

**DOES THE UNIVERSITY ENVIRONMENT MATTER FOR ENTREPRENEURIAL
BEHAVIOR?**

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1. INTRODUCTION

Entrepreneurship is a social phenomenon which has drawn the attention of scholarly research for decades. It is regarded as a means of economic growth and a solution to contemporary socioeconomic problems (Bruton, Ketchen, & Ireland, 2013; Sutter, Bruton, & Chen, 2019). However, entrepreneurship *per se* doesn't fit into a single definition and can vary depending on the type of activity being developed in a given context. Moreover, the conditions to stimulate successful entrepreneurial activity are also a matter of intense academic investigation. Both businesses and governments alike have taken an interest in entrepreneurial ecosystems and have tried to better understand how it is possible to produce successful outcomes from entrepreneurial activity (Isenberg, 2010; Isenberg, 2011; Mason & Brown, 2014), especially as it relates to innovation and high-end technology. Universities, by their turn, come into this discussion as one of the main elements pertaining to the entrepreneurial ecosystem. They play the role of knowledge providers and also serve as a hub for connecting different actors and allowing for the exchange of information (Duruflé, Hellmann, & Wilson, 2018). With this in mind, our research takes interest in the entrepreneurial activity pertaining to the sphere of universities.

The phenomenon of the entrepreneurial university refers to universities and ideas that arise in the academic environment and are leveraged by these institutions in the economic and financial sphere (Gibb & Hannon, 2006). Entrepreneurial university has been the focus of several studies in different countries (Guerrero, Liñán, & Cáceres-Carrasco, 2020; Guerrero & Urbano, 2010). Thus, several theoretical models have already been created in order to explain the circumstances in which entrepreneurial universities emerge (Clark, 1998; Etzkowitz, 2004; Rothaermel, Agung, & Jiang, 2007) and how the university environment can influence students' entrepreneurial intention (Barral, Ribeiro, & Canever, 2018; Liñán & Chen, 2009; Moraes, Iizuka, & Pedro, 2018). The university environment is composed of activities mostly linked to teaching, research and outreach activities, making it possible to explore entrepreneurship in different ways (Laguía González *et al.*, 2019; Moraes, Iizuka, & Pedro, 2018).

Previous studies have focused on investigating the relationship between entrepreneurial characteristics and entrepreneurial intention (Koh, 1996; Mueller & Thomas, 2001) and so far, the literature has different results on the influence of the university environment in entrepreneurial behavior (Morris, Shirokova, & Tsukanova, 2017; Rocha, Moraes, & Fischer, 2021). Empirical evidence abounds on the positive effects exerted by universities on academic entrepreneurship (Abualbasal & Badran, 2019; Ferrandiz *et al.*, 2018; Karim, 2016). However, results are not homogenous across different scenarios, thus indicating that our understanding of the entrepreneurial environment and its position within contemporary economies can be improved.

This paper is structured into seven sections beyond this introduction. On section 2 we present the research problem and objectives. Section 3 provides the theoretical basis for our research. Section 4 presents the conceptual model of research and study hypothesis. Section 5, by its turn, presents the chosen method as well as the foundation for our hypothesis. Section 6 will develop on the research results, while section 7 discusses our findings. Finally, we conclude our paper on section 8.

2. RESEARCH PROBLEM AND OBJECTIVES

Although different studies have focused on emphasizing the best configurations and strategies employed by universities to foster entrepreneurial behavior (Warhuus & Basaiawmoit, 2014), there are still research gaps to be filled in understanding of how the

university environment can stimulate students' entrepreneurial behavior (Watson & Hall, 2015) and what are the most effective ways to foster entrepreneurship within universities (Fischer, Moraes, & Schaeffer, 2019; Moraes *et al.*, 2020), especially in the Latin American context (Fischer, Moraes, & Schaeffer, 2019. Rocha, Moraes, & Fischer, 2021). Even more with regard to the analysis of the moderating effect, since studies seem to focus on analyzing only direct effects (Ertuna & Gurel, 2011), with some exceptions (Gurel, Altinay, & Daniele, 2010; Thompson, Kiefer, & York, 2011). Thus, the need for investigations with more sophisticated methodologies on the effectiveness of university-level actions for entrepreneurial activity is justified (Guerrero & Urbano, 2019; Matt & Schaeffer, 2018).

