

Evaluation of entrepreneurial intention in agronomic engineering students

Evaluación de la intención emprendedora en estudiantes de ingeniería agronómica

Daniel Esteban Serrato-Castro¹, Diego Romero-Sánchez¹, and Dursun Barrios¹

ABSTRACT

Entrepreneurship has emerged as a crucial factor in economic development, especially in developing nations, where the COVID-19 pandemic has exacerbated socioeconomic challenges, particularly in rural areas. Despite these adversities, countries like Colombia boast abundant natural resources and a dynamic young population, creating a conducive environment for sustainable economic growth. In this context, the main objective of this study was to conduct a comprehensive analysis of the factors influencing entrepreneurial intention in academic settings related to agriculture. To achieve this, a structural equation modeling was conducted on a sample of 200 agronomic engineering students at the Universidad Nacional de Colombia. This analysis identified the positive impact of entrepreneurial self-efficacy and opportunity recognition on entrepreneurial intention. The research focused on understanding entrepreneurial spirit among young individuals, acknowledging its significance as a driver of economic and social development.

Key words: businesses, enterprises, management.

RESUMEN

El emprendimiento se posiciona como un factor crucial para el desarrollo económico, especialmente en naciones en desarrollo, donde la pandemia de COVID-19 ha agravado los retos socioeconómicos, sobre todo en áreas rurales. A pesar de estas adversidades, países como Colombia cuentan con vastos recursos naturales y una población juvenil dinámica, creando un escenario propicio para un crecimiento económico sostenible. En este contexto, el objetivo principal de este estudio es realizar un análisis exhaustivo de los factores que inciden en la intención emprendedora en entornos estudiantiles relacionados con la agricultura. Para lograr este objetivo, se llevó a cabo un modelo de ecuaciones estructurales en una muestra de 200 estudiantes de ingeniería agronómica en la Universidad Nacional de Colombia. Este análisis permitió reconocer el impacto positivo de la autoeficacia emprendedora y el reconocimiento de oportunidades en la intención emprendedora. La investigación se centró en comprender el espíritu emprendedor de los jóvenes, reconociendo su importancia como motor del desarrollo económico y social.

Palabras clave: empresas, gestión, negocios.

Introduction

Entrepreneurship has emerged as a key component in driving economic development and job creation globally. It is defined as the process of establishing a new business, encompassing everything from developing the business plan to implementing strategies and managing associated risks (Muñoz & Dimov, 2023). At a global level, countries are focusing their efforts on supporting entrepreneurship. With a growing demographic and an increasing demand for employment, there is an urgent need to establish new businesses to accommodate this workforce (Zen *et al.*, 2023). This phenomenon could have a particularly positive impact on developing nations like Colombia, where the COVID-19 pandemic has triggered a humanitarian crisis that severely affected low- and middle-income communities, especially in rural areas. In Colombia, the contribution of the agricultural sector to the country's GDP decreased from 14% in 1995 to 6% in 2020 (Cámara de Industria y Comercio

Colombo-Alemana, Cámara de Comercio de Medellín para Antioquia & Institución Universitaria EUSUMER, 2021). Nevertheless, Colombia has significant opportunities for sustainable growth in rural regions, leveraging its biodiversity, fertile lands, young population, abundant freshwater resources, and access to renewable energy such as wind and solar power (Organization for Economic Co-operation and Development-OECD, 2022). Despite these comparative advantages, rural entrepreneurship in Colombia needs a stronger foundation to promote rural economic growth. However, according to the Global University Entrepreneurial Spirit Students' Survey (GUESSS), entrepreneurial intention has increased in the country, particularly since the COVID-19 pandemic, driven by entrepreneurship policies and the university environment (Martins *et al.*, 2021).

Entrepreneurial success largely depends on the skills and characteristics possessed by entrepreneurs. Regardless of the field in which they operate, these individuals exhibit a

Received for publication: April 13, 2024. Accepted for publication: August 30, 2024.

Doi: 10.15446/agron.colomb.v42n2.115744

¹ Universidad Nacional de Colombia, Facultad de Ciencias Agrarias, Grupo de Investigación Biogénesis, Bogotá (Colombia).

* Corresponding author: dbarrio@unal.edu.co



range of fundamental abilities, among which recognition of opportunities and self-efficacy stand out. Self-efficacy is defined as a person's conviction in their ability to manage and control events and situations affecting daily life (Lopez-Garrido, 2023). This quality, essential in the entrepreneurial context, entails belief in the possibility of establishing and successfully directing a business. On the other hand, recognition of opportunities refers to the capacity to identify business prospects that were previously unknown (Sautet, 2016).

