

## Article

# Entrepreneurial Intention before and during COVID-19—A Case Study on Portuguese University Students

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**Abstract:** The present research aims to compare the entrepreneurial intention of university students before and during the Covid-19 pandemic. For this purpose, some dimensions were analyzed, such as the availability of this target audience to undertake an activity at their own risk, the preference for a future while employed by others, their perception of the values that society places on entrepreneurship, and the entrepreneurial abilities/skillsets. A comparative study of a quantitative nature was used, associating two samples composed of students of higher education in Portugal, the data were obtained before and during the COVID-19 pandemic. The analysis of the results permits us to conclude: (1) in the circumstances of macroeconomic changes resulting from the COVID-19 pandemic, entrepreneurial activity does not decrease; (2) respondents are less interested in being employed by others and more attracted to being entrepreneurs; (3) there is a growing concordance with the values that society places on entrepreneurship; and (4) there is now a greater aptitude for entrepreneurial activity. The present research is original, as it compares data obtained in different contexts of economic and social stability. It contributes to theory and practice, in the sense that it points to conclusions in the opposite direction of other studies carried out in situations of disasters of another nature, and can serve as a reference for the development of strategies to promote entrepreneurship, within higher education institutions and official entities to publicize and promote new public policies.

**Keywords:** university; academy; entrepreneurial intention; academic entrepreneurship; third mission of the university; pandemic; COVID-19



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## 1. Introduction

Since the end of 2019, with the emergence of the COVID-19 pandemic, the world has faced problems with the health of populations. This quickly brought about social and economic problems on a worldwide scale, creating an unprecedented environment of great uncertainty [1]. With this new crisis, many companies closed and others had to substantially change their business model.

In this context, entrepreneurship and innovation have great potential to mitigate the negative impacts of the pandemic. Entrepreneurship is a determining factor for socio-economic development, improves the well-being of countries, and enhances the creation of value and wealth [1–4]. Thus, individual talent, the experience of entrepreneurs and its resources must be part of the solution to overcome this crisis and transform weaknesses into sources of competitive advantage for countries [5–7].

Entrepreneurship is widely accepted by the international and academic community as an important catalyst in regional and country development [8,9]; nonetheless, studies on its importance in adverse situations and uncertainty are scarce [1,10]. The current COVID-19 pandemic originated in Wuhan, China, in December 2019. Spreading very quickly around the world, it has infected 104,963,559 people and cause 2.286.850 fatalities up to 5 February 2021. In Europe, for the same period, the virus infected 32,047,663 people, resulting in 845,847 fatalities. In Portugal, for the same period, 755,774 cases were registered, causing 13,740 deaths [11]. On 11 March 2020, the World Health Organization officially announced the pandemic and identified it in 114 countries [12].

Consequently, countries had to implement large expenditure measures to increase the capacity of their health systems to assist their populations, as they were strongly affected by the pandemic [13]. In education, some methodologies had to be changed to facilitate students' learning in a sustainable manner [14]. In general, society faced a decrease in positive feelings and a dissatisfaction with lifestyle, derived from economic problems [14]. Socioeconomic factors are the drivers of the conditions in which society lives. Decriminalization, wages, social support, employment, security, and education account for circa 40% of an individual's entire health [15]; these factors may positively or negatively influence the competitiveness of economies.

Competitiveness of economies is of broad concern; policy makers and universities have worked together to promote an increasingly entrepreneurial environment amongst the academic community and society [16,17]. Universities have a mission of teaching, investigating, and transferring knowledge to society and, subsequently, their entrepreneurial activities are their third mission [18,19]. Universities are becoming increasingly proactive in transferring their research to society [20]. The creation of technology transfer offices, business centers, technology parks, and incubators based on universities have greatly contributed to this [21,22].

The entrepreneurial intention in academia has sparked an interest amongst researchers and policy makers. However, a deeper understanding of the factors that encourage students to participate in entrepreneurial activities is necessary [23–26]. Many students want to become entrepreneurs because they realize that this will bring advantages such as an increased salary, greater job satisfaction, and a better reputation [27,28]. The entrepreneurial intention in education has been advanced through the foundation of spin-offs, aiming to transfer knowledge generated in universities and transform them into marketable services or products [22,29]. Nevertheless, and despite the growing number of students in higher education, few academics or scientists choose to be entrepreneurs. They prefer to remain as full-time scientists or choose to commercialize knowledge, through licensing, consulting, or patenting [24,25,30,31]. Furthermore, it is expected that the current COVID-19 pandemic will have an impact on business development and potential entrepreneurs in the creation of future businesses, however, there are still no relevant studies on this topic [1].

Several scientific publications address entrepreneurial intention considering personality factors, and their relationship with the intention to start a business, and also the processes that benefit entrepreneurship [25,32–34]. However, academics have not studied entrepreneurial intention in academia in situations of catastrophes, uncertainty, or pandemics [1,35,36]. That said, the present research aims to compare the entrepreneurial intention of university students before and during the COVID-19 pandemic

The research was performed in Portugal, exclusively with students currently attending university education. We expect that the research will contribute to clarify the current literature on entrepreneurial intention in pandemic situations. We also intend to give recommendations to the universities and regional policy makers, to maintain or even increase entrepreneurial intent in the face of a pandemic crisis.

