



Gender, Perceived Insecurity, Corruption Perception, Subjective Norm, and Household Income: A Configurational Approach to Entrepreneurial Intention

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Abstract

The entrepreneurial intention is of great importance as an immediate antecedent of entrepreneurship, understood as a key to explain future regional economic development in emerging countries. There is a growing interest from academia about the entrepreneurial intention of university students from emerging countries. This study addresses, in an exploratory way, the combined effect of three internal variables affected by the environment (perceived insecurity, corruption perception, and subjective norm) and two sociodemographic variables (household income and gender) and their impact on the entrepreneurial intention of university students. A sample of students ($N=380$; male=185; female=195) from the Technological University of the State of Zacatecas (Mexico) is used and a causal model is proposed following the fsQCA configurational methodology. This study highlights the gender gap that affects women even in the stage that precedes the act of entrepreneurship as well as the importance of having financial resources. Also, the results show how citizen security facilitates the development of entrepreneurial intention and the need of improving the formal procedures surrounding entrepreneurship to reduce the facilitating effect of corruption. Finally, the findings support the important role of subjective norm. From a cognitive point of view, a configurational approach is addressed to explain the effect on entrepreneurial intention of phenomena that are strongly prevalent in the Latin America and the Caribbean region, such as gender inequality, citizen insecurity, corruption, and poverty.

Keywords Entrepreneurial intention · Perception of corruption · Perception of insecurity · Household income · Gender · QCA

JEL Classification D9 · M13 · M2

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Introduction

Economic returns are determined from multiple sources. Entrepreneurship is considered one of the most important factors because of its dynamic capacity to promote the creation of long-term value (Minniti, 2008). However, the great differences existing at the microeconomic level between developed and developing countries explain why there is no single recipe that promotes entrepreneurship from politics (Acs & Szerb, 2007). Along these lines, it is important to adapt entrepreneurship promotion policies to the specific restrictions of each territory (Boettke & Coyne, 2009). Thus, there is a need to understand the factors that lead individuals to start a business and, more specifically, the need to focus on their entrepreneurial intention as an indicator of the latent entrepreneurship that exists in a region (Blanchflower et al., 2001; Verheul et al., 2006).

The personal history of each person, their characteristics and abilities, and their context can affect their entrepreneurial intention (Liñan et al., 2016). Consequently, the phenomenon of entrepreneurship must be studied considering the external factors that surround entrepreneurs (Aldrich, 2000; Brush et al., 2003) and not only based on their internal factors, since there is an interrelation between both (Fritsch & Storey, 2014). Along these lines, it should be noted that Mexico has high levels of violence and is among the top 20 most violent countries in the world, registering a homicide rate of 27.3/100,000 inhabitants in 2019 (Igarapé Institute, 2021). In the same way, in 2020, it occupied position 124 out of 180 in the transparency index (Transparency International, 2020), which reflects the huge problem of existing corruption in the country. Despite being one of the two Latin American countries that the global entrepreneurship monitor (GEM) project identifies as high-parity economies (GEM, 2017), in 2019, Mexico had a female/male total early-stage entrepreneurial activity ratio of 0.91 (GEM, 2021), which shows that there is still a gender gap in entrepreneurship that must be closed through a deep understanding of the underlying social reality, and that allows the corresponding design of public policies.

Using samples of students pursuing higher education is common in entrepreneurship literature (Liñan & Chen, 2009), as people between the ages of 25 and 34 and university studies have a greater propensity to start a business (Reynolds et al., 2002). Human capital is presented as a fundamental element of the territorial economic development of Mexico. From a cognitive point of view, this work deals with the combined influence of different variables that can favor or hinder Zacatecan university students' entrepreneurial intention. Thus, this study generates a novel contribution since the variables that are combined are not present in the most developed countries, and most of the scientific studies that address the entrepreneurial phenomenon focus on these countries. This research addresses, in an exploratory way, the combined effect of three internal variables affected by the environment (perceived insecurity, corruption perception, and subjective norm) and two sociodemographic variables (household income and gender) and their impact on the entrepreneurial intention of university students from the state of Zacatecas. The proposed model was tested using fuzzy set comparative qualitative analysis (fsQCA). A key point is

to develop explanatory models to identify the different profiles of individuals based on the combination of these external and internal variables (Gartner, 2010). The fsQCA configurational methodology is suitable for this purpose since it focuses on the study of cases, allowing the identification of common behavior patterns that help improve the understanding of the phenomenon under study. The research design that takes these antecedents into account facilitates the development of empirical studies whose findings allow researchers to advance in the field of knowledge through the development of multilevel theory (Lacey & Fiss, 2009). The main contribution of this research is to find and understand the underlying patterns of the profiles of university students analyzed with the aim of guiding policy makers and advising university managers on improving environments that facilitate university student entrepreneurship. The academic literature has analyzed how the alignment of objectives and design of university activities can improve the development of entrepreneurial skills in students (Potocan et al., 2021). In fact, culture and its active management (Facchini et al., 2021) define the contour within which entrepreneurship growth develops in emerging economies (Hamdan et al., 2022).

In the following sections, this article provides a conceptual framework on the importance of studying entrepreneurial intention in the context of the economic development of territories. As part of the literature review, this research analyzes perceived insecurity, corruption perception, subjective norm on the intention to start a business, household income, and the gender of the individual as factors that affect entrepreneurial intention. Subsequently, the fsQCA methodology is explained, the results of the research are presented, the main findings are discussed, and recommendations are provided. Finally, the conclusions, limitations of the study, and future research directions are presented.

Literature Review and Propositions

Economic Development, Entrepreneurship, and Entrepreneurial Intention (EI)

Entrepreneurship is a driver of economic dynamism and notably influences the economic growth of countries and regions (Acs & Armington, 2004). Levie and Autio (2008) highlight the impact of entrepreneurial activity on economic development, based on the dynamization of production factors, increased efficiency, and the incentive for innovation (López-Claros et al., 2006). In fact, the promotion of innovation processes and the creation of new employment opportunities are decisive (Audretsch & Thurik, 2001), as innovation and growth contribute significantly to prosperity and citizens' well-being (Audretsch, 2007; Levie & Autio, 2008).