In addition to these skills, various factors, such as gender and entrepreneurial education, influence the entrepreneurial process. Evidence suggests that entrepreneurship may exhibit a gender bias, with women showing less willingness than men to embark on entrepreneurial ventures due to lower self-efficacy and openness to new experiences (Elshaer & Sobaih, 2023). In contrast, higher education plays a crucial role in promoting entrepreneurship and fostering an entrepreneurial culture among young people. Both self-efficacy and recognition of opportunities are influenced by the university environment, which in turn impacts the entrepreneurial intention of students.

According to Liñán and Chen (2009), self-efficacy is a significant predictor of entrepreneurial intention, indicating that students who have confidence in their entrepreneurial abilities are more likely to have entrepreneurial intentions. Furthermore, the perception of opportunities also influences this intention. Fayolle and Gailly (2015) found that students who perceive more entrepreneurial opportunities are more likely to have entrepreneurial intentions.

A study conducted by the Organization for Economic Co-operation and Development (OECD) in 2021 revealed that universities play a significant role in fostering entrepreneurship and creating new businesses. Universities can influence the entrepreneurial intention of students, as these institutions can provide them with the knowledge, skills, and tools necessary to become successful entrepreneurs and create innovative new ventures (Fayolle & Gailly, 2015).

Today, the competition in the job market has increased significantly. This implies that students are increasingly considering entrepreneurship as an option due to the evident saturation of the job market. Barba-Sánchez *et al.* (2022) argue that this trend has led to students demanding new and competitive tools, including entrepreneurial education, from universities. This educational approach is essential for preparing future entrepreneurs and providing them with the necessary resources to establish businesses

in a saturated labor market. Additionally, Syed *et al.* (2020) suggest that the drive towards entrepreneurship may be influenced by individuals' passion and interest. Therefore, it can be inferred that there is a growing interest among students in entrepreneurship, which in turn drives the demand for education focused on this area.

Given the central role of agriculture in rural development, agronomic engineering students have a unique opportunity to contribute to Colombia's sustainable growth through entrepreneurship. Understanding the factors that influence their entrepreneurial intention, such as self-efficacy and opportunity recognition, is essential for designing effective educational programs that foster these skills. Therefore, the aim of this research was to assess the entrepreneurial intention of agronomic engineering students and provide a theoretical basis for developing academic programs that enhance their entrepreneurial skills.

Materials and methods

Sample size

The determination of the minimum sample size was based on the work of Westland (2010), who established a metric using Monte Carlo simulations and considered the relationship between the number of latent variables and items. The resulting formula is $n \geq 50r^2 - 450r + 1100$, where r represents the relationship between items and constructs, and n is the sample size. In this study, the model proposed by Hassan *et al.* (2020) was utilized, which incorporates four latent variables evaluated in twenty-two items, with a relationship of 5.5. Based on this model, the necessary minimum sample size was determined to be 137 individuals. However, to ensure the validity and reliability of the study, a sample of 200 agronomic engineering students was selected.

Data collection and description of the measurement instrument

The study enlisted a sample of 200 agronomic engineering students enrolled in the Faculty of Agricultural Sciences at the Universidad Nacional de Colombia, Bogotá campus. Data were collected online via a Google Forms questionnaire administered between May and August 2023. The questionnaire was structured into two sections. The first section focused on demographic information, including age, gender, and family business experience, to understand the social and economic backgrounds, as well as family exposure to entrepreneurship among the respondents. The second section featured the Likert questionnaire adapted from Liñán and Chen (2009) and Ozgen and Baron (2007) (Tab. 1). This section included validated questions designed

TABLE 1. Latent variables and their items to measure entrepreneurial intention in agronomic engineering students.

Construct	Variable name	Item
Entrepreneurial self-efficacy	SELF1	I can control the creation process of a new business
	SELF2	If I tried to start a business, I would have a high probability of success
	SELF3	Starting a business and keeping it functional would be easy for me
	SELF4	I know the necessary practical details to start a business
	SELF5	I am prepared to start a viable business
	SELF6	I know how to develop an entrepreneurial project
Opportunity recognition	OPT1	I see many opportunities to start and grow a business
	OPT2	Finding potential venture opportunities is easy for me
	OPT3	In general, there are many opportunities for new product innovation
	OPT4	I have a special sense of new venture ideas
	OPT5	During my routine day-to-day activities, I see potential new venture ideas
Entrepreneurship education	EDU1	Knowledge about the entrepreneurial environment
	EDU2	Greater recognition of the entrepreneur's figure
	EDU3	The preference to be an entrepreneur
	EDU4	The necessary abilities to be an entrepreneur
	EDU5	The intention to be an entrepreneur
Entrepreneurial intention	INT1	I am ready to do anything to be an entrepreneur
	INT2	My professional goal is to become an entrepreneur
	INT3	I will make every effort to start and run my own firm
	INT4	I am determined to create a firm in the future
	INT5	I am very seriously thinking of starting a firm
	INT6	I have a firm intention to start a company someday

to assess the latent variables under investigation. Each latent variable was represented by a minimum of five questions, totaling 22 observed variables. This was done to determine the relation between the latent variables and the entrepreneurial intention.

