Assessing Entrepreneurial Intention Through Cognitive Factors in Spain Using the GEM Database

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Abstract

This study addresses the impact of cognitive factors, namely role models, self-efficacy, and risk aversion, on entrepreneurial intentions in Spain, specifically focusing on gender differences. The study employs data from the 2019 Global Entrepreneurship Monitor (GEM) Adult Population Survey (APS), encompassing responses from 22,936 persons aged between 18 and 64. The study uses binary logistic regression models to thoroughly examine the impact of these cognitive characteristics on entrepreneurial ambitions. The research findings reveal that having positive role models and strong self-belief significantly increases the likelihood of aspiring to become an entrepreneur, regardless of gender. Conversely, perceiving high levels of risk, especially the fear of failure, is a deterrent to pursuing entrepreneurship. Moreover, factors such as work

status and education level have varying impacts on entrepreneurial intentions based on gender. These findings aid in understanding the factors that influence entrepreneurial intentions, emphasizing the importance of cognitive factors while considering gender-specific contexts.

Keywords: entrepreneurial intention, role models, self-efficacy, risk-averse behavior, gender differences and Spain

JEL classification: L26, M13, D91, C83

1 Introduction

Entrepreneurship is widely recognized as a vital catalyst for economic growth due to its ability to generate fresh employment possibilities, encourage innovation, and promote competition and competitiveness (Kritikos, 2014; Stoica et al., 2020). Gartner (1990) characterized *entrepreneurship as the sum of the qualities and activities of a person who establishes and assumes the risk for a new or innovative business venture.* This process involves recognizing opportunities to develop a novel product, service, or process and obtaining the necessary resources to capitalize on these opportunities and improve individual well-being (Parthasarathy et al., 2011).

Entrepreneurship is undertaken by individuals or teams who possess unique human and social capital, cognitive abilities, and distinct circumstances. These characteristics are shaped by broader environmental factors, including social, cultural, political, and economic contexts (Gomez-Gras et al., 2010). Here, cognitive factors—such as knowledge, skills, and abilities—are foundational to detecting opportunities and are vital components in the entrepreneurial process (Shane et al., 2003; Parthasarathy et al., 2011). These factors significantly influence entrepreneurial activities (Al Mamari et al., 2020).

The cognitive approach is essential for understanding entrepreneurial behavior, especially how individuals perceive and evaluate business opportunities and

growth potential (Sanchez et al., 2011). Ahmad et al. (2014) identified three kinds of perceptions of the cognitive approach: individual perceptions, perceptions of economic opportunities, and sociocultural perceptions. They analyzed them in connection with entrepreneurial intentions. The results indicated that role models and self-efficacy have the strongest influence on entrepreneurial inclination when considering individual cognitive components. Additionally, the availability of high economic opportunities leads to positive entrepreneurial intentions. However, the perception of a greater risk of failure does not substantially impact the probability of entrepreneurial inclinations. Lee et al. (2022) emphasized that self-efficacy, innovativeness, and internal control are crucial for entrepreneurs to navigate challenges in launching businesses amidst uncertainty. Gani et al. (2022) further suggest that fear of failure negatively correlates with entrepreneurial intention, especially in factor-driven and innovation-driven economies, but is insignificant in efficiency-driven economies, while opportunity perception and self-confidence remain consistently positive predictors across various economic contexts. These findings collectively demonstrate the complexity of cognitive factors in shaping entrepreneurial intention and underscore the need for further investigation (Liao et al., 2022).

Entrepreneurial activities are crucial for spurring innovation, creating jobs, and fostering sustainable economic growth (Patzelt & Shepherd, 2011; Méndez-Picazo et al., 2021; Karabetyan, 2023). Although Spain has progressed in innovation, it still faces challenges in strengthening its innovation capacity relative to other European economies. In 2023, Spain's innovation index score reached 96 points, marking an improvement from previous years; however, this figure remains 11 percent below the EU average of 108.5. The gap is partly due to lower R&D investment and limited innovation among small and medium-sized enterprises (SMEs) (Arenas, 2024). Moreover, despite its status as one of the world's most advanced economies, supported by a diversified economic structure (IMF, 2023), Spain grapples with high unemployment, particularly among youth, with rates at 12.1 percent overall and 28.7 percent among youth (World Bank, 2023). These structural challenges signal that entrepreneurship could be pivotal in addressing

Spain's economic issues by creating jobs and promoting financial stability (Wongnaa & Seyram, 2014).

Policies promoting entrepreneurship are essential for economic resilience and can contribute to sustainable development goals by fostering a dynamic economic environment (Méndez-Picazo et al., 2021). Within this context, examining the cognitive factors that influence entrepreneurial intentions is key to formulating policies and support systems that address psychological and practical barriers to entrepreneurship in Spain (Selmi & Haddad, 2013).

The COVID-19 pandemic has further impacted entrepreneurial intentions, as evidenced in the Global Entrepreneurship Monitor (GEM) report, which notes a decline in the percentage of Spanish adults intending to start a business from 7.4 percent in 2019 to 6.8 percent in 2020, with 54 percent of potential entrepreneurs emphasizing that the pandemic influenced their intentions. By 2022, the intention rate had risen to 8.3 percent, yet it remains low compared to other European nations (GEM, 2021; GEM, 2023). This trend underscores the necessity of addressing factors that discourage entrepreneurial pursuits, including fear of failure, limited financial resources, lack of access to entrepreneurship education, and the appeal of stable employment (Mackiewicz, 2022; Pan et al., 2022). Cognitive and motivational factors, alongside external environmental influences, significantly shape entrepreneurial intentions, explaining why some individuals are more inclined toward entrepreneurship than others (Gomez-Gras et al., 2010).

