AGE2}, \text{AGE3}, \text{AGE4}, \text{CHILD}, \text{N_N}, \text{N_P}, \text{N_S}, \text{N_PB}, \text{N_PS}, \ln \text{ING}, \text{TRAB_2}, \text{Q_DOM})$

The explanatory variables included in the model refer to:

Entrepreneurship = f (marital status, age, children, no educational level, primary education level, secondary education level, high school education level, Professional education level, log of monthly income, having two jobs, performing domestic chores).

For data management, only the population considered to be of working age (15 to 65 years old) living in Chihuahua City and identified as heads of households were included.

Table 3 shows the variables considered for the logit model and their dichotomization criteria. Considering the objectives and nature of the research, age was grouped to better understand its impact as a factor in entrepreneurship. Similarly, the variable for children is dichotomous, analyzing only whether the head of the household has children or not, rather than the number of children, as a possible factor in entrepreneurship. The variable related to income is expressed as a natural logarithm to reduce noise and analyze this variable more effectively.

Table 3. Typology of variables.

Variable	Type of Variable	Dichotomization Criterion
E_E	Dichotomous	1 = entrepreneur, 0 = not an entrepreneur
SEX	Dichotomous	1 = Male, 0 = Female
MARRIED	Dichotomous	1 = Married, 0 = Single or other
AGE1	Dichotomous	1 = 15 to 25 years, 0 = other age
AGE2	Dichotomous	1 = 26 to 35 years, 0 = other age
AGE3	Dichotomous	1 = 36 to 45 years, 0 = other age

AGE4	Dichotomous	1 = 46 to 55 years, 0 = other age
AGE5	Dichotomous	1 = 56 to 65 years, 0 = other age
CHILD	Dichotomous	1 = Has children, 0 = No children
N_N	Dichotomous	1 = No educational level, 0 = Other
N_P	Dichotomous	1 = Primary educational level, 0 = Other
N_S	Dichotomous	1 = Secondary educational level, 0 = Other
N_PB	Dichotomous	1 = Preparatory or baccalaureate educational level, 0 = Other
N_PS	Dichotomous	1 = Professional educational level, 0 = Other
L_ING	Numerical	Logarithm of the individual's monthly income
TRAB_2	Dichotomous	1 = Has two jobs, 0 = Has only one job
Q_DOM	Dichotomous	1 = Performs household chores, 0 = Does not perform household chores

Source: Authors.

4. Results

According to the hypotheses and objectives set out in the research, the following results of the regression and its marginal effects were obtained, as shown in Table 4.

Table 4. Logistic regression 1.

VARIABLES E_E	ESTIMATIONS ODDS RATIO	STD. ERR.	Z	P>Z	MARGINAL EFFECTS DY/DX	STD. ERR.	Z
MARRIED	0.740146	0.0051908	-42.91	0	0.044862	0.00104	-43.04
SEX	1.788641	0.0548286	18.97	0	0.078289	0.0037	21.16
CHILD	1.267356	0.0394695	7.61	0	0.036916	0.00506	7.30
AGE1	0.084437	0.0019737	-105.74	0	0.188487	0.00075	-252.45
AGE2	0.541018	0.0030163	-110.18	0	0.091616	0.00082	-111.41
AGE3	0.716559	0.0023869	-100.05	0	-0.049707	0.00049	-100.57
AGE4	0.879975	0.0020916	-53.79	0	0.0190692	0.00035	-53.79
AGE5	1 (OMITTED)						
N_N	0.98186	0.0304216	-0.59	0.555	0.0027147	0.00457	-0.59
N_P	1.35748	0.0209094	19.84	0	0.0479726	0.00254	18.90
N_S	1.50822	0.0226974	27.31	0	0.0638622	0.00243	26.27
N_PB	1.35008	0.0216725	18.7	0	0.0474227	0.00268	17.71
N_PS	1.35964	0.0220722	18.92	0	0.0489138	0.00275	17.80
L_ING	0.83865	0.0045014	-32.78	0	0.0262424	0.0008	-32.82
TRAB_2	1.18535	0.0140556	14.34	0	0.0265326	0.00193	13.73
Q_DOM	0.60272	0.0043462	-70.21	0	0.0805283	0.00121	-66.49

Source: Authors.