The entrepreneurship process consists of a sequence of phases, including those before and after starting a new business (Moriano, 2005). In this sense, EI is a core element for understanding the process of starting a business (Bird, 1988) and represents the antecedent of the decision to create a company (Liñán et al., 2013). Thus, having the intention to start a new venture is the first step in the entrepreneurial process (Kessler & Frank, 2009).

Hence, the study of EI is of crucial interest because it is considered the best predictor of entrepreneurial behavior (Kautonen et al., 2015; Krueger, 2017). In recent years, the analysis of EI among university students has become relevant (Franke & Lüthje, 2004; Lüthje & Franke, 2003), because this construct has become decisive as a proxy for future entrepreneurship (Hmieleski & Corbett, 2006; Lüthje & Franke, 2003; Thompson, 2009).

EI is defined as an individual's willingness to undertake a business activity and start a new company in the future (Thompson, 2009). It is a mental state of consciousness that precedes the action of starting a business and directs attention toward that goal (Fayolle et al., 2014). Therefore, measuring EI can be said to measure the latent entrepreneurship that exists in a territory (Blanchflower et al., 2001; Verheul et al., 2006).

Perceived Insecurity (PERIN)

Insecurity comprises both an objective and a subjective component. Following Bartal and Jacobson (1998), this study focuses on PERIN (the subjective component), which can be defined as the estimate made by each individual evaluating the degree of risk to which they are exposed. Objective risk and victimization play an important role in the formation of the perception of insecurity (Nasir & Rehman, 2019), showing the relationship between objective and subjective insecurity. However, the subjective nature of the perception of insecurity can determine that two subjects perceive different levels of insecurity in the same situation (Owen, 2008).

Insecurity in a territory affects entrepreneurship directly and indirectly (Pinazo-Dallenbach, 2021). In turn, it affects the investment capacity of companies as well as the education of human capital (Brück et al., 2013). In addition, the perception of insecurity pushes entrepreneurs to invest significant sums of money in the protection of their business and their physical integrity (Muggah & Tobón, 2018). In this regard, subjective insecurity may end up becoming a barrier to entry that inhibits entrepreneurship (Ospina-Plaza & Giménez-Esteban, 2009; UNDP, 2013). Consequently, as argued by Nasir and Rehman (2019), PERIN directly affects economic decisions. Insecurity and its collateral effects have an adverse impact on entrepreneurship, increasing risk and uncertainty in business management, which, in many cases, means the end of a business venture (Brück et al., 2016; Escandon-Barbosa et al., 2019).

Considering the consequences of subjective insecurity on entrepreneurship, this exploratory study proposes the existence of a causal relationship between PERIN and the EI of university students.

Corruption Perception (COPER)

Institutional conditions affect business activities (Autio & Fu, 2015). The existence of efficient organizations and institutions that promote opportunities and economic growth is decisive for entrepreneurial success (Kenney & Von Burg, 1999; Saxenian, 1994). On the contrary, corruption in institutions

is an important barrier to entrepreneurial activity, even in countries with a bad business climate (Dutta & Sobel, 2016). Institutional quality affects proliferation of new businesses (Ben Ali, 2022), and deficient or inadequate regulation is linked to the appearance of corruption (Broadman & Recanatini, 2001; Rose-Ackerman, 2007). Similarly, the level of corruption influences institutional quality by affecting the distribution of resources, increasing capital costs, and inhibiting productive business activities (Estrin et al., 2013).

The existence of competent bureaucratic systems facilitates control of corruption. In their absence, they increase the incentives for a few privileged groups to develop opportunistic behaviors (e.g., arbitrating between expenses and taxes or with extra costs of public works), contributing to an increase in the perception of corruption and stopping private action (Padró i Miquel, 2007). Therefore, capital resources and, in particular, human resources are not allocated efficiently, and the level of performance of the economic model is limited.

Evidence suggests that corruption has important effects on entrepreneurship, inequality, and social well-being (Chowdhury et al., 2018). Corruption discourages investment (Lambsdorff, 2003), both foreign and national, and the higher levels of uncertainty caused will increase transaction costs and hinder market efficiency (Luhmann, 1988; Teece, 1981). Corruption decreases trust in institutions (Rose-Ackerman, 2001), which is strongly necessary for entrepreneurs as they need to be sure that “office holders and others who are directly and indirectly party to a transaction will, regardless of their identity, impartially and fairly enforce the rules that govern exchange” (Anokhin & Schulze, 2009, p.467). In this sense, and due to their intrinsic characteristics, entrepreneurs are more vulnerable to corruption that comes from the public sphere, since they need to request licenses and other official documents, they do not have contacts in the government elite or lobbies, they have greater difficulties to get credit and therefore have greater difficulties to pay bribes, and their projects involve slow accumulation of capital and are riskier (Collins et al., 2016). The perception of corruption is also observed as the abuse of power by private groups or public authorities (Rodríguez et al., 2006), which translates into risk that the agents participating in the value chain have opportunistic behaviors and develop rent-seeking clientelism by appropriating the benefits of business activity (Aidis, 2005; Anokhin & Schulze, 2009). As a consequence, innovative outcomes and business performance are limited (Baker et al., 2005; Block et al., 2015; Rose-Ackerman, 2001).

The literature shows that there is an inverse relationship between corruption and entrepreneurship. However, as in the case of insecurity, there are differences between the corruption in a territory and the corruption perceived by its inhabitants (Donchev & Ujhelyi, 2014; Gutmann et al., 2020; Olken, 2009). This study focuses on the perceptions of corruption.

Considering the consequences that the perception of corruption has on entrepreneurial activity, this exploratory study proposes the existence of a causal relationship between COPER and the EI of university students.

