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To cite this article: Ricardo Cabana-Villca, Aldo Alvarez-Risco, Ricardo Andrés-Moncada, Camila Marin-Aracena, Shyla Del-Aguila-Arcenales, Neal M. Davies & Jaime A. Yáñez (2024) Green entrepreneurial intentions among university students in Chile: use of PLS-SEM, Development Studies Research, 11:1, 2336909, DOI: [10.1080/21665095.2024.2336909](https://doi.org/10.1080/21665095.2024.2336909)

To link to this article: <https://doi.org/10.1080/21665095.2024.2336909>



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Published online: 08 Apr 2024.



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Green entrepreneurial intentions among university students in Chile: use of PLS-SEM

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ABSTRACT

The current study evaluated factors that explain green entrepreneurship intention (GEI) among 407 university students in Chile, who were presented with an online questionnaire. Thirty-nine questions evaluated their GEI, and the data was analysed using multivariate techniques. Results showed that concept development support (CDS), business development support (BDS) and academic training support (ATS) had a positive effect on institutional support (IS). Country support (CS) had a positive effect on self-efficacy (SE). IS did not have a positive effect on SE. Finally, SE had a positive effect on GEI. The model explained 25.3% of GEI. Bootstrapping led support to these results. The effects of CDS, BDS, ATS, CS and SE were positive and significant. Recognizing which factors have a significant effect can be useful to devise university programs aiming to enhance GEI among university students. The results of this paper may provide useful indications about future entrepreneurship and possibly suggest ways in which students' participation in private companies may create successful green products and services.

ARTICLE HISTORY

Received 21 August 2023
Accepted 26 March 2024

KEYWORDS

Green entrepreneurship intention; entrepreneurs; COVID-19; university students; Chile

1. Introduction

Green entrepreneurship is rapidly gaining momentum in Chile due to the timely implementation of government policies, increasing consumer demand for eco-friendly products and services, and the emergence of a new generation of entrepreneurs who are highly aware of the importance of environmental sustainability (La Tercera 2021). Chile has made remarkable strides in producing renewable energy, particularly solar and wind power, thanks to the government's ambitious targets to increase their use in the country's energy mix, which has created a highly conducive environment for renewable energy entrepreneurs, many of whom have gained global recognition for their innovative solutions. Furthermore, there is a growing interest in circular economy models that seek to minimize waste and maximize resource efficiency. Chilean entrepreneurs are developing cutting-edge solutions such as recycling technologies, sustainable packaging, and sustainable agricultural practices, while some companies are exploring new business models based on circular economy

principles, such as leasing products instead of selling them (Ministerio del Medio Ambiente 2022).

Chile's natural beauty and cultural heritage make it a popular tourist destination. However, there is growing awareness of the need to develop sustainable tourism practices to protect the environment and local communities. Green entrepreneurs are developing sustainable tourism initiatives, such as eco-lodges, sustainable tour operators and cultural tourism experiences that promote local culture and traditions. Chilean cities are plagued by traffic jams and air pollution, which has led to a growing demand for clean transportation solutions. Green entrepreneurs are developing innovative transportation solutions, such as electric bicycles, scooters and buses. Some companies are also developing new business models based on shared mobility. Agriculture is an important sector of the Chilean economy, but traditional agricultural practices can hurt the environment and public health. Green entrepreneurs are developing sustainable agricultural practices, such as organic farming, agroforestry and precision agriculture. Some

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companies are also developing new technologies to reduce the environmental impact of agriculture, such as water-saving irrigation systems and natural pest control solutions (Diario Sustentable 2022; MarcaChile 2021).

Despite all of the above, university students do not intend to carry out green entrepreneurship; there are different factors that could first explain the low self-efficacy to undertake and, subsequently, the low intention of green entrepreneurship. At the university, there are curricular and extracurricular activities that can contribute to increasing entrepreneurial self-efficacy and then have an effect on increasing entrepreneurial self-efficacy and then affecting green entrepreneurship intention. There are very limited studies able to evaluate these factors, in particular using multivariate models. In this paper, we address these issues performing multivariate analyses where primary data was collected from university students via online questionnaires. The study make it possible to show which factors influence entrepreneurial self-efficacy most and the intention of green entrepreneurship.

Researching the intention of green entrepreneurship in students can contribute to sustainable development since green entrepreneurship is aligned with several of these objectives, such as SDG 7 (Affordable and non-polluting energy), SDG 9 (Industry, innovation and infrastructure) and SDG 13 (Climate Action). The study provides information on how students perceive and are willing to participate in business initiatives focused on environmental sustainability. If the results indicate a high green entrepreneurship intention, this could suggest a growing interest in creating businesses that address environmental issues, thus contributing to SDG 12 (Responsible Production and Consumption).

Furthermore, the study could reveal factors that have an effect on green entrepreneurship intention, such as environmental education, sustainability awareness, and access to financial resources. This information would be valuable to designing educational and support policies that encourage the formation of green entrepreneurship among young people, thus contributing to SDG 4 (Quality education) and SDG 8 (Decent work and economic growth).

2. Theoretical background

2.1. Theories

2.1.1. Theory of planned behavior

The Theory of Planned Behavior (TPB) (Fishbein and Ajzen 1977) is a psychological model that provides a

basis for understanding and predicting human actions. It was developed by Icek Ajzen in 1985 and has been used in various fields, including psychology, sociology, and marketing. The TPB focuses on the relationship between attitudes, subjective norms, perceived control over behavior, and how these factors influence a person's intention to perform a specific action. In the context of green entrepreneurship, the TPB can be applied to understand and predict the actions of entrepreneurs about adopting sustainable practices in their businesses. The TPB holds that a person's intention to perform a specific behavior is determined by three main factors: attitudes toward that behavior, subjective norms, and perceived control over that behavior. The use of TPB in the model allows the demonstration of the relevant intention as a dependent variable and can be used as a predictor of future green entrepreneurship.

