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## **Grupo APOE**

**Grupo de Estudo sobre Administração  
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***Opportunities to Improve Entrepreneurship Education in Higher Education:  
Addressing Brazilian Challenges***

**(Oportunidades para se Aperfeiçoar a Educação em Empreendedorismo no Ensino Superior:  
Desafios Brasileiros)**

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# OPPORTUNITIES TO IMPROVE ENTREPRENEURSHIP EDUCATION IN HIGHER EDUCATION: ADDRESSING BRAZILIAN CHALLENGES

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## Abstract

It is important to pursue research that can help guide the improvement of entrepreneurship education. The objective of this paper is to identify challenges and opportunities for enhancing Brazilian higher education in entrepreneurship considering the demand for courses and activities in entrepreneurship and the entrepreneurial intentions of students. The study was a survey complemented by a detailed review of the literature. The survey questionnaire contains 16 sets of multiple choice questions employing scales of five or seven points. It was made available on a website and was answered online by 29,186 students of 37 Brazilian colleges and universities. Results were compared with a similar international survey, named GUESSS ([www.guesssurvey.org](http://www.guesssurvey.org)). Comparing to the international sample, Brazilian students are significantly more motivated to take courses and activities in entrepreneurship. The conclusion offers recommendations for improving entrepreneurship education in colleges and universities and suggests future directions for research.

**Keywords:** entrepreneurship education, demand, entrepreneurial intention, opportunities, challenges.

## Introduction

Given sweeping changes in the global economy and associated changes in the nature of the workplace, it is no longer sufficient for institutions of higher education simply to train students to occupy traditional employment roles. Rather, entrepreneurial capabilities are becoming much more important and sought after. After all, many contemporary college students want to have their own businesses in the future, regardless of their major field of study. The international GUESSS study, covering 26 countries and just over 93,000 college students, shows that approximately 10% of students surveyed want to found their own businesses immediately after graduating, and 30% hope to do so within five years of graduation (Sieger, Fueglistaller and Zellweger, 2011).

According to Alvarez and Busenitz (2004), if universities do not offer entrepreneurship education, students will be less likely to become entrepreneurs. In fact, Peterman and Kennedy (2003) found evidence that students' entrepreneurial experiences during their education awaken or strengthen their desire to create new businesses. If universities promote entrepreneurship education and engage in developing entrepreneurial potential (Vyakarnam, 2005) and the different skills related to it (Kirby, 2005; Gibb, 2006), they can raise consciousness and interest in exploring alternative forms of work and entrepreneurial activities (Galloway et al., 2005).

Even if students do not plan on having their own businesses, they can benefit from the development of entrepreneurial knowledge and skills. Entrepreneurship education not only

helps students learn to run a business but, more importantly, helps develop creative thinking, innovative capacity, and improvement in self-esteem and responsibility (Heinonen, Kovalainen and Pukkinen, 2006), which makes it highly desirable.

The importance of entrepreneurship education has even been recognized by the United Nations Conference on Trade and Development as an important item in the promotion of the development of countries (UNCTAD Secretariat, 2011). However, the risk of promoting entrepreneurship training and activities that are inconsistent with student needs, and thus ultimately fruitless, is great. Thus, it is important to pursue research that can help guide the improvement of entrepreneurship education.

The objective of this paper is to identify challenges and opportunities for enhancing entrepreneurship education in Brazilian universities and colleges considering the demand for courses and activities in entrepreneurship and the entrepreneurial intentions of students. The conclusion offers recommendations for improving entrepreneurship education in colleges and universities and suggests future directions for research.

### **Demand for More Entrepreneurial Education Programs**

There are very few studies based on what improvements in entrepreneurship education offerings are required from a student perspective. It is much more common to find studies in which the sources of information and evaluation of entrepreneurship courses and activities offered are teachers or specialists. Here are some examples.

Lüthje and Nikolaus (2002) compared 312 Business Administration undergraduate students from a large public university in Germany who were not exposed to entrepreneurship education with 143 undergraduate and graduate students (from a random selection of 490 students) from the MIT Sloan School of Management. Sloan students evaluated their school's overall environment more favorably than did the Germans. They considered the university environment more inspiring and conducive to entrepreneurial ideas, and they indicated that entrepreneurship was favored by many environmental aspects, such as contact with cutting-edge technologies, innovative ideas, and entrepreneurs whom the students can take as inspiring models.

Sloan students indicated much more strongly that lectures and classes favored development of entrepreneurship-related knowledge and skills and that the school favored integration among students from different fields. Students also evaluated Sloan better at promoting and supporting entrepreneurs in the steps prior to beginning a business. In addition, they considered support for entrepreneurship with courses and training was strong at Sloan in the first half of schooling – and it intensified in the second half. The German students, on the other hand, did not see that.

Lüthje and Nikolaus (2002) thus concluded that German universities could use the entrepreneurship programs at Sloan and other U.S. universities known for entrepreneurship education as models for improving their approach.

Gasse et al. (2006) compared the intentions, interests, and percentage of students who were entrepreneurs among 656 Administration and Engineering learners in Quebec (Canada), Tunisia, and France. 72% were undergraduates, 25% at the master's level and almost 2% at the doctorate level. Most (51.5%) studied Administration. They were asked about their intentions over the short, medium, and long term (during studies, soon after graduation, and some time after graduation) and also about any entrepreneurial activities already begun within or outside the university.

Between 76% and 88% of students from the different countries stated that more practical and participatory academic activities such as projects, work experiences, and simulations helped

in preparing them to be entrepreneurs. However, in the answers on how much their courses on entrepreneurship had helped to develop entrepreneurial spirit, the percentages decreased considerably: 36.4% among Tunisians, 33.5% among Canadians, and 23.2% among the French.

Having a favorable environment for innovation at university and in companies was a very important factor: 40% for French students, 52% for Tunisian students, and 51% for Canadian students. The existence of a support system for entrepreneurial activities also stood out as a factor: 18% among Tunisians, 31% among the French and 36% among Canadians. Nearly a third of Tunisian students believed that the lack of help and support was a real obstacle to the development of entrepreneurship.