Subjective Norm (SN)

The theory of planned behavior (Ajzen, 1991) offers a coherent theoretical framework to explain human behavior in specific contexts. According to Ajzen (1991, 2001), the three variables that explain a person's intention to do something are the attitude toward something, the SN, and their perceived behavioral control. Thus, attitudes toward entrepreneurship, SNs, and perceived behavioral control should directly predict EI (Kautonen et al., 2015). Although there is a consensus among researchers regarding the determining role of the attitude toward entrepreneurship and the perceived behavioral control, there is no consensus to be able to affirm whether the SN plays an important role in determining the intention of individuals to start a business (Liñan & Chen, 2009).

The SN refers to the “perceived social pressure to perform or not perform a specific behavior” (Ajzen, 1987, p.188). This component can be defined, specifically, as a probabilistic judgment about what the majority of the important people for the individual (direct relatives, friends, and colleagues) think of the performance of a certain behavior (Ajzen, 2001; Kautonen et al., 2015). Ajzen (2006) adds that SNs are formed by individuals' beliefs about the normative expectations of their most important referents (normative beliefs) and the motivation to fulfill these expectations.

Given the low consensus among researchers, this study focuses on the SN to improve empirical knowledge of this component of EI. Some authors highlight the important relationship between SN and EI (Kautonen et al., 2015; Kolvereid & Isaksen, 2006). Others find that SN does not affect significantly (Autio et al., 2001; Krueger et al., 2000). Some prefer not to include it in their models (Veciana et al., 2005).

In this exploratory study, the existence of a causal relationship between SN and university students' EI was proposed.

Household Income (HI)

Small- and medium-sized companies must have access to financial resources to ensure their survival, since without them, the entrepreneur will not be able to develop new products and services, undertake expansion plans, or create jobs (Petersen & Rajan, 1994). Thus, financing is a critical aspect that new and smaller companies must face (Hall, 2008; Kerr & Nanda, 2011).

Various studies show that there is a positive correlation between an individual's HI and entrepreneurial activity (Evans & Jovanovic, 1989; Wiseman & Young, 2011). Casson (1982) explains that the lack of wealth among individuals is a fundamental barrier that restricts their entrepreneurial activity. Consequently, entrepreneurs facing liquidity constraints are discouraged from undertaking a business venture (Evans & Jovanovic, 1989; Holtz-Eakin & Smeeding, 1994). Other studies affirm that parents' financial capital is also related to youth entrepreneurship (Dunn & Holtz-Eakin, 2000; Hsu et al., 2007). Shapero and Sokol (1982) point out that HI indirectly affects attitudes, intentions, and behaviors related to entrepreneurship.

Along these lines, Raijman (2001) specifies that family financial resources have a significant impact on EI.

However, some authors question the relationship between HI and entrepreneurship. Setti (2017) points out that individuals belonging to wealthy families are more likely to undertake a business venture, but adds that the influence of family income is not the same in all countries. Schøtt (2017) finds that HI does not have a significant effect on young Europeans' intention to start a business, even if they are immigrants. Sharma (2014) also found no relationship between family financial capital and the EI of young people in India.

This exploratory study proposes the existence of a causal relationship between the HI of university students and their EI.

Gender (GEN)

Women are less likely to start entrepreneurial projects than men (Autio, 2005; Schøtt et al., 2015). However, the differences between genders regarding EI are largely explained by the influence of the environment, especially in more traditional cultures (Setti, 2017). This is the case in Latin America, where the proportion of women entrepreneurs lags behind that of more advanced countries in other regions such as Europe, Asia, and North America. Despite this, the rates of female entrepreneurship are growing in this region (Acs et al., 2008; Allen, et al., 2008; Weeks & Seiler, 2001). Female entrepreneurship rates in Latin America are higher than in other emerging territories (Bosma et al., 2008), although the majority are classified as necessity-driven entrepreneurs (Terjesen & Amorós, 2010). Indeed, the difficulty of women to be employed is the main impulse to start a business, as reflected in the data of the World Bank (2010), which indicates self-employment as the main source of paid work for women in Latin America.

Female entrepreneurship in Latin America is diverse and spreads across almost all sectors of the economy (Amorós & Pizarro, 2007). However, large differences are seen between men and women, especially when entrepreneurial incentives are measured (Allen et al., 2008; Amorós & Pizarro, 2007). Along these lines, women entrepreneurs are more affected by corruption in institutions (Boehm & Sierra, 2015; Goel & Nelson, 2021) and have difficulties accessing training systems and business development services (Bruhn, 2009; CEPAL, 2010; World Bank, 2010). Likewise, women entrepreneurs also have problems accessing professional networks that provide them with the necessary information on business management and access to financing, technology, and marketing channels (CEPAL, 2010; World Bank, 2010).

The inequality between men and women causes unfavorable situations for women, even when their skills, knowledge, and perception are favorable for entrepreneurship (Amorós & Pizarro, 2007). Thus, one of the main problems faced by women in these countries is access to financial resources for their business ventures (de Vita et al., 2014), concentrating the entrepreneurial drive on their ability to save (Smith-Hunter & Leone, 2010). The ownership of productive assets also presents gender inequality and represents another barrier to entrepreneurship for

Latin American women (Bruhn, 2009; World Bank, 2010). There is an unfavorable context for female entrepreneurship that, in addition, conditions the perception that future entrepreneurs have about entrepreneurship and widens the development gap for future generations of female entrepreneurs.

The available empirical evidence and the focus of the literature on difficulties that women face in the entrepreneurship process lead to the proposal of the existence of a causal relationship between the gender of university students and their EI.

This theoretical framework allows the formulation of the following causal model: $EI = f(\text{PERIN}, \text{COPER}, \text{SN}, \text{HI}, \text{GEN})$.

Given the nature of the methodology used, the tested conditions cannot be evaluated individually but rather are assumed in the proposed model that analyzes them from a factual perspective and in a combined manner. Thus, as a consequence, adopting a joint configurational approach to causal conditions, and based on the theoretical framework reviewed in this article, the following propositions are stated:

P1. None of the five causal conditions (PERIN, COPER, SN, HI, GEN) are necessary to predict high (or low) levels of EI among university students.

