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Students' entrepreneurial behavior: international and gender differences

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Abstract

Due to a high level of uncertainty, entrepreneurship is generally considered a risky endeavor. This paper explores the factors impacting entrepreneurial behavior in order to identify new educational opportunities for its development. The paper explores perceived feasibility and desirability for students in 10 countries. The entrepreneurship role is gender tested against desirability and feasibility. The requirements for developing this skill set are also studied. A survey instrument was developed, and data was collected from 4281 students. The results indicate that gender impacts entrepreneurship intention and the way it impacts is influenced by which country the students are from.

Keywords: Entrepreneurship, International differences, Gender differences, Behavior, Higher education

Background

The noteworthy contribution of entrepreneurial activities to economies (Keilbach and Sanders, 2008) in terms of growth, innovation, job creation, and poverty reduction (Lunati et al., 2010) makes entrepreneurship a popular research topic. The OECD-Eurostat Entrepreneurship Indicators Programme defines entrepreneurs as "those persons (business owners) who seek to generate value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets" (Lunati et al., 2010). Entrepreneurs differ from the rest of the society ostensibly by their propensity to take risk, tolerance for ambiguity, and motivation for self-employment. Hines (1973) sees entrepreneurship as a role model and bases his reasoning on a conclusion that entrepreneurs strive for greater realization and accomplishment in comparison to the role that is fostered by non-entrepreneurial activity. According to Summers (2000), the main aspect of entrepreneurship is "the critical combination of the individual, his or her past experience, background and the decision to start an enterprise." Increasing interest in entrepreneurship also raised the curiosity for the drivers such as intentions, traits, behavioral patterns, and external and contextual factors leading individuals to entrepreneurship phenomenon.

The study of entrepreneurial motivations has a long history. According to Summers (2000), primal publications were mainly focused on traits, such as self-

confidence, risk tolerance, and tolerance for ambiguity. On the way to more recent intention-based process models (Shapero, 1982), later studies for entrepreneurial motivation were based on several other perspectives, such as demographic characteristics (gender, age, education, etc.), social factors (family, community, etc.), and external influences (politics, capital availability, etc.) (Summers, 2000). More recent process models for entrepreneurial motivation are "focusing on attitudes and beliefs and how they can predict intentions and behaviors" (Segal et al., 2005). These models are mainly based on human cognitive processes to distinguish possible desirable outcomes and to make decisions on the feasibility of acting to obtain those outcomes (Segal et al., 2005).

As mentioned above, country-specific factors were examined in relation with entrepreneurship in the literature. For instance, in their study where they compared 15 EU member countries and the USA in terms of latent and actual entrepreneurship, Grilo and Irigoyen (2005) indicate that the level of entrepreneurship shows distinct differences across countries. They pointed out that country-specific effects are indicative for both entrepreneurial motivation and activity levels. According to Freytag and Thurik (2007), country-specific effects are significant for entrepreneurship preferences but in contrast to that result they do not seem to be able to explain entrepreneurial activity. In their 2006-dated paper, Lee et al. 2006 tried to determine the disparities among the examined countries regarding the aspects essential to improve the entrepreneurship education. Also, Carayannis et al. (2003) indicate that there are differences between American and French entrepreneurship students in terms of attitudes and perceptions towards entrepreneurship.

Female and male entrepreneurs usually operate in different sectors and pursue different ways to develop their business. Therefore, increased number of female entrepreneurs means increased entrepreneurship variety in economy (Verheul et al. 2004). Notwithstanding the importance of their contribution in terms of entrepreneurship variety, the number of female entrepreneurs is lower than that of male entrepreneurs in almost every country in terms of Total Entrepreneurial Activity, except Ghana, Costa Rica, and Australia (Kelley et al. 2010). This result is also supported with the entrepreneurship literature. For instance, according to Grilo and Irigoyen (2005), for the evaluated 15 EU member countries and the USA, the probability of preference for self-employment is notably higher for men compared to women. Menzies and Tatroff's (2006) work on gender differences on preferences on entrepreneurship education also states that less women are interested in entrepreneurship education compared to men. Zhang et al. (2009) indicate that there is a difference between genders regarding the genetic basis of entrepreneurship.

