Self-Efficacy and Self-Perception as Predictors of Opportunity-Driven Entrepreneurship from a Gender Perspective in Emerging Economies [*]

La autoeficacia y la autopercepción como predictoras del emprendimiento por oportunidad desde una perspectiva de género en economías emergentes

Autoeficácia e Autopercepção como Preditores do Empreendedorismo por Oportunidade sob uma Perspectiva de Gênero em Economias Emergentes

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Abstract:

Several studies have identified a significant association between self-efficacy and opportunity-driven entrepreneurship. However, research examining how individuals' self-perception of the entrepreneurial context relates to opportunity-driven entrepreneurship –and how sex moderates these relationships in emerging economies– remains limited. Addressing this gap, this study examines the extent to which self-efficacy and context perception are associated with a higher likelihood of engaging in opportunity-driven entrepreneurship, evaluating gender as a moderating variable. Methodology: Data were obtained from the Adult Population Survey (APS) of the Global Entrepreneurship Monitor (GEM) for the 2010–2023 period. Since a balanced panel was not feasible, an unbalanced panel was constructed for the set of emerging countries participating in GEM. Three logistic regression models were developed using a variable saturation approach to test and validate the hypotheses. Results: While self-efficacy and context self-perception were significantly associated with opportunity-driven entrepreneurship, the strength and direction of these relationships varied, revealing a distinct moderating effect between men and women across the analyzed emerging economies.
Keywords: Self-Efficacy, Opportunity-Driven Entrepreneurship, GEM Data, Gender Studies, SMEs.

Resumen:

Diversos estudios han identificado una asociación significativa entre la autoeficacia y la creación del emprendimiento por oportunidad. Sin embargo, el análisis sobre cómo la autopercepción de los individuos respecto al contexto emprendedor se relaciona con el emprendimiento por oportunidad —y cómo el sexo modera estas relaciones en economías emergentes— sigue siendo limitado. Para abordar este vacío, este estudio examina en qué medida la autoeficacia y la percepción del contexto se asocian con una mayor probabilidad de ser un emprendedor por oportunidad, evaluando el género como una variable moderadora. Metodología: los datos se obtuvieron de la Encuesta a Población Adulta (APS, por su sigla en inglés) del Monitor Global de Emprendimiento (GEM por su sigla en inglés) para el periodo 2010-2023. Se construyó un panel desbalanceado para el conjunto de países emergentes participantes en el GEM. Se desarrollaron tres modelos de regresión logística mediante un enfoque de saturación de variables para probar y validar las hipótesis planteadas. Resultados: aunque las variables de autoeficacia y autopercepción del contexto emprendedor mostraron una asociación significativa con el emprendimiento por oportunidad, la fuerza y la dirección de esta relación variaron, revelando un efecto moderador diferenciado entre hombres y mujeres en la muestra de países emergentes analizada.
Palabras clave: autoeficacia, emprendimiento por oportunidad, datos GEM, estudios de género, PyMEs.

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Resumo:

Diversos estudos identificaram uma associação significativa entre a autoeficácia e o empreendedorismo por oportunidade. No entanto, a análise sobre como a autopercepção dos indivíduos em relação ao contexto empreendedor se relaciona com o empreendedorismo por oportunidade —e o papel do sexo na moderação dessas associações em economias emergentes— permanece limitada. Para preencher essa lacuna, este estudo examina em que medida a autoeficácia e a percepção do contexto estão associadas a uma maior probabilidade de engajamento no empreendedorismo por oportunidade, avaliando o gênero como variável moderadora. Metodologia: Os dados foram obtidos a partir da AdultPopulation Survey (APS) do Global Entrepreneurship Monitor (GEM) para o período de 2010 a 2023. Como não foi viável estruturar um painel balanceado, construiu-se um painel não balanceado (unbalanced panel) para o conjunto de países emergentes participantes do GEM. Desenvolveram-se três modelos de regressão logística utilizando uma abordagem de saturação de variáveis para testar e validar as hipóteses da pesquisa. Resultados: Embora a autoeficácia e a autopercepção do contexto tenham se associado significativamente ao empreendedorismo por oportunidade, a força e a direção dessas relações variaram, revelando um efeito moderador distinto entre homens e mulheres na amostra de países emergentes analisada.

Palavras-chave: autoeficácia, empreendedorismo por oportunidade, dados do GEM, Estudos de gênero, PMEs.

Introduction

Several studies have examined the determinants of opportunity-driven entrepreneurship in emerging economies as a case study (Arráiz et al., 2014; Aparicio et al., 2016; Parra & Argote, 2024). In this context, one of the variables that have a significant presence in the literature is the self-efficacy, mediated by the auto perception of the individual about his abilities to start a new venture, and his fear of failure in this purpose (Solesvik, 2017; Sharma & Rautela, 2022). In this sense, most studies found a significant association between high and positive self-efficacy in individuals and opportunity-driven entrepreneurship. However, many research questions remain sparsely explored, as for example, the gender gap analysis in opportunity-driven entrepreneurship from a comparative perspective between developed and emerging economies, to establish whether gender plays a significant role as a mediating variable in the relationship between self-efficacy and opportunity-driven entrepreneurship, and how this relationship changes according to each country's level of development, little is being explored.

Entrepreneurship has traditionally been defined as the process by which individuals identify, evaluate, and exploit opportunities to introduce new goods and services, organizational forms, or markets (Shane & Venkataraman, 2000). This opportunity-centric perspective emphasizes that entrepreneurship is not merely self-employment but a distinct form of economic behavior driven by opportunity recognition under uncertain conditions.

On the other hand, research on entrepreneurship has evolved substantially over the past decades, moving from early opportunity-based conceptualizations toward more contextualized and multilevel perspectives. Foundational contributions emphasized opportunity recognition and individual agency as the core of entrepreneurial action (Shane & Venkataraman, 2000), while subsequent work incorporated human capital, institutional, and environmental factors shaping entrepreneurial behavior (Lazear, 2004; Acs et al., 2014).

More recent research has increasingly highlighted the role of entrepreneurial ecosystems and institutional frameworks in shaping opportunity-driven entrepreneurship, particularly within emerging economies (Guerrero et al., 2016; Urbano et al., 2019). This shift reflects a broader evolution in the field toward integrating individual-level capabilities –such as self-efficacy– with contextual and gender-sensitive dimensions, thereby recognizing entrepreneurship as a socially embedded process rather than an isolated decision (Welter et al., 2019).

At the same time, existing literature emphasizes that opportunity-driven entrepreneurship differs fundamentally from necessity-driven entrepreneurship, as the former is closely linked to innovation, business growth, and productivity-enhancing activities (Bosma et al., 2021). Consequently, identifying the individual and contextual determinants that foster opportunity-driven ventures is central to both advancing entrepreneurship theory and informing policy design.