Hypotheses

Based on Hassan *et al.* (2020), the following structural model and hypotheses were formulated (Fig. 1):

H1: Entrepreneurial self-efficacy has a positive impact on entrepreneurial intention.

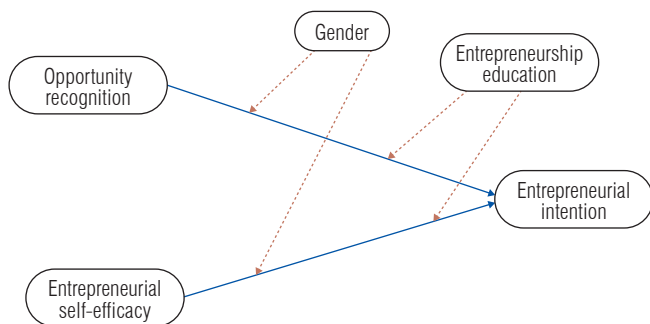
H2: Opportunity recognition has a positive impact on entrepreneurial intention.

H3: Entrepreneurship education positively moderates the relationship between opportunity recognition and entrepreneurial intention.

H4: Entrepreneurship education positively moderates the relationship between entrepreneurial self-efficacy and entrepreneurial intention.

H5: Gender negatively moderates the relationship between entrepreneurial self-efficacy and entrepreneurial intention.

H6: Gender negatively moderates the relationship between opportunity recognition and entrepreneurial intention.

**FIGURE 1.** Structural model of entrepreneurial intention in agronomic engineering students.

Statistical validation

A structural equation model (SEM) was developed and validated by assessing its internal consistency, goodness of fit, discriminant validity, and convergent validity.

Internal consistency was evaluated using the Cronbach's alpha coefficient, which measures how closely related a set of items are and the degree of internal consistency within the data. Values above 0.7 were considered acceptable, with higher values indicating better model consistency (Panayides, 2013). Goodness of fit was determined using the goodness-of-fit index (GoF). The GoF measures how well the model fits the data by assessing the model's implicit covariance matrix, with a value above 0.5 indicating a good fit of the model to the data (Tian *et al.*, 2020). The convergent validity of the model was assessed using the average variance extracted (AVE), with values above 0.5 considered acceptable, indicating that the latent variable is measured by at least 50% of the items (Dabbous & Barakat, 2020). Discriminant validity was determined based on the Fornell-Larcker criterion. This was assessed by comparing the square root of the AVE with the shared variance, with positive values indicating that the latent variables discriminate from each other.

Results and discussion

Among the surveyed students, 62% were men and 38% were women, with an average age of 23.3 years. The students were classified into six socioeconomic levels (strata) to understand the household context and the urban atmosphere within, with Level 1 being the lowest and Level 6 the highest. The results were as follows: stratum 1 comprised 9% of the students, stratum 2-32.8%, stratum 3-46.8%, and stratum 4-11.4%. Strata 5 and 6 did not report any percentage of students. The results are relevant because individuals from wealthier backgrounds are more likely to become entrepreneurs. Boldureanu *et al.* (2020) argue that if someone is born in a better social and economic position, the chances of a better education and networking increase significantly, thus increasing the probability of entrepreneurship.

As regards the family entrepreneurship experience, 57.9% of the students affirmed that someone in their household had had an experience with entrepreneurship. This information is important because, according to Georgescu and Herman (2020), individuals from entrepreneurial families are more likely to start their own business. Al Mamun *et al.* (2019) affirm that the lowest-income households often create businesses to provide themselves with the necessities. Regardless of their socioeconomic status, most of the students surveyed had family entrepreneurship experience, suggesting that those students were more likely to become entrepreneurs.

The analysis of motivations and limitations (Tab. 2) reveals that the reasons for pursuing entrepreneurship vary by gender. Women showed greater motivation for labor independence and self-employment. Bullough and Renko (2017) argue that the entrepreneurial intention of women is focused on self-determination and the pursuit of equity, which aligns with our findings. In contrast, the main motivation for men lies in income expectations. Men tend to be more oriented towards achieving specific goals or status (Brixiová *et al.*, 2020). In terms of limitations, both men and women cited a lack of funding as the greatest obstacle. Melugbo *et al.* (2020) found that individuals aged 18 to 35, regardless of gender, have lost confidence in the entrepreneurial ecosystem since the onset of the COVID-19 pandemic. This finding aligns with our results, as funding is an integral part of the entrepreneurial ecosystem.