Entrepreneurship is also considered an important economic factor for any country, yet the gender gap in entrepreneurship persists in most countries, with a low percentage of women entrepreneurs, limiting the growth potential (Seyberth & Overwien, 2024). In Spain, while men continue to exhibit a higher rate of total early-stage entrepreneurial activity (TEA) compared to women, the gender gap in entrepreneurial participation has shown signs of narrowing between 2001 and 2021 (Elam et al., 2021). However, despite this narrowing, the gender gap in Spain remains significant when compared to France (GEM, 2023). Research suggests

a strong link between entrepreneurial passion and intention, with some findings indicating that women may exhibit higher passion levels for entrepreneurship. However, while passion is a significant predictor of entrepreneurial intention, men's passion slightly surpasses in terms of intention prediction (Kyriakopoulos et al., 2024). In addition, cultural factors contribute to variations in entrepreneurial intention, as illustrated by a comparative study indicating that Italian students display higher entrepreneurial intentions than Spanish students, attributed to cultural differences in individualism and gender roles (Parente et al., 2017).

That is why this study seeks to explore the cognitive factors influencing entrepreneurial intentions in Spain, with a particular emphasis on gender-based differences. The goal is to provide insights that can inform policies and educational initiatives to support prospective entrepreneurs. Specifically, the study addresses the following questions:

- How are cognitive factors associated with entrepreneurial intention in Spain?
- What are the differences in entrepreneurial intentions across genders?

Additionally, in the study, theoretical foundations from social cognitive theory (Nwosu et al., 2022) and the theory of planned behavior (TPB) (Shi et al., 2020) are employed to explore cognitive influences on entrepreneurial intentions. By addressing the key research questions, the study aims to offer valuable insights into how cognitive factors shape entrepreneurial intentions. Furthermore, it seeks to propose strategies for fostering an entrepreneurial mindset in Spain, to enhance the entrepreneurial ecosystem in the region.

2 Theoretical Framework and Hypotheses

2.1 Entrepreneurial Intention

Entrepreneurial intention refers to the propensity and preparedness of an individual to engage in entrepreneurial activities and actively pursue opportunities to initiate a new business venture (Anwar et al., 2022). This inclination can be influenced by various factors, such as attitudes, beliefs, motivations, and environmental influences (Lihua, 2022). According to Moriano et al. (2012), entrepreneurial intention is a conscious state of mind that focuses on entrepreneurial behaviors, such as starting a new business or becoming an entrepreneur. The theory of planned behavior (TPB) is a widely used model in entrepreneurship studies, focusing on intentions and behaviors. It has been proven effective in predicting entrepreneurial intention (Karimi et al., 2016). Wang and Zheng (2020) found that attitudes toward entrepreneurship are significantly affected by anticipated outcomes and the perceived utility of these outcomes when applying this theory to entrepreneurial intention. Entrepreneurship is pursued to achieve various outcomes, such as wealth, social status, and personal fulfilment. Entrepreneurs perceive their endeavors as having the potential to impact multiple aspects of their lives, including material, spiritual, and value dimensions (Lihua, 2022). Researchers can use TPB to analyze the factors influencing individuals' decision-making processes and predict their chances of becoming entrepreneurs. Furthermore, TPB can help develop interventions or strategies to influence or change these factors, ultimately promoting entrepreneurship (Saoula et al., 2022).

Entrepreneurial intention also involves acquiring knowledge that can be used to achieve a business goal (Anjum et al., 2021). In addition, entrepreneurial intention refers to an individual's conscious decision and motivation to engage in entrepreneurial activities or start their own business. It comprises the desire, commitment, and aspiration to create, innovate, and take calculated risks in pursuing business ventures (Anjum et al., 2023). Researchers often use social cognitive theory to study how individuals develop entrepreneurial intentions and behaviors. This theory emphasizes the complex interaction between social

influences, observational learning, and self-efficacy in shaping human behavior. According to theoretical principles, confidence in one's capacity to initiate and manage a firm can result in the formation of entrepreneurial intentions (Liguori et al., 2018), and self-efficacy, shaped by learning experiences, influences career goals and interests (Ip et al., 2021).

2.2 Entrepreneurial Intention and Cognitive Factors

Entrepreneurial intentions are one of the most significant factors in starting a new venture from an individual cognitive perspective (Fernandez-Serrano et al., 2009). Various factors significantly influence entrepreneurial intentions, including evaluating entrepreneurial prospects, inclination toward entrepreneurship as a career choice, and willingness to take risks. Furthermore, an individual's personal effectiveness, skills, and practical knowledge, combined with their perception of the feasibility of starting a business, play a vital role in shaping their inclination toward entrepreneurship and defining their overall entrepreneurial mindset (Ali & Jabeen, 2020). Altinay et al. (2022) found that risk-taking individuals are more likely to become entrepreneurs. Those with a higher tolerance for ambiguity are better equipped to navigate the uncertainties and risks of starting a business. Moreover, those with strong self-confidence are more inclined to believe in their capabilities and perceive adversities as favorable opportunities to succeed. This trait can help them in their entrepreneurial endeavors, enabling them to establish and innovate their businesses, even in the face of setbacks (Caliendo et al., 2023). Furthermore, studying and gaining knowledge from accomplished entrepreneurs can offer significant perspectives on the mentality, tactics, and behaviors contributing to achieving business success. Pan et al. (2022) state that having a role model for entrepreneurial intention is important, as it can provide inspiration, guidance, and a tangible example of success.