Accordingly, this study aims to examine how self-efficacy and individuals' self-perception of national entrepreneurial conditions relate to the likelihood of engaging in opportunity-driven entrepreneurship, while evaluating gender as a moderating variable across emerging economies. By investigating whether gender exerts a differential moderating effect on self-efficacy, this research provides empirical insights into persistent gender gaps in high-growth venture creation. On the other hand, exploring the interaction of gender with the self-perception of the contextual factors could provide a better explanation of how the evaluation of the context affects the opportunity-driven entrepreneurship.

In this regard, this study uses logistic regression models to determine the extent to which individuals' self-efficacy and self-perception of their economic context are associated with a higher likelihood of being opportunity-driven entrepreneurs, and ¿how this association change when interacting with the gender variable?

These questions led to the implementation of three differential econometric models: The first assessed the effect of each predictor variable independently, controlling for other sociodemographic variables, on the probability of being an opportunity-driven entrepreneur. The second introduced the interaction between gender and variables related to individual self-efficacy was introduced. The third factor incorporated the interaction between gender and variables related to individuals' self-perception of the entrepreneurial environment (Parra & Argote, 2024).

The remainder of this manuscript is structured as follows. The first section contextualizes the study and reviews the theoretical literature on opportunity-driven entrepreneurship, self-efficacy, and gender perspectives. The second section details the methodology and empirical framework used to examine the determinants of opportunity-driven entrepreneurship in emerging markets, utilizing an unbalanced panel of GEM data spanning from 2010 to 2023. The third section presents the estimation results of the econometric models, highlighting the direct and interactive relationships associated with the likelihood of engaging in opportunity-driven entrepreneurship. Finally, the fourth section discusses the main findings, theoretical contributions, and practical implications for public policy design.

Literature Review

A substantial theory related to entrepreneurship in general and opportunity-driven entrepreneurship in particular exists (Audretsch et al., 2016; Parra & Argote, 2024). In addition, some research indicates that factors associated with opportunity-driven entrepreneurship are linked to entrepreneurs' specific characteristics (self-efficacy) rather than external factors. Consequently, individuals' competencies, such as their previous professional and entrepreneurial experience, the soft and hard skills in the sector in which the entrepreneur is involved, and their low aversion to risk, determine the opportunity-driven entrepreneurship (Antoncic et al., 2016; Solesvik, 2017).

Similarly, Lazear (2004) and Lazear et al. (2016) pointed out that the likelihood of observing opportunity-driven entrepreneurial behavior can be explained in terms of the entrepreneur's human capital. In this regard, as an individual's human capital grows through professional qualifications, work experience, and entrepreneurial endeavors, they are more likely to conceive higher-quality ventures, which are regularly motivated by the identification of new opportunities.

Furthermore, several studies consider each individual's competencies, knowledge, and motivations as key predictors of opportunity-driven entrepreneurship and their corresponding success in the market. In this approach, entrepreneurs' previous experience in a sector or industry increases the likelihood of opportunity-driven entrepreneurship (Solesvik, 2017; Auer & Kim, 2018). Similarly, entrepreneurs with a high level of education are better prepared to create and develop dynamic or technology-based companies. This means that by enhancing individuals' competencies, the quality of ventures that they create could be improved (Porfírio

et al., 2024). However, it remains unclear whether the entrepreneur's personal attributes positively impact the growth of their businesses or if they are also affected by the economic context (Guerrero, 2021; Acs et al., 2014).

Self-efficacy as a predictor of opportunity-driven entrepreneurship

Entrepreneurial self-efficacy reflects individuals' beliefs regarding their ability to successfully perform entrepreneurial tasks (Bandura, 1997). High levels of self-efficacy are consistently linked to opportunity recognition, persistence, and entrepreneurial entry (Caliendo et al., 2023; Stajkovic et al., 2018).

Entrepreneurial self-efficacy serves as a key cognitive mechanism that enables individuals to execute tasks and fulfill roles aimed at achieving business outcomes. As a foundational antecedent of entrepreneurial behavior, self-efficacy offers crucial insights into how individual actions are initiated and sustained, particularly regarding opportunity recognition and exploitation.

Within the framework of the Theory of Planned Behavior, self-efficacy plays a pivotal role in venture creation and sustainability by shaping individual attitudes and future career expectations. These expectations are further conditioned by subjective norms –reflecting the social influence of family, peers, and broader networks– thereby fostering a socially constructed entrepreneurial mindset that is profoundly influenced by gender, regional dynamics, and socio-economic contexts (Maalaoui et al., 2023).

In this context, Malodia, Mishra, Fait, Papa, and Dezi (2023) found that in a sample of SMEs, older entrepreneurs showed greater resistance to change and digital transformation than younger entrepreneurs. This resistance made them more vulnerable to the disruptions caused by the COVID-19 pandemic, thereby affecting the opportunity-driven entrepreneurship.

These findings suggest that while specific sociodemographic characteristics can enhance self-efficacy, individuals' cognitive frameworks and career expectations evolve over time in gender-differentiated ways. This evolution often manifests as higher risk aversion and lower adaptability among certain demographic segments. Consequently, gender and age are likely to moderate the effect of self-efficacy on opportunity-driven entrepreneurship.

Similarly, Caliendo et al. (2023) argued that psychological attributes and personality traits significantly shape opportunity-driven entrepreneurship. Specifically, higher scores on key individual traits correlate with stronger entrepreneurial commitment, elevated levels of innovation, and greater openness to entering new markets and capturing emerging opportunities.

Accordingly, recent literature emphasizes the necessity of analyzing the determinants of opportunity-driven entrepreneurship through a gender lens, as men and women leverage distinct personal attributes when identifying and developing new business ideas (Filser et al., 2023). As Brush et al. (2019) noted, gender profoundly influences how opportunities are perceived and pursued; structural differences in motivations and asymmetrical access to resource endowments shape distinct entrepreneurial pathways for men and women. Consequently, greater resource allocation and stronger motivation reinforce venture success—a virtuous cycle that empirical evidence shows occurs more frequently among male entrepreneurs in developing contexts (Taneja et al., 2023).

The study of factors associated with opportunity entrepreneurship through a gender lens highlights a complex interplay among individual, social, and economic variables that warrants further empirical investigation. Unraveling these dynamics is crucial for designing policies and support programs that foster inclusive entrepreneurial ecosystems, particularly within emerging economies characterized by high levels of economic informality. Consequently, this study provides a deeper understanding of how individual self-efficacy drives the propensity to engage in opportunity- rather than necessity-driven entrepreneurship, while elucidating how gender moderates this relationship.