This paper is organized as follows: The introduction contextualizes the current research. The second part accomplishes an extensive literature review focused on entrepreneurial activity within higher education students, before and during the pandemic crisis. The third part details the methodological process used in the research. In the fourth

part, the results are presented, discussed, and compared with the existing literature. Finally, the main conclusions are presented, with the theoretical and practical contributions, the originality of the research, limitations, and clues for future investigations.

## 2. Literature Review

All over the world, since the concept of entrepreneurship was presented by Schumpeter [37], this phenomenon has been an object of study by scholars. Entrepreneurship is seen as vital to expand job opportunities and create wealth and innovation and has acted as a driving force in entrepreneurship centers, which in turn contributes to economic growth.

As the theme gained relevance in academic circles, the number and importance of studies that link entrepreneurship with entrepreneurial intentions also grew. To evince these intentions, we can consider the contributions of Anwar, et al. [38], who mentioned that this is about a person's predisposition to establish his own company or the ability that a person demonstrates to become an entrepreneur in the coming years. The importance of this indicator is echoed in studies that demonstrate that entrepreneurial intentions are strongly related to entrepreneurial behavior, as shown in the longitudinal study of Kautonen, et al. [39].

It is possible to find in the literature on entrepreneurship several models and theories that help to understand the entrepreneurial intention, such as the theory of planned behavior (TPB) Ajzen [40], the entrepreneurial event model (EEM) [41], implementing entrepreneurial ideas model (IEI) [42], or the model by Autio, et al. [43].

According to the TPB, entrepreneurial intention can be anticipated from three main constructs: attitudes (commonly used to refer to the degree to which an individual sees the attractiveness of the behavior in question), subjective norms (corresponding to the perceived social pressure to perform a behavior, whether by family, friends, or behavioral models of other influential people), and perceived behavioral control (referring to self-assessment of one's skills and competences to carry out entrepreneurial actions [44–46]).

In the EEM model, there are three components considered to be crucial for entrepreneurial intent: perceived desirability, perceived viability, and propensity to act. The perceived desirability is related to the evaluation of the attractiveness of the new business to be undertaken. The perceived viability is associated with the person's perception of the feasibility of creating a new business. Finally, the propensity to act involves the evaluation of current opportunities [45,47].

Regarding the IEI model, its development was based on the TPB. According to this model, the intention starts as a response to the interaction between personal factors (previous knowledge, personality characteristics, capacity), and contextual factors (social variables, political and economic) [48].

As for the model developed by Autio, H. Keeley, Klofsten, G. C. Parker and Hay [43], entrepreneurial intention is based on a context of choosing a future career, where the main reference focuses on the personal history of an entrepreneur who will function as a reference for the potential entrepreneur. This is the perception that the entrepreneur and its history will be a stimulus to the image of entrepreneurship, also influencing the business conviction and the variables that represent the social context of a potential entrepreneur [49].

Thus, certain items of analysis were considered to be relevant in the determination of these entrepreneurial intentions, these include: personality traits; psychological traits; social, economic, political, environmental, or demographic contexts; family background factor; parents' employment status; and occupational status. Several studies relate this issue to the effective implementation of entrepreneurial practices [38,44,50–54]. It is possible to identify the prevalence of a combination of internal factors, such as personality traits, behavioral attitude, self-efficacy, etc., with external factors such as social norms, behavioral models, perceived opportunities, or other contextual factors, such as economic and environmental factors [38,53,54].

With a greater or lesser prevalence of these internal or external factors in the propensity of the entrepreneurial attitude, it is possible to find in the literature some authors who affirm

that students' perceptions about entrepreneurship are changing, largely motivated by the contribution of higher education institutions (HEIs), which are increasingly structuring training on entrepreneurship and giving credit to those qualifications [55]. This stake does not arise from isolation, since governments and policy makers also understand, in an increasingly affirmative way, that entrepreneurship education is considered a crucial method for resolving economic stagnation and decline, combating unemployment, and increasing innovation [32].

Entrepreneurship is therefore understood as an essential driver for job creation, innovation, and sustainability in different countries, whereby higher education students are seen as a promising source of entrepreneurs. Aware of this reality, governments around the world tend to build entrepreneurial ecosystems through the implementation of policies, financial support, promotion of education for entrepreneurship, and the construction of an atmosphere to encourage university students to start and develop a business [56].

However, with the COVID-19 pandemic creating new social and economic contexts all over the world, the challenges that arise from the entrepreneurial intention may be of a different order. Events, such as wars, natural disasters, terrorist attacks, or even pandemics, have the potential to influence the expectations and perceptions of an entire population and are generally associated with a decrease in investment and the gross domestic product since they lead to uncertain social, economic, and political scenarios [57]. Although the literature on processes that indulge entrepreneurship, and factors related to the intention to start a business is abundant, it has not focused enough on what happens to the intention in situations of uncertainty, catastrophes, and pandemics [1]. Additionally, according to these authors, the perception of the pandemic itself can influence the entrepreneurial intentions of individuals through a subjective perception of danger, blocking positive behaviors and frustrating the satisfaction of needs. Among the few investigations that address entrepreneurial intent in the context of dangerous situations, there are some studies related to war scenarios [58,59], terrorism contexts [60], and natural disasters [61]. However, there is currently little empirical evidence to analyze the entrepreneurial intention within a pandemic situation.