2.1.2. Theory of social cognitive

The cognitive social learning theory, developed by Albert Bandura (Bandura 1986), delves into how people gain knowledge, abilities, and conduct through observation and social interaction. This theory establishes a strong basis for understanding how green entrepreneurs can emerge and prosper in today's business world, where sustainability and environmental responsibility are increasingly significant. Green entrepreneurship is creating and managing companies that consider their operations' environmental and social impacts and strive to provide ground-breaking and sustainable solutions to address environmental challenges.

The cognitive social learning theory provides a useful framework for understanding the acquisition of abilities and competencies necessary for establishing and operating sustainable businesses in the field of green entrepreneurship. This theory highlights the critical role of observation in the learning process. Green entrepreneurs can learn a great deal by observing successful entrepreneurs in the field of sustainability and adopting their effective strategies and behaviors. In addition, learning can also occur through symbolic observation, where green entrepreneurs can learn from models presented in the media or online. The self-efficacy of the theory of Bandura has the same role as the Perceived Behavior Control of the TPB. In this way, the self-efficacy received the support's effects to predict the students' intention to engage in green entrepreneurship.

The authors established the model present in this research to answer the questions. The support in the university ecosystem and the efforts by a country influence

students' entrepreneurial self-efficacy to improve the intention of green entrepreneurship. These variables make it possible to explain the processes behind the intention of green entrepreneurship and, in this way, provide tools to build strategic plans at the university level to generate greater interest and better academic training toward entrepreneurship.

2.2. Previous studies

Some initial reports on entrepreneurship have been carried out; however, there is a paucity of studies concerning green entrepreneurship conducted on university students. Some studies have demonstrated the significant effect of concept support, as was detailed by Soomro, Ghumro, and Shah (2020) in 284 undergraduate and postgraduate students in a university in Pakistan, Mia et al. (2022) in 302 university students in Bangladesh, Fanea-Ivanovici and Baber (2022) in 422 university students on different academic programs in India.

Regarding self-efficacy, some studies have evidenced the significant effects of Frago, Rocha-Junior, and Xavier (2020) when evaluating 600 university students from Portugal and Brazil. However, other studies showed a non-significant effect of self-efficacy on the inclination towards green entrepreneurship, as reported by Soomro, Ghumro, and Shah (2020). The significant effect of institutional support on green entrepreneurship intention has been demonstrated by Qazi et al. (2021), who evaluated 533 university students in Pakistan. Finally, there is evidence of the effect of green entrepreneurial intentions on green entrepreneurial behavior, as Yi (2021) did during the evaluation of 586 university students in China.

Also, relevant results were obtained by Elahi et al. (2021) that showed that the green action' actors as farmers also need training and support to develop green production. Consumers can shape the green offerings of companies (Qing et al. 2018). However, university training is crucial, so students and professors must be efficiently trained in developing green business proposals (Saqib et al. 2020).

In addition, more recent studies, including outcomes, have been conducted by Gao and Huang (2022) in 252 university students in China, Sh. Ahmad, Rosli, and Quoquab (2022) in 321 university students in Malaysia, Barba-Sánchez, Mitre-Aranda, and Brío-González (2022) in 1337 university students in Spain, Boutaky and Sahib Eddine (2022) in 148 students in Morocco, Waris et al. (2022) in 380 university students in Pakistan, Wu et al. (2022) in 804 university students in China, Saoula et al. (2023) in 334

university students in Malaysia, Luong and Lee (2023) in 177 university students of tourism and hospitality in New Zealand.

The gap that faces our study is integrating academic, concept and business support with institutional support by self-efficacy. Also, we have added the relevant country support to promote green entrepreneurship.

2.3. Development of hypothesis

2.3.1. Green entrepreneurial intention (GEI)

Intention is the state of a person who makes decisions to perform a specific action (Bird 1988; Maheshwari, Kha, and Arokiasamy 2022; Romero-Colmenares and Reyes-Rodríguez 2022). The intention to perform a behavior is the previous step for the behavior itself. It has been reported that entrepreneurship positively affects a country's business development (Pérez-Fernández et al. 2022). Entrepreneurship encompasses individuals and companies (Covin et al. 2020; Niemann, Mai, and Dickel 2022; Santos, Marques, and Ferreira 2020). According to Farinelli et al. (2011), green entrepreneurship involves implementing sustainable innovations to promote the green economy among clients. However, entrepreneurs face the challenge of determining whether a business is truly 'green.' To simplify this process, businesses are defined based on research findings. Essentially, green entrepreneurship means making a positive impact through ecological activities such as reuse, recycling, clean manufacturing processes, and waste management. It's about caring for the environment, approving suppliers, purchasing materials, and utilizing clean processes. Nonetheless, ongoing research and debate surround the definition of green entrepreneurship. This study focuses on the intentions of university students to pursue green entrepreneurship.

2.3.2. Institutional Support (IS)

This variable is linked to the support that universities provide from the financial aspect, such as the case of entrepreneurship scholarships or loans for entrepreneurship and connections between students and both entrepreneurs and investors (Maritz, Nguyen, and Ivanov 2022). Likewise, it attempts to capture the favorable environment between students and professors for developing entrepreneurship, creating programs and accelerating enterprises with advisers who guide the process (Liu et al. 2022; Yang, Zhang, and Lin 2022).

2.3.3. Concept development support (CDS)

This variable describes the actions carried out by the university, which are aimed at providing knowledge and

developing skills about entrepreneurship among its students, helping them have the tools for the successful development of ventures in the future (Badri and Hachicha 2019; Wong and Chan 2022). Also, part of this variable is the training activities that seek to provide practical knowledge to develop entrepreneurship. It is expected that this conceptual knowledge may have an effect on the student's self-efficacy to develop green entrepreneurship subsequently.

Hypothesis 1 (H1): CDS has a positive and significant effect on IS

2.3.4. Business development support (BDS)

This variable captures the efforts of the university to raise awareness among its students to generate entrepreneurship, seeking that they can start their own disruptive business based on the knowledge acquired during professional training at the university.