Therefore, given that many students intend to be entrepreneurs or work autonomously soon after graduation, inductive reasoning indicates that colleges and universities wishing to encourage entrepreneurship can be most effective if they nurture an environment conducive to innovation and offer support services for entrepreneurship.

Later, Gasse and Tremblay (2011) compared the results of a 2,053-student-sample study, also with Management and Engineering students, from seven different countries: Canada (Quebec Province), Tunisia, France, Romania, England, Colombia, and Germany. Entrepreneurial intentions in this sample were comparatively higher than those observed in two other studies – one developed by Filion et. al. (2002, apud Gasse and Tremblay, 2011) and the previous one by Gasse et al. (2006). One reason is that entrepreneurship in the 2011 study was understood as covering the activities of opening a businesses and also self-employment.

The contribution of the general system of education for entrepreneurship development was only highlighted by the students from Colombia and Germany (57% and 61% respectively). However, for the contribution of academic activities in general to encourage entrepreneurship, all groups indicated that projects, initiatives, simulations, internships, and work experiences helped (between 79% and 95%). When asked specifically about the contribution of entrepreneurship courses offered for the development of entrepreneurial spirit, the numbers declined substantially to between 20% and 40%. Colombian students were the exception: 82% responded that the courses stimulated and helped them to develop entrepreneurial spirit.

Thus, the general result shows little perceived contribution of courses on entrepreneurship and strong perceived usefulness in entrepreneurial preparation from activities requiring student participation and practical activities.

Drost agrees with Zhao, Seibert and Hills (2006, apud Drost, 2010) that the best way to measure this would be via student perceptions on how much they have learned through these activities on the four basic entrepreneurial skills: new business opportunity identification, opportunity evaluation, business beginning, and organizational entrepreneurship. Thus, the better students evaluate the learning of these skills, the better they think their preparation to become entrepreneurs is.

In her study, Drost (2010) used a sample of 168 students at a public university in Finland with a female predominance – 62%. The results showed that self-efficacy has a mediating role in entrepreneurship education on entrepreneurial intention. Perception of learning the aforementioned four basic skills of entrepreneurship positively affected student confidence that they possessed the competencies to open their own businesses within five years. Therefore, Drost (2010) argues, entrepreneurship education has practical components – contact and exposure to entrepreneurs who serve as inspiring models, practical activities generating feedback and encouragement, and stimulation of self-confidence in the students' own abilities. For the author, entrepreneurship education should also offer assistance and support to help deal with anxiety when students are actually involved in entrepreneurial activities.

She states that practical experiences strengthen this confidence (perceived control) both for activities in the classroom and outside – in companies and in the real world. These experiences may involve internships, case studies, interactions with entrepreneurs, consulting for startups or connections with corporate entrepreneurship, etc. In short, all activities that involve practice and placing students in direct contact with entrepreneurs and models build confidence and entrepreneurial intention. Dilts et al. (1999 apud Fayolle, Benoît and Lassas-Clerc, 2006) had already identified internships and practical in-the-field training as more successful teaching modes in preparing students for entrepreneurship.

### **Entrepreneurship Education in Brazil**

Perceiving the new demands posed by changes in global and national economies, Brazilian universities and colleges have introduced and, later, expanded entrepreneurship education offerings. The “New Business” course at the *Fundação Getúlio Vargas – Escola de Administração de Empresas* (Getúlio Vargas Foundation – School of Business Administration) was created in 1981 as part of the MBA program, and in 1984 a similar undergraduate course was instituted for business majors. Other institutions have followed suit: *Universidade de São Paulo – Faculdade de Economia, Administração e Contabilidade* (University of São Paulo – College of Economics, Administration, and Accounting) as well as the *Universidade Federal do Rio Grande do Sul – Departamento de Ciência da Computação* (Rio Grande do Sul Federal University – Department of Computer Sciences) (Lopes and Mello, 2005).

Entrepreneurship education is growing. A web-based survey of 516 schools by Guerra and Grazziotin (2010) showed that 32% of public and 11.5% of private higher education institutions offered entrepreneurship courses. 44.6% of these courses were offered outside the area of Business Administration – in areas such as Computing, Engineering, Communication, Tourism, Physical Education, and Speech Therapy. Universities and colleges have increased the number of courses and activities offered in the area. Flores, Hoeltgebaum, and Silveira (2008) noted that between 2004 and 2007, course numbers increased 27.8% in post-graduate business administration programs in the nation.

Interest in entrepreneurship education has also grown. Some Brazilian institutions offer entrepreneurship centers, business incubators, and both minors and majors in entrepreneurship education. Business plan competitions are slowly increasing in number, as well as events that stimulate entrepreneurship. In addition, academic events have begun, including the *Internationalizing Entrepreneurship Education and Training Conference – IntEnt 2006*, the *Roundtable on Entrepreneurship Education (REE) Latin America* in 2007, and the *Roundtable on Entrepreneurship Education Satellite Brazil*. These conferences addressed ways of improving the quality and impact of Brazilian entrepreneurship education.

However, the GEM study *Entrepreneurship in Brazil: 2008* (Greco et. al. 2009), which developed a specific topic on education and training, provides worrying information. Based on INEP-MEC (2009), it states that there were 39,555 higher education courses in Brazil in 2008. Among these, 3,465 were in Administration and 988 in Computer Engineering, Computer Studies, and Information Systems. These four areas are usually forerunners in offering entrepreneurship courses in Brazil. Nevertheless, only 25 educational programs were specifically related to entrepreneurship and small business management. The programs were concentrated in the south and southeast regions of the country. According to the authors, these numbers indicate a modest offering of higher education entrepreneurship courses and a lack of trained teachers.

Thus, these are the first two challenges to improving entrepreneurship education in Brazil, as shown in Table 1.

Chart 1- Challenges 1 and 2

- Challenge 1: To increase the offer of higher education courses and activities in entrepreneurship.
- Challenge 2: To train more teachers in entrepreneurship education.