Given this new type of social and economic normality, and taking into account the efforts of the society, political power, and HEIs to promote entrepreneurial intent amongst the student community of higher education, the question of how the COVID-19 pandemic is influencing is pertinent. Therefore, according to this framework and the objectives of the current research, we present the following research hypotheses:

Main hypothesis:

**Hypothesis 0 (H0).** *There are no differences in the average response obtained in the questionnaires before and during the pandemic.*

Alternative hypotheses:

**Hypothesis 1 (H1).** *During the pandemic, the entrepreneurial activity in education is higher than before the pandemic.*

**Hypothesis 2a (H2a).** *Before the pandemic, higher education students had a preference for being entrepreneurs.*

**Hypothesis 2b (H2b).** *During the pandemic, higher education students preferred to be employed.*

**Hypothesis 3 (H3).** *During the pandemic, the values that society places on entrepreneurship increased.*

**Hypothesis 4 (H4).** *During the pandemic, higher education students considered having more entrepreneurial abilities/skill sets than before the pandemic.*

### 3. Data and Methodology

This research uses a quantitative methodology. This type of methodology is the most used in studies carried out on entrepreneurship [62] as it allows for the collection of data samples, the validation of theories and relationships between the collected variables, generalizing the results obtained, and replication for different samples [63,64].

Two samples were collected through questionnaires taken by university students before and during the COVID-19 pandemic. The first sample (sample 1) corresponds to the period before COVID-19, with 596 valid responses having been collected between April 2017 and October 2019, while the second sample (sample 2), with 518 valid responses, was collected during the pandemic period, between June and December 2020. The sample is of a convenient type, as the questionnaire was posted on the social networks Twitter and Facebook to collect a substantial number of responses in due time. The questionnaire is based on the model applied by Liñán, et al. [65] and Lopes, Teixeira Sergio, Ferreira João, Silveira, Farinha, and Lussuamo [32].

This questionnaire encompasses five groups of questions: (1) sociodemographic characteristics; (2) group of questions A assesses the propensity of the respondents' entrepreneurial activity; (3) group of questions B assesses the attractiveness of the entrepreneurial activity (advantages and disadvantages such as economic, personal, social recognition, job stability, etc.); (4) group of questions C is related to the measurement of the perception of the values that society places on entrepreneurship; and (5) group of questions D assesses the respondents' business skills. All replies to questions in groups A, B, C, and D were measured using a seven-point Likert scale. Questions from groups A and C use an agreement scale, where, 1—strongly disagree and 7—strongly agree; the group of questions B, use an attractiveness scale, where, 1—not at all attractive and 7—extremely attractive, and the group of questions D, use an aptitude scale where, 1—without the aptitude and 7—total aptitude. The same data collection procedure was applied to both samples of university students.

As the questionnaires of samples 1 and 2 have the same questions but were collected at different times, the objective is to compare the entrepreneurial intention of the respondents before and during the COVID-19 pandemic. To achieve this objective, both samples were joined into one applying the paired sample t-test method with a 95% confidence level and using SPSS software. This method, also called t-test of a dependent sample, is a statistical procedure used to compare the differences between databases with the same observations, but collected at different times. It evaluates whether the average difference between two sets of observations is zero, with each question being measured twice and resulting in pairs of observations [66,67]. As with many statistical procedures, the paired sample t-test has two competing hypotheses, the null hypothesis (H0) and the alternative hypothesis (H1). The null hypothesis assumes that the true average difference between paired samples is zero. Under this model, all observable differences are explained by random variations. On the other hand, the alternative hypothesis assumes that the real difference in terms of averages between paired samples is not equal to zero. The alternative hypothesis can take one of several forms, depending on the expected result and the null hypothesis remains the same for each type of alternative hypothesis. The paired sample t-test hypotheses [66,67] are formally defined as follows:

- The null hypothesis (H0) assumes that the true average difference is equal to zero;
- The two-tailed alternative hypothesis (H1) assumes that the true mean difference is not equal to zero;
- The alternative hypothesis of the upper tail (H1) assumes that the true mean difference is greater than zero;
- The alternative lower-tail hypothesis (H1) assumes that the true mean difference is less than zero.

In such a manner, and as the questions asked to the respondents were the same, the paired sample t-test was used to test the significant differences between the responses to the questionnaires before and during the pandemic. The assumptions for the application

of the paired sample t-test were verified: (1) the dependent variable is measured by a continuous scale (1 to 7); (2) the observations are independent of each other; (3) there are no significant outliers in the differences between the two samples; and (4) the distribution of the dependent variable between the two samples has an approximately normal distribution. To verify the assumptions (3) and (4), The Kolmogorov–Smirnov test and the Shapiro–Wilk’s W test in SPSS were applied.