Hypothesis 2 (H2): BDS has a positive and significant effect on IS

2.3.5. Academic training support (ATS)

This variable describes the curricular activities the university develops so that enterprises can be developed, that is, knowledge of management finances, marketing, and supply chain (Rauf, Wijaya, and Tari 2021). Academic training in this variable implies that the university offers compulsory subjects whose content can be used during a venture's creation, development, management and research processes. This variable explicitly evaluates the holding of academic events focused on entrepreneurship and linking students with entrepreneurs (Mukhtar et al. 2021).

Hypothesis (H3). ATS for developing entrepreneurship has a positive and significant effect on ESE

2.3.6. Country support for entrepreneurship (CSE)

This variable focuses on measuring the actions in a country to promote the development of enterprises (Pinheiro, Moraes, and Fischer 2022). This variable facilitates understanding the perception of students about the laws and legal regulations that seek to promote green entrepreneurship in a population. Likewise, it is evaluated if, from the student's perspective, the country where they live offers alternatives to develop enterprises, including ease of obtaining loans from banks (Huang et al. 2022).

Hypothesis H4 (H4). CSE has a positive and significant effect on ESE

2.3.7. Entrepreneurial self-Efficacy (ESE)

This construct describes what a person can believe about their ability to perform a specific activity successfully and that they can also incorporate these new activities into their daily routine (Al-Qadasi et al. 2023; Bandura 1992; Soomro and Shah 2022). In this study, self-efficacy is linked to the confidence to carry out successfully a venture (Saoula et al. 2023; Wu et al. 2022). People with more self-efficacy may have a greater intention to develop enterprises (Bohlayer and Gielnik 2023; Christensen et al. 2023). The same is explicitly evidenced for green ventures (Robayo-Acuña et al. 2023).

Hypothesis 5 (H5): IS has a positive and significant effect on ESE

Hypothesis 6 (H6): ESE has a positive and significant effect on GEI

3. Methods

The research study used a quantitative, explanatory-level, non-experimental approach. The variables were not manipulated. The data was collected through online questionnaires, which utilized a five-point Likert scale ranging from disagree to agree for each variable. Participants were provided with information regarding the study's aim and the expected completion time prior to presenting the main questions of the questionnaire. The questionnaire comprises 8 sections, one of which is designed to obtain personal data from the respondents through 6 questions to develop a general profile. The remaining 7 sections cover the variables related to entrepreneurial intention factors identified in the research stage, including self-efficacy, academic training support, business development support, and others. In total, the questionnaire consists of 39 items. The items were built based on previous literature: academic support (Wegner et al. 2020), business support (Alvarez-Risco et al. 2021), conceptual support (Wegner et al. 2020), country support (Alvarez-Risco et al. 2021), entrepreneurial self-efficacy (Soria-Barreto, Zúñiga-Jara, and Ruiz Campo 2016) and green entrepreneurial intention (Moriano, Trejo, and Palací 2001).

To collect the data was following the study of Robayo-Acuña et al. (2023). It used an online questionnaire run online from August to September 2021. The population was 1092 students of business careers in a Chilean university. It was expected to collect data from 285 participants (95% confidence and 5% margin of error), but finally was obtained 407 questionnaires were completed (which means 95% confidence and 3.85% margin of error). It used Google Forms for the collection of data. The questionnaire collects

sociodemographic data and Likert scale data based on previous studies. through Social media recruited the sample. Online data collection has limitations such as lack of representativeness, as some groups may be underrepresented, self-selection, and lack of privacy, as information may be collected without the user's knowledge. Additionally, data quality may vary due to a lack of verification. However, it must be understood that this was the means available for the study since it was done during the COVID-19 pandemic period. The sample obtained represented 38.61% of the studied population.

Then, the authors analyzed the data through the SPSS and SmartPLS program v3.3.3. The Partial Least Squares (PLS) assessment model allowed us to analyze the reliability and validity of the model. The convergent construct validity is evaluated by factor loading the indicators in their respective latent constructs. Factor loadings represent the strength of the relationship between an indicator and its latent construct. An indicator contributes significantly to its construct if it has a substantial factor loading. A model is reliable if all the loads exceed 0.50. Construct reliability measures the internal consistency of the indicators that make up a construct. In PLS-SEM, it is evaluated by Cronbach's alpha and the composite reliability coefficient. Cronbach's alpha and composite reliability must be above 0.6 (Hair et al. 2019). Construct convergence validity involves the comparison between the factor loadings of the indicators and their respective average variances extracted (AVE). It is expected that the factor loadings will be greater than the AVE, indicating that the indicators are converging towards the latent construct. Convergent validity is assessed with the Average Variance Extracted exceeding 50%. The discriminant validity of the model was corroborated by the Fornell-Larcker criterion (Hair et al. 2019). Bootstrapping with 5000 resample is used to determine the significance of all the relationships.

4. Results

4.1. Description of the population

The theoretical sample size is 280; however, the sample obtained reached 407 responses to the online questionnaire. This value represents 38.61% of the population studied, which is made up of the careers of business lines of the Universidad de La Serena, being Auditing (19.4%), Commercial Engineering (28.5%) and Business Administration (21.13%) part of the Faculty of Economic, Social and Legal Sciences; and Industrial Civil Engineering (30.96%) part of the Faculty of Engineering (30.96%) part of the Faculty of Business Administration.

Table 1. Sample characteristics.

Variable	Item	Percentage
Sex	Male	44,22%
	Female	55,78%
Age	17–20	19,9%
	21–24	70,02%
	25–28	7,86%
	More than 28	2,21%
Residence	La Serena	45,95%
	Coquimbo	28,75%
	Ovalle	11,55%
	Vicuña	2,46%
	Others	7,29%
Profession	Audit	19,41%
	Commercial Eng.	28,50%
	Business Administration	21,13%
	Engineer	
Year of study	Industrial Civil Engineer	30,96%
	First-year	8,50%
	Second year	15,72%
	Third year	17,20%
	Fourth-year	25,31%
	Fifth year	22,36%
Relationship with enterprises	Sixth year	10,57%
	No participation	67,32%
	Support as an intern	12,78%
	Co-direction of a venture	9,58%
	In charge of a venture	10,32%

Business Administration (21.13%) is part of the Faculty of Economic, Social and Legal Sciences, and Civil Industrial Engineering (30.96%) is part of the Faculty of Engineering of the educational institution. The most general descriptive data of the population can be seen in [Table 1](#).