Additionally, the results of Greco et al. (2009) showed that among the entrepreneurs who start their own companies, 90% had never attended any course or training activity related to opening a business. 40% of the entrepreneurs who had taken any entrepreneurship education activity did so during their higher education studies. These activities were optional, not part of the core set of courses and activities required for the students.

This suggests that much still needs to be done to improve entrepreneurship education offerings in Brazil.

### **More Challenges for Improving Entrepreneurship Education in Brazil**

In 2006, the Federal Administration Council (CFA, 2006) conducted a Brazilian survey covering a sample of 10,552 Administration students, as well as teachers and businesses, which suggested new content for higher education, more in line with the market reality, to prepare students better. The main contents were: entrepreneurship development (46%), micro- and small-sized business management (23.5%), environmental management and sustainable development (23.5%), and business ethics (20%). Clearly there is a demand for entrepreneurship education, at least among students in Administration.

Oliveira, Taffo and Andrade (2010) conducted another study involving Administration students. It included 60 students concluding studies at a private university in São Paulo (62% female). 95% of students reported not having taken courses on entrepreneurship. They were asked about their career interests. For the short term, entrepreneurship emerged with 65%, as the most preferred option. 40% chose to work as employees. Regardless of career interest, 77% wanted to continue their studies. When asked about their intentions over the medium and long terms, 87% indicated a preference for becoming entrepreneurs, 28% for becoming freelance professionals, and 35% for working as employees.

When asked about their preparation for evaluating the different activities related to opening a business, they responded that they did not feel properly prepared. Only a minority said they would be truly able to open and manage a viable business. Only a little more than half rated themselves competent to design a new business. It is indirectly evident, therefore, that they perceived gaps in their education related to entrepreneurship.

In addition, when questioned about their level of knowledge of different forms of support for business creation, they showed little understanding of the different forms of training, assistance in opening a business, financial support sources, business centers, technical guidance for start-ups, or even outsource services helpful for opening businesses. There is a clear lack of information among students about the various forms of support for potential entrepreneurs (Oliveira, Taffo and Andrade, 2010).

Anjos, Fechine and Nobrega (2005) indicate that only one quarter of Administration students at the *Universidade Federal de Campina Grande* considered good or very good the level of debate on entrepreneurship at their university, while the rest assessed it as fair or poor. Students recommended changes, primarily for adopting a more practical approach of education. They pointed out the need for a more interdisciplinary perspective in this area

among the different courses, expansion and improvement of debates on the subject, and incentives and training for more teachers to work.

In their study *Empreendedorismo das Universidades Brasileiras* (Entrepreneurship at Brazilian Universities), Suedekum and Miller (2011) found that, compared to other universities in the world, the courses offered in Brazil invite fewer entrepreneurs to speak to students and do not focus on practical activities. In other words, students see neither a practical approach nor learning considering actual, specific challenges faced by entrepreneurs. Their educational activities are usually far from those experienced by entrepreneurs. Suedekum and Miller (2011) advise that the students who intend to become entrepreneurs should have more involvement with and exposure to the experience of entrepreneurs to prepare themselves better.

Entrepreneurship education in Brazil is also limited by the fact that the courses offered on entrepreneurship are essentially restricted to the development of a business plan (Degen, 2009; Guerra and Grazziotin, 2010). In light of this and of the needs described in this section, most Brazilian students suffer a lack of diversification (beyond the business plan) in the offering of courses and activities related to entrepreneurship.

Chart 2 contains a summary of the challenges present in this section.

Chart 2- Challenges 3 to 5

- Challenge 3: Greater proximity to and contact with entrepreneurs and their reality.
- Challenge 4: A more practical approach to entrepreneurship education, including information on support systems and financial aid for entrepreneurs.
- Challenge 5: Greater diversity in course and activity offerings at colleges and universities beyond business plans.

## Research Methods

This survey used the Global University Entrepreneurial Spirit Student Survey – GUESSS ([www.guesssurvey.org](http://www.guesssurvey.org)) questionnaire, translated and theoretically validated by experts on entrepreneurship and entrepreneurship education in Brazil. This questionnaire contains 16 sets of multiple choice questions employing scales of five or seven points. It was made available on a website and answered online.

As this was the first time the survey has been done in Brazil, teachers and program coordinators/directors were contacted personally by email and telephone and invited to participate. They then either solicited student participation by email or they made the link to the online questionnaire available on internet/intranet sites of their schools.

Data processing was done by frequency analysis of responses, since the sample was configured as statistically infinite (Levy and Lemeshow, 1999). Although the sample was not randomly drawn, because of its large size it is likely reasonably representative of the perceptions of Brazilian students. Both data collection and processing followed the GUESSS international standard to enable comparisons between countries and universities from one or more countries.

The survey included 37 Brazilian colleges and universities resulting in a total of 29,186 questionnaires answered. Of these, 25,867 were considered useable. The estimated total number of students who received the Internet link to answer the questionnaire was 250,000. So, the response rate was 10.3%, which exceeds the 6.3% international response rate (Sieger, Fueglistaller and Zellweger, 2011).