Thus, the objective of this research is to analyze the moderating effect of the university environment on the relationship between entrepreneurial characteristics and entrepreneurial intention of undergraduate students in Business Administration in Brazil. Thus, it is intended to answer the following question: Does the university environment moderate the relationship between entrepreneurial characteristics and the entrepreneurial intention of undergraduate students from Brazilian universities?

This study was conducted with the use of Partial Least Squares Structural Equation Modeling (PLS-SEM) and a sample of 1.012 observations from Business Administration students from seven public universities across Brazil's five macro-regions. The country is one of the largest economies in the world and its population ranks high in global entrepreneurial intention indexes (GEM, 2021). Public universities tend to concentrate the majority of the academic research developed in the country, thus becoming potential hubs for innovation and, possibly, entrepreneurial action.

3. THEORETICAL DISCUSSION

The theoretical discussion of this article involves the three variables of the theoretical model, which are: the university environment, entrepreneurial characteristics and entrepreneurial intention.

3.1 University Environment

A change in perspective regarding the university and entrepreneurship took place after the introduction of the concept of the entrepreneurial university, used for the first time by Clark (1998). An entrepreneurial university is an institution capable of undertaking both structural and cultural changes, diversifying funding sources, strengthening relations with society and the economy through engagement, dynamism, innovation and proactivity. However, there is no unified definition for this concept (Cerver Romero, Ferreira & Fernandes, 2021; Tsujimoto *et al.*, 2018). For Etzkowitz (1983), an entrepreneurial university is an institution that considers new forms of resources, such as those coming from partnerships with private entities, patents or even government funded research by contracts. Guerrero and Urbano (2011), by their turn, emphasize the developmental and catalytic role of these institutions, which, based on the generation and dissemination of knowledge, enable important social, regional and economic developments. Either way, the entrepreneurial university deals in entrepreneurial activity, and the process of transforming universities from institutions focused on teaching and research to entrepreneurial institutions emerged from the pressure to transition from activities purely dedicated to scientific research to the creation of marketable solutions (Etzkowitz *et al.*, 2000).

Although entrepreneurial activity consolidated in universities over time, some are still resistant to this process (Kirby, 2006). Obstacles relate to structural and contextual differences, such as the possibility of decreasing the autonomy of research activities (Rasmussen *et al.*, 2014). This is the case of public universities in Brazil, which tend to concentrate the bulk of national research activities. With this, public higher education institutions can emphasize academic careers at the expense of entrepreneurial careers.

Regarding empirical studies that evaluated the university environment, the literature supports the positive effect of the university on the entrepreneurial intention of students. Souitaris, Zerbinati and Al-laham (2007), for instance tested the impact of entrepreneurship programs on the entrepreneurial attitudes and intentions of students in science and engineering courses and found that programs like this increased students' intention to start a business. Regarding entrepreneurship education, Fayolle and Liñán (2014) identified that the number of elective courses engineering and science students undertake also positively influences their entrepreneurial intention.

For Moraes *et al.*, (2018) the term university environment is a concept that encompasses different teaching and research environments, as well as outreach activities to which students have access in higher education. When entering such an environment, students can opt for an entrepreneurial career. However, this is dependent on several factors, including their perception of the extent of the university's support (or the lack thereof), which ends up (Peterman; Kennedy, 2003; Vracheva; Abu-Rahma; Jacques, 2019). Thus, by offering a fertile environment for entrepreneurship, through training and education, students' decisions about entrepreneurship are positively affected (Franke & Lüthje, 2004).

3.2 Entrepreneurial Characteristics

In addition to the university environment, other elements can influence student's motivation in the decision to become entrepreneurs, such as social motivations (Omoredede, 2013), family context (Almeida & Teixeira, 2014) and financial aspects. Gender, ethnicity, geographic region and culture can also be influential elements (Shane, Kolvereid & Weshead, 1991). However, motivation is not an inert factor, it transforms as stimuli change over time (Sivarajah & Achchuthan, 2013). Thus, even individual goals change and are shaped by different circumstances and influences.

Entrepreneurial behavior varies according to the individual's perception of the environment in which he/she is embedded, which explains the emergence of new products and services from varied market perceptions and insights (Filion, 2000). Thus, understanding which characteristics and variables are fundamental to drive entrepreneurial behavior is often a common goal in the academic literature. With regard to this research, our definition of entrepreneurial characteristics follows along Holienka and Gál (2015), meaning specific personality attributes that are associated to entrepreneurs. These characteristics can be either innate or developed throughout life (Raupp & Beuren, 2011). Although not all human beings have the skillset required for entrepreneurial action, these can be learned and assimilated. Therefore, the university environment comes into play. The designated set of characteristics used in this research is presented on Table 1.