In terms of entrepreneurial intentions, gender differences are evident through distinct pathways involving personal attitudes and perceived behavioral control rather than social norms. Compared to men, women tend to have a

stronger inclination toward entrepreneurship driven by organizational motives, particularly the desire for balance, which has a lesser influence on personal attitudes. Moreover, women have a relatively lower drive toward entrepreneurship stemming from beliefs in internal control, which, on the other hand, plays a more significant role in predicting perceived behavioral control (Maes et al., 2014). The study by Alnemer (2021) underscores the importance of knowledge and skills in promoting female startup intentions. Adopting entrepreneurship as a professional path, a desire to create jobs rather than seek them, and a dedication to social well-being are important factors in pursuing entrepreneurial objectives. Women with the necessary skills, risk tolerance, and ability to identify viable business opportunities tend to pursue entrepreneurship, even when regulatory and societal norms are unfavorable. On the other hand, men tend to initiate businesses even without regulatory support if they perceive good opportunities and have the required skills and risk tolerance. In less developed countries, male entrepreneurship may be driven more by necessity than opportunity, especially in poor institutional environments (Chen et al., 2023).

2.2.1 Entrepreneurial Intention and Role Models

Entrepreneurial role models are often cited as positively influencing individuals who start their own businesses (Van Auken et al., 2006; Bosma et al., 2012; Liu et al., 2019; Al Halbusi et al., 2024). These role models offer inspiration and guidance, demonstrating the potential and achievements that can be attained in entrepreneurship. In addition, having access to role models positively affects an individual's perception of their ability to control their behavior. This provides them with the confidence that they possess the required abilities and resources to succeed (Taouab, 2014). According to TPB, role models indirectly affect entrepreneurial desires by influencing attitudes toward entrepreneurship, subjective norms, and perceived behavioral control (Karimi et al., 2014). Moreover, having a role model can be a source of inspiration for potential entrepreneurs. It provides a clear template for approaching and managing a business, helping to reduce the

fear of failure by offering examples of successful navigation through challenges (Trang et al., 2019; Kong et al., 2020), thus enhancing the perceived feasibility and desirability of initiating a business venture (Nowiński & Haddoud, 2019). Providing a direct and observable template for success and effective entrepreneurial behavior may increase motivation to participate in entrepreneurial activities (Jin et al., 2023).

The connection between having a desire to start a business and having role models can be significant for both men and women. However, women tend to have less motivation to become entrepreneurs than men, which may be because they have fewer opportunities to observe role models in this field. Conversely, men may have more access to role models of the same gender in the entrepreneurial field, which can boost their confidence and intention to start their own businesses (Austin & Nauta, 2015). Nevertheless, role models' impact on perceived behavioral control and attitudes toward entrepreneurship is more significant in women than men (Karimi et al., 2014). Research by Amofah and Saladrigues (2022) explored gender differences in entrepreneurial intentions, revealing that the influence of parental self-employment was stronger in men than women.

Hypotheses:

H1a: A positive relationship exists between role models and entrepreneurial intentions in Spain.

H1b: A positive relationship exists between role models and women's entrepreneurial intentions in Spain.

H1c: A positive relationship exists between role models and men's entrepreneurial intentions in Spain.

2.2.2 Entrepreneurial Intention and Self-Efficacy

Self-efficacy can be a crucial factor in determining entrepreneurial intention. This is because it affects an individual's belief in the feasibility of embarking on entrepreneurial inclinations. Individuals with elevated levels of self-confidence are more inclined to believe that they can effectively initiate and oversee a commercial venture. The heightened self-assurance can enhance their inclination to participate in entrepreneurship (Drnovšek et al., 2010; Bullough & Renko, 2013). In addition, self-efficacy, when combined with attitudes toward entrepreneurship and the presence of role models, can increase entrepreneurial intentions (Nowiński & Haddoud, 2019).

Individuals with boosted self-confidence are more inclined to have a greater intent to engage in entrepreneurial activities (Li et al., 2020). In addition, self-efficacy directly impacts individuals' confidence in their capacity to carry out entrepreneurial duties effectively. People with a strong sense of self-efficacy are more inclined to trust their capacity to initiate and oversee a company endeavor (Ferreira-Neto et al., 2023). According to a recent study by Caliendo et al. (2023), entrepreneurs with high generalized self-efficacy tend to perform better in their startups. This is reflected in various business outcomes, such as survival rates, entrepreneurial income, job creation, and innovation, up to 19 months after establishing their businesses.