The model exhibited satisfactory reliability indicators (Tab. 3). The Cronbach's alpha coefficient, which measures the internal consistency of the model on a scale from 0 to 1, showed values above 0.7 for all latent variables, suggesting good internal consistency (Taber, 2018). According to Omar and Zolkaflil (2015), an index exceeding 0.5 indicates strong alignment between the model and the data.

TABLE 2. Motivation and limitation factors for entrepreneurship in agronomic engineering students.

Motivation	Percentage (%)	Limitation	Percentage (%)
Labor independence/self-employment	19.9	Lack of financing	26.3
Existence of a business opportunity	17.1	High risk	13.1
Income expectations	16.5	Market concurrence	11.5
Personal	16.1	Lack of experience	10.9
Create something of your own	15.0	Lack of guaranteed minimum wage	9.8
Unemployment	9.3	Failure fear	8.4
Family tradition	3.5	Tax charges	7.4
Reference model or recognition of successful entrepreneurs	1.6	Lack of entrepreneurial education	6.9
Dissatisfaction with current occupation	1.0	Other	5.7

Furthermore, the goodness-of-fit index (GoF) was 0.63, indicating a good model fit. Lastly, the average variance extracted (AVE) confirmed convergent validity, as all values surpassed the threshold of 0.5, indicating that at least 50% of the variance in the latent variables was explained by the observed variables (Setiawan Wibowo *et al.*, 2020).

TABLE 3. Consistency, validity, and reliability indicators for the model of entrepreneurial intention in agronomic engineering students.

Latent variable	Cronbach's alpha	AVE*	GoF**
Entrepreneurial self-efficacy	0.84	0.60	0.63
Opportunity recognition	0.84	0.61	
Entrepreneurial education	0.85	0.61	
Entrepreneurial intention	0.91	0.70	

*Average variance extracted (AVE), ** Goodness-of-fit index (GoF).

The measure of discriminant validity (Tab. 4) relied on the comparison between the square root of the average variance extracted (AVE) and the shared variance among latent variables. This confirms that the latent variables in the model differ from each other. It also indicates that the extracted variances surpass the shared variances among constructs. According to Moreira and Silva (2015), the difference between the average variance extracted and shared variance indicates the presence of discriminant validity between the two latent variables. This observation suggests a clear distinction between the various constructs (Alamer, 2021).

Verification of each hypothesis is presented in Table 5. These results confirm that entrepreneurial education positively moderates the relationship between entrepreneurial self-efficacy and recognition of opportunities, which in turn influences entrepreneurial intention. Likewise, gender negatively moderates the relationship between recognition of opportunities and self-efficacy, which in turn positively influences entrepreneurial intention.

Chien-Chi *et al.* (2020) emphasize that self-efficacy plays a fundamental role in fostering a proactive mindset among students, which encourages development of the practical skills necessary for entrepreneurship. This self-confidence in one's abilities drives entrepreneurial intention by generating a readiness to face challenges and pursue business opportunities. Additionally, evidence suggests that opportunity recognition positively influences the entrepreneurial intention of students by providing a market perspective that reveals unmet needs and opens up the possibility of starting a business.

Furthermore, entrepreneurial education plays a key role in strengthening both self-efficacy and opportunity recognition among students. These educational programs provide young entrepreneurs with the tools and knowledge necessary to initiate and manage a business effectively. By providing a more informed understanding of entrepreneurship, entrepreneurial education nurtures confidence in individual capabilities and empowers students to identify

TABLE 4. Average variance extracted and shared variance in entrepreneurial intention in agronomic engineering students.

Latent variable	√AVE	Entrepreneurial self-efficacy	Opportunity recognition	Entrepreneurship education	Entrepreneurial intention
Entrepreneurial self-efficacy	0.76	0.68	0.45	0.56	0.59
Opportunity recognition	0.78	0.57	0.65	0.48	0.38
Entrepreneurship education	0.78	0.42	0.54	0.51	0.57
Entrepreneurial intention	0.84	0.70	0.48	0.41	0.61

TABLE 5. Model hypotheses to assess entrepreneurial intention among agronomic engineering students.