Table 1. Entrepreneurial characteristics

Attitudinal characteristics	Description	References
Risk taking	The approach to personal projects by means of considering variables and resources in order to endeavor despite negative outcomes.	Drucker (1986); Carland <i>et al.</i> (1988); Schmidt & Bohnenberger (2009)
Planning	Ability to organize actions in order to achieve a certain end or objective.	Filion (2000); Schmidt & Bohnenberger (2009)
Opportunity recognition	Exploration, identification and undertaking of business opportunities.	Markman & Baron (2003); Krakauer <i>et al.</i> (2018)
Persistency	Individuals who keep busy and seek to achieve their goals regardless of negative results.	Markman & Baron (2003); Krakauer <i>et al.</i> (2018)
Sociability	Degree of use of the social network to support professional activity.	Markman & Baron (2003); Schmidt & Bohnenberger (2009)

Innovation	The adoption of new methods or ideas in order to make changes.	Filion (2000); Schmidt & Bohnenberger (2009)
Leadership	One's ability to engage others based on their own goals.	Filion (2000); Schmidt & Bohnenberger (2009)

Source: author's elaboration.

Although there are still other characteristics listed in the literature, such as self-efficacy, openness to new experiences, extraversion and emotional stability, the variables listed here are relevant and widely used in studies of attitudinal characteristics of entrepreneurial behavior, being considered significant for entrepreneurship. Thus, the chosen entrepreneurial characteristics pointed will be integrated into the conceptual model of this study, as they are widely used and have been previously validated, making them suitable for examining the moderation of the university environment in its relationship with entrepreneurial intention.

3.3 Entrepreneurial Intention

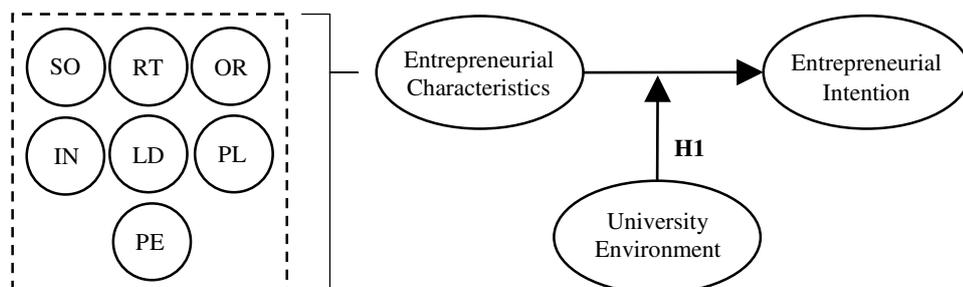
Regarding the entrepreneurial intention, in the theoretical aspect of the probability of an individual to undertake, it is considered the starting point of the entrepreneurial journey (Lee *et al.*, 2011). Although research has advanced in many aspects, indicating that the entrepreneurial intention is an antecedent element of the action to start a business (Karim, 2016), that the entrepreneurial characteristics (taking risks, planning, persistence, sociability, innovation and leadership) influence the intention of entrepreneurship (Moraes *et al.*, 2018) and research that emphasized the best configurations and strategies employed by universities to foster entrepreneurial behavior (Warhuus & Basaiawmoit, 2014), it is still necessary to highlight the university environment as a stage for entrepreneurship (Bignotti & Le Roux, 2016; Cruz, Ferreira, & Kraus, 2021).

Entrepreneurial intention involves individual intrinsic factors such as beliefs, personal characteristics, values, needs and habits (Cope, 2005). The seminal studies by Shapero and Ajzen in the 1980s and 1990s on entrepreneurial intention shaped the concept. From this, other authors systematically contributed to the formation of the theoretical basis on the subject, such as Gartner and Katz (1988), Souitaris, Zerbinati and Al-Laham (2007) and Mcgee *et al.* (2009). With the evolution of studies on entrepreneurial intention, several conceptual models emerged in the literature aiming to highlight the relationship between individual personal attributes and entrepreneurial intention, as in the studies by Bird (1988) and Krueger and Brazeal (1994).