Table 4 shows that the explanatory variable AGE5, representing the 56 to 65-year-old age group, is omitted from the model due to multicollinearity with other explanatory variables. Only the variable N_N (no educational level) has a P-value of 0.555, indicating that this variable is not a significant determinant for the explained variable E_E.

Regarding the marginal effects of the regression, the AGE3 group (36 to 45 years) has a negative probability of entrepreneurship among heads of households in Chihuahua. The AGE1 (15 to 25 years) and AGE4 (46 to 55 years) groups show a higher probability of entrepreneurship among heads of households.

Heads of household who perform household chores (Q_DOM) have an 8.05% probability of entrepreneurship. Similarly, heads of household aged 15 to 25 years have an 18.8% probability of entrepreneurship in the state of Chihuahua.

In terms of educational level, having a secondary education increases the probability of entrepreneurship as a head of household by 6.38% in the state of Chihuahua. Having a high school or professional educational level has a similar probability of 4.7% and 4.8%, respectively.

5. Discussion

According to the hypothesis, the factors that influence entrepreneurship include recent unemployment, age, gender, and educational level. The results show that the variables age (15 to 55 years), gender, educational level (primary, secondary, high school, and professional), children, and salary (logarithm of monthly income) are significant factors influencing entrepreneurship among heads of household in Chihuahua. However, the variable for recent unemployment showed a correlation with the explained variable (E_E) and was therefore excluded from the regression. Consequently, the first hypothesis is not accepted.

Regarding the second hypothesis, which posits that entrepreneurship among heads of families in the state of Chihuahua arises out of necessity, a theoretical analysis of the variables associated with the push and pull effect recession theories was conducted to determine which theory the regression results align with (González-García et al., 2018). Only the variables L_ING and TRAB2 correspond to these theories.

The results indicate that having a high monthly income (L_ING) increases the probability of entrepreneurship by 2.62% among heads of household in Chihuahua, corresponding to the pull effect theory, as higher income incentivizes and provides opportunities for entrepreneurship. In contrast, the TRAB2 variable, corresponding to the recession push theory, indicates that having two jobs increases the probability of entrepreneurship by 2.65%, suggesting that having multiple jobs is often out of necessity.

These results show a variation of 0.03%. The ODDS RATIOS indicate that individuals with two jobs are 1.18 times more likely to be entrepreneurs. It can be deduced that both opportunity and necessity entrepreneurship exist, but it is more likely that heads of families in Chihuahua undertake entrepreneurship out of necessity. Therefore, the second hypothesis is not rejected.

The factors influencing entrepreneurship between men and women are the same. The difference lies in the probability of entrepreneurship, depending on gender. For the model applied, the dichotomous variable was classified with values 1 = male and 0 = female. Therefore, a male head of household has a 7.8% probability of entrepreneurship, with other factors also showing positive probabilities.

Having children does influence the decision of heads of households to undertake entrepreneurship, regardless of whether the head of the family is male or female. This factor drives entrepreneurship due to the need to generate more income to support more people within the household, aligning with the results of the second hypothesis.

Based on the results, the causes of entrepreneurship among heads of households in Chihuahua include income, educational level, having two jobs, having children, doing household chores, and gender. It is also deduced that performing household chores has a positive probability of entrepreneurship among heads of households in Chihuahua, contrary to the findings of Álvarez et al. (2012), which indicated that dedicating oneself to housework decreases the probability of being an entrepreneur. This difference highlights a unique aspect of heads of families in Chihuahua.