P2. The five causal conditions form multiple configurations that are sufficient to predict a high (or low) level of EI among university students.

Methodology

Sample

This study used data extracted from a sample of 380 university students, of which 185 were men and 195 were women. University students have a greater propensity to undertake entrepreneurial projects (Liñan et al., 2011), which makes them the appropriate group to conduct studies on EI (De Clercq et al., 2013).

The sampling method used was random sampling. Online surveys were distributed to students of different technical/professional careers and degrees/engineering from the Technological University of the State of Zacatecas (UTZAC). This university has a population of approximately 2500 students. To obtain a representative sample of this population, it was necessary to receive at least 334 correctly completed questionnaires, accepting a margin of error of 5% and a confidence interval of 95%.

Measurement of Variables

The EI variable was constructed by applying a factor analysis using SPSS v 19. The items that comprise the EI factor correspond to the scale that appears in the EI questionnaire by Liñan et al. (2016). A similar process was carried out to construct the variables perceived insecurity (PERIN) and corruption perception (COPER). The items that constitute the PERIN factor correspond to those proposed by Pinazo-Dallenbach and Castelló-Sirvent (2021). Those included in the COPER factor correspond to the questions that appear in Transparency

Table 1 Conditions and scales

Attribute		Concept	
Type	Condition	Indicator	Scale
Outcome	EI	Entrepreneurial intention	(Liñan, Moriano & Jaen, 2016)
Ambiental conditions	PERIN	Perceived insecurity	Pinazo-Dallenbach and Castelló-Sirvent (2021)
Entrepreneur conditions	COPER	Corruption perception	Transparency International (2017)
	SN	Subjective norm	Liñan & Chen (2009), Laguía et al. (2017)
	HI	Household income	López Romo (2018)
	GEN	Gender (0, 1)	-

Own elaboration

International's (2017) corruption perception index. Among the three factors, the goodness of fit is correct, since the significance level of the Bartlett sphericity test is less than 0.05, and the Kaiser–Meyer–Olkin index reaches a minimum value greater than 0.50 and very close to 1, so its significance is very high. Similarly, the reliability of the scales was correct because they showed Cronbach's alpha values higher than 0.8.

On the other hand, to measure the subjective norm (SN), the model proposed by Liñan and Chen (2009) in their EI questionnaire was used. This model includes three reference groups: direct family members, close friends, and colleagues or co-workers. The following formula proposed by Laguía et al. (2017) has been used: $SN = (NB1 * M1) / 3 + (NB2 * M2) / 3 + (NB3 * M3) / 3$, where NB refers to the normative beliefs relative to other referents, and M refers to the individual's motivation to accommodate other referents.

Finally, to measure household income (HI), the scale of the Social Research Institute of Mexico (López Romo, 2018) was used, which allows individuals to be classified into six different levels based on their household income.

Table 1 summarizes this information.

Table 2 Descriptives

	GEN ^(a)	EI	SN	HI	PERIN	COPER
Mean	0	0.0957	6.14	0.501	0.0558	0.142
	1	-0.0908	5.98	0.403	-0.0588	-0.135
Median	0	0.396	6.33	0.600	0.0698	0.321
	1	0.255	6.00	0.400	-0.0842	-0.208
Standard deviation	0	0.912	1.77	0.223	0.922	0.938
	1	0.947	1.63	0.224	0.952	0.943

^aGEN takes value 0 when it comes to men and value 1 when it comes to women

Own elaboration

Table 3 Correlation matrix

	EI		SN		HI		PERIN		COPER
EI	—								
SN	0.247	***	—						
HI	0.080		0.085	—					
PERIN	0.036		-0.034		-0.009	—			
COPER	0.170	***	0.172	***	0.194	***	0.223	***	—

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Own elaboration

The variables presented the following descriptive statistics for the sample obtained in this investigation ($N = 380$). Table 2 shows the values for both men and women.¹

The perception of corruption (COPER) has a weak, statistically significant, positive correlation with the variables under study (EI, SN, HI, PERIN). SN has a statistically significant relationship with the outcome (EI), while from the conventional statistical analysis, HI and PERIN do not establish statistically significant relationships (see Table 3).

Fuzzy Set Qualitative Comparative Analysis (fsQCA)

To verify the propositions raised in the “Literature Review and Propositions” section, comparative qualitative analysis (QCA) was used in its variant of fuzzy sets (fsQCA). The fsQCA is a methodology that allows the systematic analysis of a series of cases that are conceptualized as combinations of specific characteristics or conditions to find causal patterns that determine the outcome (Fiss, 2011; Ragin, 2008). Comparative qualitative analysis is a causal technique (Ragin, 1987). This differentiates it from other inferential statistical techniques and multivariate data analysis by using conditions that show attributes of presence or absence. Furthermore, this technique makes it possible to indicate asymmetric relationships between variables that are not high enough to produce statistically significant results in a dependent variable, which makes them go unnoticed using conventional statistical techniques (Woodside, 2013).² Thus, fsQCA focuses on the analysis of case studies, highlighting the causal relationships that occur in the phenomenon studied (Rihoux & Lobe, 2009). In this way, it improves the understanding of reality based on factual analysis. As a result, as it is a methodology focused on the cases, it is suitable for conducting exploratory studies (Beynon et al., 2021; Lei et al., 2022). Thus, this research serves as a starting point, as its results are useful as a basis for the design of future studies that deepen the knowledge extracted from this article. The characteristics

¹ The distributions of each variable for each gender are available in the annex.

² This characteristic of fsQCA enables the study of causal relationships between the variables of this study despite the fact that Table 4 indicates that HI and PERIN do not show statistically significant relationships with the rest of the variables.