#### 4. Results Presentation and Discussion

The presentation of the results starts with the sociodemographic characteristics of the students who compose the collected samples, according to the context described previously (Table 1).

**Table 1.** Sociodemographic characteristics.

	Sample 1	Sample 2
Observations (N)	596	518
<b>Age (years)</b>		
Minimum	18	17
Maximum	68	60
Average	29.40	23.30
<b>Gender</b>		
Male	38.30%	29.90%
Female	61.70%	70.10%
<b>Place of residence</b>		
Portugal Mainland	72.40%	98.99%
Azores	14.80%	0.34%
Madeira	12.80%	0.67%
<b>Education level</b>		
Undergraduate	55.00%	71.30%
Master	31.70%	10.90%
Doctorate	5.50%	0.70%
Other	7.80%	17.10%
<b>Employment experience</b>		
Yes	72.50%	64.70%
No	27.50%	35.30%
<b>Self-employed or SME owner</b>		
Yes	13.30%	7.10%
No	86.70%	92.90%

Of the respondents who compose sample 1, 61.7% are women and 38.3% are men, aged between 18 and 68 years old, with an average age of 29.4 years. In terms of residence, 69.7% of the students reside in Portugal Mainland, 14.8% in the Azores archipelago, and 12.8% in Madeira island. In terms of education, 55% of respondents are studying or already have an undergraduate degree and 31.7% are studying or already have a master’s degree. Of the respondents, 72.5% already have job experience and only 13.3% were self-employed or owners of a small and medium-sized company. In sample 2, 70.1% are women and 29.9% are men, with a minimum age of 17 years and a maximum age of 60 years, with an average age of 23.3 years. Regarding residence, 84.5% are students residing in Portugal Mainland, 0.3% residing in the Azores archipelago, and 0.7% in Madeira. In terms of education, 71.3% of respondents are studying or already have an undergraduate degree and 10.9% are studying or already have a master’s degree. Of the respondents, 64.7% already have job experience and 7.1% were self-employed or owners of a small or medium-sized company. Despite the difference in the average age of the respondents of around 6 years, they met

the requirements imposed for this research, which is being higher education students. In Portugal in 2020, 396,909 students were enrolled in higher education, of which 54.10% were women and 45.90% men (PRODATA, 2021). This difference in the number of students enrolled by gender has conditioned the majority of the responses in our questionnaire, as the majority were female students.

As previously mentioned, to compare the differences between the observations of samples 1 and 2, the paired sample t-test method was applied, obtaining the statistical results described in Tables 2–4, for a degree of confidence of 95%. Thus, in Table 2, the application of the paired sample t-test method to the group of questions A regarding the entrepreneurial activity of the respondents is found.

**Table 2.** Statistics on the application of the paired sample t-test method to group A questions.

	Variable Pairs	Average	N	Standard Deviation	Standard Mean Error	Paired Differences	
						t	Sig.*
Pair 1	A01.—Starting a company and keeping it viable would be easy for me. COVA01.—Starting a company and keeping it viable would be easy for me	3.61 vs. 3.98	518	1.520 vs. 1.359	0.067 vs. 0.60	−4.078	0.000
Pair 2	A02.—A career as an entrepreneur is totally uninteresting to me. COVA02.—A career as an entrepreneur is totally uninteresting to me	2.97 vs. 2.39	518	1.892 vs. 1.596	0.083 vs. 0.070	5.307	0.000
Pair 3	A03.—My friends would approve my decision to start a business. COVA03.—My friends would approve my decision to start a business	5.30 vs. 5.91	518	1.485 vs. 1.246	0.065 vs. 0.055	−7.143	0.000
Pair 4	A04.—I am ready to do anything to be an entrepreneur. COVA04.—I am ready to do anything to be an entrepreneur	3.94 vs. 4.60	518	1.753 vs. 1.586	0.077 vs. 0.070	−6.192	0.000
Pair 5	A05.—I believe that I would be completely unable to start a business. COVA05.—I believe that I would be completely unable to start a business	2.42 vs. 2.35	518	1.641 vs. 1.484	0.072 vs. 0.065	0.770	0.442
Pair 6	A06.—I will make every effort to start and run my own business. COVA06.—I will make every effort to start and run my own business	4.57 vs. 5.29	518	1.876 vs. 1.600	0.082 vs. 0.070	−6.760	0.000
Pair 7	A07.—I am able to control the process of creating a new business. COVA07.—I am able to control the process of creating a new business	4.50 vs. 4.74	518	1.623 vs. 1.377	0.071 vs. 0.061	−2.419	0.016
Pair 8	A08.—My closest family would approve my decision to start a business. COVA08.—My closest family would approve my decision to start a business	5.46 vs. 5.93	518	1.580 vs. 1.308	0.069 vs. 0.057	−5.083	0.000
Pair 9	A09.—I have serious doubts about starting my own business. COVA09.—I have serious doubts about starting my own business	4.00 vs. 4.06	518	1.865 vs. 1.628	0.082 vs. 0.072	−0.647	0.518

Table 2. Cont.