Perceived role of entrepreneurs and economic ease of doing business

As noted previously, the development of opportunity-driven entrepreneurship is closely tied to national economic growth. However, the determinants of this dynamic are complex and often governed by socio-cultural factors rather than purely economic indicators. Key among these is society's valuation of the entrepreneurial role, including whether entrepreneurship is viewed as a desirable career choice, and the structural ease of doing business within a given regulatory framework. While each of these conditions independently shapes opportunity-driven entrepreneurship, analyzing their combined effect through a gender lens offers crucial insights for evidence-based policy design.

In this context, recognizing entrepreneurship as a prestigious and legitimate career path reflects the degree of societal status and validation accorded to entrepreneurial endeavors. In cultural contexts where entrepreneurs are perceived as innovative leaders, job creators, and drivers of positive change, high-potential individuals are more likely to view venture creation as an attractive and viable career choice. Conversely, where entrepreneurial roles are undervalued or stigmatized, individuals tend to favor traditional, stable employment or seek opportunities abroad (Stephan & Uhlaner, 2020).

A positive media narrative, a favorable perception of entrepreneurship as a career path, and high-risk tolerance constitute essential components of this institutional environment. When business failure is framed as a valuable learning experience rather than a social stigma, the psychological cost of risk-taking is substantially reduced, thereby fostering opportunity-driven entrepreneurship (Aparicio et al., 2021). Conversely, in societies where commercial failure is stigmatized or private enterprise is viewed with skepticism, the intent to launch a venture to capture market opportunities –rather than out of necessity– declines sharply.

Similarly, a country's ease of doing business –governed by its regulatory framework and institutional access to capital and support mechanisms– directly facilitates the emergence of high-potential ventures. A burdensome regulatory environment, characterized by excessive monetary costs and administrative delays in business registration, credit access, tax compliance, and contract enforcement, creates severe entry barriers for opportunity-driven enterprises (Estrin et al., 2021). Consequently, recent empirical evidence demonstrates a strong negative correlation between bureaucratic complexity and the formation rates of high-growth firms (Phan, 2024).

Building on these insights, a favorable perception of the entrepreneurial role, the social valuation of entrepreneurship as a viable career choice, and favorable conditions for business creation constitute essential drivers of opportunity-driven entrepreneurship. Together, these factors establish the cultural and cognitive foundations that motivate individuals to pursue entrepreneurial pathways and inspire broader venture creation (Welter et al., 2019). Nevertheless, addressing existing gender gaps in business creation is equally important to strengthening the productive structure of emerging economies to ensure that this process develops in the right direction.

Entrepreneurship and Gender Approaches

A substantial body of literature has documented a persistent gender gap in entrepreneurial participation. Research demonstrates that this disparity is not merely a statistical difference, but rather a structural feature shaped by labor market dynamics and the asymmetric opportunities available to women when undertaking entrepreneurial endeavors (Cardella et al., 2020).

In this sense, some studies indicate that women in most developed and developing countries engage in entrepreneurial activity at lower rates than men. This reality is particularly relevant considering that women represent approximately half of the economically active population worldwide and have been steadily

increasing their participation in the labor market year after year (Guzman & Kacperczyk, 2019; Nowiński et al., 2019).

Moreover, gender-focused research highlights that an individual's socio-cultural context significantly conditions their opportunity set. The gender dimension –shaped by cultural norms as well as formal and informal institutional structures– plays a decisive role in driving structural labor market disparities and shaping individual entrepreneurial propensities (Rietveld & Patel, 2022).

Accordingly, a central debate in the literature concerns the influence of demographic characteristics, particularly gender, on venture creation. Although gender is frequently treated merely as a control variable to isolate other drivers (Caliendo et al., 2015), emerging evidence suggests it functions as a critical moderating variable that alters the strength and direction of key predictors on entrepreneurial likelihood (Barcena-Martín et al., 2021).

This distinction offers contrasting perspectives on gender's role. The direct effect of gender on entrepreneurial likelihood is assessed as a control, with its coefficient varying based on its dichotomous value. Conversely, as a moderator, introducing the respective interaction between gender and the other predictive variables allows the evaluation of how gender interacts with other predictors to shape entrepreneurial outcomes, in our case the opportunity-driven entrepreneurship.

Under this moderating framework, numerous empirical studies have documented significant gender disparities across economic and institutional conditions (Caliendo et al., 2015). Furthermore, literature emphasizes a higher prevalence of necessity-driven entrepreneurship among women in developing nations, often accompanied by greater risk aversion alongside distinct evaluations of their entrepreneurial environment (Khan et al., 2021).

Unequal access to entrepreneurial opportunities for women and the underlying factors that shape this disparity remain critical concerns in the literature (Rietveld & Patel, 2022; Scott et al., 2012). This gap has driven empirical research into the interplay among gender, socioeconomic conditions, and individual cognitive attributes, such as self-efficacy, in explaining entrepreneurial propensity and venture characteristics, particularly within developing economies where severe labor market disparities persist.

Building upon this theoretical framework, this study examines the differential effects of self-efficacy, individual evaluations of the socioeconomic context, and the moderating role of gender on the likelihood of engaging in opportunity-driven entrepreneurship across a panel of emerging economies participating in the Global Entrepreneurship Monitor (GEM). The following sections outline the research hypotheses and present the proposed conceptual model.

Research Hypotheses and Conceptual Model

The theoretical framework presented above, together with the research questions outlined in the introduction, led to the formulation of the following research hypotheses.

Self-efficacy –defined as an individual's belief in their ability to successfully execute the actions required to achieve their goals– has consistently been identified as a crucial predictor of entrepreneurial behavior (Barcena-Martín et al., 2021; Stajkovic et al., 2018). However, this relationship is conditioned by demographic and institutional variables, such as gender and education, which alter the degree to which self-efficacy translates into entrepreneurial action.

Recent literature indicates that men generally report higher self-perceived entrepreneurial capabilities and lower risk aversion than women, which amplifies the positive impact of self-efficacy on opportunity-driven venture creation (Rietveld & Patel, 2022; Zheng et al., 2019). Conversely, women often prioritize employment stability, resulting in heightened risk aversion and a higher inclination toward traditional or necessity-driven entrepreneurial pathways.

Based on this context, the first two research hypotheses were expressed as follows:

Hypothesis 1 (H1): Self-efficacy, measured through the variable indicating whether the individual possesses the knowledge and experience to start a business, shows a significant and positive association with the with the likelihood of being classified as opportunityd-riven entrepreneur in emerging economies. Furthermore, this association becomes more significant when interacting with the gender variable while maintaining its positive direction.