Table 4 Calibration and descriptive statistics

Condition Concept	Calibration			Statistics		
	Fully inside	Maximum ambiguity	Fully outside	Max	Min	Median
EI	0.808581	0.39642	-1.271704	0.81	-3.352	0.3964
PERIN	1.3128648	0.0293905	-1.32032	1.79	-1.6542	0.0294
COPER	1.166747	0.027752	-1.311001	1.22	-2.2011	0.0278
SN	8	6.00	4	9	1	6
HI	0.6	0.4	0.2	1	0	0.4
GEN	1	-	0	-	-	-

Compiled by the authors

highlighted by Fiss (2011), i.e., the results obtained through the use of fsQCA allow the identification of relationships between variables that would not be identified through the use of conventional inferential methodologies, support the choice of this methodology.

Although the QCA was originally designed to analyze small or medium samples, subsequent studies have shown that there are no mathematical limitations to working with large samples, offering valid results (Fiss, 2011; Woodside, 2012). Furthermore, in recent years, the growing interest in this methodology has increased its application in the study of entrepreneurship. In this sense, Kraus et al. (2018) offer an extensive study on the use of this methodology in this area of knowledge, identifying 261 papers published in high-impact journals from 2005 to 2016. More specifically, recent studies, such as that of Şahin et al. (2019), show that this methodology is very useful for exploring the combined effect of personal characteristics on EI.

According to Ragin (2008), fsQCA allows researchers to understand the relationships of need and sufficiency between sets, from the dependent variables (conditions) and the independent variable (outcome). Thus, there are three phases of an fsQCA analysis (Ragin, 2008; Schneider & Wagemann, 2012): the calibration of the outcome and the conditions, the analysis of necessary conditions, and the analysis of sufficient conditions.

Calibration

The software fs/QCA 3.0 (Ragin & Davey, 2014) was used to carry out the analysis. The first phase corresponds to the calibration of the conditions and the outcome. The calibration process allows the identification of cases and classifies them as fully inside (1), fully outside (0), or at the point of maximum ambiguity (0.5) of a variable (Ragin, 2008). Table 3 presents the statistics and calibration rules for the conditions and the outcome of the fuzzy set.

The calibration of EI, PERIN, COPER, and SN was carried out following the methodology proposed by Fiss (2011), using the 0.90, 0.50, and 0.10 percentiles (Climent-Serrano et al., 2018). HI calibration, expressed as monthly income, was carried out with fixed values, establishing cut-off points (0.6, 0.4, 0.2) that assume

Table 5 Analysis of necessary conditions

Conditions tested	Presence of entrepreneurial intention		Absence of entrepreneurial intention	
	Consistency	Coverage	Consistency	Coverage
● PERIN	0.564070	0.613044	0.576807	0.548749
○ PERIN	0.584798	0.612198	0.593259	0.543644
● COPER	0.635399	0.650231	0.552036	0.494507
○ COPER	0.506038	0.563413	0.609541	0.594060
● SN	0.639394	0.657057	0.551694	0.496268
○ SN	0.509810	0.565052	0.618757	0.600321
● HI	0.704736	0.619841	0.629526	0.484676
○ HI	0.414096	0.560807	0.506227	0.600126
● GEN	0.472903	0.491403	0.559144	0.508597
○ GEN	0.527097	0.577323	0.440856	0.422677

Compiled by the authors using the software program fsQCA 3.0

● Means presence of a condition ○ Means absence of a condition

fully inside ($\geq 11,600$ pesos), maximum ambiguity (between 6800 and 11,599 pesos), and fully outside (≤ 6799 pesos). The manual method proposed by Ragin (2008) was followed for GEN calibration, indicating 1 when it is a woman and 0 when it is a man. Table 4 lists the data.

Results

Analysis of Necessary Conditions

To understand how comparative qualitative analysis works, it is necessary to establish the difference between necessity and sufficiency analyses. Following Ragin (2008), a condition is necessary for a specific result if it is always present when this result occurs. In contrast, a condition is sufficient for a specific result if the outcome occurs whenever the condition is present. However, this result can be attributed to other conditions. Necessity analysis allowed us to determine if any of the analyzed conditions are necessary to produce the EI outcome (Ragin, 2008).

The necessity analysis (Table 5) concludes that there is no condition that is necessary for the presence (or absence) of EI to occur, since no condition exceeds the minimum consistency threshold of 0.9 (Schneider et al., 2010).

There are no necessary conditions for university students to present a high EI (or low EI). This indicates that there are various causal configurations formed by combinations of conditions that must be given to increase (or decrease) the EI of university students. To determine the success (and failure) factors that affect EI, the sufficiency analysis of the proposed model must be carried out, both in the presence and absence of EI.

Table 6 Analysis of sufficiency for the outcome entrepreneurial intention (EI)^(a)
Antecedent conditions (intermediate solution)^(b)

Presence Condition/path- ways	1a	1b	1c	1d	1e	1f	1g	1h
PERIN	○	●	○	○	●	●	●	●
COPER	●	○	○	○	●	○	●	○
SN	●	●	●	●	○	○	○	○
HI	●	○	○	○	○	○	○	○
GEN	○	○	○	○	○	○	○	○
Raw coverage	0.334853	0.247109	0.203543	0.136644	0.0928436	0.0946596	0.143827	0.131657
Unique coverage	0.0210142	0.0191821	0.0030004	0.0041148	0.0003159	6.81E-05	0.0031241	0.000621
Consistency	0.797776	0.777431	0.806293	0.785016	0.79977	0.785255	0.756866	0.757652
Intermediate solution								
Coverage	0.510588							
Consistency	0.759494							
Cutoff								
Frequency	1							
Consistency	0.775271							

● Means presence of a condition ○ Means absence of a condition. Blank spaces in a solution represent a “do not care” situation. Compiled by the authors using the software program fsQCA 3.0

^aMore detailed results are available at request to the authors

^bGraphical representation of the causal configurations according to Fiss (2011)

Analysis of Sufficient Conditions

The analysis of the intermediate solution for the proposed model that measures the presence of EI offers consistent solutions (0.759494), as shown in Table 6. Ragin (2008) established a minimum consistency threshold of 0.75. The coverage of the solution is greater than 0.25, which is why it also exceeds the threshold suggested by Ragin (2008). Consequently, the solution obtained offers information on the empirical relevance of the conditions analyzed (Ragin, 2008; Woodside, 2013).