						Paired Differences	
	Variable Pairs	Average	N	Standard Deviation	Standard Mean Error	t	Sig.*
Pair 10	A10.—If I had the opportunity and the resources, I would love to start a business. COVA10.—If I had the opportunity and the resources, I would love to start a business	5.51 vs. 5.99	518	1.745 vs. 1.368	0.077 vs. 0.060	−4.800	0.000
Pair 11	A11.—My colleagues would approve my decision to start a business. COVA11.—My colleagues would approve my decision to start a business	5.42 vs. 5.86	518	1.433 vs. 1.239	0.063 vs. 0.054	−5.308	0.000
Pair 12	A12.—Among various options, I prefer to be anything but an entrepreneur. COVA12.—Among various options, I prefer to be anything but an entrepreneur	2.85 vs. 2.48	518	1.7662 vs. 1.486	0.078 vs. 0.065	3.751	0.000
Pair 13	A13.—I am determined to create an enterprise in the future. COVA13.—I am determined to create an enterprise in the future	4.19 vs. 4.76	518	1.748 vs. 1.608	0.077 vs. 0.071	−5.470	0.000
Pair 14	A14.—If I try to start a business, I would have a high chance of being successful. COVA14.—If I try to start a business, I would have a high chance of being successful	4.58 vs. 4.73	518	1.472 vs. 1.224	0.065 vs. 0.054	−1.648	0.100
Pair 15	A15.—Being an entrepreneur would give me great satisfaction - COVA15.—Being an entrepreneur would give me great satisfaction	4.74 vs. 5.45	518	1.798 vs. 1.526	0.0789 vs. 0.067	−6.800	0.000
Pair 16	A16.—It would be very difficult for me to develop a business idea. COVA16.—It would be very difficult for me to develop a business idea	3.23 vs. 3.61	518	1.716 vs. 1.589	0.075 vs. 0.070	−3.543	0.000
Pair 17	A17.—My professional goal is to be an entrepreneur. COVA17.—My professional goal is to be an entrepreneur	3.41 vs. 4.13	518	1.859 vs. 1.773	0.082 vs. 0.078	−6.292	0.000
Pair 18	A18.—Being an entrepreneur implies more advantages than disadvantages for me. COVA18.—Being an entrepreneur implies more advantages than disadvantages for me	3.95 vs. 4.63	518	1.605 vs. 1.486	0.071 vs. 0.065	−6.918	0.000
Pair 19	A19.—I have a very low intention to start a business. COVA19.—I have a very low intention to start a business	3.85 vs. 3.28	518	2.037 vs. 1.849	0.089 vs. 0.081	4.713	0.000
Pair 20	A20.—I know all about the practical details needed to start a business. COVA20.—I know all about the practical details needed to start a business	2.95 vs. 2.93	518	1.776 vs. 1.513	0.078 vs. 0.066	0.111	0.912

Note: \* Sig (2 extremities).



**Table 3.** Statistics on the application of the paired sample t-test method to group B and C questions.

Variable Pairs		Average	N	Standard Deviation	Standard Mean Error	Paired Differences	
						t	Sig.*
Pair 1	B1.—Employee. OVB1—Employee	4.29 vs. 4.14	518	1.624 vs. 1.534	0.071 vs. 0.067	1.501	0.134
Pair 2	B2.—Entrepreneur. COVB2.—Entrepreneur	5.05 vs. 5.63	518	1.606 vs. 1.405	0.071 vs. 0.062	−6.094	0.000
Pair 1	C1.—My closest family values business activity above other activities and careers. COVC1.—My closest family values business activity above other activities and careers	3.46 vs. 3.85	518	1.652 vs. 1.662	0.073 vs. 0.073	−3.838	0.000
Pair 2	C2.—Culture in my country is highly favorable to entrepreneurial activity. COVC2.—Culture in my country is highly favorable to entrepreneurial activity	3.43 vs. 4.06	518	1.439 vs. 1.631	0.063 vs. 0.072	−6.625	0.000
Pair 3	C3.—The role of the entrepreneur in the economy is generally undervalued in my country. COVC3.—The role of the entrepreneur in the economy is generally undervalued in my country	4.23 vs. 4.26	518	1.515 vs. 1.466	0.067 vs. 0.064	−0.379	0.705
Pair 4	C4.—My friends value business activity above other activities and careers. COVC4.—My friends value business activity above other activities and careers	3.53 vs. 3.87	518	1.465 vs. 1.498	0.064	−3.625	0.000
Pair 5	C5.—Most people in my country consider it unacceptable to be an entrepreneur. COVC5.—Most people in my country consider it unacceptable to be an entrepreneur	2.49 vs. 2.32	518	1.389 vs. 1.367	0.061 vs. 0.060	1.904	0.057
Pair 6	C6.—In my country, the entrepreneurial activity is considered valuable, despite the risks. COVC6.—In my country, the entrepreneurial activity is considered valuable, despite the risks	4.68 vs. 4.86	518	1.377 vs. 1.359	0.061 vs. 0.060	−2.170	0.030
Pair 7	C7.—My colleagues value business activity above other activities and careers. COVC7.—My colleagues value business activity above other activities and careers	3.52 vs. 3.79	518	1.458 vs. 1.534	0.064 vs. 0.067	−2.902	0.004
Pair 8	C8.—It is common to think in my country that entrepreneurs take advantage of others. COVC8. It is common to think in my country that entrepreneurs take advantage of others	4.97 vs. 4.90	518	1.435 vs. 1.443	0.0630 vs. 0.0630	0.780	0.436

Note: \* Sig (2 extremities).