On the other hand, 89.92% of the responses correspond to the age group between 17 and 24 years old, living mainly in the Serena-Coquimbo conurbation, which corresponds to 74.7% of the population. Finally, 32.68% participate in an enterprise, while 67.32% do not. Evaluating the questions on the relationship of entrepreneurship with the questions on sex and study career, there is a greater tendency for the female gender to direct or oversee some entrepreneurship, a finding that can be seen in more detail in [Table 2](#).

Regarding the relationship between entrepreneurship and the degree program studied, the most active participation is observed in the Commercial Engineering and Industrial Engineering programs. In contrast, the least active in entrepreneurial activity is the Auditing program, information that can be corroborated by the breakdown presented in [Table 3](#).

Table 2. Relationship with entrepreneurship by sex.

	Female	Male
I do not participate in any venture	35%	32%
I am in charge of the venture	8%	2%
I manage with another person the management of the venture	6%	3%
I am currently contributing as an intern in a venture	7%	6%

Table 3. Relationship with entrepreneurship by sex.

	I contribute as an intern in a start-up	I lead with another person the management of the venture	I am in charge of the enterprise	I do not participate in any venture
Audit	3%	2%	1%	13%
Civil Industrial Engineering	4%	1%	4%	21%
Commercial Engineering	4%	4%	3%	18%
Business Administration Engineering	2%	2%	1%	15%

4.2. Individual reliability

Multivariate models involving the construction of structural equations include within their procedures a factor analysis, a stage that requires compliance with the assumptions of sample adequacy, Bartlett's test of sphericity and an analysis of correlations. The Kaiser-Meyer-Olkin (KMO) sample adequacy measure was incorporated using the IBM SPSS Statistics V.23, student version, with the minimum KMO value for a successful factor analysis being 0.6 to measure the homogeneity of the factor and check whether the partial correlations are low.

In this study, the KMO value for the totality of the data obtained is 0.892, meeting the cut-off criterion mentioned above, and is considered a satisfactory measure, according to Kaiser himself, for carrying out this procedure. The second criterion, Bartlett's test of sphericity, has a significance of less than 0.05, which contradicts the Hypothesis that the variables are not intercorrelated, making factorization a viable option. By calculating the factorial loadings or weights of each item of the constructs of the causal model proposed, it is possible to determine the individual reliability of the indicators since they express the functional relationship between the factors and items. The statistics between variables in confirmatory factor analysis (CFA) are expressed as linear relationships: formative relationships are represented by factor weights, while factor loadings represent reflective relationships. The values of this indicator are acceptable and significant at 95% for standardized loadings, which are values greater than or equal to 0.7; however, figures more significant than 0.4 are acceptable in exploratory studies. Table 4 shows the factor loading of the variables. The item that does not have a factor loading within the acceptable range is GIE 9; therefore, it is not considered when calculating the model's coefficients.

4.3. Reliability and construct validity

Internal consistency allows for evaluating the reliability and validity of the construct. Commonly Cronbach's alpha indicator is the most popularly accepted and implemented indicator. A value of Cronbach's alpha,

between 0.70 and 0.90, shows a good internal consistency; however, certain authors consider that the calculation of Composite reliability (CR) is a more appropriate measure to check the reliability of a set of indicators to the corresponding construct, the accepted value is at least 0.7, however, in cases of exploratory studies, figures from 0.6 are allowed. (Table 5)

Regarding internal consistency reliability, Cronbach's Alpha and CFI values are presented. The latent variables of Country Support and self-efficacy do not meet the criterion about the first criterion; however, they are at the appropriate threshold for the CFI, a more appropriate indicator for PLS-SEM cases.

4.4. Univariate and bivariate analyses

The univariate and bivariate analyses of the constructs associated with the causal model are presented below, applying the sum of the constructs to obtain values of agreement on the general approaches of the evaluation instrument. Using the scale shown in Table 6.

Table 7 shows the summary of percentages of agreement and the comparison between means using the analysis of variance (ANOVA) of one factor and Fisher's statistic, with a standard significance of 0.05.

The descriptive elements of each construct of the proposed model are presented to perform a univariate and bivariate analysis. A comparison of means between age, gender and career groups is made for the survey participants associated with the model. In this way, the Ho hypothesis was contrasted, which indicates that the means of the populations are equal, as opposed to the alternative hypothesis H1, in which the means of the groups are different in at least one of the segments analyzed. The literature states that the null hypothesis is rejected when the calculated F indicator exceeds the tabular F indicator Leenen. The tabular value is obtained using a distribution for F, which uses the degrees of freedom of the numerator (n1) and those of the denominator (n2), which correspond to the given situation. For a proposed statistical significance (0.05), the degrees of freedom of each analysis are determined, thus applying the search in Fisher statistical tables to determine the tabular F.

Table 4. Individual reliability of green entrepreneurship intention (GEI) indicators.