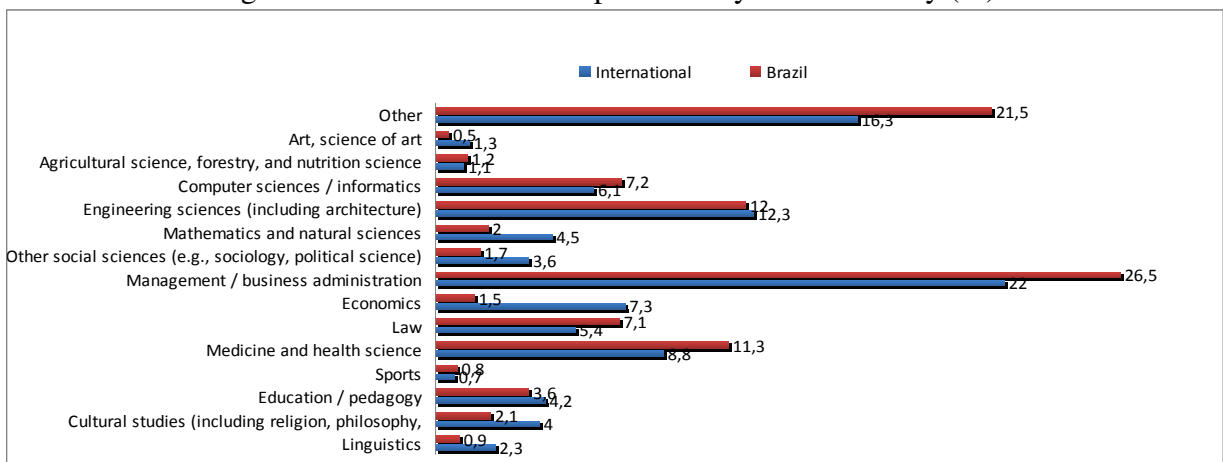
The study lies within the broader international context of GUESSS, a panel study involving 26 countries, whose students produced 93,265 responses in 2011. Due to its characteristics, the study allows comparison and benchmarking between different universities, regions, and countries. This paper’s analysis includes comparisons with the results of the international study (Sieger, Fueglistaller and Zellweger, 2011).

The following are some particularities of the Brazilian sample:

- Age: 55% of the Brazilian respondents were in the “under 25” range, in comparison to 70% for the international sample. 27.8% of the national respondents were in the “over 30” range, as opposed to 16% for their international counterparts.
- Gender: Brazilian and international samples present similar percentages and a predominance of women – 55.4% of the Brazilian respondents, which is approximately 10% more than men.
- Study level: 95% of the students were undergraduates; 1.2% M.A. students; 3.4% M.B.A. students; 0.4% Ph.D. students; and 0.4% post-doctorate students; for the international sample, the figures were 78.6%, 16.7%, 1.9%, 2.4% and 0.4%, respectively.

The respondents’ fields of study for the two samples are detailed in Figure 1.

Figure 1 - Distribution of Respondents by Field of Study (%)



The “other” category in the figure includes those students who did not define their field of study in the response.

### Future Work Intentions and Demand in Entrepreneurship Education

The questionnaire asked students which career option they expected to choose immediately after and five years after graduation. In the responses to “immediately after studies”, Brazilian students show greater preference (30.3%) for working in companies with more than 250 employees than those of the international sample (26.2%). When asked about working in micro-, small-, and medium-sized enterprises, the results for the international sample were almost double that of the Brazilian sample – 22.4% versus 11.4%. The Brazilian students expressed a greater preference for public sector employment (14.6%) compared to the international sample (10%).

Brazilian students are more attracted to entrepreneurial career options. The largest percentage difference is in creating one’s own business, with 8.4% among Brazilians and 4.6% in the

international sample. 3.0% of Brazilian students intend to acquire companies not controlled by their families, while for the international sample, the percentage drops to 1.6%. The percentage of Brazilian students who intend to maintain companies they have already founded is 3.0% versus 2.3% for the international sample.

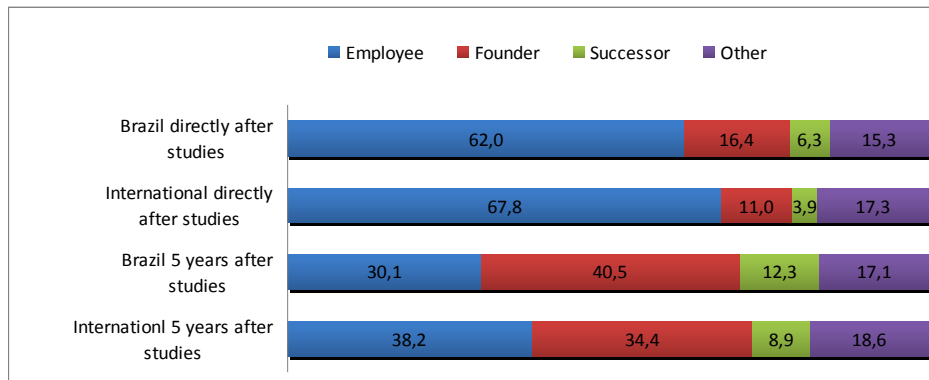
A comparison with the responses to “five years after studies” shows a significant decline in percentages for the following categories:

- Concerning students who want to work in companies with more than 250 employees, the percentages fall to 22.2% in the Brazilian sample and 11.2% in the international sample.
- For those intending to work in micro-, small-, or medium-sized enterprises, the percentages fall to 9.9% in the Brazilian sample and 15.3% in the international sample.
- The percentages concerning students who intend to work in the public sector, fall to 2.6% for the Brazilian sample and 1.4% for the international sample

These percentage drops appear to be an effect of increases in entrepreneurial intention: the intention of having one’s own business (18.7 point increase among Brazilians, and 17 point increase among international students), and the intention of acquiring a non-family business (6.3 point increase among Brazilians, and 4.4 point increase among international students). Continuing companies they have already founded shows a 0.8 point increase among Brazilians and a 1.8 point increase among international students.

Figure 2 describes the degree of change in career intentions for the transition between the “immediately after studies” and “five years after studies” periods. A sharp decline in intention to be employed in favor of one to found a company or take over a family enterprise is clear. The “other” category – which includes the answer options “other options”, “do not know yet”, and “do not have professional career” – presents a slight increase in both samples.

Figure 2 – Degree of change in career intention (%)



As seen with the percentages shown in Figure 2, entrepreneurial intention nearly doubles in the interim between the two periods. This variation is associated with a drop to almost half in the “non-founder” category areas and a small increase (up to 2%) in the “other” category.

### Student Demand

When asked about which courses and activities they had not taken or did not know if their colleges and universities offered, students were invited to express their level of interest in taking the course as shown in Table 1.