Bandura's social cognitive theory explains this relationship. This theory suggests that an individual's trust in their capacity to perform certain actions can significantly influence their choices, motivation, and perseverance in various endeavors, including entrepreneurship (Nsereko et al., 2021; Kumar & Shukla, 2022; Wardana et al., 2024). Moreover, the theory proposed by Nwosu et al. (2022) elucidates the connection between self-efficacy and entrepreneurial inclination by employing a comprehensive framework that considers personal, cognitive, behavioral, and contextual aspects. The study indicates that students' experiences at business firms for practical training can enhance their belief in their ability to succeed as entrepreneurs, which subsequently affects their intention

to pursue entrepreneurial activities. When students' self-efficacy increases, they develop greater confidence in their capacity to carry out entrepreneurial tasks. The heightened self-assurance ultimately results in a greater inclination to participate in entrepreneurial endeavors following graduation. The correlation between self-efficacy and entrepreneurial intention is influenced by entrepreneurial enthusiasm and personal qualities such as entrepreneurial ingenuity (Nwosu et al., 2022).

In the study conducted by Martínez Campo (2011), women and men have similar levels of entrepreneurial self-belief and are equally likely to pursue entrepreneurial ventures. This suggests that women have the same confidence level in engaging in entrepreneurial activities as men.

However, according to Karimi et al. (2014), women often perceive the entrepreneurial landscape as unsupportive and feel apprehensive about their perceived lack of skills. Men often report higher intentions to start businesses and show greater self-efficacy than women, which can be linked to societal, psychological, and educational influences (Contreras-Barraza et al., 2021).

Hypotheses:

H2a: A positive relationship exists between individuals' self-efficacy and entrepreneurial intentions in Spain.

H2b: A positive relationship exists between individuals' self-efficacy and women's entrepreneurial intentions in Spain.

H2c: A positive relationship exists between individuals' self-efficacy and men's entrepreneurial intentions in Spain.

2.2.3 Entrepreneurial Intention and Risk-Averse Behavior

The fear of failure is a widely experienced psychological barrier that can significantly affect an individual's entrepreneurial intentions. Entrepreneurs afraid of failure often hesitate to pursue their business goals due to the potential risks, uncertainties, and negative consequences of failure. This fear can prevent individuals from starting a business or exploring entrepreneurial opportunities (Hunter et al., 2021). According to Zhang and Cain (2017), failure anxiety indirectly affects entrepreneurial intention through planned behavior determinants. Risk aversion can also influence general entrepreneurial attitudes, shaping entrepreneurial intentions. The impact of these relationships can be moderated by factors such as gender and country contexts. For example, Ugandan women and German men who exhibited a higher risk aversion were less likely to have strong intentions of engaging in entrepreneurial activities. This means a significant association exists between risk aversion and lower entrepreneurial intentions among these groups (Baluku et al., 2021). Moreover, García-Rodríguez et al. (2022) compared the entrepreneurial activity of Cuba and Spain, considering their diverse economic systems and cultural contexts. In Cuba, which has a collectivist economy, entrepreneurship might be seen as a necessity rather than an opportunity, and therefore, people may have a lower level of risk aversion due to their urgent economic needs. On the other hand, in Spain, a more developed market, individuals might have more options outside of entrepreneurship, leading to a higher level of risk aversion that can shape entrepreneurial activity in the country.

Sousa-Filho et al. (2023) investigated the influence of fear of failure on entrepreneurial ambitions. The study employed TPB to comprehend this association. The presence of a fear of failure served as a precursor that impacted attitude and perceived behavioral control, ultimately influencing one's entrepreneurial ambitions. The results indicate that the apprehension of failure has a detrimental impact on attitude and perceived behavioral control in certain Latin American nations, namely Brazil and Mexico. In contrast, it does not have

the same effect in other countries, such as Colombia. Regardless of the fear of failure, both attitude and perceived behavioral control have a favorable influence on entrepreneurial inclinations.

Hypotheses:

H3a: Individuals' risk-averse behavior negatively relates to entrepreneurial intentions in Spain.

H3b: Individuals' risk-averse behavior negatively relates to women's entrepreneurial intentions in Spain.

H3c: Individuals' risk-averse behavior negatively relates to men's entrepreneurial intentions in Spain.

3 Methodology

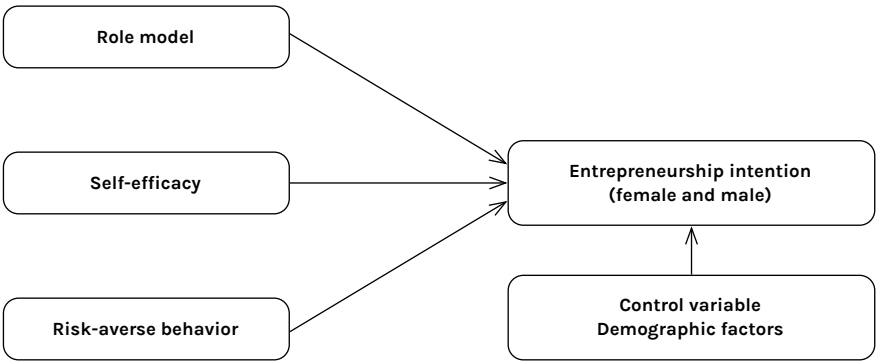
The paper primarily examines the aspirations of Spain's adult population to become entrepreneurs, using cross-sectional data from Spain's 2019 National GEM survey. As young adults develop an entrepreneurial mindset, they can recognize and address unmet needs and community gaps. This enables them to create innovative solutions and exploit these opportunities within their local surroundings (Biney, 2023).

To test the nine theoretical hypotheses, binary logistic regression is employed as the primary analytical technique. Successive logit models are used to introduce each cluster of independent variables sequentially, which allows for examining the incremental impact of different factors. The SPSS software program is used for data analysis.