	Green entrepreneurial intention	Factor loading
GEI1	I plan to develop an entrepreneurship that addresses the ecological problems of my community	0.740
GEI2	I recommend to my peers to develop ventures that solve ecological problems	0.578
GEI3	My future ventures will prioritize ecological benefits over financial benefits	0.577
GEI4	If I had the opportunity and the resources, I would definitely undertake a green venture	0.500
GEI5	I have seriously thought about becoming a green entrepreneur	0.764
GEI6	I will do my best to start and manage my own green venture	0.854
GEI7	I strongly intend to start a green business someday	0.842
GEI8	I intend to start and act in the management of my own green venture	0.840
GEI9	It is safer to work for a company than to take a risk on a green venture	-0,329
	Self-efficacy	Factor loading
SE1	Creating and maintaining a green business is a task that I can do.	0.623
SE2	I have the necessary knowledge to develop a green venture	0.749
SE3	I have sufficient skills to develop a green business.	0.767
SE4	I believe that in the future I will be able to develop a successful green business.	0.733
	Academic training support	Factor loading
ATS1	Offers elective courses on entrepreneurship	0.656
ATS2	Offers project work focused on entrepreneurship	0.796
ATS3	Offers entrepreneurship-focused internships	0.603
ATS4	Offers a bachelor's or master's degree in entrepreneurship.	0.589
ATS5	Organizes conferences/workshops on entrepreneurship	0.802
ATS6	Connects students with entrepreneurs	0.780
	Concept development support	Factor loading
CDS1	Creates awareness of entrepreneurship as a possible career path	0.770
CDS2	Motivates students to start a new business	0.905
CDS3	Provides students with strategies for starting a new business	0.672
CDS4	Provides students with the knowledge necessary to start a new business	0.668
	Business development support	Factor loading
BDS1	Creates awareness of entrepreneurship as a possible career path	0.891
BDS2	Motivates students to start a new business	0,191
BDS3	Provides students with ideas for starting a new business	0.881
	Country support	Factor loading
CS1	In my country, green entrepreneurs are encouraged by an institutional structure.	0.981
CS2	The economy in my country offers many opportunities for entrepreneurs	0.881
CS3	Obtaining bank loans is quite difficult for entrepreneurs in my country.	-0,294
CS4	State laws in my country are averse to running a company	0,077
	Institutional support	Factor loading
IS1	Financial and/or technical advice is provided to university ventures.	0.751
IS2	Promote contact networks between university entrepreneurs and investors.	0.744
IS3		0.731

(Continued)

Table 4. Continued.

	Green entrepreneurial intention	Factor loading
	A favorable environment for entrepreneurship is fostered among students and teachers.	
IS4	Social entrepreneurial ideas are promoted through contests, fairs or competitions.	0.731
IS5	There are support programs for the creation of entrepreneurship	0.800
IS6	There is support from senior management and authorities to initiate ventures.	0.714
IS7	There are subjects or courses related to entrepreneurship.	0.611
IS8	There is practical training in entrepreneurship (project development, business plans, etc.).	0.670
IS9	They have specialized offices that provide advice for the development of entrepreneurship.	0.673

A Pearson correlation analysis examined significant dependencies between model constructs in cases where statistically similar means were determined. The calculations are performed using SPSS v26 software.

4.5. Green entrepreneurial intention

Table 7 shows 72.68% agreement on the builder; this high mean value is a predisposition to develop sustainable ventures seeking social and environmental benefit. In analyzing the distribution of the means obtained in the different ages of the sample, the alternative hypothesis is accepted, given that the calculated F (2.67) is higher than the tabular (1.72). Thus, a statistically relevant difference is observed between the means according to age. When considering a segmentation by gender, the calculated F (5.93) is higher than the tabulated F

Table 5. Construct reliability test results.

Variables	Code	Alpha Cronbach	Composite reliability
Green entrepreneurship intention	GEI	0.865	0.895
Self-efficacy	SE	0.689	0.811
Academic training support	ATS	0.827	0.857
Concept development support	CDS	0.781	0.843
Business development support	BDS	0.728	0.880
Country support	CS	0.630	0.836
Institutional support	IS	0.889	0.904

Table 6. Measurement scale.

Since (%)	To (%)	Level
0	14%	Non-existent
15%	29%	Very Low
30%	43%	Low
44%	57%	Medium Low
58%	74%	Medium High
75%	86%	High
87%	100%	Very High

Table 7. Overall results and one-factor ANOVA.

Factor	%	Age			Career			Sex		
		F	Sig	Correl.	F	Sig	Correl.	F	Sig	Correl.
GEI	72,68	2,677	0,010	-0,053	1,184	0,315		5,930	0,016	0,120*
SE	72,47	1,717	0,050		1,391	0,245		1,920	0,167	
ATS	68,30	1,510	0,064	-0,100	19,830	0,001	0,020	1,117	0,291	
CDS	73,93	2,741	0,010	-0,150	9,561	0,001	0,047	0,034	0,853	
BDS	53,58	1,226	0,253		4,448	0,004	0,123*	0,726	0,395	
CS	62,44	3,071	0,001	0,023	3,122	0,026	0,013	0,597	0,440	
IS	64,03	2,699	0,010	-0,185	15,68	0,001	0,059	2,526	0,113	

Table 8. Tabular F calculation.

Control variable	N	K	Formula N1	Formula N2	Fisher
Sex	407	2	1	405	3.865
Age	407	15	14	392	1.720
Career	407	4	3	403	2.630

(3.86) accepting the H₀; thus, there is no evidence to indicate that the perception of entrepreneurial intention varies according to the gender of the students participating in the study. For the distribution by career, the tabular F (2.63) is higher than the calculated F (1.184), with a significance greater than 0.05. In this way, differences are distinguished between the means of the career segments, which could be influenced by the curricula and graduate profiles, even when the sustainable themes are transversal to the careers of the business lines of the University.

4.6. Self-efficacy

For this outcome, 72.42% is visualized according to its approach, related to people's belief in their abilities and capacities to succeed in adverse situations. In the gender analysis, an F of (1.92) and a tabular F of (3.865) were calculated; therefore, we accept the hypothesis that the samples do not present a statistically appreciable difference between both sexes. In the case of segmenting by career, the tabular F is (2.63) and the calculated F (1.391), so there are no differences between careers in the personal perceptions of their abilities. If we analyze the ages, the calculated F (1.717) and the tabulated F (1.720) have no difference determined, thus the acceptance of the null hypothesis that there is no difference in means between the magnitudes of this segmentation.