Table 1 - Demand for Courses and Activities

Type of offer	Item	Brazil		International	
		I would like it (%)	I do not need it (%)	I would like it (%)	I do not need it (%)
Courses	Entrepreneurship in general	75,4	24,6	64,0	36,0
	Business planning	81,4	18,6	65,6	34,4
	Entrepreneurial marketing	73,4	26,6	52,7	47,3
	Innovation and idea generation	85,4	14,6	69,5	30,5
	Financing entrepreneurial ventures	75,8	24,2	65,3	34,7
	Social entrepreneurship	85,4	14,6	54,3	45,7
	Technology entrepreneurship	71,5	28,5	49,5	50,5
	Family firm	60,7	39,3	42,4	57,6
Activities	Workshops/networking with experienced entrepreneurs	75,9	24,1	70,7	29,3
	Mentoring and coaching programs for entrepreneurs	70,9	29,1	64,2	35,8
	Business plan contests or workshops	73,8	26,2	59,5	40,5
	Contact point for entrepreneurial issues	80,8	19,2	67,1	32,9
	Contact platforms with potential investors	76,1	23,9	66,1	33,9

In comparison to the international sample, Brazilian students are significantly more motivated to take the courses and activities in Table 1. This is clearly shown by comparing the “I would like it” column for Brazilian students (marked in blue) with their counterparts in the international sample. These results suggest that efforts to improve offerings in Brazilian colleges and universities should emphasize the courses and support activities related to these results.

The percentages of Brazilian students who believe these courses and support activities are not necessary are low. This is encouraging and propitious for improving entrepreneurship education in Brazil.

We undertook a chi squared test of interest in entrepreneurial education courses and activities cross tabulated by gender, major, and career intentions. Raw scores were converted to percentages for ease of interpretation.

Table 2 presents the variables with their corresponding p values.

Table 2: Significant Probability Values (p value) for Cross-correlated Variables

<b>Types of offer</b>	<b>Gender</b>	<b>Study Field</b>	<b>Career choice intentions: Right after studies</b>	<b>Career choice intentions: 5 years after studies</b>
Entrepreneurship in general	<0.001	<0.001	<0.001	<0.001
Business planning	<0.001	<0.001	<0.001	<0.001
Entrepreneurial marketing	<0.001	<0.001	<0.001	<0.001
Innovation and idea generation	<0.001	<0.001	<0.001	<0.001
Financing entrepreneurial ventures	<0.001	<0.001	<0.001	<0.001
Social entrepreneurship	0.02	<0.001	<0.001	<0.001
Technology entrepreneurship	<0.001	<0.001	<0.001	<0.001
Family firm	<0.001	<0.001	<0.001	<0.001
Workshops/networking with experienced entrepreneurs	<0.001	<0.001	<0.001	<0.001
Mentoring and coaching programs for entrepreneurs	<0.001	<0.001	<0.001	<0.001
Business plan contests or workshops	<0.001	<0.001	<0.001	<0.001
Contact point for entrepreneurial issues	<0.001	<0.001	<0.001	<0.001
Contact platforms with potential investors	<0.001	<0.001	<0.001	<0.001

As seen, all p values are below 0.05, indicating that levels or groups of variables have significant differences. For this reason, the chi-square null hypothesis that respondents have similar choices or answers was rejected.

As there are significant differences between the variable groups, the surveyed response trends are given in Table 3. To simplify, only the highest percentage response for the options (i.e. the modal response) “I would like it” and “I do not need it” are given. The responses considered refer to the question of whether respondents would like to undertake the entrepreneurship-related courses and activities listed in the table. The results reflect student demand for the courses and activities.

Table 3: Response Trends – Modal Respondent Choice

Types of offer	Gender		Field of Study		Career choice intentions: directly after studies		Career choice intentions: 5 years after studies	
	I would like it	I do not need it	I would like it	I do not need it	I would like it	I do not need it	I would like it	I do not need it
Entrepreneurship in general	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in Public Service	Found One's Own Firm	Found One's Own Firm
Business planning	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in Public Service	Found One's Own Firm	in Public Service
Entrepreneurial marketing	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in a Large Firm (>250 Employees)	Found One's Own Firm	Found One's Own Firm
Innovation and idea generation	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in a Large Firm (>250 Employees)	Found One's Own Firm	Found One's Own Firm
Financing entrepreneurial ventures	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in a Large Firm (>250 Employees)	Found One's Own Firm	in Public Service
Social entrepreneurship	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in a Large Firm (>250 Employees)	Found One's Own Firm	Found One's Own Firm
Technology entrepreneurship	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in a Large Firm (>250 Employees)	Found One's Own Firm	Found One's Own Firm
Family firm	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in a Large Firm (>250 Employees)	Found One's Own Firm	Found One's Own Firm
Workshops/networking with experienced entrepreneurs	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in Public Service	Found One's Own Firm	Found One's Own Firm
Mentoring and coaching programs for entrepreneurs	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in a Large Firm (>250 Employees)	Found One's Own Firm	Found One's Own Firm
Business plan contests or workshops	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in a Large Firm (>250 Employees)	Found One's Own Firm	Found One's Own Firm
Contact point for entrepreneurial issues	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in a Large Firm (>250 Employees)	Found One's Own Firm	Found One's Own Firm
Contact platforms with potential investors	Female	Female	Other	Other	in a Large Firm (>250 Employees)	in a Large Firm (>250 Employees)	Found One's Own Firm	Found One's Own Firm

A rudimentary analysis of Table 3 suggests a great homogeneity in the results. The first columns show that women have higher percentages than men in the response options “I would like it” and “I do not need it” – indicating, respectively, that they would like to do and do not need to do the courses or activities. This result shows that more women than men answered, in a previous question, that they had not yet done the courses and activities in the list. Only respondents who gave this answer were asked if they would like to do or considered unnecessary the courses and activities. This applies to all the cases in the table. Considering the female predominance with the response “I would like it”, entrepreneurship education improvement efforts should give special attention to female students’ demands. A complementary study to learn the specifics of their demand and needs would be very useful, especially considering that female entrepreneurship is significant in Brazil – women are 49,3% of the entrepreneurs responsible for new business in the country (Greco et al., 2010).