4. CONCEPTUAL MODEL OF RESEARCH AND STUDY HYPOTHESIS

From the literature review, a model was elaborated to meet the research purpose (Figure 1).

Figure 1. Conceptual model



Note: RT = risk taking; IN = innovation; OR = opportunity recognition; LD = leadership; PE = persistency; PL = planning; SO = sociability.

Source: author's elaboration.

The presented conceptual model is composed of two constructs (entrepreneurial characteristics and entrepreneurial intention) and a moderating variable (university environment), which give rise to Hypothesis 1 (H1). Table 2 contains a summarized explanation of the constructs used in the proposed structure.

Table 2. Moderating and latent variables theoretical foundation summary

Variable	Description	References
University Environment (moderator variable)	Relates to different teaching and research environments, in addition to academic outreach activities to which students have access in higher education. Essential component of a larger set called the entrepreneurial ecosystem. Greatly affects students' attitudes towards entrepreneurship.	Moraes <i>et al.</i> (2018); Audrestch & Link (2019); Fayolle & Liñán (2014); Johannisson (1991);
Entrepreneurial Characteristics (latent, second order construct)	Specific personality attributes of an entrepreneur, often found in enterprising individuals. In this study, the following characteristics will be considered: risk taking (RT), planning (PL), opportunity recognition (OR), persistence (PE), sociability (SO), innovation (IN) and leadership (LD).	Holienka & Gál (2015); Schmidt & Bohnenberger (2009); Lüthje & Franke (2003); Markman & Baron (2003); Filion (2000).
Entrepreneurial Intention (latent variable)	Rational decision arising from the desire to endeavor or to do so in the future. One of the most studied antecedents in the field of entrepreneurial behavior studies. The Theory of the Entrepreneurial Event proposed by Shapero and Sokol (1982) and the Theory of Planned Behavior (TCP) proposed by Ajzen (1991) are the most used models in studies related to entrepreneurial attitude and intention.	Liñán & Fayolle (2015); Thompson (2009); Ajzen (1991); Bird (1988); Shapero & Sokol (1982).

Source: author's elaboration.

Previous studies have considered universities as integral components of the entrepreneurial ecosystems and made important contributions to understanding what motivates students to choose entrepreneurship as a career option. These go through university support mechanisms (Saeed *et al.*, 2015), entrepreneurship programs (Souitaris, Zerbinati & Al-Laham, 2007), entrepreneurship related courses (Chen, Greene & Crick, 1998; Fayolle & Liñán, 2014), and specific entrepreneurial characteristics, such as planning (Vodá, Butnaru & Butnaru, 2020) and risk taking (Zhang, Wang & Owen, 2015), as determinants of entrepreneurial intention.

Empirical evidence attests to the direct relation between the university environment and student's entrepreneurial intention. Laguía *et al.* (2019), for instance, found that the university environment was the most relevant antecedent of entrepreneurial intention during a study conducted in Spain. However, there is also evidence of a negative influence stemming from the university environment (as seen in Farhangmehr, Gonçalves, & Sarmento, 2016). Moreover, the intention to become an entrepreneur is not a phenomenon exclusively linked to the presence of an educational/academic environment. Therefore, there is still need to investigate the reach of the university environment further on this matter (Bignotti & Le Roux, 2016; Cruz; Ferreira & Kraus, 2021), especially its indirect effect on student's entrepreneurial intention (Ertuna & Gurel, 2011), which is our proposed approach.

In this sense, to investigate the moderating effect of the university environment has to do with exploring the circumstances in which it affects the direction or intensity of the relation between university environment and entrepreneurial intention. Thus, we formulate the following hypothesis:

H1: The university environment moderates the relationship between entrepreneurial characteristics and entrepreneurial intention.

5. RESEARCH METHODOLOGY

The research was developed through quantitative methodology, with the use of multivariate data analysis. According to the suggestions by Hair *et al.* (2019), in which the goals are prediction and explanation of the constructs presented and the method provides a common point between path modeling and confirmatory factor analysis, we opted for the use of Partial Least Squares-Structural Equation Modeling (PLS-SEM). The model developed for research presents reflective and formative indicators, as well as second order construct, which is another reasons to use PLS-SEM (Hair *et al.*, 2019; Sarstedt *et al.*, 2019).

Our research utilized a secondary data source drawn from Campos *et al.* (2021). The sample is composed of 1,012 observations (Table 3) with Business Administration undergraduate students from seven Brazilian universities across the country's five macro-regions.