Regarding the characteristic of being married, the results show a positive probability of 4.4% for entrepreneurship within Chihuahua, corroborating the findings of Alvarado-Lagunas et al. (2018), which suggest that being married can be a significant reason to start a micro business and improve family income (22%).

6. Conclusions, limitations and recommendations

Understanding the factors that encourage entrepreneurship among heads of households helps analyze the causes and determine whether they are consequences of public policies or the current economic environment. Based on the theories of recession push and pull effect, this analysis allows for identifying the type of entrepreneurship emerging in the state of Chihuahua.

Determining the factors influencing entrepreneurship in each state aids future research by explaining entrepreneurship behavior and projecting it based on external factors such as economic crises and political changes. Understanding the type of entrepreneurship based on the recession push and pull effect theories is a valuable tool for analyzing municipal and state policies in Chihuahua. It reveals the most important factors for families who have recently started businesses, enabling targeted actions to positively impact the state's families.

The benefits of this paper include obtaining results on a crucial economic topic: families and SMEs. By researching and comparing various studies, this paper creates a national and international overview of the situations and factors affecting individuals. This allows for a thorough analysis to resolve the research problem, achieve the objectives, and determine the validity of the hypotheses, ultimately benefiting decision-making for future research.

Reducing unemployment and informality is crucial for the government and the economic development of the state. The creation of microenterprises serves as a tool to support the economy and provides a more income-friendly employment alternative for families.

By identifying the factors that influence entrepreneurship among heads of households in the state of Chihuahua, this knowledge enables further research related to entrepreneurship, which is a significant source of employment that strengthens the state's economy. This analysis serves as a basis for future research on necessity-driven entrepreneurship, which is characteristic of heads of households in Chihuahua. The identified factors have the potential for further analysis, including comparisons over different periods, such as during or after the pandemic.

Another suggested research topic is related to policies aimed at supporting entrepreneurship. The results indicate that current support for entrepreneurship is not reflected in the findings, as the theory suggests that opportunity-driven entrepreneurship would be the outcome. This research does not cover all theories or variables related to public policies and their impact on the family economy.

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References

- Alvarado-Lagunas, E., Ortiz-Rodríguez, J., & Morales-Ramírez, D. (2018). Factores que influyen en el emprendimiento de un micronegocio familiar en México. *Revista de Economía del Rosario*, 21(1), 153–180. <https://doi.org/10.12804/revistas.urosario.edu.co/economia/a.6816>
- Brunet, I., & Alarcón, A. (2004). Teorías sobre la figura del emprendedor. *Papers. Revista de Sociología*, 73, 81. <https://doi.org/10.5565/rev/papers/v73n0.1108>
- Díaz-Casero, J. C. (2003). *La creación de empresas en Extremadura. Un análisis institucional*. Universidad de Extremadura. <https://dialnet.unirioja.es/servlet/tesis?codigo=1282>