Hypotheses	P-value	Result
H1 Entrepreneurial self-efficacy has a positive impact on entrepreneurial intention.	0.0000001	Accepted
H2 Opportunity recognition has a positive impact on entrepreneurial intention.	0.0000001	Accepted
H3 Entrepreneurship education positively moderates the relationship between opportunity recognition and entrepreneurial intention.	0.00009	Accepted
H4 Entrepreneurship education positively moderates the relationship between entrepreneurial self-efficacy and entrepreneurial intention.	0.0000001	Accepted
H5 Gender negatively moderates the relationship between entrepreneurial self-efficacy and entrepreneurial intention.	0.0351	Accepted
H6 Gender negatively moderates the relationship between opportunity recognition and entrepreneurial intention.	0.00094	Accepted

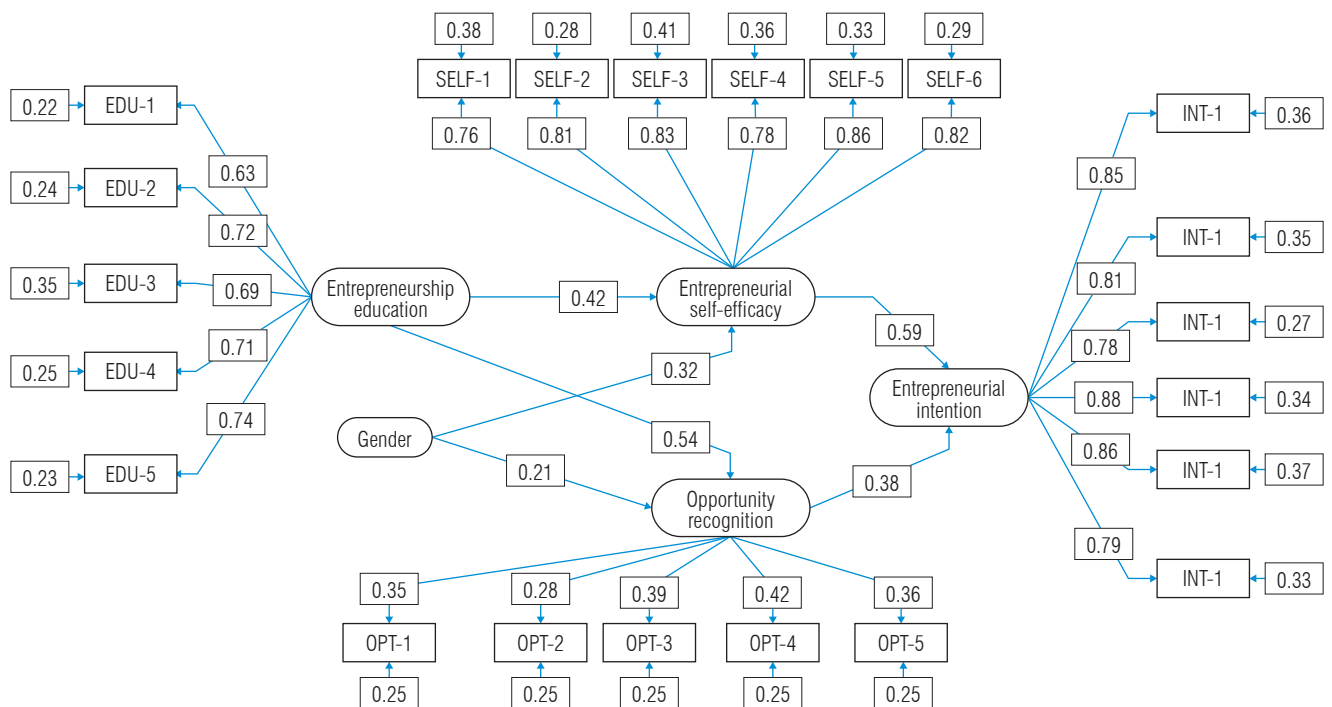


FIGURE 2. Structural equation model of entrepreneurial intention in agronomic engineering students.

and capitalize on emerging opportunities in the market, as highlighted by Wiramihardja *et al.* (2022).

However, a gender disparity in self-efficacy and opportunity recognition has been observed, negatively impacting the entrepreneurial intention of women. Research by Nowiński *et al.* (2019) indicates that women tend to exhibit less willingness towards entrepreneurship than men. This gap can be attributed, in part, to the lack of representation of female entrepreneurs and the existence of a predominantly male entrepreneurial environment, as suggested by Cochran (2019). Overcoming these gender barriers requires measures that promote inclusivity and diversity in the entrepreneurial ecosystem, as well as the promotion of female role models in the business sphere.

This study indicates that most agronomy student's families have had some experience related to entrepreneurship, possibly due to the high unemployment rate and prevalent informal work environment in Colombia. According to Arango and Flórez (2020), Colombia faces structural unemployment stemming from a lack of education. Villanueva and Martins (2022) stated that entrepreneurship in Colombia exhibits high failure rates, aligning with the general perception among students that a lack of financing is the main limitation. This suggests a perceived issue within the entrepreneurial ecosystem. However, according to Meoli *et al.* (2020), entrepreneurship is still seen

as an opportunity for social change. Motivations for entrepreneurship vary, though they differ by gender in this study. For women, the primary motivation lies in labor independence or self-employment, while for men, income expectations predominate.