The fsQCA makes it possible to identify the profiles of individuals with common characteristics. In this way, it analyzes how different conditions combine to explain the outcome. Because of the intrinsic characteristics of fsQCA, when combining some conditions with others, they can appear in different directions (presence or absence) and produce the same result.

The analyzed model offers eight solutions for high EI values. All of them exceed the minimum consistency threshold of 0.75, as established by Ragin (2008). The different causal configurations were organized according to gender.

First, there are two causal configurations that are valid for both male and female students (1a and 1b):

- Causal configuration 1a brings together individuals who do not perceive insecurity, perceive corruption, have high levels of SN, and express high levels of EI.
- Causal configuration 1b concentrates individuals who, despite perceiving insecurity, do not perceive corruption, have high levels of SN, and present high levels of EI.

In the specific case of male students, the solution to the proposed model offers four causal configurations (1c, 1d, 1e, and 1f):

- Causal configuration 1c identifies male students who come from high-income households who have a high SN, do not perceive insecurity, and have high levels of EI.
- Causal configuration 1d explains the profile of male students who come from high-income households, who have a high SN, do not perceive corruption, and have high levels of EI.
- The causal configuration 1e gathers the archetype of male students who come from low-income households, who have a high SN, perceive corruption, and present high levels of EI.
- Causal configuration 1f concentrates male students who come from low-income households, who have a high SN, perceive insecurity, and present high levels of EI.

Finally, in the specific case of female students, the solution offers two causal configurations (1g and 1h):

- The 1 g causal configuration helps to understand the profile of female students who come from high-income households, who have a high SN, perceive corruption, and present high levels of EI.
- The 1 h causal configuration explains the archetype of female students who come from high-income households, who have a high SN, perceive insecurity, and have high levels of EI.

From the analysis of these results, it is important to highlight the role of SN when it is present as a facilitator of EI, as it is found in all the causal configurations provided by the model. For the other four conditions (PERIN, COPER, HI, and GEN), the results show that they are important in the formation of high levels of EI when combined with each other and with SN.

The results obtained in the analysis of necessity and sufficiency offer information that confirms the two propositions made in this exploratory study.

Solutions for Low Level of EI

The analysis of the intermediate solution for the proposed model that measures the absence of EI was conducted by pointing out in Ragin and Davey's (2014) software the negation of the EI outcome. This complementary analysis is necessary to fit causal asymmetry (Woodside, 2013). This indicates that the fact that some solutions entail the presence of an outcome (in this case, high levels of EI) does not necessarily indicate that the opposite entails the absence of the outcome (in this case, low levels of EI). Thus, some conditions combined with each other are facilitators of EI, but their absence is not necessarily a barrier to EI.

For this model, applying the same frequency cut-off (1), the results obtained, despite meeting the consistency threshold set by Ragin (2008) and Woodside (2013), do not reach the minimum coverage (0.25), which indicates that the solutions obtained are not informative. Therefore, there are many causal configurations (pathways) that inconsistently explain the low levels of EI. Hence, barriers to EI cannot be detected in this study.

Sensitivity Test

A robustness test was conducted to determine the solution to the proposed model. Three stress tests were conducted to test the sensitivity of the methodology used.

In the first place (test 1), following Skaaning (2011) and Schneider and Wagemann (2012), the selected percentiles for the calibration of the variables were modified. Following the criteria set by Fiss (2011) and Stevens (2016), the percentile that defines the fully inside point was reduced by 10% and the point that defines the fully outside point was increased by 10%, establishing the following points for fully inside (80%), maximum ambiguity (50%), and fully outside (20%).

In test 2, the cut-off frequency was increased (Paykani et al., 2018). In this case, the original requirement (one case per configuration) increased to four cases per configuration.

Finally, in test 3, the minimum consistency level for a configuration was increased (Paykani et al., 2018), raising it to a minimum raw consistency of 0.7915.

In all cases, the results were similar to those previously reported for a high level of EI declared by university students. No significant differences were observed in the causal configurations, and the analysis of necessity was not altered for any of the alternative scenarios proposed by the three tests performed. The sensitivity test did not reveal significant changes in the coverage and consistency thresholds of the model.

The methodological stress tests carried out caused the oscillation within a small range with respect to the original solution, both for the coverage (-0.0089 ; -0.0491) as for the consistency ($+0.0028$; $+0.0139$). The results of these tests guarantee the robustness of the model and the solutions obtained. Table 7 shows the tests performed (methodological stress test) and their impact on the model that explains the presence of EI.

For the model that explains the case of students with a low level of declared EI, there are no changes when applying the three sensitivity tests, which is not significant with the sample used.

Discussion and Implications

The results obtained allow the identification of different archetypes found among university students with high levels of EI. First, solutions 1a and 1b indicate that there are two individual profiles that are valid for both genders without specifying the level of HI. In 1a, there are high levels of EI when the absence of perception of insecurity is combined with the perception of corruption. These results are aligned with studies that indicate that corruption is capable of enhancing entrepreneurship in countries with inefficient rules around entrepreneurship (Dreher & Gassebner, 2013). In these countries, the use of bribes is a shortcut to accelerate the process of entrepreneurial activity. This is what the authors call the “grease the wheels” argument. On the one hand, Mexico ranks 60 out of 190 in the Doing Business for the year 2020 (World Bank, 2020), which measures the ease of doing business and, on the other hand, its institutions harbor high levels of corruption (Transparency International, 2020). In these cases, the facilitating effect of corruption is an anomaly that must be corrected by taking the necessary measures to facilitate the formal processes surrounding the venture and reduce corruption. Another explanation for this phenomenon, which occurs in countries with high rates of corruption, is the normalization of corruption that can occur through rationalization, socialization, and/or institutionalization (Guerber et al., 2016). The second solution (1b) indicates that if there is a perception of insecurity, there should be no perception of corruption for students to present high levels of EI. This profile illustrates the thinking that individuals have regarding insecurity in this and other Latin American and Caribbean-LAC countries, as something that must be lived with and that is part of the environment (Moser & McIlwaine, 2004).