3.1 Data Collection

GEM is an extensive worldwide database on entrepreneurship compiled by national country teams associated with prestigious academic institutions. The Adult Population Survey (APS) investigates individuals' involvement in the entrepreneurial process, encompassing their motivations, activities, and views. The analysis considers the variables that motivate individuals to become entrepreneurs and the characteristics of businesses (Ali et al., 2022). Specifically, this survey includes 22,936 respondents aged 18–64, providing insights into variables that motivate entrepreneurial aspirations and characteristics of existing businesses. The study focuses on cognitive factors that may predict an individual's probability of initiating a business endeavor within three years (Figure 1).

Figure 1: *Conceptual Framework*



Source: Authors' illustration.

The study incorporates a range of characteristics derived from the GEM APS. Tables 1 and 2 present the descriptive statistics for the variables used in the investigation. The participants' entrepreneurial intention was assessed by determining if they had plans to initiate a new firm, either alone or in collaboration with others, within three years, encompassing any form of self-employment. The mean value for entrepreneurial intention is 0.08, indicating that only 8 percent of respondents expressed intentions to start a business, reflecting low entrepreneurial aspirations in the sample. Nearly half of the participants (43 percent) know someone who has recently started a business. About half of them (51 percent) feel confident in their ability to start a business, while more than half (56 percent) are held back by a fear of failure in pursuing their entrepreneurial goals.

The study also included key demographic criteria, such as male gender, employment position, educational attainment, and income groups, to examine the impact of these traits on entrepreneurial intention. The descriptive statistics for demographic characteristics indicated that 50,1 percent of the respondents were male and 49.9 percent female. Many respondents (57.6 percent) worked full-time and part-time, while 8.2 percent worked part-time only, 6.3 percent were homemakers, 6.9 percent were students, and 11.2 percent were not working.

Regarding education, 20.6 percent of the participants had secondary education, 20.1 percent had post-secondary education, 18.3 percent held bachelor's degrees, 14.1 percent had master's degrees, and 4.8 percent possessed doctoral degrees. According to the income distribution, the lowest-income group comprised 28.7 percent of the respondents, followed by the middle-income group (18.6 percent) and the upper-income group (21.9 percent).

Table 1: *Descriptive Statistics for Control Variable*

Variable	Category	Obs.	Percentage (%)
Gender	Total	22,936	100.0
	Male	11,499	50.1
	Female	11,437	49.9
Work status	Full-time or part-time	13,217	57.6
	Part-time only	1,879	8.2
	Homemaker	1,454	6.3
	Student	1,578	6.9
	Not working	2,560	11.2
	Other (dummy = 0)	2,248	9.8
Education	Secondary education	4,731	20.6
	Post-secondary education	4,613	20.1
	Bachelor	4,196	18.3
	Master	3,229	14.1
	Doctoral or equivalent	1,110	4.8
	Other (dummy = 0)	5,057	22.0
Income	Lowest 33%	6,576	28.7
	Middle 33%	4,267	18.6
	Upper 33%	5,027	21.9
	Other (dummy = 0)	7,066	30.8

Source: Authors' calculations.

Table 2: *Description of Statistics for the Dependent and Independent Variables*

Variables	Description	Obs.	Mean	SD	Min.	Max.
Entrepreneurial intention	Do you expect to start a new business within three years? (yes = 1, no = 0)	22,271	0.08	0.267	0	1
Role model	Has anyone you know started a business or become self-employed within the last two years? (yes = 1, no = 0)	22,481	0.43	0.494	0	1
Self-efficacy	Do you possess the necessary knowledge, skills, and experience to start a new business venture? (yes = 1, no = 0)	21,712	0.51	0.500	0	1
Risk-averse	Would the fear of failure hinder your aspirations to start a business? (yes = 1, no = 0)	22,936	0.56	0.497	0	1

Source: Authors' calculations.

3.2 Data Analysis

The analysis employs a binary logistic regression model to estimate the probability of individuals having an entrepreneurial intention, where the dependent variable (entrepreneurial intention) is binary (1 = intends to start a business within three years, 0 = does not). Logistic regression is well-suited for this analysis as it estimates the likelihood of a binary outcome, leveraging one or more predictor variables (Edgar & Manz, 2017). The model can be expressed as:

$$\log \frac{P(Y = 1)}{1 - P(Y = 1)} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n + \varepsilon$$

Where:

$P(Y = 1)$ represents the likelihood of an individual's intention to establish a business, where Y is the dependent variable.

β_0 represents the intercept.

$\beta_1 \ldots \beta_n$ represent the coefficients of the independent variables.

$x_1 \ldots x_n$ represent the independent variables and

ε = is the error term.

This study uses several statistical techniques to evaluate the effectiveness of the models. The omnibus test is used to assess the significance of the model coefficients, while the -2 log-likelihood statistic provides a measure of the model's goodness of fit. Additionally, the Hosmer-Lemeshow test is employed to assess the model's calibration. The correct classification rate is used to evaluate the model's predictive accuracy. Furthermore, pseudo-R^2 statistics, including Cox and Snell R^2 and Nagelkerke R^2, are used to assess the proportion of variance explained by the model.

To ensure the robustness of the results, a collinearity analysis is conducted to avoid biased coefficient estimations. It includes calculating variance inflation factors (VIF) and condition indices to identify potential multicollinearity issues.