The study also confirmed that the entrepreneurial intention of agronomic engineering students is positively influenced by self-efficacy and opportunity recognition. Furthermore, it demonstrated that entrepreneurial education has a positive effect on both self-efficacy and opportunity recognition. Fietze and Boyd (2017) corroborate the existence of a significant positive influence on entrepreneurial intention. These qualities provide students with the necessary self-management tools and knowledge to enter the entrepreneurial ecosystem. Additionally, the study showed that gender negatively affects self-efficacy and opportunity recognition, implying that entrepreneurial intention is gender-biased, with men presumably showing more interest in the business environment than women. This disparity can be explained by differences in educational opportunities, such as the lower representation of women in STEM (Science, Technology, Engineering, and Mathematics) fields compared to men, as noted by Gomez Soler *et al.* (2020).

The findings highlight the importance of self-efficacy, opportunity recognition, and entrepreneurial education in fostering entrepreneurial intention among agronomic

engineering students. Self-confidence in one's abilities and the ability to identify and capitalize on emerging opportunities in the market are key factors driving entrepreneurial spirit. However, addressing gender disparities in entrepreneurship is crucial. Promoting inclusion and diversity in the business ecosystem can create an environment that encourages equitable participation of women and men in entrepreneurial activity. These actions can contribute to building a more inclusive and vibrant entrepreneurial future.

Conclusions

This study provides a comprehensive insight into the entrepreneurial intention among agronomic engineering students, laying the groundwork for designing strategies focused on developing entrepreneurial skills, such as self-efficacy and opportunity recognition, with the aim of fostering entrepreneurship intention. The results suggest that implementing entrepreneurship-focused educational programs could be pivotal in cultivating an entrepreneurial mindset among agronomic engineering students. These programs could encompass practical activities, mentorship, and specialized courses to prepare students for the challenges of the business world, thereby contributing to shaping a more skilled and entrepreneurial generation.

Furthermore, the importance of addressing gender disparities in entrepreneurship through specific policies promoting inclusion and equity, especially to support female entrepreneurship, was emphasized. Public policies can play a crucial role by providing resources and financial support targeted at female entrepreneurs, as well as by eliminating structural and cultural barriers that may hinder their participation in the labor and business market. In this regard, adopting a comprehensive approach that spans education, access to financing and the creation of support networks is essential to create an enabling environment for the development and growth of women-led businesses.

While these findings are promising, it is crucial to acknowledge some limitations of the study. For instance, the research focused exclusively on students from the Faculty of Agricultural Sciences of the Universidad Nacional de Colombia in the city of Bogotá, which limits the generalizability of the results to other student populations or geographical contexts. Therefore, future research could expand the sample and consider different faculties or universities to obtain a broader and more representative understanding of entrepreneurial intention among agronomic engineering students. Additionally, conducting

long-term follow-ups to assess the impact of educational programs on the development of entrepreneurial skills and the realization of entrepreneurial activities among students would be beneficial. These additional efforts would help strengthen the theoretical and practical foundation for fostering entrepreneurial spirit in the university context.

Conflict of interest statement

The authors declare that there is no conflict of interests regarding the publication of this article.

Author's contributions

DESC and DB conceptualized the manuscript. DESC, DRS, and DB wrote the manuscript. All authors critically revised the manuscript and approved the final version.

Literature cited

- Alamer, A. (2021). Construct validation of self-determination theory in second language scale: the bifactor exploratory structural equation modeling approach. *Frontiers in Psychology*, 12, Article 732016. <https://doi.org/10.3389/fpsyg.2021.732016>
- Al Mamun, A., Muniady, R., Fazal, S. A., & Malarvizhi, C. A. (2019). Micro-enterprise development training and entrepreneurial competencies among low-income households in Malaysia. *Asia Pacific Journal of Innovation and Entrepreneurship*, 13(3), 354–366. <https://doi.org/10.1108/apjie-06-2019-0042>
- Arango, L. E., & Flórez, L. A. (2020). Determinants of structural unemployment in Colombia: A search approach. *Empirical Economics*, 58(5), 2431–2464. <https://doi.org/10.1007/s00181-018-1572-y>
- Barba-Sánchez, V., Mitre-Aranda, M., & del Brío-González, J. (2022). The entrepreneurial intention of university students: An environmental perspective. *European Research on Management and Business Economics*, 28(2), Article 100184. <https://doi.org/10.1016/j.iedeen.2021.100184>
- Boldureanu, G., Ionescu, A. M., Bercu, A. M., Bedrule-Grigoruță, M. V., & Boldureanu, D. (2020). Entrepreneurship education through successful entrepreneurial models in higher education institutions. *Sustainability*, 12(3), Article 1267. <https://doi.org/10.3390/su12031267>
- Brixiová, Z., Kangoye, T., & Said, M. (2020). Training, human capital, and gender gaps in entrepreneurial performance. *Economic Modelling*, 85, 367–380. <https://doi.org/10.1016/j.econmod.2019.11.006>
- Bullough, A., & Renko, M. (2017). A different frame of reference: Entrepreneurship and gender differences in the perception of danger. *Academy of Management Discoveries*, 3(1), 21–41. <https://doi.org/10.5465/amd.2015.0026>
- Cámara de Industria y Comercio Colombo-Alemana, Cámara de Comercio de Medellín para Antioquia, & Institución Universitaria EUSUMER. (2021). Contexto, tendencias y oportunidades del mercado de los derivados lácteos en Antioquia, 2021. Cámara de Comercio del Oriente Antioqueño. <https://ccoa.org.co/wp-content/uploads/2021/04/ESTUDIO-DE-TENDENCIAS-DERIVADOS-LACTEOS-2021.pdf>