Table 3
Sample aspect

Macro-region	Name of the Higher Education Institution	Acronym	EUR rank*	Total samples	%	
N	Universidade do Estado do Amazonas	UEA	54 th /3 rd	144	14.2%	14.2%
NE	Universidade Federal de Campina Grande	UFCG	95 th /27 th	222	21.9%	21.9%
MW	Universidade de Brasília	UNB	8 th /1 st	194	19.2%	19.2%
SE	Universidade Estadual de Campinas	UNICAMP	2 nd /2 nd	191	18.9%	27.3%
	Universidade de São Paulo	USP	1 st /1 st	85	8.4%	
S	Universidade Tecnológica Federal do Paraná	UTFPR	30 th /13 th	96	9.5%	17.4
	Universidade Federal do Rio Grande do Sul	UFRGS	4 th /1 st	80	7.9%	
TOTAL:				1,012**	100%	100%

*Brasil Júnior's Entrepreneurship University Ranking 2019. First number refers to the university's overall position. Second number refers to the university's position within its macro region.

**22 years old, in average; 51.6% male and 48.4% female; 92.8% single, 4.8% married and 2.4% other declared civil status.

Source: Campos *et al.* (2021).

6. RESULTS

Data analysis procedure followed four main steps: (I) evaluation of measurement scales and descriptive statistical analysis of indicators, (II) evaluation of the measurement model (first and second stage), (III) evaluation of the structural model and (IV) analysis of the moderating effect of the university environment on the relation between entrepreneurial characteristics and entrepreneurial intention.

Campos *et al.* (2021) had already tested the measurement scales. They demonstrated the quality of the psychometric properties of the constructs used in the research through Confirmatory Factor Analysis (CFA). The purpose of the current test (step I) comes from the need to ensure that the adopted constructs are adequate to measure each of the variables used in this research (acceptable loadings must be above 0.7). Table 4 presents the results of the analysis of the distribution of research data using descriptive statistics.

Table 4. Descriptive statistics

Questions	Mean	Median	Min.	Max.	Std. Dev
Risk Taking					
AR1. I would take on long-term debt, believing in the advantages that a business opportunity would bring me.	4.361	5.000	1.000	7.000	2.316
AR2. I admit to taking risks in exchange for possible benefits.	4.988	5.000	1.000	7.000	1.400
AR3. My decisions are not predominantly based on my comfort zone.	4.806	5.000	1.000	7.000	1.491
AR4. I believe that getting involved in higher risk situations will bring better, meaningful results.	5.017	5.000	1.000	7.000	1.490
Opportunity Recognition					
RO1. I believe to have a good ability to detect business opportunities in the market.	4.623	5.000	1.000	7.000	1.376
RO2. I believe I have the ability to understand, recognize and make concrete use of abstract, implicit and constantly changing information.	5.017	5.000	1.000	7.000	1.229
RO3. I believe I am able to take advantage of any opportunities to evaluate businesses.	4.601	5.000	1.000	7.000	1.552
RO4. I believe I have the ability to identify and endeavor in new business opportunities.	4.819	5.000	1.000	7.000	1.365
Innovation					
IN1. I prefer a job full of novelty to a routine activity.	5.397	6.000	1.000	7.000	1.525
IN2. I like to change my way of working whenever possible.	4.771	5.000	1.000	7.000	1.400
IN3. I like to improve the conventional and correct way of activities, not strictly following steps.	4.883	5.000	1.000	7.000	2.624
IN4. I bet on creativity when designing projects/activities.	5.362	6.000	1.000	7.000	1.305
Leadership					
LI1. I am often chosen as a leader in school or professional activities.	4.727	5.000	1.000	7.000	2.728
LI2. People respect my opinion.	5.359	5.000	1.000	7.000	1.105
LI3. I can convince people to overcome conflicts and work as a team to achieve a certain result.	5.350	6.000	1.000	7.000	1.194
LI4. I am able to encourage people to perform tasks for which they feel unmotivated.	5.242	5.000	1.000	7.000	1.228
LI5. People often ask for my opinion on matters of work or study.	5.160	5.000	1.000	7.000	1.369
Persistency					
PE1. Professionally, I consider myself a much more persistent person than others.	5.021	5.000	1.000	7.000	1.373
PE2. I am able to work intensively on projects at the cost of social deprivation, even if they have an uncertain return.	4.790	5.000	1.000	7.000	1.510
PE3. I believe I have the ability to create, lead and implement new life plans.	5.297	5.000	1.000	7.000	1.182
PE4. Whenever possible, I carry out a self-assessment, looking into personal characteristics such as perseverance, imagination and creativity.	4.853	5.000	1.000	7.000	1.561
Planning					
PL1. I always plan everything I do very well.	5.070	5.000	1.000	7.000	1.497
PL2. I define where I want to go and detail all the steps I must follow.	5.011	5.000	1.000	7.000	1.404
PL3. I know I can define my short, medium and long-term directions.	5.231	5.000	1.000	7.000	1.332
PL4. I like to set goals and targets to feel challenged.	5.469	6.000	1.000	7.000	1.306
Sociability					
SO1. The social contacts I have are very important to my personal life.	5.595	6.000	1.000	7.000	1.356
SO2. I know several people who could help me professionally if I needed them.	5.197	5.000	1.000	7.000	1.494
SO3. I relate very easily to other people.	5.326	6.000	1.000	7.000	1.573