The purpose of this paper is to examine whether gender and country of residence differences have a significant impact on entrepreneurial intentions of university students as measured by perceived feasibility and perceived desirability. So our research question is the following:

> What are the gender and country differences' impacts on entrepreneurial intentions of university students?

This paper focuses on university-level students as a result of the conviction that younger people are more willing to be self-employed (Blanchflower et al., 2001; Grilo and Irigoyen, 2005). According to GEM's 2010 global report, in the case of age distribution of entrepreneurs, the 24–35 age group has the highest population for almost every geographic region. Since university students generally fall into the 18–24 age group, examining their entrepreneurial intentions as potential future entrepreneurs might reveal some implications, because according to Ajzen (1991) intention is anterior to act.

The next section examines the entrepreneurial behavior literature with a focus on university students and corresponding national setting and gender differences. Then hypotheses are introduced. This is followed by the description of research design and the methodology conducted. The paper concludes with the discussion of the results and the recommendations for future research.

Literature review and hypotheses

Entrepreneurial motivations have been frequently examined in the literature. Chell and Allman (2003) explored intentions of more technology-oriented entrepreneurs, while Krueger et al. (2000) analyzed differing entrepreneurial intentions. Grilo and Thurik (2005) explored barriers in 15 European countries and the USA and tried to explain differences in those countries in terms of latent and actual entrepreneurship. Studies of entrepreneurship attitudes among students have been viewed as an emerging topic due to an increase in the research performed on that subject by authors such as Luthje and Franke (2003), Wang and Wong (2004), Huffman and Quigley (2002), and Johnson et al. (2006). These studies test entrepreneurial attitudes against differing behavioral characteristics to elaborate on a model that would be used as a tool for prediction of future behavior.

Among the authors who modeled and examined the behavioral relationship between university students and the corresponding national setting are Turker and Selcuk (2008), Wu and Wu (2008), Wang and Wong (2004), Menzies and Tatroff (2006), Verheul et al. (2004), Kourilsky and Walstad (1998), Zhang et al. (2009), Elenurm et al. (2007), Petridou et al. (2009), Shariff and Saud (2009), Liñán (2008), Carayannis et al (2003), and Veciana et al. (2005).

In Turker and Selcuk's (2008) study, similar to Wu and Wu's (2008) and Lee and Wong's (2004), educational setting is seen as a significant factor spurring entrepreneurship. While Wu and Wu (2008) credit educational significance for assisting in realization of potential behavior, Wang and Wong (2004) see this realization emanating from appropriate curriculum structure. Liñán (2008) identified the role of perceived skill as an important factor impacting entrepreneurial intention. Shariff and Saud (2009) explored students' attitudes towards entrepreneurship in Malaysia and found that self-esteem and personal control differences were influential. Carayannis et al (2003) compared French and US students on their attitudes and perceptions of entrepreneurship and identified regional differences. Barriers against entrepreneurial behavior have long been studied.

Menzies and Tatroff (2006) explored attitudes of students in Canada as well, but they also looked at gender differences. They identified no differences in attitudes towards taking risks, but fewer women tended to think that entrepreneurship fit

their personality. They also reported on studies citing how education helped increase the number of female entrepreneurs. Verheul et al. (2004) explored similar factors in a US university and found similar results. Kourilsky and Walstad (1998) also identified similar differences in a US-wide study and proposed entrepreneurship-focused curricula. Zhang et al. (2009) explored genetic differences between genders and their impact on entrepreneurship. Petridou et al. (2009) identified that there were differences in attitudes towards entrepreneurship education and perceptions about required skills between the two genders. Eddleston and Powell (2008) examined how gender identity explains what male and female business owners look for from their careers and found that gender identity, represented by the dimensions of masculinity and femininity, serves as a cognitive mechanism that contributes to differences in business owners' career satisfaction preferences. Verheul et al. (2004) explored female entrepreneurship in 29 countries and found that similar factors impacted both genders. Grilo and Thurik (2005) also identified gender differences in a study conducted in the general population. Gerry and Marques (2008) identified similar differences in Portugal. Both were exploring entrepreneurship as a choice. However, Fischer et al. (1993) argued against these differences and found that there was no difference in the success rate at the end.