- Escamilla-Salazar, Z., & Caldera-González, D. C. (2013). Análisis de los factores socioeconómicos y psicosociales en mujeres y hombres emprendedores nacientes en México. *Investigación Administrativa*, 111, 7–19. <https://www.escasto.ipn.mx/investigacion-administrativa/revistas-anteriores/ia-revista111.html>
- Flores, B., Landerretche, O., & Sánchez, G. (2011). *Propensión al emprendimiento: ¿Los emprendedores nacen, se educan o se hacen?* Facultad Economía y Negocios Universidad de Chile. <http://repositorio.uchile.cl/handle/2250/128190>
- González-García, J., Mungaray-Lagarda, A., & Osorio-Novela, G. (2018). La microempresa mexicana, un asunto de necesidad y no de oportunidad: el caso de Colima. *Análisis Económico*, 33(September), 123–142. https://www.researchgate.net/publication/327762591La_microempresamexicana_unasunto_de_necesidad_y_no_de_oportunidad_el_caso_de_Colima
- González-Milán, D. J., Ávila-Arce, A., & Rios-Luna, E. A. (2016). Posibilidades de crecimiento y éxito microempresarial: un análisis a través de modelos logit. *Ra Ximhai*, 12(4), 197–209. <http://www.raximhai.com.mx/Portal/index.php/component/content/article/7-ejemplares/53-vol-12-num-6>
- INEGI. (2005). Catálogo e Instructivo de Codificación de Parentesco. INEGI. https://www.inegi.org.mx/contenidos/programas/enoe/15ymas/doc/enocatalogoinstructivoparentesco2005a2_2007.pdf
- INEGI. (2019). Encuesta Nacional de Ocupación y Empleo. Estructura de la base de datos. 2019. Instituto Nacional de Estadística y Geografía.
- Kirzner, I. M. (1985). *Discovery and the Capitalist Process*. The University of Chicago Press.
- López-Fernández, M.C., Serrano-Bedia, A.M., & Palma-Ruiz, M. (2016). What hampers innovation in Mexican family firms? *Academia Revista Latinoamericana de Administración*, 29(3), 255–278. <https://doi.org/10.1108/ARLA-08-2015-0194>
- López-Vera, J. G., & Apolinario-Quintana, R. (2019). Emprendimiento por necesidad: una visión desde UNASUR. *Journal of Chemical Information and Modeling*, 53(9), 1689–1699. <https://doi.org/10.1017/CBO9781107415324.004>
- Low, M. B., & Macmillan, I. C. (1988). Entrepreneurship: Past Research and Future Challenges. *Journal of Management*, 14(2), 139–161. <https://doi.org/10.1177/014920638801400202>
- García-Macias, M. A., Zerón-Félix, M., & Sánchez-Tovar, Y. (2018). Factores de entorno determinantes del emprendimiento en México. *Entramado*, 14(1), 88–103. http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S1900-38032018000100088
- Marulanda-Valencia, F. Á., Montoya-Restrepo, I. A., & Vélez-Restrepo, J. M. (2018). El individuo y sus motivaciones en el proceso emprendedor. *Universidad & Empresa*, 21(36), 149. <https://doi.org/10.12804/revistas.urosario.edu.co/empresa/a.6197>
- Marulanda-Valencia, F. Á., & Morales-Gualdrón, S. T. (2017). Entorno y motivaciones para emprender. *Revista EAN*, (81), 12–28. <https://doi.org/10.21158/01208160.n81.2016.1556>
- Mungaray-Lagarda, A., Osuna-Millán, J., Ramírez-Urquidy, M., Ramírez-Angulo, N., Escamilla-Díaz, A., Ramírez-Urquidy, M., & Ramírez, N. (2015). Emprendimientos de micro y pequeñas empresas mexicanas en un escenario local de crisis económica: El caso de Baja California, 2008-2011. *Frontera Norte*, 27(53), 115–146. <https://doi.org/10.17428/rfn.v27i53.87>
- Palma-Ruiz, J. M., Serrano-Bedia, A. M., & López-Fernández, M. C. (2019). Social capital multidimensionality as a determinant of entrepreneurial intention: Evidence from Mexico and Spain. *International Journal of Smart Education and Urban Society (IJSEUS)*, 10(3), 43–56. <https://doi.org/10.4018/IJSEUS.2019070105>
- Ramos-Guerrero, F. R. & Quintero-Hernández, L. H. (2012). Determinación de factores que inciden en la decisión de emprender un negocio: Caso IETI-CUCIENEGA. XVII Congreso Internacional de Contaduría, Administración e Informática. Universidad Autónoma de México. <https://investigacion.fca.unam.mx/docs/memorias/2012/3.07.pdf>
- Shapiro, A. T. (1985). *The Entrepreneurial Event*. College of Administrative Science, Ohio State University.
- Vallmitjana, N. (2014). *La Actividad Emprendedora de los Graduados Iqs*. Universitat Ramon Llull. <https://www.tdx.cat/handle/10803/145034>