- Chien-Chi, C., Sun, B., Yang, H., Zheng, M., & Li, B. (2020). Emotional competence, entrepreneurial self-efficacy, and entrepreneurial intention: A study based on China college students' social entrepreneurship project. *Frontiers in Psychology*, 11, Article 547627. <https://doi.org/10.3389/fpsyg.2020.547627>
- Cochran, S. L. (2019). What's gender got to do with it? The experiences of U.S. women entrepreneurship students. *Journal of Small Business Management*, 57(sup1), 111–129. <https://doi.org/10.1111/jsbm.12508>
- Dabbous, A., & Barakat, K. A. (2020). Bridging the online offline gap: Assessing the impact of brands' social network content quality on brand awareness and purchase intention. *Journal of Retailing and Consumer Services*, 53, Article 101956. <https://doi.org/10.1016/j.jretconser.2019.101966>
- Elshaer, I. A., & Sobaih, A. E. E. (2023). The impact of gender on the link between personality traits and entrepreneurial intention: Implications for sustainable agriculture. *Agriculture*, 13(2), Article 454. <https://doi.org/10.3390/agriculture13020454>
- Fayolle, A., & Gailly, B. (2015). The impact of entrepreneurship education on entrepreneurial attitudes and intention: Hysteresis and persistence. *Journal of Small Business Management*, 53(1), 75–93. <https://doi.org/10.1111/jsbm.12065>
- Fietze, S., & Boyd, B. (2017). Entrepreneurial intention of Danish students: A correspondence analysis. *International Journal of Entrepreneurial Behaviour & Research*, 23(4), 656–672. <https://doi.org/10.1108/IJEBR-08-2016-0241>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.2307/3151312>
- Georgescu, M. A., & Herman, E. (2020). The impact of the family background on students' entrepreneurial intentions: An empirical analysis. *Sustainability*, 12(11), Article 4775. <https://doi.org/10.3390/su12114775>
- Gomez Soler, S. C., Abadía Alvarado, L. K., & Bernal Nisperuza, G. L. (2020). Women in STEM: Does college boost their performance? *Higher Education*, 79(5), 849–866. <https://doi.org/10.1007/s10734-019-00441-0>
- Hassan, A., Saleem, I., Anwar, I., & Hussain, S. A. (2020). Entrepreneurial intention of Indian university students: The role of opportunity recognition and entrepreneurship education. *Education+Training*, 62(7–8), 843–861. <https://doi.org/10.1108/ET-02-2020-0033>
- Lián, F., & Chen, Y.-W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice*, 33(3), 593–617. <https://doi.org/10.1111/j.1540-6520.2009.00318.x>
- Lopez-Garrido, G. (2023). Bandura's self-efficacy theory of motivation in psychology. *Simply Psychology*, 10(1). <https://www.simplypsychology.org/self-efficacy.html>
- Martins, I., López, T., Álvarez, C., Pérez, J. P., Gálvez-Albarracín, González-Campo, C. H., & Murillo-Vargas, G. (2021). *El espíritu emprendedor de los estudiantes en Colombia. Resultados del proyecto GUESSS Colombia 2021*. Universidad EAFIT. https://www.guesssurvey.org/resources/nat_2021/GUESSS_Report_2021_Colombia.pdf
- Melugbo, D. U., Ogbuakanne, M. U., & Jemisenia, J. O. (2020). Entrepreneurial potential self-assessment in times of COVID-19: Assessing readiness, engagement, motivations and limitations among young adults in Nigeria. *Ianna Journal of Interdisciplinary Studies*, 2(1), 12–28. <https://iannajournalofinterdisciplinarystudies.com/index.php/1/article/view/33>
- Meoli, A., Fini, R., Sobrero, M., & Wiklund, J. (2020). How entrepreneurial intentions influence entrepreneurial career choices: The moderating influence of social context. *Journal of Business Venturing*, 35(3), Article 105982. <https://doi.org/10.1016/j.jbusvent.2019.105982>
- Moreira, A. C., & Silva, P. M. (2015). The trust-commitment challenge in service quality-loyalty relationships. *International Journal of Health Care Quality Assurance*, 28(3), 253–266. <https://doi.org/10.1108/IJHCQA-02-2014-0017>
- Muñoz, P., & Dimov, D. (2023). Facing the future through entrepreneurship theory: A prospective inquiry framework. *Journal of Business Venturing*, 38(4), Article 106303. <https://doi.org/10.1016/j.jbusvent.2023.106303>
- Nowiński, W., Haddoud, M. Y., Lančarič, D., Egerová, D., & Cze-glédi, C. (2019). The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries. *Studies in Higher Education*, 44(2), 361–379. <https://doi.org/10.1080/03075079.2017.1365359>
- Omar, N., & Zolkafil, S. (2015). Profit shifting and earnings management through tax haven subsidiaries: An exploratory analysis of multinational companies. *Procedia Economics and Finance*, 28, 53–58. [https://doi.org/10.1016/s2212-5671\(15\)01081-3](https://doi.org/10.1016/s2212-5671(15)01081-3)
- Organization for Economic Co-operation and Development-OECD. (2022). *Rural policy review of Colombia 2022*. OECD Publishing. <https://doi.org/10.1787/c26abeb4-en>
- Ozgen, E., & Baron, R. A. (2007). Social sources of information in opportunity recognition: Effects of mentors, industry networks, and professional forums. *Journal of Business Venturing*, 22(2), 174–192. <https://doi.org/10.1016/j.jbusvent.2005.12.001>
- Panayides, P. (2013). Coefficient alpha: Interpret with caution. *Europe's Journal of Psychology*, 9(4), 687–696. <https://doi.org/10.5964/ejop.v9i4.653>
- Sautet, F. (2016). Opportunity recognition. In M. Augier, & D. Teece (Eds.), *The Palgrave encyclopedia of strategic management* (pp. 1–5). Palgrave Macmillan, London. https://doi.org/10.1057/978-1-349-94848-2_557-1
- Setiawan Wibowo, T., Qonita Badi'ati, A., Asna Annisa, A., Wahab, M. K. A., Rifa Jamaludin, M., Rozikan, M., Mufid, A., Fahmi, K., Purwanto, A., & Muhaini, A. (2020). Effect of hard skills, soft skills, organizational learning and innovation capability on Islamic university lecturers' performance. *Systematic Reviews in Pharmacy*, 11(7), 556–569. <https://papers.ssrn.com/abstract=3986845>
- Syed, I., Butler, J. C., Smith, R. M., & Cao, X. (2020). From entrepreneurial passion to entrepreneurial intentions: The role of entrepreneurial passion, innovativeness, and curiosity in driving entrepreneurial intentions. *Personality and Individual Differences*, 157, Article 109758. <https://doi.org/10.1016/j.paid.2019.109758>
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education.