Based on the above discussion, our hypotheses below were developed:

H1—Gender in different countries makes a difference in students' attitudes towards entrepreneurship as measured by desirability and feasibility one country at a time.
H2—Country of residence makes a difference in students' attitudes towards entrepreneurship as measured by desirability and feasibility.

Methods

Shapero's model (1982), augmented by Krueger and Brazeal (1994), underlines the basis of our research. We draw our conclusions from the reasoning that intentions are predictions for future behavior. Shapero divided all the characteristics that could initiate intentions into two groups which consist of perceived desirability and perceived feasibility (Summers, 2000). Perceived desirability is defined as a subjective norm regarding the perceived social support and personal interest to perform the entrepreneurial behavior. Perceived feasibility examines the perceived ease or difficulty of performing the entrepreneurial behavior and the perceived self-competence regarding to entrepreneurship.

Accordingly, we suggest in this paper a model (Fig. 1) that provides insight into the entrepreneurial intensions of students in terms of genders and country of residence differences.

A survey instrument was developed, and data was collected from 4281 students from Croatia (1918), Slovenia (306), Austria (541), Poland (332), France (442), Lithuania (415), Israel (295), India (16), and other countries (16) of which 2712 were female and 1563 were male students. This paper is a part of a survey that collected data on the perceived feasibility and desirability of students in more than 10 countries.

In this theoretical framework, to examine the concept of perceived desirability, students were asked to measure the extent to which they agreed or disagreed with

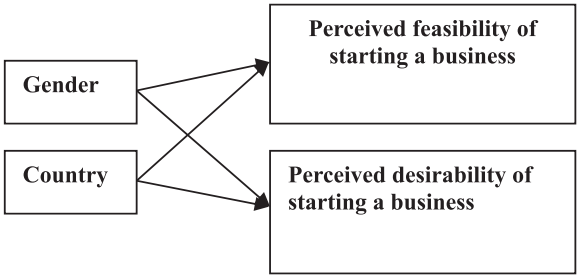

Fig. 1 Research framework (*solid lines* indicate the part of the study addressed in this paper)

the following statements regarding their personal level of desirability for starting their own businesses after the completion of their education: (1) "I would love to do it"; (2) "My immediate family members would encourage me to do it"; (3) "I would be tense"; and (4) "I would be enthusiastic." Students answered by choosing a number on a Likert scale from 1 to 6, with 1 representing "not at all" and 6 "extremely." In order to investigate students' perceptions on the feasibility of starting a new business, the following questions were included in the survey: (1) "It would be very hard to do"; (2) "I am certain that I would be successful"; (3) "I would be overworked"; (4) "I know enough to start a business"; and (5) "I trust myself." In each question, students were able to choose their answers on a Likert scale of 1 to 6, this time with 1 being "very much agree" and 6 being "very much disagree."

As a difference from the previous two studies of Dabić et al. (2012a, 2012b), this study used the same data with the addition of survey results from India and some other countries used to evaluate the impact of gender and country of residence differences on entrepreneurial intentions of university students as measured by perceived feasibility and perceived desirability. In this study, countries were analyzed separately in terms of entrepreneurial intention differences based on country of residence and gender. As a result, significant differences were found among countries and genders in terms of desirability and feasibility towards entrepreneurship. Results indicated that Poland, Slovenia, and India seem to have little difference between male and female genders whereas responses from Croatia, Austria, France, and Israel revealed quite strong difference among male and female students. In the other study of Dabić et al. (2012a), perceived desirability, perceived feasibility, and educational needs in terms of entrepreneurial programs/activities/projects at an academic institution were analyzed from the gender difference perspective only. Results of the analysis showed that there were significant differences between genders' perception for educational needs to construct academic entrepreneurship education and networking and tutoring channels for students. In Dabić et al. (2012b), countries in the sample were clustered into four groups. The first cluster was created from the questionnaires collected in Israel with the reasoning that Israel is the country with a high entrepreneurial culture, a high level of development, but a low level of political integration. The second cluster consisted of the countries which are in the EU for a longer period of time, namely France and Austria. These two countries have a high level of