4.7. Academic training support

The percentage of agreement on this construct is 68%, mainly related to the formative processes, including theoretical-practical activities and subjects of the different study plans that evaluate and prepare the students for environmental and social topics; in this way,

the sustainable perception presents a medium-high level. If we review the segmentation by gender, there are no statistical differences ($F_c = 1.117$ and $F_t = 3.865$), nor if the process is carried out by age $F_c = 1.51$ and $F_t = 1.72$. On the other hand, when categorized by career ($F_c = 19.83$ and $F_t = 2.63$), significant differences in the variation of the means were observed when evaluating this concept.

4.8. Concept development support

This support is evaluated at a high level, reaching 73.93%, referring mainly to the university's work in creating awareness of entrepreneurship and supporting new business initiatives by providing the necessary knowledge. When the data is divided by gender, the $F_c = 0.047$ and $F_t = 3.865$ present differences between their means. A different case occurs when evaluating the division by age, the $F_c = 2.741$ and $F_t = 1.72$, while in that by career, $F_c = 9.561$ and $F_t = 2.36$; in both cases, the F_c is greater than the F_t . In this manner, we can appreciate no significant differences between the evaluated groups.

4.9. Business development support

The construct of support for business development presents a medium level of agreement of 53%. When analyzing the distribution of the means for this, the segmentations of age and gender do not present significant differences when contrasting the null Hypothesis. For the former, the $F_c: 1.226$ is lower than $F_t: 1.72$; for the latter, the $F_c: 0.076$ is lower than $F_t: 3.865$. On the contrary, when fractioning by race, it accepts the null hypothesis, indicating that there are means of statistically similar magnitudes given an $F_c: 4.448$ higher than $F_c: 2.63$.

4.10. Country support

When considering country support in the evaluation instrument, a medium-high level perception is obtained with 62.44% in global support for entrepreneurship, financing and current legislation. Complementarily, the

Table 9. Analysis of internal consistency for reliability.

Scales	Items	Cronbach's Alpha values	Range of Items Values	Composite reliability	AVE
Academic Training Support	6	0.827	0.652–0.784	0.874	0.537
Business Development Support	3	0.765	0.804–0.847	0.864	0.680
Concept Development Support	4	0.781	0.750–0.812	0.859	0.603
Country Support	2	0.630	0.765–0.923	0.835	0.719
Green Entrepreneurial Intention	9	0.801	0.500–0.854	0.895	0.524
Institutional Support	9	0.889	0.661–0.791	0.911	0.532
Self-efficacy	4	0.689	0.619–0.770	0.810	0.518

Sample: 407 students.

distribution of the means is analyzed, being different for the segmentations age (Fc:62.44, Ft:1.72) and career (Ft:2.63, Fc:3.122), while for gender, no statistically significant differences can be visualized.

4.11. Institutional support

Mainly referred to university factors to advise, create networks and promote sustainable entrepreneurial behavior, this item presents a level of agreement of 64.03%, establishing itself in the upper middle range. When considering an analysis of means, we can point out that when discriminating by gender, there are no differences given that Ft:3.865 is greater than Fc: 0.059. When divided by age, Ft:1.72 is lower than Fc:64.03, and we can see a statistically considerable distance between means, which also occurs when analyzing the 4 careers participating in the sample (Ft2. 63: Fc:15.68).

4.12. Multivariate analyses

The items with factor loading less than 0.50 were deleted by previous analysis to test the model.

4.12.1. Reliability

The variables' scales described reliability coefficients higher than 0.5 (Lopez-Odar et al. 2020) (Table 9).

4.13. Convergent validity and discriminant validity

Discriminant validity was evaluated by Fornell and Larcker (1981). Table 10 demonstrates the convergent and discriminant validity of the tested instrument.

Table 10. Convergent validity and discriminant validity.

Scales	ATS	BDS	CDS	CS	GEI	IS	SE
ATS	0.733						
BDS	0.509	0.825		0.848	0.724	0.730	0.720
CDS	0.603	0.421	0.777	0.085	–	0.067	
CS	0.149	0.204	0.118	0.263	0.016		
GEI	0.021	0.058	0.123	0.186	0.503		
IS	0.695	0.564	0.638				
SE	0.100	0.033	0.131				

Sample: 407 students.

4.14. Bootstrapping

Bootstrapping is a statistical method used to estimate population parameters by combining estimates from several small data samples (Streukens and Leroi-Werelds 2016). This technique involves randomly selecting observations from a larger data sample, one at a time, and then returning them to the original dataset after being chosen. This approach is known as replacement sampling, allowing the same observation to be included in multiple small samples. The calculation is carried out multiple times (in this case, 5000 times) to determine if a tested model is significant. The results of these calculations are displayed in Table 11, where it can be observed that three values have a significance level of less than 0.01.

Figure 1 shows the research model tested.

4.15. Test of Hypothesis

H1: Concept development support has a positive and significant effect on Institutional support

Concept development support has a positive effect of 0.301 on Institutional support. The p -value from bootstrapping was 0.000. The Hypothesis was confirmed.

H2: Business development support has a positive and significant effect on Institutional support

Business development support has a positive effect of 0.237 on Institutional support. The p -value from bootstrapping was 0.000. The hypothesis was confirmed.

H3: Academic training support has a positive and significant effect on Institutional support

Table 11. Significance of trajectory coefficients (beta).

Variables effects	Original sample	Mean sample	Standard deviation	t-statistic	p -value
ATS → IS	0.393	0.394	0.047	8.335	0.000
BDS → IS	0.237	0.238	0.040	5.933	0.000
CDS → IS	0.301	0.300	0.047	6.438	0.000
CS → SE	0.181	0.186	0.052	3.450	0.001
IS → SE	0.020	0.018	0.066	0.303	0.762
SE → GEI	0.503	0.509	0.043	11.785	0.000

The bootstrapping technique (5 000 times) using Smart PLS. p -value <0.01. Sample: 407 students.