SO4. I try to keep in constant contact with people in my network of relationships.	5.177	5.000	1.000	7.000	1.414
Entrepreneurial Intention					
IE1. I am ready to do anything to be an entrepreneur.	4.468	5.000	1.000	7.000	1.759
IE2. I will make every effort to create and maintain my own company.	4.778	5.000	1.000	7.000	1.727
IE3. Even if I work for other companies, I will never abandon my dream of opening my business.	4.661	5.000	1.000	7.000	1.888
IE4. My biggest achievement will be having my own business.	4.170	4.000	1.000	7.000	2.006
IE5. I intend to start a company in the next few years.	4.332	5.000	1.000	7.000	2.087
University Environment					
AMB1. The university environment helped me to identify business opportunities.	4.334	4.000	1.000	7.000	1.590
AMB2. The university environment helped me to be persistent.	4.904	5.000	1.000	7.000	1.605
AMB3. The university environment provided me with planning and strategy tasks in different disciplines, developing my ability to plan.	4.923	5.000	1.000	7.000	1.622
AMB4. The university environment developed my leadership skills through group work.	5.288	6.000	1.000	7.000	1.406
AMB5. The university environment has increased my ability to innovate	4.728	5.000	1.000	7.000	1.567
AMB6. The university environment has allowed me to relate and analyze the variables that influence the outcome of a problem, increasing my ability to take calculated risks.	4.988	5.000	1.000	7.000	1.431
AMB7. The university environment provided me with several important contacts, both personally and professionally.	4.618	5.000	1.000	7.000	1.655
AMB8. The university environment motivated me to want to open my own business	3.768	4.000	1.000	7.000	1.800
AMB9. The university environment developed my skills to lead a new business opportunity.	4.362	5.000	1.000	7.000	1.636

Source: author's elaboration based on the questionnaire from Campos *et al.* (2021) and research data.

Evaluation of the measurement model (step II) allows us to verify the congruence between theory and research data (Hair *et al.*, 2019). It focuses on the predictive competence in relation to the model. Thus, the recommended measures are reliability, convergent validity and discriminant validity (Hair *et al.*, 2019). In the first stage of the analysis of the measurement model, we consider nine reflective constructs. The measurement involves testing for internal consistency (compound reliability), indicator reliability, convergent validity (demonstrated by the Average Variance Extracted – AVE) and discriminant validity.

Regarding internal consistency (measured by Cronbach's Alpha), Composite Reliability and Average Variance Extracted, all indicators are within satisfactory standards, with the exception of Cronbach's Alpha, which presented scores lower than 0.7 for some constructs. However, according to Hair *et al.* (2019), this indicator is quite vulnerable in relation to the number of items in the scale, thus prone to underestimate internal consistency. Therefore, the use of Composite Reliability measures is required, which presented adequate results for all evaluated constructs. Collinearity, by its turn, was measured by the Variance Inflation Factor (VIF). Adequate values should be between 0.2 and 5.0 (Hair *et al.*, 2019). These results are also demonstrated in Table 5.