4 Results and Discussion

4.1 Model Overview

The study employs four distinct models to elucidate the proposed hypotheses. The initial model indicates the relationship between demographic factors and entrepreneurial intention. The second model includes entrepreneurial intention at the overall level, using cognitive characteristics as independent variables and age, education, and working status as control variables. Model 3 examines the evaluation of female entrepreneurial intention, using cognitive characteristics as independent variables and age, education, and working status as control variables. Model 4 examines the assessment of male entrepreneurial intention, where cognitive traits are considered independent variables, while age, education, and working status are treated as control variables. The results of these four models are indicated in Table 4.

It is important to note that for Model 4, the "work status (3)" category for male respondents was excluded due to its small sample size (n = 2), ensuring statistical reliability. Conversely, the same category was retained for female respondents because its sample size was sufficiently large.

4.2 Model Fit and Multicollinearity

The multicollinearity test results indicated that the highest VIF was 1.09, well below the threshold of 5. Additionally, the highest condition index was 7.7, which is below the recommended limit of 20.0 proposed by Belsley et al. (1980). Therefore, no symptoms of multicollinearity were detected (see Table A1 in the Appendix).

Table 3 presents the model fit statistics for the different models in the study. The omnibus test results suggest significant prediction performance across all models: Model 1 (χ^2 = 525.311, df = 14, $p \leq 0.05$), Model 2 (χ^2 = 1223.874, df = 17, $p \leq 0.05$), Model 3 (χ^2 = 542.349, df = 16, $p \leq 0.05$), and Model 4 (χ^2 = 649.095, df = 15, $p \leq 0.05$). These outcomes confirm that the overall performance of the models is satisfactory. However, despite the significant omnibus test outcomes, the variables included in Models 1 through 4 explain only a limited portion of the variation in entrepreneurial intention.

The -2 log-likelihood statistic evaluates model fit, with lower values signifying better performance. Model 3, with the lowest value of 4296.002, demonstrates the best fit. Comparatively, Models 2 and 1 have higher values, reinforcing that Model 3 provides the most accurate predictions with minimal discrepancies between observed and predicted outcomes.

Table 3: *Model Fit Statistics*

	Model 1	Model 2	Model 3	Model 4
Omnibus test (sig.)	0.001	0.001	0.001	0.001
-2 log-likelihood	11568.146	10031.641	4296.002	5712.18
Cox and Snell pseudo-R^2	0.023	0.057	0.051	0.06
Nagelkerke pseudo-R^2	0.056	0.137	0.137	0.131
Hosmer and Lemeshow test (sig.)	0.018	0.651	0.543	0.037
Percentage correct	92.3	92.3	93.8	90.9

Source: Authors' calculations.

The pseudo-R^2 statistics, including Cox and Snell R^2 and Nagelkerke R^2, further support these findings. These metrics quantify the proportion of variance in entrepreneurial intention explained by the models. In Model 1, demographic factors account for only 2.3 percent (Cox and Snell) and 5.6 percent (Nagelkerke) of variability. As additional variables are incorporated in Models 2 through 4, the explanatory power increases, with pseudo-R^2 values ranging from 5.7 percent to 13.7 percent. This progression suggests that including more predictors improves the model's ability to explain the variability in entrepreneurial intention. The Hosmer-Lemeshow test, which evaluates the goodness of fit, showed *p*-values greater than 0.05 for Models 2 and 3, indicating a good fit. However, Models 1 and 4 exhibit significant *p*-values, suggesting potential concerns with model fit.

Finally, the percentage of correct predictions made by each model is shown in the statistics. Model 3, which analyzes data at a female level, has the highest accuracy, achieving 93.8 percent correct predictions. It is followed by Models 1 and 2, both of which have an accuracy of 92.3 percent, and Model 4, which has 90.9 percent correct predictions.

4.3 Key Findings and Discussion

The study results revealed that both demographic factors (gender, education level, and work status) and cognitive factors (role models, self-efficacy, and risk-averse behavior) significantly impact entrepreneurial inclinations in Spain (see Table 4 in the main text and Table A2 in the Appendix). These findings are discussed in detail below for each model.

In Model 1, demographic factors were found to have a significant influence on entrepreneurial intentions (Dubey & Sahu, 2022). Specifically, being male is associated with more positive perceptions of entrepreneurship. Additionally, each work status category and education level positively affect entrepreneurial inclinations, except for education level 3 (post-secondary vocational education), which shows no statistically significant effect. However, the income level in this model does not demonstrate a significant impact on entrepreneurial inclinations.