- Research in Science Education*, 48(6), 1273–1296. <https://doi.org/10.1007/s11165-016-9602-2>
- Tian, X., Qiao, X., Dong, L., Liu, N., Si, H., Jin, Y., Liu, X., & Wang, C. (2020). Cross-cultural adaptation and psychometric properties of the Groningen Frailty Indicator (GFI) among Chinese community-dwelling older adults. *Geriatric Nursing*, 41(3), 236–241. <https://doi.org/10.1016/j.gerinurse.2019.10.002>
- Villanueva, E., & Martins, I. (2022). Overconfidence, fear of failure, risk-taking and entrepreneurial intention: The behavior of undergraduate students. *Tec Empresarial*, 16(3), 16–33. <https://doi.org/10.18845/te.v16i3.6355>
- Westland, J. C. (2010). Lower bounds on sample size in structural equation modeling. *Electronic Commerce Research and Applications*, 9(6), 476–487. <https://doi.org/10.1016/j.elerap.2010.07.003>
- Wiramihardja, K., N'dary, V., Al Mamun, A., Munikrishnan, U. T., Yang, Q., Salamah, A. A., & Hayat, N. (2022). Sustainable economic development through entrepreneurship: a study on attitude, opportunity recognition, and entrepreneurial intention among university students in Malaysia. *Frontiers in Psychology*, 13, Article 866753. <https://doi.org/10.3389/fpsyg.2022.866753>
- Zen, A., Kusumastuti, R., Metris, D., Gadzali, S. S., Muna, A., & Ausat, A. M. A. (2023). Implications of entrepreneurship education as a field of study for advancing research and practice. *Journal on Education*, 5(4), 11441–11453. <https://www.jonedu.org/index.php/joe/article/view/2091/1730>