The results show that COPER and PERIN affect the profiles identified among male students differently depending on the HI. To have high levels of EI, male

Table 7 Sensibility test

Analysis of the robustness of the intermediate solution to the proposed model			Evaluation of the test for the intermediate solution of the proposed model							
Test type and sources			Changes made		Test results		Test impact*		Significative changes	
Stress test	Type	Source	Original	Test	Coverage	Consistency	Coverage differences	Consistency differences	Necessary conditions	Profiles configurations
Test 1	Calibration percentile change	Skaaning (2011)	90% (fully inside); 50% (maximum ambiguity); 10% (fully outside)	80% (fully inside); 50% (maximum ambiguity); 20% (fully outside)	0.4684	0.7567	-0.0422	+0.0028	NO	Similar
Test 2	Increase in the minimum number of cases required for any configuration	(Paykani et al., 2018)	1 case per configuration	4 cases per configuration	0.5017	0.7648	-0.0089	+0.0053	NO	Similar
Test 3	Increased minimum raw consistency required for any configuration (consistency cutoff)	(Paykani et al., 2018)	0.7753	0.7915	0.4615	0.7734	-0.0491	+0.0139	NO	Similar

*Compared with the original solution to the proposed model (coverage = 0.5106; consistency = 0.7595). Compiled by the authors

students with high HI need not perceive insecurity or corruption (solutions 1c and 1d). This reflects the importance of controlling both to encourage EI. However, in the case of male students with low HI (solutions 1e and 1f), EI is high when insecurity or corruption is perceived. This is in line with the explanation given to the generic solutions (1a and 1b) regarding the “grease the wheels” argument and the normalization of corruption and learning to live with the insecurity of the environment.

Finally, the profiles of women only appear in combination with high HI. This indicates that female students are aware of the barriers to accessing financial resources that they must face (de Vita et al., 2014) and therefore only intend to start a business if they have the resources at first (Smith -Hunter & Leone, 2010). In the same way, both profiles perceive corruption or insecurity. This may also be the case of living with these informal institutional characteristics as indicated above.

All solutions that help to explain a high EI among students include a high SN. Thus, the empirical evidence found in this study corroborates the thesis raised by the literature that understands SN as a precursor to EI (Kautonen et al., 2015; Kolvereid & Isaksen, 2006) providing useful arguments to resolve the academic discussion.

These findings offer politicians and public administration officials in Mexico important suggestions that will guide the design of the policy to consolidate and promote entrepreneurship among high education graduates. Expanding efforts aimed at designing measures with the purpose of improving governance and control and reducing citizen insecurity would aim for Mexican university students to increase their EI in the long-term (solutions 1a and 1c). The literature indicates a clear directionality regarding the effects of insecurity on entrepreneurship (Brück et al., 2016; Escandon-Barbosa et al., 2019; Pinazo-Dallenbach, 2021). Therefore, the solutions that indicate the presence of PERIN (solutions 1b, 1f, and 1 h) correspond to the archetype of the student who assumes resignation of the violent environment that surrounds him (Moser & McIlwaine, 2004) and in which he has to develop his life. In this sense, Moser and McIlwaine (2004) emphasize that in Latin America, “everyday violence” is part of the daily reality of individuals and generates a context of “endemic fear and insecurity” (p.3).

Solutions 1e and 1f show the profiles of potential entrepreneurs who come from families with limited resources. Thus, the design of public policies aimed at closing the income inequality gap is important. The consolidation of this type of initiative makes it possible for low-income students in their family unit not to see their EIs frustrated and, therefore, to promote long-term economic development (Blanchflower et al., 2001; Verheul et al., 2006).

In this sense, students must find facilitating pathways and institutional coverage environments promoted by public bodies (state and federal) and university management administrations. This has three objectives: (a) each student can fully develop his/her entrepreneurial potential; (b) the rate of frustrated entrepreneurial passions is reduced; and (c) to start their business, a male or female student is not forced to emigrate.

It should be remembered that EI is considered a “prelude” to entrepreneurship (Kautonen et al., 2015; Krueger, 2017) and this is especially relevant in countries whose economic growth is strongly determined by the impulse

of new businesses (Acs & Armington, 2004; Levie & Autio, 2008; Minniti, 2008). In this sense, countries that fail to retain their most qualified human capital (brain drain) (Lowell et al., 2004) reduce their long-term development possibilities, as future graduates could carry out their entrepreneurial projects in the country of destination (Pinazo-Dallenbach & Castelló-Sirvent, 2021). Thus, retaining these students allows future generations of better-trained citizens to carry out their EI, create their companies, and build the foundations for economic development in the region.

Along these lines, a fundamental objective is to prevent many future entrepreneurs from wasting their underlying potential, deriving their activity from opportunity-driven entrepreneurship to necessity-driven entrepreneurship. Necessity-driven entrepreneurship is more common in low-income family settings (Reynolds et al., 2002) and has less potential to generate long-term value for both the entrepreneurial ecosystem and the territory (Sternberg & Wennekers, 2005). Thus, an important finding related to this study suggests the promotion of public–private partnerships (PPPs) (Biygautane et al., 2019; Ferraris et al., 2020) institutional financing mechanisms, both banking and alternative, oriented to communities with few resources. In this way, the generation of entrepreneurship and investment ecosystems can contribute to develop a network of business angels, taking advantage of crowdfunding or crowdlending mechanisms that have already been successfully applied in Mexico (González et al., 2021; Segura-Mojica, 2021) and other countries (Cornelius, 2020; Fonrouge & Bolzani, 2019; N'Guessan et al., 2019). University business incubators represent a framework for the applicability of the findings of this study. Various investigations have highlighted the possibilities of this instrument acting as a gateway to an entrepreneurial society (Jamil et al., 2015). In recent years, the development vector of university incubators has become transnational hubs for entrepreneurship (Pellegrini & Johnson-Sheehan, 2021). The results of this research allow university policy makers to guide the design of learning programs to promote business incubators (Jones et al., 2021).