Table 4: *Logistic Regression on Entrepreneurial Intention*

Model 1: Demographic			**Model 2: Overall level**		**Model 3: Female level**		**Model 4: Male level**	
	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
Demographic factors								
Male	0.412***	1.509	0.322***	1.381				
Work status	***		***		***		***	
Work status (1)	1.415***	4.118	1.223***	3.398	1.346***	3.842	1.165***	3.205
Work status (2)	1.893***	6.637	1.858***	6.410	1.808***	6.099	1.955***	7.062
Work status (3)	0.852***	2.345	0.935***	2.546	1.023**	2.782		
Work status (4)	1.605***	4.976	1.795***	6.020	1.491***	4.442	1.936***	6.929
Work status (5)	2.220***	9.209	2.168***	8.743	2.259***	9.578	2.101***	8.176
Education	***		***		***		***	
Education (1)	0.515***	1.673	0.419***	1.521	0.580***	1.785	0.305**	1.356
Education (2)	0.293***	1.340	0.178*	1.195	0.365**	1.440	0.048	1.049
Education (3)	0.111	1.118	-0.001	0.999	0.115	1.122	-0.078	0.925
Education (4)	0.445***	1.559	0.311**	1.365	0.481**	1.617	0.181	1.198
Education (5)	0.974***	2.649	0.705***	2.023	0.862***	2.367	0.591***	1.805
Income								
Income (1)	0.026	1.026	0.035	1.036	0.168	1.183	-0.064	0.938
Income (2)	-0.142	0.868	-0.124	0.883	-0.132	0.876	-0.129	0.879
Income (3)	-0.066	0.936	-0.122	0.885	-0.044	0.957	-0.173	0.841
Cognitive factors								
Role model			0.758***	2.134	0.651***	1.918	0.833***	2.301
Self-efficacy			1.137***	3.116	1.247***	3.481	1.051***	2.861
Risk-averse behavior			-0.368***	0.692	-0.371***	0.690	-0.365***	0.694
Constant	-4.493***	0.0101	-5.169***	0.006	-5.436***	0.004	-4.668***	0.009

Note: ***, **, * are significant at $p < 0.001$, $p < 0.01$, and $p < 0.05$, respectively.

Source: Authors' calculations.

In Model 2, which incorporates cognitive factors alongside demographic factors, the findings suggest that role models and self-efficacy significantly and positively influence entrepreneurial intention (H1a, H2a, and H3a). The results show that

both role models and self-efficacy have significant coefficients, aligning with the expected direction of influence. Notably, self-efficacy has the most substantial impact among all variables studied, followed by role models (with odds ratios of 3.116 and 2.134, respectively). However, a higher perceived risk of failure negatively affects entrepreneurial intentions. The impact of demographic factors remains consistent, both in terms of direction and the statistical significance of their coefficients.

The results align with previous studies by Coduras et al. (2008), Lee (2017), Saleem et al. (2021), Pham et al. (2022), Ali et al. (2022), and Wardana et al. (2024), which documented the positive influence of role models and self-efficacy on entrepreneurial intentions. Role models can be invaluable for aspiring entrepreneurs, offering guidance, support, and sharing their experiences to help individuals avoid potential pitfalls and make informed decisions (Ridzwan et al., 2021). According to TPB, exposure to successful entrepreneurs as role models fosters positive attitudes toward entrepreneurship, reinforcing intentions to pursue entrepreneurial ventures (Nowiński & Haddoud, 2019; Kong et al., 2020; Amofah & Saladrigues, 2022).

Entrepreneurial self-efficacy, which reflects an individual's confidence in their ability to perform entrepreneurial activities effectively, further strengthens this inclination. Individuals with higher self-efficacy are more likely to initiate and manage business ventures successfully. Bandura's social cognition theory emphasizes the critical role of self-efficacy in shaping behavior, including entrepreneurial intentions (Kumar & Shukla, 2022; Nsereko et al., 2021; Wardana et al., 2024).

However, the relationship between fear of failure and entrepreneurial intention presents mixed findings. While some studies suggest that fear of failure significantly negatively impacts the likelihood of pursuing entrepreneurship (Coduras et al., 2008; Al Mamari et al., 2020; Ali et al., 2022; Gani et al., 2022), others find no significant influence (Ahmad et al., 2014; Anwar ul Haq et al., 2014; Saleem et al., 2021). These discrepancies may arise from differences in sample characteristics, cultural contexts, measurement techniques, or other contextual factors.

Baluku et al. (2021) found that individuals with strong risk aversion are less likely to choose entrepreneurship due to the inherent uncertainties and risks involved in starting and running a business.

In Models 3 and 4, the study investigates the effects of role models, self-efficacy, and risk aversion on entrepreneurial intentions across genders (H1b and H1c, H2b and H2c, and H3b and H3c). The findings confirm that cognitive factors, namely having role models and self-efficacy, positively influence the entrepreneurial intentions of both males and females ($p < 0.01$). For example, role models increase entrepreneurial intentions significantly, with an Exp(B) of 1.918 for women and 2.301 for men. Similarly, self-efficacy positively influences entrepreneurial intentions for both genders, with stronger effects observed among women (Exp(B) = 3.481) compared to men (Exp(B) = 2.861). However, risk-averse behavior negatively impacts entrepreneurial intentions for both genders, with nearly identical effect sizes (Exp(B) = 0.690 for women and Exp(B) = 0.694 for men). This suggests that the fear of failure decreases the likelihood of developing entrepreneurial intentions for both genders.

The analysis also reveals variations in the effects of demographic variables on entrepreneurial intention between men and women. Regarding education, women with post-secondary (Exp(B) = 1.440) and master's degrees (Exp(B) = 1.617) show a significant positive effect on entrepreneurial intention. In contrast, these effects are not statistically significant for men. Additionally, bachelor's degrees do not exhibit a significant effect on entrepreneurial intentions for either gender, while secondary education (Exp(B) = 1.785 for women, Exp(B) = 1.356 for men) and doctoral degrees (Exp(B) = 2.367 for women, Exp(B) = 1.805 for men) show significant positive effects for both genders.