**Table 4.** Statistics on the application of the paired sample t-test method to group D questions.

Variable Pairs		Average	N	Standard Deviation	Standard Mean Error	Paired Differences	
						t	Sig.
Pair 1	D1.—Opportunity recognition. COVID1.—Opportunity recognition	4.78 vs. 5.01	518	1.350 vs. 1.210	0.059 vs. 0.053	−2.700	0.007
Pair 2	D2.—Creativity. COVID2.—Creativity	5.01 vs. 5.03	518	1.470 vs. 1.304	0.065 vs. 0.057	−0.254	0.800
Pair 3	D3.—Problem solving skills. COVID3.—Problem solving skills	5.43 vs. 5.35	518	1.1478 vs. 1.176	0.050 vs. 0.052	1.181	0.238
Pair 4	D4.—Leadership and communication skills. COVID4.—Leadership and communication skills	5.31 vs. 5.28	518	1.369 vs. 1.228	0.060 vs. 0.054	0.406	0.685
Pair 5	D5.—Development of new products and services. COVID5.—Development of new products and services	4.45 vs. 4.74	518	1.427 vs. 1.247	0.063 vs. 0.055	−3.497	0.001
Pair 6	D6.—Formation of networks and professional contacts. COVID6.—Formation of networks and professional contacts	4.53 vs. 4.71	518	1.528 vs. 1.346	0.067 vs. 0.059	−2.056	0.040

As previously mentioned, the answers obtained in the group of questions A, that assess the propensity of the respondents' entrepreneurial activity, comply with a seven-point Likert scale, being 1—strongly disagree and 7—strongly agree. Comparing the averages of the pairs of answers obtained for the group of questions A in sample 1 (before COVID-19) and sample 2 (during COVID-19), it appears that there was an increase in the mean values in all responses; that is, an increasing trend towards a higher scale of totally agree, except for questions A2, A5, A12, A19, and A20 where the average response value decreases. The questions whose average response values increased the most were A6, A15, A17, with increases of 0.75 pp in question A6 and 0.71 pp in the other two questions.

The maximum mean value obtained was in question A10 of sample 2 (5.99) and the minimum mean value was in question A5, also of sample 2 (2.35). Considering the interval between the average maximum and minimum values, the average value of the average of responses obtained increased from 4.07 in sample 1 to 4.35 in sample 2. This means that, on average, there is a greater propensity for entrepreneurial activity during the COVID-19 pandemic (H1a is confirmed). The average value of the Likert scale, 4—Neither disagree nor agree, is present in answers to questions, such as A1, A2, A5, A12, A16, A19, and A20. Questions A17 and A18 in sample 1 had an average of 3.41 and 3.95 and increased to 4.13 and 4.63, respectively.

A correction test was carried out between the pairs of questions obtained alongside a significance test for  $p < 0.05$ , the pairs of questions A5, A9, A14, and A20 are not significant for this  $p$  value.

In summary, hypothesis 1 confirms that the average propensity for entrepreneurial activity amongst higher education students is greater during the COVID-19 pandemic period than before. The questions whose average response increased the most were: "I will make every effort to start and manage my own business" (A6), with an increase of 0.75pp; and "being an entrepreneur would give me great satisfaction" (A15) and "my professional goal is to be an entrepreneur" (A17), both with an increase of 0.71pp. To be an entrepreneur, an individual must be motivated and able to take risks, accomplish something, be an innovative and creative thinker, and have a locus of control [68].

According to Obraztsova and Chepurenko [69], the entrepreneurial activity of the population decreases in situations of macroeconomic changes (as has occurred due to the COVID-19 pandemic), which is not in line with the present research. In general, the pandemic can harm entrepreneurship; however, the current results are not so negative as initially predicted. Entrepreneurship is expected to increase exponentially after the pandemic. Entrepreneurial activity with high growth potential can be encouraged, as long as the recovery is fast and there is sufficient support [70]. On the other hand, in times of crisis, individual characteristics are the most relevant predictor of entrepreneurial activity [71]. In recent years, students have generally expressed a greater willingness and intention to become entrepreneurs [72].

Table 3 shows the application of the paired sample t-test method to the groups of questions B and C regarding the attractiveness of the respondents' entrepreneurial activity and the perception of the values that society places on entrepreneurship, respectively.