Table 5. Measurement model analysis - first stage indicators

Constructs	RT	EI	IN	OR	LD	PE	PL	SO	UE
RT	0.709								
EI	0.378	0.843							
IN	0.377	0.311	0.722						
OR	0.376	0.597	0.429	0.762					

LD	0.225	0.186	0.282	0.378	0.717				
PE	0.315	0.401	0.41	0.578	0.485	0.728			
PL	0.201	0.193	0.318	0.371	0.446	0.557	0.715		
SO	0.260	0.200	0.260	0.334	0.35	0.344	0.277	0.737	
EU	0.176	0.347	0.114	0.316	0.171	0.264	0.158	0.142	0.707
Cronbach's Alpha	0.503	0.898	0.54	0.756	0.696	0.56	0.698	0.600	0.843
Composite Reliability	0.751	0.924	0.765	0.843	0.806	0.771	0.806	0.779	0.853
Average Variance Extracted (AVE)	0.503	0.71	0.521	0.581	0.515	0.531	0.511	0.544	0.501

Note: RT = risk taking; EI = entrepreneurial intention; IN = innovation; OR = opportunity recognition; LD = leadership; PE = persistency; PL = planning; SO = sociability; EU = university environment.

Source: author's elaboration

In order to perform second stage analysis of the measurement model, we saved the factor loading scores of the first stage constructs and added them as new variables in the data set (as per recommendation from Hair *et al.*, 2019 and Sarsted *et al.*, 2019). Considering one reflexive construct (entrepreneurial intention) and one formative construct (entrepreneurial characteristics), the same criteria used in the first stage analysis was carried on to this stage (Table 6).

Table 6. Measurement model analysis - second stage indicators

Constructs	EC	EI
Entrepreneurial Characteristics	FORMATIVE	
Entrepreneurial Intention	0.629	0.840
Cronbach's Alpha	FORMATIVE	0.898
Composite Reliability	FORMATIVE	0.924
Average Variance Extracted (AVE)	FORMATIVE	0.710

Note: EC = entrepreneurial characteristics; EI = entrepreneurial intention

Source: author's elaboration.

Regarding the analysis of the formative element (entrepreneurial characteristics), convergent validity was established through redundancy analysis (as per recommendation from Chin, 1998). Redundancy analysis result scored 0.879, thus supporting the convergent validity of the formative construct (Hair *et al.*, 2019). The next step was to analyze the formative measurement model regarding the collinearity of its indicators, through VIF. The results obtained are also within adequate standards, which allows us to conclude that collinearity of formative constructs is not at critical levels.

Moving to the evaluation of the structural model (step III), we sought to measure the model's capacity for predicting variance on the dependent variables. Thus, we calculated the measures for R² and Q², as well as the Student-T statistic and P-value, which are found on Table 7.

Table 7. Coefficients of the structural model

Coefficients of the structural model (between constructs)				
Relation	Mean	Std Dev	T-statistic	P-value
Entrepreneurial Characteristics → Entrepreneurial Intention	0.63	0.02	29.03	0

Coefficient of determination (R ²)			
Construct	R ²	R ² adjusted	Q ²
Entrepreneurial Intention	0.421	0.416	0.277

Note: EC = entrepreneurial characteristics; EI = entrepreneurial intention
Source: author's elaboration.

Lastly, we conducted the analysis of the moderating effect of the university environment on the relation between entrepreneurial characteristics and entrepreneurial intention (step IV). First, we estimated main effects model in order to obtain the latent variable scores. Secondly, we used this data to form a single value measure for the interaction term (Hair *et al.*, 2019). Thus, the latent variables were now represented by a single item (entrepreneurial intention). Afterwards, we applied the bootstrapping technique once again. Results of this procedure are presented on Table 8.

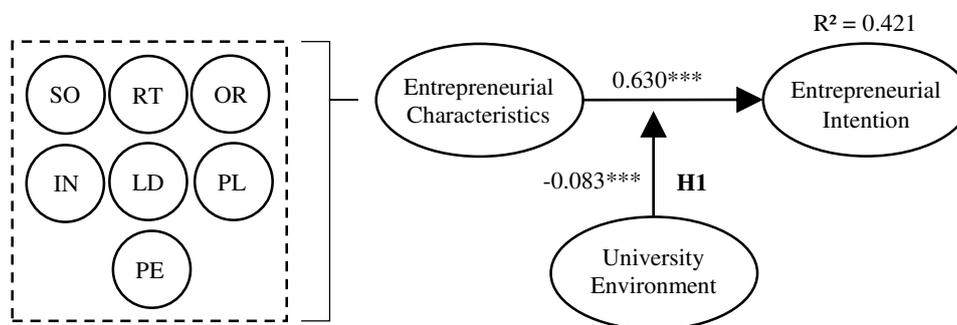
Table 8. Determination Test of Moderating Effect Path Coefficients

Relation	Mean	Std Dev	T-statistic	P-Value
University Environment → Entrepreneurial Intention	-0.084	0.020	3.298	0.001

Source: author's elaboration.