These results align with prior research. For instance, Ali et al. (2022) analyzed the factors influencing entrepreneurial intention across genders, specifically focusing on cognitive factors. Their results revealed that while self-efficacy, role models, and fear of failure all play roles in shaping entrepreneurial intentions, only self-efficacy showed a significantly positive influence on women's entrepreneurial

intentions. Arafat et al. (2021) also emphasized the critical role of self-efficacy and role models in fostering entrepreneurial intentions among women. Moreover, the findings regarding gender-specific differences in the impact of education status resonate with Arshad et al. (2016), who highlighted that men are more influenced by entrepreneurial self-efficacy, while women's intentions are shaped by social norms and education-related factors.

These findings have important implications for designing gender-sensitive entrepreneurial education and support programs. For example, focusing on role models and the development of self-efficacy can boost entrepreneurial intentions for both men and women. Additionally, targeted educational initiatives can address the unique needs of women at different educational levels, fostering equitable opportunities in entrepreneurship (Jiatong et al., 2021). Understanding these dynamics is essential for policymakers and educators who aim to support inclusive entrepreneurial ecosystems.

5 Conclusion

In summary, this research significantly contributes to understanding the influence of cognitive determinants on entrepreneurial inclinations, particularly in the Spanish context and with a focus on gender. The findings underscore the importance of role models and self-efficacy in fostering entrepreneurial intentions, irrespective of gender. The results suggest that individuals with access to favorable role models and strong self-efficacy are more likely to express intentions to pursue entrepreneurial endeavors. However, the study also highlights a clear relationship between the perception of risk and the level of entrepreneurial ambition, demonstrating that a fear of failure negatively impacts entrepreneurial intentions for both men and women.

The decision to pursue entrepreneurship is influenced by various cognitive factors, including opportunity recognition, job selection, and risk assessment (Sarfaraz et al., 2014). External factors such as exposure to successful entrepreneurs and

societal attitudes toward entrepreneurship also play a critical role in shaping entrepreneurial mindsets. Personal attributes like skills, knowledge, and the perceived feasibility of starting a business further influence this decision-making process. Understanding these interconnected factors is essential for stakeholders aiming to foster an environment conducive to entrepreneurial development and innovation.

The study also reveals that demographic variables, such as work status and education level, significantly affect entrepreneurial intentions. These factors, however, vary between men and women, suggesting that targeted interventions are necessary to address the specific barriers each gender faces in pursuing entrepreneurship.

Despite its valuable insights, the study has certain limitations. The sample is limited to Spain, which may restrict the generalizability of the findings to other cultural contexts. However, Spain's unique economic environment and entrepreneurial ecosystem provide relevant insights that contribute to broader discussions on entrepreneurship in similar socio-economic settings. Additionally, focusing on a single country enables a more in-depth exploration of cognitive factors and gender differences, which could serve as a benchmark for future comparative studies across EU countries. Furthermore, the cross-sectional nature of the data limits our ability to establish causal relationships between cognitive factors and entrepreneurial intention. Future research should include longitudinal studies that track individuals over time to better understand how cognitive factors evolve and influence entrepreneurial intentions. Comparative studies across different countries and cultures would also help determine whether similar patterns emerge.

Appendix

Table A1: *Multicollinearity Analysis*

Predictors	**Model 1**			**Model 2**			**Model 3**			**Model 4**		
	Tolerance	VIF	Condition index	Tolerance	VIF	Condition index	Tolerance	VIF	Condition index	Tolerance	VIF	Condition index
Demographic factors												
Male	0.978	1.023	2.548	0.965	1.036	2.833						
Work status	0.948	1.055	2.789	0.942	1.061	3.135	0.957	1.045	2.685	0.962	1.040	2.782
Education	0.938	1.066	3.457	0.921	1.086	3.365	0.891	1.122	3.006	0.946	1.057	3.031
Income	0.918	1.089	5.769	0.916	1.091	3.474	0.902	1.109	3.171	0.941	1.063	3.325
Cognitive factors												
Role model				0.952	1.051	3.724	0.949	1.054	3.635	0.962	1.040	3.524
Self-efficacy				0.935	1.070	4.2	0.935	1.069	3.995	0.951	1.052	3.974
Risk-averse behavior				0.981	1.019	7.713	0.986	1.014	6.863	0.984	1.016	7.076

Source: Authors' calculations.

Table A2: *Hypothesis Summary*

Hypothesis	Description	Result	Statistical result
H1a	A positive relationship exists between role models and entrepreneurial intentions in Spain.	Accepted	$p < 0.01$
H1b	A positive relationship exists between role models and women's entrepreneurial intentions in Spain.	Accepted	$p < 0.01$
H1c	A positive relationship exists between role models and men's entrepreneurial intentions in Spain.	Accepted	$p < 0.01$
H2a	A positive relationship exists between individuals' self-efficacy and entrepreneurial intentions in Spain.	Accepted	$p < 0.01$
H2b	A positive relationship exists between individuals' self-efficacy and women's entrepreneurial intentions in Spain.	Accepted	$p < 0.01$
H2c	A positive relationship exists between individuals' self-efficacy and men's entrepreneurial intentions in Spain.	Accepted	$p < 0.01$
H3a	Individuals' risk-averse behavior negatively relates to entrepreneurial intentions in Spain.	Accepted	$p < 0.01$
H3b	Individuals' risk-averse behavior negatively relates to women's entrepreneurial intentions in Spain.	Accepted	$p < 0.01$
H3c	Individuals' risk-averse behavior negatively relates to men's entrepreneurial intentions in Spain.	Accepted	$p < 0.01$

Source: Authors' findings.

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