The high percentage of women responses for “I do not need it” might seem contradictory in a first glance, but those responses have were not made by the same people who answered “I would like it”, as is the case in other categories in the table. One possible explanation for the women exclusivity in the “I do not need it” column is that a part of them do not have knowledge about the nature of entrepreneurship. Another is that they do not receive enough information about entrepreneurship and about courses and activities related to it.

In the “field of study” column, those students grouped in “other” (not classified in the Social Sciences, Natural Sciences, or Business Administration and Economics) responded most to the offerings listed in the table. It is possible that those who responded “I would like it” recognize the need to study entrepreneurship even if no content on the topic exists in their chosen major, which is probably not related to business management. At the other extreme, those who answered “I do not need it”, may be predominantly students who lack a clear understanding of what entrepreneurship is and who, when they think about business, believe that their success depends primarily on technical knowledge in their particular fields.

When it comes to “career choice intentions directly after studies”, the tendency to answer “I would like it” and “I do not need it” is related to students interested in working in large companies. Those who responded “I would like it” seem to recognize the importance of entrepreneurship. Additionally, part of this group may belong to the larger body of those who say they want to work in large companies once they graduate but change their intentions to that of becoming entrepreneurs five years after graduation. Students interested in public service or working in large companies who responded “I do not need it” may not perceive the potential utility of entrepreneurship for their career choices. Another possibility is that they have a minimal knowledge of entrepreneurship and therefore little idea of the potential utility of different educational activities related to entrepreneurship.

Finally, when it comes to “career choice intentions five years after studies”, virtually all respondents are people who want to be entrepreneurs for the two possible answers. The exclusivity of this answer in the “I would like it” column may possibly be explained by a strong interest in better preparation for a future entrepreneurial career. Its predominance, along with the “in public service” group for the “I do not need it” response, could reflect a lack of consideration of the potential contributions for the career of the courses and activities and even a lack of information about what courses, activities and a career in entrepreneurship could be. These two student groups may also be skeptical of the institution’s capacity to provide effective entrepreneurship education and/or have little information about entrepreneurship courses and activities. This may also apply in the case of all other “I do not need it” response groups in Table 3.

### **Additional Results and Steps Taken to Become Entrepreneurs**

Generally speaking, among the different fields of study, Brazilian students in Administration, Economics, and Natural Sciences (this last one includes Engineering and Exact Sciences, etc.) are the most enthusiastic about creating businesses. Those less interested in entrepreneurship are in Social Sciences. Concerning different items, proportionally, more Brazilian students are motivated to having their own businesses than students in the international sample. For Brazilian respondents, the most attractive sectors to develop businesses are health services (12.3%), wholesale and retail trade (12.1%), consulting in law, tax, management etc. (11.6%), and communications or information (9.8%). The least interesting areas for Brazilian respondents are agriculture, forestry, and fishing (1.4%). One reason for this result may be the fact that a little over 80% of the students in the Brazilian sample live in urban areas.

Figure 3 - Steps Taken to Start Businesses

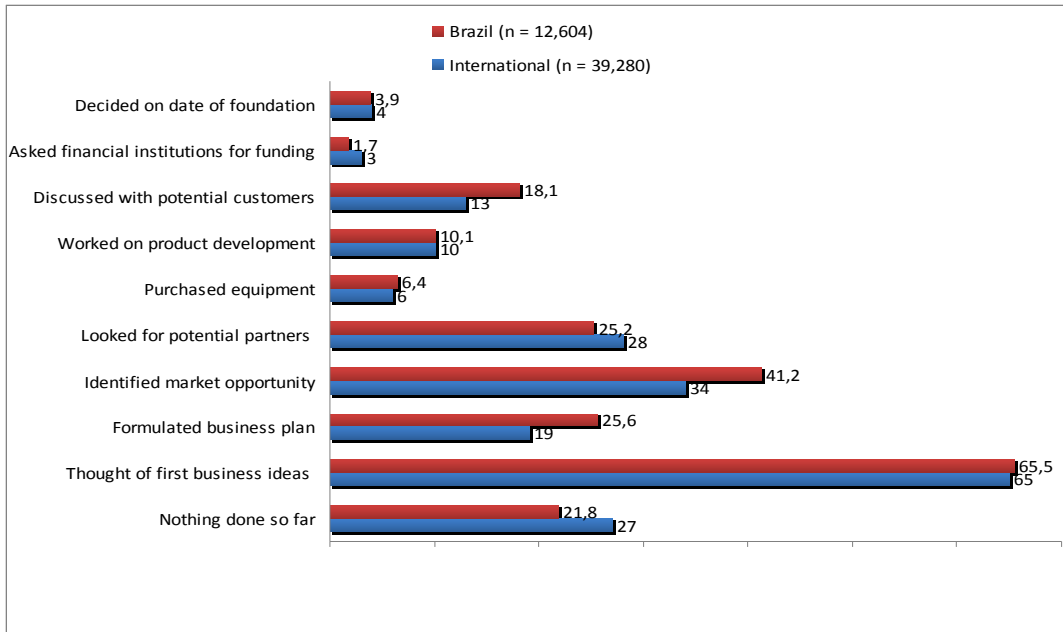


Figure 3 clarifies that nationally and internationally the majority of the potential entrepreneur respondents (65%) already have ideas about the businesses they would like to create. It should be noted that questionnaire respondents were able to choose more than one option for the responses listed in the figure. The group that has done nothing represents 21.8% of Brazilians and 27% of the international sample. In general, Brazilians are in the same condition or more advanced than the international sample concerning their preparations to own businesses – mainly in opportunity identification and developing business plans. Brazil is behind the international sample only in making loan applications to financial institutions and looking for possible partners.

The following figure reports the percentages of responses to the question of how seriously the students have thought about being their own bosses with one or more companies and what concrete steps they may have taken in this regard.