With a P-value lower than 0.05 we attest the strength of the nullity of the hypothesis (as per Morettin & Bussab, 2007). Finally, the complete model results can be seen on Figure 2.

Figure 2. Conceptual model results and hypothesis test



Note: * = significant at 5%; ** = significant at 1%; *** = significant at 0.1%; NS = not significant.

Moderation results indicated a significance level of 0.1%. This allows us to conclude that the central theoretical hypothesis (H1) is statistically accepted and empirically confirmed, that is, the university environment moderates the relationship between CE and entrepreneurial intention. However, the effect of this moderation is negative, thus indicating the more the student realizes that the environment improves his skills, the less he intends to become an entrepreneur.

7. DISCUSSION OF RESULTS AND CONCLUSION

Results obtained during this research point to a negative influence of the university environment on the relationship between entrepreneurial characteristics and student's entrepreneurial intention. Thus, we infer that the greater the university's support in developing student entrepreneurship, the lesser is the influence of entrepreneurial characteristics on the students' intention to become entrepreneurs. This empirical finding requires some necessary discussions.

We set off from the fact that the current literature on the subject has several studies evidencing a positive influence, rather than a negative, from the university environment on entrepreneurial intention (Chen *et al.*, 1998; Saeed, *et al.*, 2015; Souitaris *et al.*, 2007; Turker & Selcuk, 2009). However, the context of Brazilian universities might be a determinant factor for these differences in results. Although universities can implement strategies to foster entrepreneurial behavior (Markuerkiaga *et al.*, 2014) there can be obstacles hindering positive results, especially in the context of public universities (Kirby, 2006). Previous studies have indicated that such ambiguities, specifically in Brazil, are due to structural differences (Barral *et al.*, 2018; Canever *et al.*, 2017; Rowe & Bastos, 2010).

Within public universities, faculty is generally more involved in scientific research activities (Barral *et al.*, 2018; Rowe & Bastos, 2010; Speller, Robl & Meneghel, 2012). Furthermore, both faculty and students generally have access to funding and scholarships that represent important financial options, which in turn influences the choice for an academic career. Furthermore, Brazilian public universities, although research intensive, present weak relations with the private sector when compared to other international institutions (Moraes *et al.*, 2019), which comes from a lack of interest from the private initiative in R&D activities (Fischer *et al.*, 2019). Moreover, our results also resonate with the findings from Perim (2012), who demonstrated that students from public universities perceived their educational support to be substantially theoretical, evidencing the need to include more practically oriented subjects and activities related to entrepreneurship into universities.

Another pertinent questioning arising from our results regards the role played by universities in relation to entrepreneurship. Is it the university's responsibility to promote entrepreneurial action? Entrepreneurship finds several antecedents, from individual behavior to macroeconomic conditions. Therefore, the presence of universities is not a necessary condition for it to develop. This, in turn, questions the effectiveness of university's efforts to support students in becoming entrepreneur. If the university environment negatively moderates the relationship between entrepreneurial characteristics and students' intention to become entrepreneurs, then entrepreneurship support mechanisms must be redesigned in terms of their efficiency, delivering results that take advantage of student's own entrepreneurial characteristics.

8. FINAL REMARKS AND AVENUES FOR FUTURE RESEARCH

We believe our study evidenced an important finding about the public and national context of Brazilian universities, providing guiding results for the preparation and encouragement of students towards entrepreneurship. Results can subsidize the improvement of the university environment to support entrepreneurship among students, while collaborating with insights to the field of study on academic entrepreneurship. A limitation of our research, regard the nature of the sample. Although we used Campos *et al.* (2021) secondary data, which samples all five macro-regions of Brazil, statistically relevant samples from each macro-region could provide deeper insights into the specifics of different university environment contexts. In addition, a research opportunity stemming from our research would involve a deeper understanding of the university environment entrepreneurship support structure. If student's entrepreneurial characteristics are significant antecedents of entrepreneurial intention ($R^2 = 0.421$), then perhaps different support mechanisms could take advantage of this potential and increase entrepreneurial intention.

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