From the perspective of Self-Efficacy Theory (Bandura, 1997), entrepreneurial behavior is strongly conditioned by individuals' beliefs regarding their ability to successfully perform entrepreneurial tasks. These beliefs influence not only entrepreneurial intentions but also opportunity recognition, resource mobilization, and persistence under uncertainty. Individuals with higher entrepreneurial self-efficacy tend to perceive challenging situations as opportunities rather than threats, increasing their likelihood of identifying and exploiting market opportunities.

Furthermore, Human Capital Theory suggests that entrepreneurial knowledge and previous experience constitute strategic resources that enhance individuals' capacity to evaluate and pursue business opportunities (Lazear, 2004). Entrepreneurs possessing greater levels of entrepreneurial knowledge are better equipped to recognize market inefficiencies, assess risks, and transform opportunities into viable business initiatives. Consequently, entrepreneurial skills should positively influence the probability of engaging in opportunity-driven entrepreneurship, particularly in emerging economies characterized by higher levels of uncertainty and institutional volatility.

Hypothesis 2 (H2): Self-efficacy, measured through the variable indicating the absence of fear of failure when starting a business, shows a significant and positive association with the with the likelihood of being classified as opportunity driven entrepreneur in emerging economies. However, while this association becomes more significant when interacting with the gender variable, the sign of the relationship changes to negative, as women tend to exhibit greater risk aversion.

In one hand, this study sought to examine whether an individual's self-perception regarding the value of entrepreneurship as a career choice and the perceived ease of doing business in emerging countries is associated with their likelihood of engaging in opportunity-driven entrepreneurship. Guerrero et al. (2021) highlight the significant impact of self-perception related to societal recognition of entrepreneurship. When such perceptions are negative or undervalued (individuals perceive the stability and dynamism of their economy), individuals tend to opt for more stable career paths, such as wage employment or even emigration.

On the other hand, a positive self perception of the socioeconomic context, measured through one's assessment of entrepreneurship as a viable career option and the perceived ease of doing business in a country, fosters opportunity driven entrepreneurship (Williams & Page, 2011). These assumptions allow us to develop the next two research hypotheses:

In this way fear of failure is one of the most commonly reported psychological barriers to entrepreneurial behavior. As per Entrepreneurial Cognition Theory, people are continually in risk and reward assessment mode where entrepreneurial decisions are made in uncertainty. Higher fear of failure makes the participant perceive the risk of entrepreneurial entry higher, and lower fear facilitates opportunity exploration and venture creation (Caliendo et al., 2023). Nevertheless, past studies have shown that the effect of fear of failure is not homogeneous across genders. Perceived entrepreneurship risk is often higher among women in part because of structural constraints, unequal access to resources, and greater social stigma (Brush et al., 2019; Rietveld & Patel, 2022). It is therefore hypothesized that the lack of fear of failure will also lead to increased opportunity-driven entrepreneurship, but that the degree of this change may be gender-specific.

Hypothesis 3 (H3): Societal recognition of entrepreneurship as a desirable career choice (NBGOOD) is positively associated with the likelihood of individuals engaging in opportunity-driven entrepreneurship, and this relationship is moderated by gender.

Institutional Theory posits that entrepreneurial decisions are deeply embedded within socio-cultural environments that govern the perceived legitimacy of entrepreneurship as an occupational choice (Urbano et al., 2019). When entrepreneurship is widely recognized as a prestigious and desirable professional path, individuals are more likely to view venture creation as an attractive and viable alternative to wage employment.

Furthermore, social recognition of entrepreneurship may have an even more meaningful influence on entrepreneurial aspirations in emerging economies where labor market uncertainty is often high. Positive societal attitudes toward entrepreneurs reduce the social costs associated with entrepreneurial risk-taking and reinforce entrepreneurial intentions. Consequently, individuals who perceive entrepreneurship as a desirable career option are expected to exhibit a greater propensity toward opportunity-driven entrepreneurial activities.

Hypothesis 4 (H4): A favorable self-perception of individuals' ease of doing business (EASYSTAR) is positively and significantly correlated with the likelihood of individuals engaging in opportunity-driven entrepreneurship. This effect is expected to be more significant when these variables are combined with gender.

Literature on the entrepreneurial ecosystem asserts that people do not make entrepreneurial decisions in isolation, but must do so within institutional contexts that either promote or restrict entrepreneurial enterprise (Guerrero et al., 2021; Urbano et al., 2019). Perceived ease of starting a business measures individuals' perceptions of the regulatory conditions, access to resources, administrative procedures, and institutional support mechanisms available in a country. When people see fewer bureaucratic hurdles and more institutional support, the anticipated expenses of entrepreneurial entry drop, prompting opportunity exploitation to become more appealing. These perceptions are especially salient in emerging economies, where institutional quality varies significantly by country. Thus, favorable viewpoints on the ease of starting a business should increase the likelihood of opportunity-driven entrepreneurship.

Based on the above hypothesis, the conceptual model of this study is explained in Figure 1.

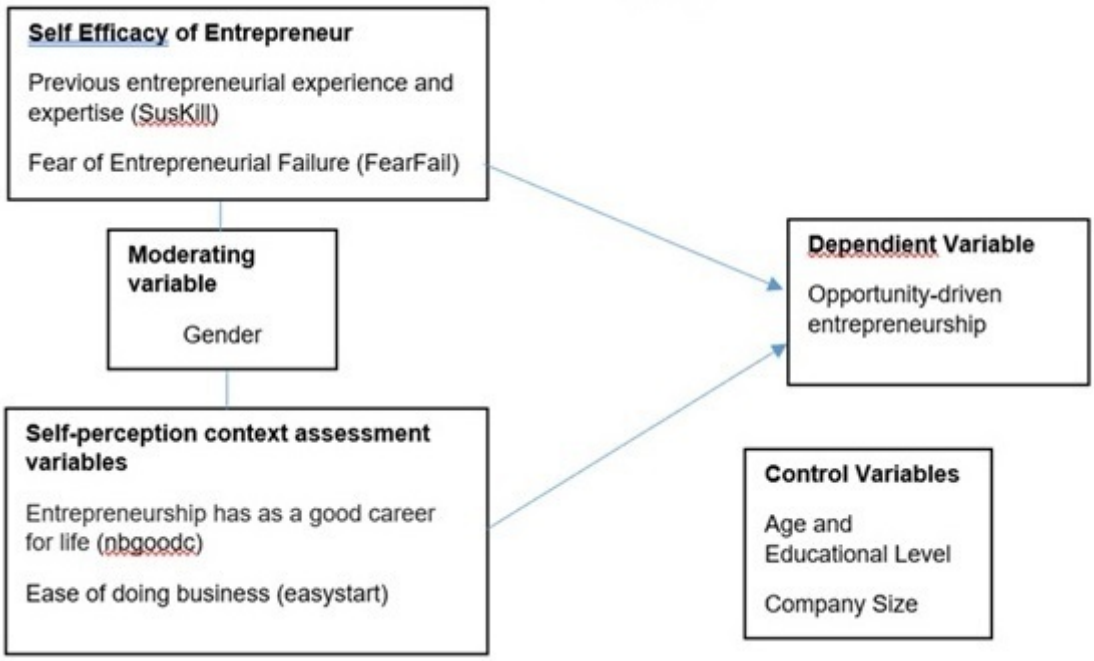

FIGURE 1.
Conceptual Model
Source: Own elaboration.