Concerning the group of questions B, that assesses the attractiveness of the entrepreneurial activity (advantages and disadvantages such as economic, personal, social recognition, job stability, etc.), the seven-point Likert scale is also used, but at the level of attractiveness, being 1—not at all attractive and 7—extremely attractive. Comparing the averages of the pairs of answers obtained for the group of questions B in samples 1 and 2, it was concluded that, on average, the respondents during COVID-19 are less attracted to being employed (question B1, with the average response decreasing from 4.29 to 4.14) and more attracted to being entrepreneurs (question B1, with the average response increasing from 5.05 to 5.63, an increase of 0.57 pp), rejecting the Hypotheses 2 (a and b). The significance test of  $p < 0.05$  demonstrated that the pair of answers to question B1 before and during COVID-19 is not significant for this  $p$  value.

Questions in group C measure the perception of the values that society places on entrepreneurship and uses the Likert scale used for question group A. Comparing the averages of the pairs of answers obtained for this group of questions in samples 1 and 2, it was concluded that, on average, there is a growing agreement with the values that society places on entrepreneurship. That is, there is an increasing trend towards the higher end of the scale for the answers obtained in sample 2 (during COVID-19), except for questions C5 and C8 whose average response decreased slightly from 2.50 and 4.97 (before COVID-19) to 2.32 and 4.90 (during COVID-19), respectively. The biggest increase in the average of responses obtained was registered in the answer to question C2 (plus 0.63 pp). The maximum mean value obtained was in question C8 of sample 2 (4.97) and the minimum mean value was in question C5 of sample 1 (2.32). Considering this interval between the maximum and minimum value, the average value of the responses obtained increased from 3.79 in sample 1 to 3.99 in sample 2; that is, there is a greater perception of the values of entrepreneurship by society during COVID-19 on average, thus confirming H3. With the application of the significance test of  $p < 0.05$ , it was concluded that the pair of answers to questions C3 and C8 before and during COVID-19 are not significant for this  $p$  value.

In summary, regarding the group of questions B that assesses the attractiveness of entrepreneurial activity, the results show that, before the pandemic, higher education students had a preference for being employed (H2 a is rejected) and, during the pandemic, students in higher education had a preference for being entrepreneurs (H2 b is rejected), and the answer B1—"Employee" is not statistically significant. Although we cannot verify whether students prefer to be entrepreneurs or employees in a pandemic time, students who like challenges, are determined, and have autonomy tend to want to be entrepreneurs [68]. Potential entrepreneurs have a more critical view of companies' commitment [73]. On the other hand, students who favor the number of pre-established hours of work, job security, and the guarantee of a salary, prefer to be employed [74]. Students whose parents are employees in organizations are more likely to be employed [68]. However, as students gain more experience in the labor market, the desire to become employers tends to increase [73].

As for the group of questions C that measures the perception of the values that society places on entrepreneurship, there is, on average, a greater perception of the values of entrepreneurship by society during COVID-19, thus confirming hypothesis 3 (H3) that, during the pandemic, the values that society places on entrepreneurship increased. The biggest increase was seen in the answers to question C2—"Culture in my country is highly favorable to entrepreneurial activity", with an increase of 0.63 pp in the average response before and during the pandemic. Our results are in line with the ones by Van Trang, Do and Loan [74] that indicated that "social status", self-respect, and culture [75,76] contribute to increased entrepreneurial intent. Culture in turn increases motivation, which in turn increases entrepreneurial intent [44]. Students living with family members, in general, negatively affect entrepreneurial intent. On the other hand, universities have an important role in entrepreneurial intention; namely, if the faculty has experience in working in the industry, it will positively affect the entrepreneurial intention and it negatively affects the intention of students to become civil servants [77].

Table 4 shows the application of the paired sample t-test method to the group of questions D related to the respondents' business skills.

Questions in group D measure professional skills and use the aptitude scale (1—no aptitude to 7—total aptitude). Comparing the averages of the pairs of answers obtained for this group of questions in samples 1 and 2, it was concluded that there is a greater entrepreneurial aptitude, in average terms, in sample 2 (during COVID-19), except for questions D3 and D4, whose average decreased from 5.43 and 5.31 to 5.35 and 5.28, respectively. The maximum mean value obtained was in question D3 of sample 1 (5.43) and the minimum mean value in question D5 of sample 1 (4.45). The greatest increases in the average responses obtained were recorded in questions D1 (plus 0.21 pp), D5 (plus 0.30 pp) and D6 (plus 0.2 pp). Considering this interval between the maximum and minimum value, the average value of the average of answers obtained increased from 4.9 in sample 1 to 5.02

in sample 2, that is, the respondents have a greater entrepreneurial aptitude during the period of COVID-19, confirming H4. With the application of the significance test  $p < 0.05$ , it was concluded that the pair of answers to questions D2, D3, and D4 before and during COVID-19 are not significant for this  $p$  value.

In summary, in the questions of group D that measures entrepreneurial abilities/skill sets, there was an increase in the average response of 0.12 pp between before and during the pandemic, this means that Hypothesis 4 is confirmed, corroborating that students in higher education during the pandemic considered themselves as having more entrepreneurial abilities/skill sets than before the pandemic. The biggest growth in response averages was found in questions D1—"Opportunity recognition" with an increase of 0.21 pp and in question D5—"Development of new products and services" with an increase of 0.30 pp. Our results are different from those specified by Eresia-Eke and Gunda [75], since the authors indicated that they found no association between entrepreneurial skills (they did not consider the pandemic factor) and entrepreneurial intention. Having the ability to raise resources is the key to entrepreneurial intent [78]. Many students lack creative skills, confidence, and a business idea, which negatively affects entrepreneurial intent [79]. Education in entrepreneurship and innovation is not recognized, since students are unable to clearly understand what entrepreneurship and innovation are. The pressure that is placed on university students about entrepreneurship and innovation decreases entrepreneurial intention [80].