economic and political development and integration. The third cluster was comprised of Lithuania, Poland, and Slovenia and forms a cluster with characteristics of countries that recently joined the EU and are of a medium level of political and economic development and integration. The fourth cluster was formed by only one country, namely Croatia, as it is a country which is awaiting its accession to the EU and which made a number of political and economic reforms but which has a low level of political integration and a lower level of development than the previous three clusters.

Results and discussion

Starting a new business: desirability

As can be seen in Table 1, the average response to the statement "I would love to do it" ($\bar{x} = 4.12$) shows a positive attitude regarding the desirability of entrepreneurial activities for students. The highest score among the statements on desirability is with family support ($\bar{x} = 4.50$), meaning that students felt they would generally have the benefit of high family encouragement. Also, it is important to note that the same statements have the highest standard deviation ($\sigma = 1.894$), indicating relatively high difference among students. The lowest average score in the group is agreement with the statement of being tense as an entrepreneur ($\bar{x} = 4.04$). However, relatively low agreement on this factor can be regarded as a positive indicator towards entrepreneurial attitude, since it suggests students are not highly certain such activities will lead to negative emotions, like tension or stress. Furthermore, enthusiasm scores ($\bar{x} = 4.33$) indicate positive mood in connection with starting a new business. This measurement has the second lowest standard deviation in the desirability group ($\sigma = 1.487$). Country-specific means show differences and will be analyzed in the next section.

Starting a new business: feasibility

It is interesting to observe the results of student perceptions on feasibility in connection with starting a new business. As can be seen in Table 2, the lowest average

Table 1 Perceived desirability—descriptive statistics

Country	Desirability 1 (D1)	Desirability 2 (D2)	Desirability 3 (D3)	Desirability 4 (D4)
Croatia	4.66	5.07	4.21	4.70
Austria	3.69	4.33	4.47	4.36
France	4.29	4.44	4.16	4.62
Israel	4.02	4.49	4.40	4.68
Lithuania	1.83	1.97	2.37	1.78
Poland	4.19	4.12	3.51	4.31
Slovenia	4.23	4.97	4.41	4.49
India	4.44	3.81	3.38	4.94
Rest of the World	4.00	4.69	4.50	4.75
All	4.12	4.50	4.04	4.33

Desirability: (D1) I would love to do it; (D2) My immediate family members would encourage me to do it; (D3) I would be tense; and (D4) I would be enthusiastic. Agreement: (1) not at all; (2) slightly; (3) somewhat; (4) moderately; (5) very much; and (6) extremely

Table 2 Perceived feasibility—descriptive statistics

Country	Feasibility 1 (F1)	Feasibility 2 (F2)	Feasibility 3 (F3)	Feasibility 4 (F4)	Feasibility 5 (F5)
Croatia	2.03	2.82	1.86	3.49	2.42
Austria	2.13	3.43	2.08	3.60	2.65
France	2.03	3.30	2.32	4.35	3.26
Israel	2.14	2.60	2.39	3.59	2.42
Lithuania	3.01	3.19	2.98	3.99	2.93
Poland	2.56	3.35	2.50	3.65	3.01
Slovenia	2.28	2.67	2.50	3.45	2.28
India	1.88	2.38	2.00	3.50	2.00
Rest of the World	2.13	3.50	2.00	3.88	2.56
All	2.20	3.00	2.17	3.66	2.62