Data and Methodology

The data for this research come from the APS (Adult Population Survey) of the Global Entrepreneurship Monitor, which provides valuable insights into entrepreneurial activity across diverse contexts. The final sample includes 28 emerging economies (Parra & Argote, 2024) for which consistent and comparable APS data were available over the 2010–2023 period. Countries classified as developed economies according to the World Bank were excluded to ensure sample homogeneity and avoid structural biases associated with advanced institutional environments.

The use of an unbalanced panel is consistent with prior GEM-based research and reflects countries' voluntary and rotating participation in the GEM project (Aparicio et al., 2021; Urbano et al., 2019).

The panel sample was selected in several stages using the GEM database. In this regard, the sample is referred to as the TEA, which includes individuals who self-identified as entrepreneurs with less than 42 months in the market and who generate paid employment. Table 1 details the valid cases for the variables of interest and the countries included in the panel.

TABLE 1.
Emerging countries with valid data in the panel from 2010 to 2023 (TEA and Established Entrepreneurs)

Country	Number of Cases	Valid Percentage	Cumulative Percentage
Argentina	3121	2.6%	23.8%
Armenia	424	0.4%	97.1%
Belarus	486	0.4%	97.5%
Brazil	11584	9.6%	33.3%
Bulgaria	480	0.4%	91.2%
Chile	28677	23.7%	57.0%
China	6205	5.1%	81.1%
Colombia	12523	10.3%	67.3%
Cyprus	1732	1.4%	89.6%
Dominican Republic	892	0.7%	100.0%
Egypt	3073	2.5%	4.2%
Estonia	1740	1.4%	96.7%
Finland	1486	1.2%	90.8%
Greece	3171	2.6%	9.5%
Hungary	1988	1.6%	11.1%
Indonesia	6095	5.0%	73.5%
Latvia	3440	2.8%	95.3%
Lithuania	1460	1.2%	92.4%
Malaysia	1314	1.1%	68.4%
Mexico	5383	4.4%	21.2%
Peru	5105	4.2%	16.7%
Philippines	1396	1.2%	74.6%
Puerto Rico	2180	1.8%	99.3%
Romania	1662	1.4%	12.5%
Russia	2037	1.7%	1.7%
South Africa	3217	2.7%	6.9%
Turkey	8524	7.0%	88.2%
Vietnam	1682	1.4%	76.0%
Total	**121077**	**100.0%**	

Source: Own elaboration based on GEM Data 2010-2023.

Variables and statistical model

The model represents the relationship between the dependent variable and a set of independent variables linked by the logistic function, allowing the prediction of the outcome of the categorical variable Y with "0" representing necessity-driven entrepreneurship and "1" representing opportunity-driven entrepreneurship, respectively. The model aims to determine the probability based on the number of cases and the information that the independent variables can offer to estimate a final occurrence rate or propensity, as shown in Equation 1.

$$\frac{\ln(P/1 - P)}{= \beta 0 + i = 1\sum k\beta iXi + j = 1\sum ky j(Woman \times Xj) + l = 1\sum 27\delta l(Countryl) + \epsilon} \quad (1)$$

Where:

ln(1−PP): This is the log-odds or logit of the probability of being an opportunity-driven entrepreneur.

β0: The intercept, which represents the baseline log-odds when all other variables are zero.

β1 to β7: The coefficients for the main effects of the predictor variables:

Woman: A dummy variable where 1 = woman and 0 = man.

Age: A continuous variable.

Tertiary or Upper: A dummy variable where 1 = tertiary or higher education and 0 = secondary or lower education.

SusbSkill: A dummy variable where 1 = previous entrepreneurial experience and 0 = no previous entrepreneurial experience.

FearFail: A dummy variable where 1 = no fear of failure and 0 = fear of failure.

Goodc: A dummy variable where 1 = entrepreneurship is a good career and 0 = it is not.

Easystart: A dummy variable where 1 = ease of doing business and 0 = no ease of doing business.

β8 to β13: The coefficients for the interaction terms. These terms allow the effect of each predictor variable (e.g., Age, SusbSkill) to change depending on gender.

∑j=127δj(Countryj): A set of dummy variables for the 28 countries. This accounts for fixed effects across countries, with one country serving as the reference group.

ε :The error term.

To assess the significance of the variable in the model, the "p" value is used to accept or reject the null hypothesis. If the "p" value is lower than the significance level, the null hypothesis is rejected, whereas if the "p" value tends to zero, the result is more significant. In this case, the null hypothesis implies that the independent variable Xi has no impact on the dependent variable Yi "Opportunity-driven entrepreneurship".

TABLE 2.
Variables of interest in the proposed model

Selected Variables	Category	N. Cases
Dependent Variable: Opportunity-driven Entrepreneurship		
Involved in Total early-stage Entrepreneurial Activity (TEA)		121.077
TEA by opportunty-driven	1	28.162
TEAby Neccesity-driven	0	72.646
Control Variables		
Age	Continuos	
Educational Level		
Secundary or Less	0	
Terciary and upper	1	
Company Size		
<5 workers	0	
>= 6 workers	1	
Independent Variables (Predictors)		
Gender		
Man	0	
Woman	1	
Previous entrepreneurial experience and expertise (SusbKill)		
Yes	1	
No	0	
Fear of Entrepreneurial Failure (FearFail)		
Yes	0	
No	1	
Entrepreneurship has as a good career for life (nbgoodc)		
Yes	1	
No	0	
Ease of doing business (easystart)		
Yes	1	
No	0	

Note: The table shows the number of valid cases included in the panel for TEA from the 28 participating countries that are considered emerging nations according to the World Economic Forum's definition.
Source: Own elaboration based on GEM Data 2010-2023.

To test each hypothesis and align the corresponding dependent variable categories with the independent variable's reference category (necessity-driven entrepreneurship), the category being tested is coded as 1, while the reference category is coded as 0 in each specification.

Furthermore, in this study, gender is conceptualized as a moderating variable rather than merely a control variable. From a theoretical standpoint, gender shapes access to resources, risk perceptions, and social norms, which in turn condition how self-efficacy and contextual perceptions translate into entrepreneurial behavior (Rietveld & Patel, 2022).