A detailed analysis of the behavior of the gender condition allows a better understanding of the limitations that female students encounter when faced with entrepreneurship. The results show that being a man increases the possibility of having higher levels of EI, which again highlights the gender inequality that surrounds the entrepreneurial process (Autio, 2005; Schøtt et al., 2015) in the antecedent to the fact of entrepreneurship among students, possibly caused by the barriers that specifically affect women when carrying out their business project (Allen et al., 2008; Amorós & Pizarro, 2007). The evidence found in this study suggests that one way to increase EI among women is to establish mechanisms for designing public and university strategies that aim to (a) control insecurity, (b) improving governance and fighting corruption, (c) designing effective equity and income redistribution policies, (d) raising awareness of the role of women in the creation of local networks of entrepreneurship and mutual support; (e) making visible the entrepreneurial success of women emerged in the community and the success stories of women entrepreneurs; and (f) support for the gender perspective proposed by the alliance of the Sustainable Development Goals (SDGs) and the 2030 Agenda.

In short, the design of public policies must take female students as a disadvantaged group in the face of entrepreneurship (GEM, 2021) capable of promoting the

economic development of the territory through their business activities (Ferreira et al., 2018; Terjesen & Amorós, 2010). In this sense, university incubators become stimulators for academic entrepreneurship (Stal et al., 2016), also in female entrepreneurship. The discussion of the findings of this study also offers two important management recommendations for university institutions, both public and private: (a) creation of training programs for female students' entrepreneurship and (b) promoting the transfer of knowledge about female entrepreneurship in a double collaboration that is university-company and university-society.

The findings of this study allow academics to understand the previous scientific knowledge generated around other latitudes of developed countries (Campanella et al., 2013). The evidence found should guide and advise the action of public officials in the objective of promoting entrepreneurship, by reducing citizen insecurity, improving the quality of institutions that facilitate the fight against corruption, and developing entrepreneurship ecosystems and public financing systems. In this sense, the establishment of agreements based on public–private partnership projects (PPPs), with the participation of government institutions, universities, financial entities, and the rest of the agents of the entrepreneurial ecosystem, should be added to the promotion of private investment networks based on seed capital.

Conclusions, Limitations, and Future Research

EI has been identified as a precursor to entrepreneurship and as an indicator of the latent entrepreneurship that exists in the territories. Entrepreneurial activity is one of the key elements in the development of economies, which explains the great interest it arouses in academia. In this study, through the application of the fsQCA, a configurational approach is adopted to offer empirical evidence that allows a better understanding of how different internal characteristics of individuals, some affected by the environment, explain higher levels of EI.

This study shows how citizen security facilitates the development of EI among university students, providing knowledge in line with recent works focused on the perverse effects of citizen insecurity on entrepreneurship in the Latin American and Caribbean-LAC region (Escandon-Barbosa et al., 2019; Pinazo-Dallenbach & Castelló-Sirvent, 2021). In the same way, the results reflect that in these countries, the environment continues to reproduce a gender gap that affects women even in the stage that precedes the act of entrepreneurship. This discourages them from anticipating the many barriers they must face, which lowers their expectations of success. Thus, this work contributes to the results of previous studies, such as that of Almeida and Daniel (2021), that highlight the lower levels of EI in women in technical/engineering careers. The present study also points out the importance of having financial resources to be able to undertake an entrepreneurial project, being of special relevance the recommendations that point out the need to provide resources to individuals with scarce resources in order to take advantage of this entrepreneurial potential. On the other hand, the contribution of this article to the important role of SN in the formation of EI is interesting, contributing empirical evidence to the discussion. Finally, the results obtained

regarding the facilitating effect of corruption support the “grease the wheels” argument and the normalization of corruption but highlight the importance of implementing improvements on the formal procedures surrounding entrepreneurship in line with what the World Bank (2020) suggests, specifically when referring to the LAC region, while reducing corruption in public institutions.

These results and the underlying recommendations offer information that has practical implications for policy makers in countries with characteristics similar to Mexico in terms of citizen insecurity, corruption, inequality in income distribution, and gender gap, such as countries from the LAC region. In this sense, in the discussion of this paper, various lines of action have been proposed aimed at correcting threats and taking advantage of latent opportunities. In the same way, considering the characteristics of the sample, this study also offers useful information for managers of university centers, highlighting the usefulness of implementing university incubators to promote entrepreneurship in contexts with a high level of knowledge.

This research also has some limitations. First, the sample used in this study was obtained from a single Latin American university. Future studies may expand the results obtained by conducting similar studies in other Latin American universities to corroborate the evidence found. In the same way, the composition of the sample — i.e., technical/engineering students — may condition the results obtained, so future research with different samples can yield interesting results. Third, the sample used did not allow the analysis of the absence of EI to measure the barriers that affect EI (low EI level model). Thus, future research can focus on the study of barriers to the creation of EI. Fourth, there is a limitation of the methodology used. The number of conditions that can be tested in QCA is limited because adding too many can offer causal configurations that are difficult to interpret (Schneider & Wagemann, 2010). Hence, future studies should contribute to the study of EI through other methodologies that can expand the analysis to other complementary variables.

Future research may focus analysis on the study of EI from a gender perspective linked to the Sustainable Development Goals (SDG), in accordance with the 2030 Agenda.

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Availability of Data and Material The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Code Availability The data analysis was carried out using fsQCA 3.0 software.

Declarations

Conflict of Interest The authors declare no competing interests.

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