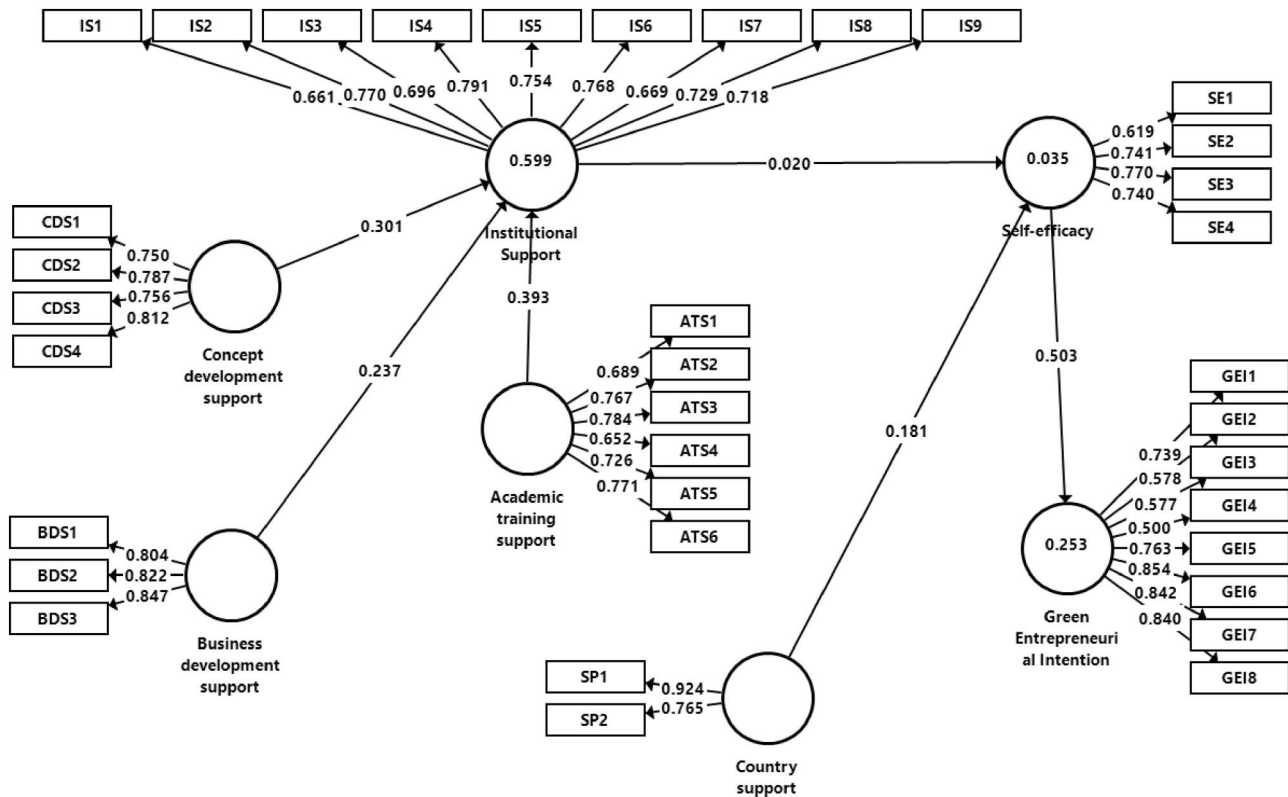


Figure 1. Research model tested.

Academic training support has a positive of 0.393 on Institutional support. The p -value from bootstrapping was 0.000. The hypothesis was confirmed.

H4: Country support has a positive and significant effect on Self-efficacy

Country support has a positive effect of 0.181 on Self-efficacy. The p -value from bootstrapping was 0.001. The hypothesis was confirmed.

H5: Institutional support has a positive and significant effect on self-efficacy

Institutional support has a positive effect of 0.020 on Self-efficacy. The p -value from bootstrapping was 0.759. The hypothesis was rejected.

H6: Self-efficacy has a positive and significant effect on green entrepreneurial intention

Self-efficacy has a positive effect of 0.503 on Green entrepreneurial intention. The p -value from bootstrapping was 0.000. The hypothesis was confirmed.

The model explains green entrepreneurship intention in 25.3%.

5. Discussion

This study aims to analyze how educational, conceptual, and country support for entrepreneurship affect the

development of entrepreneurial self-efficacy and, subsequently, green entrepreneurial intention among business students in Chile. We rigorously tested the questionnaire for reliability and validity. Our results indicate that the instrument was reliable, valid, and statistically significant for our sample and can help explain the factors contributing to green entrepreneurship intention. The effect of conceptual development support on entrepreneurial self-efficacy confirmed in the current study is similar to that reported by Neneh (2022), who carried out a study in South Africa on 500 university students, and van der Westhuizen and Goyayi (2019) that tested 109 university students in the same country. The current study parallels the report developed by Jiatong et al. (2021), who evaluated 486 university students in Pakistan (Yen and Lin 2022), Yen and Lin (2022), who tested 94 Taiwanese university students, and Saoula et al. (2023) with 345 university students in Malaysia. When considering a university, it's important to investigate whether they prioritize promoting entrepreneurship and encouraging students to pursue it as a career.

Additionally, it's valuable to assess the level of support and resources available to students who are motivated to start their businesses. A key factor to consider is whether the university offers structured guidance on generating new business ideas through an

entrepreneurial lens. The efforts made by some universities to develop think tanks that come from new ideas and proposals towards entrepreneurship are as relevant as Canadian think tanks (University of Alberta 2022) and MIT Bootcamp (MIT 2023).

The effect of business development support is similar between the current study and that reported in 98 management studies in Morocco (Boubker, Arroud, and Ouajdouni 2021) and 400 undergraduate university students in France (Alkhalaf et al. 2022). It is essential to know what the perception of students is regarding tournaments related to entrepreneurship so that the importance they devote to it the contribution of their training and that it can, at the same time, serve as a reference for universities to diversify the events so that training in green entrepreneurship can play a leading role.