Figure 4 - Strength of Entrepreneurial Intention (%)

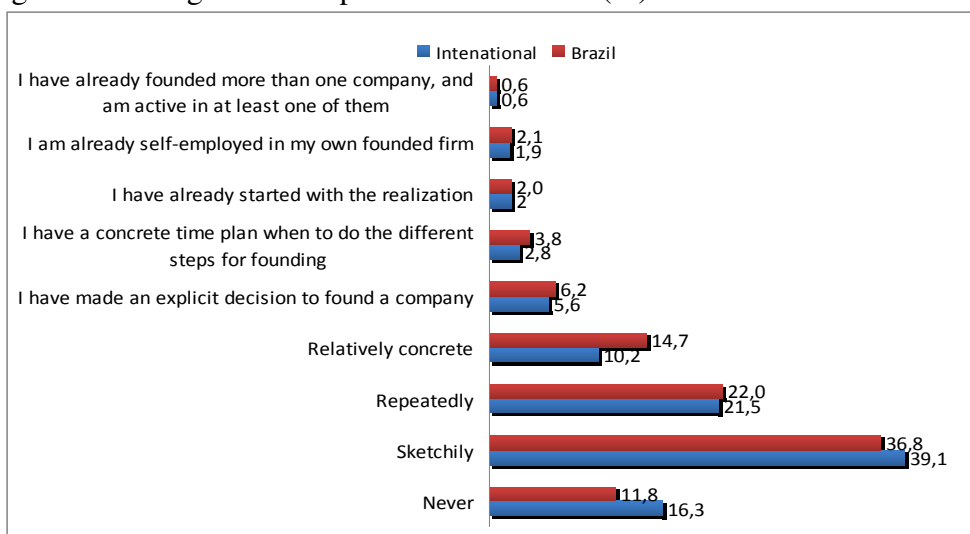


Figure 4 shows that Brazil’s results for those who have already considered or already begun creating businesses is equal to or higher than international results for all items except the two

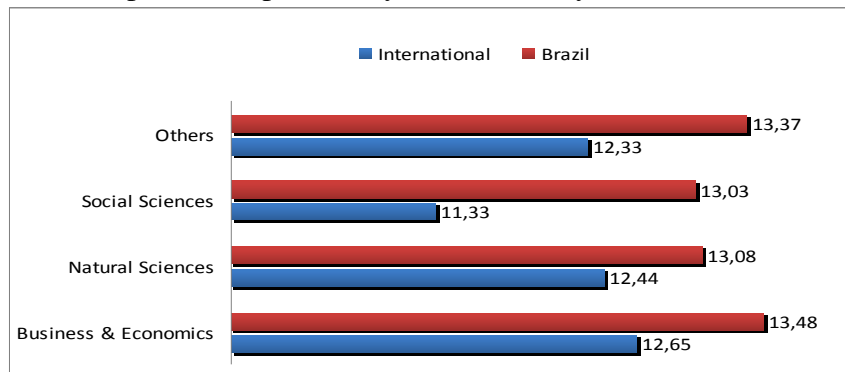
at the bottom of the figure – both of which have a weaker influence on calculating entrepreneurial interest. The lowest percentage for Brazil is that entitled “never”, which indicates that a greater percentage of Brazilian students have considered or done something about creating businesses. Thus Brazilian students present greater strength of entrepreneurial intention than the international sample.

From the results presented here, it is possible to show the entrepreneurship index for students in different fields of study, comparing Brazilian results with international ones. The index is a synthesis reflecting the combined effects of different results of the study. For this reason, it is useful in making general comparisons between different countries about entrepreneurship interest levels and practices among students participating in the study.

Tables A1 and A2 in the appendix, which are necessary for understanding the following example, form the basis for calculating the weights in this index. It is important to note that this is not a percentage. As Sieger, Fueglistaller and Zellweger explain (2011, p. 37)...

...in the study, an index was calculated for each student. The index for a country is an average percentage of all respondents in the country. For example: a student who answers “it is relatively solid” about his/her interest in entrepreneurship and checks options 3 and 5 in the question about the level of preparation to be an entrepreneur has a personal index of 13 (3+5+5) [according to the weights shown in the appendix tables].

Figure 5 - Entrepreneurship Index by Field of Study



Brazil presents averages for each field of study that are above the international averages. In Administration and Economy, the country has the highest rate (13.48). In Social Sciences, the rate is the lowest (13.03). The most significant difference in relation to international results also occurs in the area of Social Sciences, at 1.7 point above. The “Other” category refers to other fields of study: the cases in which respondents did not identify one of the previous categories on their questionnaires. This category has the second highest rating for Brazil.

According to the 2011 international GUESSS report, the United Kingdom has the highest entrepreneurship index, at 17.2. Portugal is in third place, with 16.4; Mexico is in sixth place, 14.4; and Brazil is tied with the Netherlands in thirteenth place, with 13.3. Even so, this puts Brazil above the international average of 12.8 (Sieger, Fueglistaller and Zellweger, 2011).



## Discussion and conclusions

The fact that the Brazilian entrepreneurship index is higher than the international level converges with the high demand for entrepreneurship-related courses and activities in Brazilian colleges and universities. The relatively high level the index could be one of the reasons for such demand, as it reflects students' general interest in entrepreneurship.

As shown by the number of respondents in Figure 3 (n = 12,604), approximately 50% of Brazilian students are potential entrepreneurs. Some of them want to accomplish this soon after graduation, and an even larger number want this for five years after graduation, as shown in Figure 2. Overcoming the challenge of providing a more practical approach of entrepreneurship education that includes information on support systems and funding (challenge 4) could generate more direct contributions especially for this large group of respondents.

Such a challenge – apparently the main one among those presented here – is related to something essential in teaching entrepreneurship: fostering learning through practice and relations (European Commission, 2008; McCoshan et al., 2010; Neck and Greene, 2011; Surlemont and Kearney, 2009). However, this, as well as the need to increase the offer of entrepreneurship courses and activities, has been neglected in Brazilian higher education (challenge 1).

The focus has been on teaching business planning. This kind of teaching is necessary, but diversification in course and activity offer is also required (challenge 5), as the greater proximity to and contact with entrepreneurs and their reality (challenge 3). For this reason, Neck and Greene (2011) criticize the current emphasis on prediction and planning for new businesses. For them, the priority must be learning a method of doing entrepreneurship, which depends primarily on practical activities. However, to reach this desirable mode of entrepreneurial education in Brazil, much needs to be done to train more teachers (challenge 2).