Empirically, this moderating role is operationalized through interaction terms between gender and the main explanatory variables, enabling the estimation of gender-differentiated effects on the probability of opportunity-driven entrepreneurship.

Interaction terms were used in line with the recommendation of Brambor et al. (2006) and Hayes (2018) suggesting moderation effects cannot be fully evaluated with main effects alone. Interaction models would enable estimation of how the effect of a predictor variable change according to the value of another variable. In this study, the interaction variables serve as the means to assess whether entrepreneurial self-efficacy and contextual perceptions have different effects on opportunity-driven entrepreneurship for men and women.

Finally, given the disruptive effects of the COVID-19 pandemic on entrepreneurial activity, year fixed effects are included in all models to capture time-specific shocks, particularly during the 2020–2021

period. This approach allows the isolation of individual-level and contextual effects from exogenous global disturbances –in the same way, the Matrix correlation (Attached in the appendix) shows a low correlation between predictors.

Descriptive Statistics and Correlation Analysis

Before estimating the logistic regression models, descriptive statistics and pairwise correlations of the explanatory variables were prepared to verify the distribution and possible multicollinearity. The descriptive statistics as means and standard deviations are presented in Table 3, and the correlation matrix in Table 4.

TABLE 3.
Descriptive Statistics

Variable	N	Mean	Std. Dev.
TEAOportGlobal	25450	0.72	0.45
Gender (Woman = 1)	25450	0.52	0.50
FRFAIL (No fear of failure = 1)	25450	0.58	0.49
OPPORT (Perceived opportunities = 1)	25450	0.55	0.50
NBGOOD (Entrepreneurship is a good career = 1)	25450	0.71	0.45
SUSKIL (Entrepreneurial skills = 1)	25450	0.63	0.48
EASYstart (Ease of starting a business = 1)	25450	0.61	0.49

Source: Own elaboration based on GEM Data 2010-2023.

Descriptive statistics show substantial variance in entrepreneurial attributes and contextual perception variables under analysis. Particularly, the results revealed that entrepreneurial skills and beliefs on the ease to launch a business vary considerably across respondents, implying heterogeneous entrepreneurial environments in the emerging economies represented. In terms of the correlation matrix, the correlations between all independent variables seem to be of low-to-moderate levels.

TABLE 4.
Variables of interest in the proposed model

		Gender	agegroup	Education Leven	Company Size	Expectations of Entrepreneurship as a good Career	Knowledge, skill and experience required to start a new business	Fear of failure to starting a business	In my country, it is easy to start a business
Gender	Pearson Correlation Coefficient	1	0,035	-0,025	-0,007	-0,005	-0,081	0,050	-0,030
agegroup		0,035	1	-0,076	0,087	0,008	0,077	-0,061	-0,002
Education Leven		-0,025	-0,076	1	0,045	0,019	0,039	-0,006	0,002
Company Size		-0,007	0,087	0,045	1	0,020	0,087	0,075	0,096
Expectations of Entrepreneurship as a good Career		-0,005	0,008	0,019	0,020	1	0,180	0,118	0,218
Knowledge, skill and experience required to start a new business		-0,081	0,077	0,039	0,087	0,180	1	0,064	0,126
Fear of failure to starting a business		0,050	-0,061	-0,006	0,075	0,118	0,064	1	-0,055
In my country, it is easy to start a business		-0,030	-0,002	0,002	0,096	0,218	0,126	-0,055	1

Note: The table presents the correlation matrix to assess the potential level of multicollinearity among the dependent and predictor variables, as well as between the predictors themselves. The results indicate that the correlations are low, suggesting that multicollinearity is not a concern.
Source: Own elaboration based on GEM Data 2010-2023.

Finally, neither of the coefficients reached the traditional threshold of 0.70, which is often used to describe multicollinearity concerns (Hair et al., 2019). Indeed, these relationships are in line with theoretical expectations, whereby entrepreneurial skills, perceptions of entrepreneurial opportunities, and favorable contextual assessments exhibit positive associations with opportunity-driven entrepreneurship. These results contribute initial evidence to validate the latter multivariate analyses and to confirm the appropriateness of the aforementioned variables to be included in the regression models.

Findings

The study findings are summarized in the statistical output presented in Table 3. These results, derived from a binomial logistic multivariate model, allowed us to explore the relationship between the predictor variables, gender, and opportunity-driven entrepreneurship in emerging economies.

The first step in the analysis involved comparing three models:

Model 1: Only gender and other control variables, such as age, education level, and business size (measured by the number of employees), were included.

Model 2: The predictor variables related to self-efficacy (entrepreneurial skills and fear of failure) and self-perception regarding entrepreneurship as a desirable career choice and ease of doing business, without gender interactions.

Model 3: We added the interaction terms between the predictor variables and gender to assess the moderating effect of gender on these relationships.

Analysis of Results by Model

Model 1 served as a baseline for comparison with the two other models. It included only the control variables –age, education level, and business size. This model provided a reference point for understanding the incremental contribution of the main predictors, which were later added in full (Model 2) and examined with gender interactions (Model 3). The results show that only gender and business size were statistically significant. The coefficient for gender was negative, indicating an inverse relationship with opportunity-driven entrepreneurship.

Model 2 introduced the following specific predictor variables: self-efficacy (entrepreneurial skills and absence of fear of failure) and self-perception (socioeconomic value of entrepreneurship as a career and ease of doing business). Compared with Model 1, the goodness-of-fit improved according to the R^2 statistics, suggesting that the explanatory power of the model was significantly increased by adding these predictors. The only predictor that was not statistically significant was the societal valuation of entrepreneurship as a career. All other predictors were significant and positive associated with opportunity-driven entrepreneurship in the sample of emerging economies. Notably, the variable measuring entrepreneurial skills –part of the self-efficacy construct– had a beta exponent of 3.4. This indicates that individuals who reported having the knowledge and skills to start a business were over three times more likely to be classified as opportunity-driven entrepreneurs compared to those who did not, highlighting the relevance of this variable in explaining the phenomenon.

Finally, model 3 consolidated the results by including the interaction terms between the predictors and gender. Both the Wald statistic and the model's goodness-of-fit indicate that incorporating this interaction also improved the model's explanatory capacity. This improvement was also reflected in the changes to the coefficients and significance levels of the variables, offering a more detailed analysis of gender differences. For example, the interaction between entrepreneurial skills and gender was significant at the 0.001 level and reversed the sign of the relationship with opportunity-driven entrepreneurship. This suggests that the relationship between having prior knowledge and experience and engaging in opportunity-driven

entrepreneurship is negative for women. This result may be better understood when considering the interaction with fear of failure: literature consistently shows that women tend to have higher risk aversion, which can make them less likely to remain in entrepreneurial activities. As such, gaining more knowledge in a particular field may instead increase their likelihood of entering the formal labor market rather than pursuing entrepreneurship (Barcena-Martín et al., 2021).