The effect of academic training support on entrepreneurial self-efficacy detailed in the current research is similar to that reported by Maheshwari and Kha (2022) in 401 undergraduate students in Vietnam, Luo et al. (2022) in 979 university and college students in China, and Liu et al. (2022) in 302 Chinese undergraduate students. Determining whether universities offer career paths focusing on entrepreneurship or postgraduate programs in this field is essential. This information is crucial for individuals serious about pursuing a career in this area and cannot be overlooked. It must undertake the research and make an informed decision, which is the case of the University of Toronto (2023) and the University of California San Francisco (2023). It is crucial to confirm the benefits of organizing university entrepreneurship conferences that disseminate the preliminary outcomes of entrepreneurial pursuits and establish connections with successful entrepreneurs who can impart their knowledge and motivate students to embark on an entrepreneurial journey. Previous studies confirmed the effect of country support on entrepreneurial self-efficacy like the current study. The previous outcomes include 564 students in Pakistan (Memon, Soomro, and Shah 2019), 259 university students (Elnadi and Gheith 2021), and 763 university students in Saudi Arabia.

Evaluating the support governments provide for ecological entrepreneurship, not just institutional support is crucial in assessing entrepreneurship. Governments must modify laws and encourage investment in green enterprises by offering guaranteed loans at reasonable rates through state and bank initiatives to foster new green entrepreneurs. Examining such support is essential for promoting sustainable development and creating a greener future.

The effect of self-efficacy on green entrepreneurship intention demonstrated in the current research is close to the studies described by 410 Chinese university

students (Wang et al. 2021) and 284 students in Pakistan (Soomro, Ghumro, and Shah 2020). Insufficient research has been carried out on the intention of ecological entrepreneurship, especially in Latin America. Nevertheless, this study is a crucial point of reference for this topic. The escalation of entrepreneurship provides a hopeful avenue to foster green entrepreneurship and positively influence the environment.

The primary aim of this study is to pinpoint the factors that influence the pursuit of entrepreneurship. Research has conclusively revealed that the three variables outlined in the study significantly affect the self-efficacy variable, ultimately affecting the intention to establish environmentally friendly businesses. While previous literature has focused solely on green enterprises, this study aims to broaden the scope of interest. A major strength of this article is the use of multivariate analysis by PLS-SEM, which has facilitated the identification of correlations between variables. These findings can be applied to other regions, such as Latin America or Europe, although it is crucial to consider each country's unique entrepreneurship efforts, government regulations, and university governance. Furthermore, this study has led to the development of an instrument that can be used in future research and can be further refined to amplify its effectiveness.

Green entrepreneurship is an activity that continues to increase, so knowing about the training and preference of students for this type of activity is key to having training focused on this type of student.

5.1. Theoretical implications

The current academic literature on green entrepreneurship and related research is severely limited, with little understanding of the factors influencing student intentions toward this field. Our model incorporates both internal and external support that students receive, with internal support including training courses, event promotion, and financing assistance for starting ventures. External support is evaluated based on government and university support in normative aspects and direct or training support. Our model accounts for internal-external influences on student intentions, with expected variations in results across countries due to differences in support systems. By utilizing SEM PLS, we can measure the correlation between variables and pathways toward explaining green entrepreneurship. It is relevant that the use of TPB and the theory of Bandura can allow a model to describe the factors of green entrepreneurship intention. Country support is a variable that is not usual, so this is also an important contribution to the literature.

The model model's results confirm the model that links different variables to explain the intention of green entrepreneurship. It has been important to recognize different factors ranging from the most concrete, such as training courses, to the emotional and motivational. It is relevant to show that the model works quite well when applied to university students. It should be noted that the study was carried out during the pandemic period, so the results are found in a period, making it necessary to confirm the effects between the variables in the post-pandemic period.

5.2. Practical implications

Annual university programming must create action plans to encourage greater motivation toward green entrepreneurship. These plans help universities understand important factors that students consider and request changes in course content and the development of economic sources to support green businesses. It is a missed opportunity that many universities do not often use green entrepreneurship content to motivate students. To promote the development of green entrepreneurship, universities must evaluate factors that influence it and recognize any modification being made to foster student involvement. The government must support these changes, and ongoing evaluation of green entrepreneurship in diverse populations is necessary as the field continues to grow. The model allows the prediction of the behavior of green entrepreneurship, so each variable must be analyzed to be part of programs and annual plans in universities to increase the students linked to green entrepreneurship intention; also, it is part of the diagnosis of factors and needs to be verified using other techniques.

The study suggests that entrepreneurship courses, course projects, and academic internships help students to get closer to business reality. Organizing events and facilitating contact with entrepreneurs can increase self-efficacy and encourage green entrepreneurship. Encouraging a sense of entrepreneurship in students generates positive changes and increases the number of students involved in entrepreneurship in the short term. Effective dissemination of government programs to promote entrepreneurship is necessary. Extramural learning complements in-class learning and leads to greater entrepreneurial self-efficacy. The university's continued support is crucial to making green entrepreneurship a reality.

5.3. Limitations and future research

Data collection was during COVID-19, so the number of participants was limited and obtained by online survey.

It can be interesting to evaluate the same model after the pandemic. This study identifies the key variables that significantly have an effect on self-efficacy, the ultimate determinant of entrepreneurial intention for ecological enterprises. Our research goes beyond the scope of existing literature, which predominantly focuses on green enterprises. By multivariate analysis and PLS-SEM, we have identified correlations between the variables of interest. While our findings may apply to other regions, such as Latin America or Europe, it is crucial to carefully evaluate each country's unique set of entrepreneurship efforts, government regulations, and university governance. Our research has also resulted in developing an instrument that can be effectively utilized for future studies and refinement.

6. Conclusion

This study aims to pinpoint the crucial underlying factors that have an effect on entrepreneurship intention, specifically in developing ecological enterprises. Our research has revealed that three variables have a substantial influence on self-efficacy, which is the first critical step towards having the intention to create sustainable businesses. The model tested in the current study can show the factors that need to be empowered to increase green entrepreneurship intention. The current literature on green enterprises is limited, which highlights the significance of this study in exploring this area of interest. It is essential to replicate this study in other cities, particularly other regions, to evaluate the outcomes' similarities and differences among the university students. An instrument that can be efficiently utilized in future research to refine and enhance the survey items for further studies has been developed.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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