Those challenges are interconnected, the need of a practical approach being the central one. Overcoming these challenges, whether taken separately or as a whole, is a demanding and long-term project. But some recent opportunities drafted in this paper can make the task easier:

- The opportunity to take advantage of students' positive attitude and high demand concerning improvements in entrepreneurial education and a larger range of courses about micro- and small-business administration, as well as the fact that a large percentage of them are potential entrepreneurs. Such an opportunity seems especially attractive to private colleges and universities, whose development is more directly dependent on meeting the demands of their tuition-paying students.
- The possibility of improving entrepreneurial education through the exchange of knowledge and experience among higher education teachers and directors neophytes in the field and those who have larger experience and/or more efficient education models.
- The improvement potential offered by the dynamic academic context and teacher interaction, which foments frequent conferences, meetings, and studies dedicated to entrepreneurship in higher education.
- The possible support for students through practical activities, monitoring, mentoring and/or exchange of experiences with a growing number of entrepreneurs linked to, or graduate in, the university context. Those entrepreneurs may be more responsive to cooperation needs (e.g.: former students whose businesses was incubated at the university or teachers who are also entrepreneurs).

Good use of these opportunities as a way to overcome the five challenges cited could have a positive impact on the careers of many students. Over the medium and long terms, they can have positive effects on the development of the country (as suggested by the UNCTAD Secretariat Report, 2011). Given this potential, that use merits the attention of students, teachers, researchers, university directors, government, entrepreneurs, and society in general.

For example, the use of these opportunities could be the object of university programs or even public policies prioritizing higher education improvement by offering courses and activities such as those in Table 1. The present study offers a number of helpful elements to be taken in consideration in doing that, such as those in the response trend table (Table 3):

- Considering the female predominance with the response “I would like it” for the courses or activities listed in Table 1, entrepreneurship education should give special attention to female students’ demands.
- Differentiated attention is also needed for the “Other” group in the demands. This suggests the need for more interdisciplinarity and diversification of offers, including also the offer of entrepreneurship education outside the usual areas of Administration, Engineering, and Computer Sciences.
- The importance of entrepreneurship education even for those who want to work in large companies or public service after graduation must not be forgotten; not only are entrepreneurship knowledge and skills useful for employees, these people may want to have their own businesses one day.
- As many students interested in courses and activities of the Table 1 only consider entrepreneurship as a five-years-after-graduation goal, teaching strategies should aim to develop skills usable not only in the short and medium terms, but also in the long term. In addition, higher education institutions should maintain long-term educational and support services in entrepreneurship for their alumni.
- Considering that the lack of entrepreneurship knowledge and information is a possible explanation for the answers “I do not need it”, even if given by a minority, effective clarification strategies for all students should be used to prevent this problem.

In the improvement of offers related to entrepreneurship, the entrepreneurship centres have an important role to play in colleges and universities. One fundamental reason is that their purpose is to promote the theme with lectures, workshops, etc. and provide practical activities and relationship networks to fortify entrepreneurship among students and teachers. In fact, it is common for these centres to have links with business incubators to take their role even further. Thus, the idea of creating or improving such centres is attractive.

Some suggestions can be made for new studies in the field:

- To multiple studies focused on comparisons among Brazilian institutions and among them and foreign ones to identify good practices that may be disseminated in the country.
- More in-depth studies about one or few institutions where to make precise and particular improvements, but in a specifically contextualized manner.
- A complementary study to learn the specificities of women’s demand and needs could be useful, especially considering that female entrepreneurship is significant in Brazil – women represent 49.3% of the entrepreneurs responsible for new business in the country (Greco et al., 2010) and have a high demand for courses and activities in entrepreneurship.

- Further academic research on what, precisely, it means to be an entrepreneur in Brazil and what is required to be so in Brazil would be beneficial for educational offerings that are more in line with the national economic, social, and cultural context.

Finally, entrepreneurship and business creation is closely related to administration of micro and small businesses. After all, the requirements for creating a business are inextricably linked with business management – a task that many believe would be facilitated by improving education with special attention to micro and small businesses (CFA, 2006). Thus, expanding and improving the offering of entrepreneurship courses and activities in higher education needs to include micro- and small-business administration.

## APPENDIX

Table A1 - Interest in Entrepreneurship and Weights to Define Entrepreneurship Index

<b>N.</b>	<b>Answer Option</b>	<b>Weights</b>	<b>Type</b>
1	Never	1	Non founder
2	Sketchily	1	Non founder
3	Repeatedly	3	Potential founders
4	Relatively concrete	3	Potential founders
5	I have made an explicit decision to found a company	5	Potential founders
6	I have a concrete time plan when to do the different steps for founding	7	Potential founders
7	I have already started with the realization	7	Potential founders
8	I am already self-employed in my own founded firm	8	Active founders
9	I have already founded more than one company, and am active in at least one of them	10	Active founders

Source: Sieger, Fueglistaller, and Zellweger (2011).

According to the weight distribution in the preceding table, response items related to greater entrepreneurial behavior contribute more to increasing the entrepreneurship index. Therefore, the more respondents classified as active founders a country has, the higher its index is.

Potential founders responded to a special set of questions to gauge the level of entrepreneurial preparedness. This level also determined the entrepreneurship index according to the weights in the following table.

Table A2 – Entrepreneurial Preparation and Weights to Define Entrepreneurship Index

<b>N.</b>	<b>Answer Option</b>	<b>Weights</b>
1	Nothing done so far	1
2	Thought of first business ideas	3
3	Formulated business plan	5
4	Identified market opportunity	5
5	Looked for potential partners	5
6	Purchased equipment	7
7	Worked on product development	7
8	Discussed with potential customers	7
9	Asked financial institutions for funding	8
10	Decided on date of foundation	10

Source: Sieger, Fueglistaller, and Zellweger (2011).

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