In general terms, in all groups of responses, there was an increase in the average responses obtained during the pandemic (sample 2), this means that, when comparing the period during the pandemic with the previous period in average terms, it is possible to perceive a greater propensity for entrepreneurial activity within the respondents, attractiveness for the respondents to be entrepreneurs, a greater perception of the values that society places on entrepreneurship, and greater entrepreneurial skills amongst respondents. Socio-economic factors (i.e., salary, economic development, employment) have an impact on the formation of entrepreneurial intentions in higher education students [81]. Table 5 exhibits a summary of the support and rejection of the hypotheses.

**Table 5.** Summary of Hypothesis Tests.

Hypothesis	Results
H0—There are no differences in the average response obtained in the questionnaires before and during the pandemic.	Not Supported
H1—During the pandemic, the entrepreneurial activity in education is higher than before the pandemic.	Supported
H2a—Before the pandemic, higher education students had a preference for being entrepreneurs.	Not Supported
H2b—During the pandemic, higher education students preferred to be employed.	Not Supported
H3—During the pandemic, the values that society places on entrepreneurship increased.	Supported
H4—During the pandemic, higher education students considered having more entrepreneurial abilities/skill sets than before the pandemic.	Supported

## 5. Conclusions

The present research's main objective is to compare the entrepreneurial intention of university students in two different periods, before and during the COVID-19 pandemic. This means that the societal changes in lifestyle brought about by the pandemic, could affect, either positively or negatively, the entrepreneurial intention of the target audience of this study. Several dimensions were analyzed, such as the availability of this target audience to undertake an activity at their own risk, the preference for a future while

employed by others, their perception of the values that society places on entrepreneurship, and the necessary entrepreneurial abilities/skillsets for such purpose.

The analysis of the obtained results, and the hypotheses presented for the deployment of the investigation, allowed us to comprehend that the average propensity for entrepreneurial activity in higher education students is greater during the pandemic than before it. Generally, higher education students have a preference for being employed; this opinion changed during the pandemic, as these students begin to prefer to be entrepreneurs in this new environment, which shows a greater perception of the values of entrepreneurship by society during the COVID-19 pandemic, and, finally, during the pandemic, higher education students consider themselves to have more entrepreneurial abilities/skill sets than before the pandemic.

In this sense, the findings of the present research are in the opposite direction to other studies, such as the one by Obratzsova and Chepurensko [69] which states that the entrepreneurial activity of the population decreases in situations of aggressive macroeconomic changes, such as those resulting from the COVID-19 pandemic. In general, a pandemic can harm entrepreneurship. Nevertheless, the obtained results show that the consequences are not so negative as initially predicted. Our results are an important contribution to the theory since the perceived dynamics in the socio-economic context, specifically the one we live in today, can raise new lines of research to correlate the perception of higher levels of environmental difficulty for the implementation of entrepreneurial initiatives, with contrary dynamics to the ones initially expected. Instead of generating sensations such as retraction, fear, doubt, or uncertainty, the potential entrepreneurs targeted by this study seem to increasingly perceive the current situation as a challenge or an opportunity. As such, more studies should be performed in this area to consolidate this trend as well as the coverage of other target audiences.

The present research adds practical contributions as the findings can assist universities to develop actions that promote an even stronger environment that fosters entrepreneurial activity and mentor potential entrepreneurs to take risks, have a locus of control over their professional activities, and be creative and innovative thinkers. Other civil society organizations or public institutions will also be able to regulate their strategies to accompany the growing alignment of the values of entrepreneurship between those who practice it and society in general, as well as the growing awareness of the real capacities and qualifications of potential entrepreneurs to that they are effective.

The originality of the study is focused on the comparative methodology between two different environmental contexts, whether in social, economic, or any other dimension that the COVID-19 pandemic has affected, with further repercussions on people's lifestyles and throughout the world. The data collection strategy allowed us to perceive the evolution of the perception of the same problem studied, with the same target audience, but in very different contexts, which enriches the contributions of this work to theory and practice.

Nonetheless, it should be noted that there are limitations that can be overcome with the contribution of future studies. The limitation of the current research is related to exclusivity within higher education students; this can be overcome with other studies covering other target audiences. In the case of data collected from Portuguese students, with their specificities of openness to the theme of entrepreneurship, in a context more or less favorable to entrepreneurial action, it can offer conclusions that are not confirmed in other geographical and cultural contexts, which is why we suggest studies in other social, demographic, political, or geographic contexts.

Finally, this research may be continued to reinforce the intentions revealed within this study, expose the environmental forces mobilized to support the increase in the entrepreneurial initiative, or present the ones which may have possibly failed, assuring that the availability now demonstrated will be followed up in practice.

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