TABLE 5.
Binary Logistic Regression Models Opportunity-Driven Entrepreneurship in a Sample of 28 Emerging Economies, Panel Data 2010-2023

	Model 1 Control Variables			Model 2 Control + Predictors			Model 3 Interactions with Gender		
Valid Cases in the Model	14,387			14,387			14,387		
Wald Statistic	45,183.906			62,183.906			75,183.906		
Hosmer & Lemeshow Test	243.002	***		113.021	***		39.007	***	
-2 Log Likelihood	92,723.855[a]			92,341.855[a]			89,734.187[a]		
Cox & Snell R^2	0.130			0.155			0.326		
Nagelkerke R^2	0.278			0.331			0.394		
Variable in the Model	Beta	Exp(B)	Sig.	Beta	Exp(B)	Sig.	Beta	Exp(B)	Sig.
Gender	-0.365	0.694	***	-0.258	1.294	***	-0.470	1.600	**
Age	-0.410	0.664	N.S	0.442	1.556	N.S	0.442	1.556	N.S
Education Level	-1.005	0.366	N.S	0.796	2.217	**	0.803	2.233	*
Firm Size	0.018	0.982	**	0.018	0.982	***	0.018	0.982	***
Fear of Failure (FEARFAILURE)				0.630	1.532	***	0.649	1.522	*
Entrepreneurial Skills (SUSKIL)				1.247	3.480	***	1.371	3.939	**
Entrepreneurship as a Career Option (NBGOOD)				0.271	1.311	*	0.396	1.486	*
Ease of Starting a Business (EASYSTART)				0.510	1.761	**	0.045	1.046	*
Interaction 1: FearFailure × Gender							-0.216	0.806	**
Interaction 2: SUSKIL × Gender							-0.204	0.815	***
Interaction 3: NBGOOD × Gender							0.610	1.856	*
Interaction 4: EASYSTART × Gender							-2.468	0.085	*

Notes: ***p < 0.001; **p < 0.01; *p < 0.05; N.S = Not Significant.
Exp(B) = Odds Ratio.
Negative coefficients indicate an inverse relationship with opportunity-driven entrepreneurship.
Source: Own elaboration based on GEM Data 2010-2023.

Analysis of the study hypotheses

The first and second hypotheses of this study proposed a significant and positive relationship between self-efficacy and opportunity-driven entrepreneurship, suggesting that this relationship would be strengthened when moderated by the gender.

The results indicate that the self-efficacy variables (hypotheses 3 and 4), namely, SUSKIL (Entrepreneurial Skills) and FEARFAILURE (Fear of Failure in Entrepreneurship), display positive and significant coefficients in Models 2 and 3, with Exp(B) values greater than 1 (3.480 and 1.532 in the first case; 3.939 and 1.522 in the second), all significant at $p<0.05$ or $p<0.001$. These findings support the direct effects of both research hypotheses, confirming that self-efficacy –whether measured by entrepreneurial skills or fear of failure– is a key predictor of opportunity-driven entrepreneurship.

However, upon examining the interaction terms with gender in Model 3, the signs of the coefficients reverse, highlighting the nuanced moderating role of gender in these relationships. Specifically, the interaction between *SUSKIL* and gender ($\beta = -0.204$, $p<0.001$) reveals that the positive relationship between entrepreneurial skills and the likelihood of engaging in opportunity-driven entrepreneurship is weaker for women than for men. Although this finding aligns with previous studies (Rietveld & Patel, 2022; Zheng et al., 2020), it contradicts the initial moderation hypothesis. This suggests that the positive impact of self-efficacy is stronger among men, possibly due to lower aversion to risk and fear of entrepreneurial failure among them.

Hypotheses 3 and 4, which relate to the self-perception of the entrepreneurial context –measured by the assessment of entrepreneurship as a career choice (NBGOOD) and the perceived ease of starting a business in the country (EASYSTART)– both variables exhibit a positive relationship with opportunity-driven entrepreneurship in models 2 and 3, with Exp(B) values of approximately 1.311 and 1.761, respectively. However, the statistical significance is at $p<0.1$, confirming only partially the first part of these hypotheses.

When examining the interactions between these variables and gender in Model 3, the relationship is reversed in the case of the perceived ease of starting a business. This confirms that individuals' self-perception regarding this element differs between men and women, potentially impacting the probability of being classified as an opportunity-driven entrepreneur in opposite directions.

These results underscore the relevance of applying a gender perspective when analyzing opportunity-driven entrepreneurship, self-efficacy, and contextual assessment. They highlight the importance of a favorable environment for entrepreneurial decisions, particularly for women, who tend to exhibit a greater aversion to entrepreneurial risk.

Discussion and future research lines

This study examined the relationship between self-efficacy and the likelihood of being classified as an opportunity-driven venture in emerging countries, considering gender as a moderating variable. On the other hand, it examined the association between individuals' self-perception regarding their entrepreneurial context and a higher likelihood of being opportunity-driven entrepreneurs, also considering gender as a moderating variable. An extensive literature review highlighted the importance of individual characteristics —such as prior entrepreneurial skills and knowledge, as well as risk aversion—was highlighted as key factors influencing the decision to undertake a business venture. The literature review indicated that such factors significantly affect entrepreneurial behavior, especially in contexts characterized by institutional and cultural barriers typical of emerging economies.

The study hypotheses proposed that self-efficacy and the self-perception of the country's entrepreneurial context and conditions have a positive relationship with the likelihood of launching an opportunity-driven venture. Furthermore, gender was hypothesized to moderate this relationship, given that men and women may perceive and react differently to the conditions of the entrepreneurial environment. Prior literature supports these hypotheses, noting that men tend to exhibit higher levels of self-efficacy and lower risk aversion, which is reflected in greater participation in entrepreneurial activity.

To test these assumptions, statistical analysis using logistic models with interaction terms partially validated the study's hypotheses, with some nuances worth highlighting. First, although both self-efficacy and a positive perception of the context increase an individual's probability of starting an opportunity-driven business, these relationships vary significantly when interacting with gender. In particular, perceptions of the environment (Hypothesis 3 and 4) show opposite effects for men and women, revealing a differential impact when analyzed from a gender perspective. Lastly, women display higher risk aversion and a more cautious perception of the environment, which shapes their entrepreneurial decisions differently from men (Hypothesis 1 and 2).

This research focuses on emerging economies, where cultural and institutional barriers present specific challenges for analyzing the phenomenon of opportunity-driven entrepreneurship and its relationship with gender. The study provides empirical evidence on how gender shapes the relationship among self-efficacy, entrepreneurial context perception, and opportunity-driven entrepreneurship –an underexplored aspect in these economies. These results reinforce the need to design public policies and support programs that acknowledge this heterogeneity and foster a more favorable and equitable environment for both genders.

Building on prior research that highlights persistent gender gaps in entrepreneurial activity (Brush et al., 2019; Rietveld & Patel, 2022), this study contributes to the literature by demonstrating that the effects

of entrepreneurial self-efficacy on opportunity-driven entrepreneurship are not uniform across genders in emerging economies. While previous studies have often treated gender as a control variable or have focused on developed-country contexts, our findings provide empirical evidence that gender fundamentally conditions how individual-level capabilities translate into entrepreneurial outcomes. These results support contextualized views of entrepreneurship that emphasize the embeddedness of entrepreneurial behavior within social structures and gendered norms (Welter et al., 2019).

Furthermore, from a theoretical standpoint, the results challenge simplified assumptions that higher self-efficacy uniformly increases opportunity-driven entrepreneurship across populations. Consistent with Rietveld and Patel (2022) and Zheng et al. (2019), our findings suggest that while self-efficacy remains a strong predictor of opportunity entrepreneurship, its marginal effect is moderated by gender-related differences in risk perception, opportunity costs, and labor market alternatives. This extends self-efficacy theory by demonstrating that its effectiveness as a mechanism for opportunity exploitation depends on broader gendered opportunity structures, particularly in emerging economies characterized by institutional volatility and labor market informality.

This study contributes to gender and entrepreneurship research by integrating individual-level self-efficacy and contextual perceptions within a unified empirical framework. Prior studies have often examined these dimensions in isolation (Caliendo et al., 2023; Guerrero et al., 2021). Our results indicate that women's engagement in opportunity-driven entrepreneurship is especially sensitive to contextual conditions, such as the perceived ease of starting a business and the societal valuation of entrepreneurship as a career choice. This finding underscores the limitations of policies focused exclusively on skill development and highlights the need for gender-sensitive institutional reforms that reduce structural barriers and enhance the perceived legitimacy of female entrepreneurship in emerging economies (Brush et al., 2019; Welter et al., 2019).

Key Contributions to Gender and Entrepreneurship Analysis

The findings of this study provide valuable insights into gender and opportunity-driven entrepreneurship by exploring how gender moderates the effects of self-efficacy and individuals' assessments of the entrepreneurial context. Notably, the results reaffirm that self-efficacy—defined as the belief in one's own entrepreneurial skills—and risk aversion (measured through fear of failure) have a differential impact on the likelihood of engaging in opportunity-driven entrepreneurship. This aligns with Rietveld and Patel (2022) and Zheng et al. (2020), who indicate that men tend to exhibit higher levels of entrepreneurial self-perception and lower perceived risk. These patterns are also reflected in the positive and significant coefficients observed in our models for self-efficacy variables.

Furthermore, incorporating interaction terms with gender and observing shifts in the sign and statistical significance of key predictors underscores the existence of gender-differentiated entrepreneurial profiles. The role of contextual perception in entrepreneurship –especially among women– provides valuable insights that complement and enrich current literature on environmental influences in emerging economies. As outlined in the theoretical framework, cultural and institutional factors can shape entrepreneurial intentions in distinctly different ways for men and women.

This evidence points to the need for public policies and entrepreneurial support programs that explicitly recognize and address gender inequalities, taking into account how individual and contextual variables interact to influence the likelihood of engaging in opportunity-driven entrepreneurship. This approach aligns with the contributions of Arráiz et al. (2014) and Parra & Argote (2024).

Finally, consistent with the institutional entrepreneurship framework proposed by Urbano et al. (2019), our observations at the institutional level support the view that entrepreneurial behavior arises from the interaction between individual capabilities and contextual conditions, rather than from isolated

personal traits. In emerging economies, opportunity-driven entrepreneurship is shaped simultaneously by entrepreneurial competencies, perceived institutional support, and socially embedded gender norms.

These results carry significant policy implications. Public policies designed to foster opportunity-driven entrepreneurship must move beyond traditional skill-building programs toward a comprehensive ecosystem approach. Specifically, policy efforts should focus on removing structural barriers for female entrepreneurs, enhancing perceived feasibility, and strengthening institutional support mechanisms to ease the entrepreneurial transition. Ultimately, such interventions can not only increase overall participation, but also improve the quality and sustainability of new ventures in emerging economies.

Future research could build upon these findings by exploring several promising avenues

Comparative economic contexts. Analyzing the differential effects of self-efficacy and contextual perceptions on opportunity-driven entrepreneurship across distinct economic development stages (e.g., developed, developing, and emerging economies).

Intersectional approaches. Adopting an intersectional perspective to examine how gender interacts with other individual characteristics –such as age, migrant status, ethnicity, or socioeconomic background– to shape self-efficacy and venture creation. While gender-based analyses offer crucial insights, intersectional approaches account for heterogeneous experiences within gender groups.

Longitudinal and dynamic trajectories. Another promising research avenue involves examining how entrepreneurial self-efficacy evolves over time and how these trajectories affect transitions between entrepreneurship driven by necessity and opportunity. Longitudinal designs could explore whether changes in self-efficacy –resulting from prior entrepreneurial experience, business failure, or exposure to entrepreneurial ecosystems– alter individuals' propensity to pursue opportunity-based ventures. Such analyses would deepen understanding of entrepreneurship as a dynamic process rather than a static occupational choice.

Similarly, analyzing the same phenomenon from an institutional perspective could involve incorporating country-level variables related to institutional frameworks, cultural values, and regulatory requirements for entrepreneurship.

Finally, the effectiveness of gender-sensitive entrepreneurship policies and programs could be evaluated using quasi-experimental methods, such as difference-in-differences or regression discontinuity designs. Linking individual-level GEM data with regional or national policy interventions would allow scholars to determine whether structural improvements in the perceived environment translate into measurable increases in opportunity-driven entrepreneurship among women.

Ethics and Transparency Declarations

Ethical considerations:

The present research did not require ethics committee approval since the data used are anonymized and publicly available through the GEM website.

Author contributions:

León Darío Parra: Conceptualization, Methodology, Software, Writing – original draft, Writing – review & editing.

Fabián Osorio: Validation and Writing – review & editing.

Fernando Pereira: Investigation, Writing – review & editing.

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The authors declare that Gemini and Trinka AIs were used for the review and editing of the English translation, as well as Julius AI for reviewing the econometric models.

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Notes

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