Feasibility: (F1) It would be very hard to do; (F2) I am certain that I would be successful; (F3) I would be overworked; (F4) I know enough to start a business; and (F5) I trust myself. Agreement: (1) very much agree; (2) strongly agree; (3) mildly agree; (4) mildly disagree; (5) strongly disagree; and (6) very much disagree

score ($\bar{x} = 2.17$) and standard deviation ($\sigma = 1.112$) occur for the question describing how overworked the entrepreneur expects to be. This could lead to the conclusion that students have the perception of being overworked if they start their own businesses. As for the certainty of success, the average score ($\bar{x} = 3.00$) indicates that students were right in the middle between most affirmative and most negative, meaning, on average, they were neither certain nor uncertain of success. The average score for the question regarding knowing enough to start a business ($\bar{x} = 3.66$) is slightly negative, meaning students are a little unsure whether they know everything they need to start a business and thus may benefit from some additional education in this area. For the self-confidence question, results show students have a positive perception ($\bar{x} = 2.62$). Nevertheless, they agree with the contention that starting a new business is quite hard ($\bar{x} = 2.20$). Country-specific means show differences and will be analyzed in the next section.

Based on Table 3, the average of responses for perceived desirability questions 1 through 4 can be seen gender- and countrywise. According to these results, the average of total responses for desirability question 1 regarding attitudes towards entrepreneurial initiatives and that for desirability question 4 regarding enthusiasm about entrepreneurial initiatives seem higher for male students. Furthermore, the average of total scores for desirability questions 2 and 3 regarding family support and work-related stress, respectively, may imply that although female students feel slightly more supported by their families they are inclined to feel more tense about starting a new business. Another interesting outcome is that female students from Poland and India seem to show equal or greater inclination to entrepreneurial initiatives compared to male students from those countries. Also, country-specific means show differences and will be analyzed in the next section.

Based on Table 4, the average of responses for perceived feasibility questions 1 through 5 can be seen gender- and countrywise. According to these descriptive statistics, for feasibility questions 1 and 3, regarding the difficulties associated with entrepreneurial activities and being overworked, respectively, female students' total average scores are smaller than male students'; for questions 2, 4, and 5, regarding

Table 3 Perceived desirability means by gender and country—descriptive statistics

Country	Gender		Desirability 1	Desirability 2	Desirability 3	Desirability 4
Croatia	Female	Mean	4.56	5.14	4.29	4.60
	Male	Mean	4.82	4.95	4.10	4.84
Austria	Female	Mean	3.54	4.34	4.46	4.22
	Male	Mean	4.14	4.32	4.49	4.78
France	Female	Mean	4.08	4.44	4.29	4.47
	Male	Mean	4.62	4.44	3.95	4.84
Israel	Female	Mean	3.60	4.23	4.57	4.55
	Male	Mean	4.51	4.79	4.21	4.82
Lithuania	Female	Mean	1.82	1.96	2.37	1.77
	Male	Mean	1.84	1.99	2.36	1.79
Poland	Female	Mean	4.19	4.27	3.57	4.31
	Male	Mean	4.19	3.80	3.37	4.31
Slovenia	Female	Mean	4.12	5.00	4.41	4.44
	Male	Mean	4.46	4.91	4.40	4.61
India	Female	Mean	5.60	4.80	3.00	6.00
	Male	Mean	3.91	3.36	3.55	4.45
Rest of the world	Female	Mean	4.25	4.75	4.38	4.88
	Male	Mean	3.75	4.63	4.63	4.63
Total	Female	Mean	3.99	4.52	4.10	4.23
	Female	Std. dev.	1.703	1.703	1.517	1.486
	Male	Mean	4.36	4.46	3.94	4.50
	Male	Std. dev.	1.616	2.187	1.384	1.475

certainty of success, certainty of having the required knowledge for entrepreneurial activities, and self-confidence, respectively, male students score smaller. These results may imply that female students are more concerned about the difficulties and workload associated with entrepreneurship and they have lower self-confidence and motivation under the assumption of starting a new business. Also, country-specific means show differences and will be analyzed in the next section.

Gender and country differences

Differences were analyzed in multiple perspectives as seen in Table 5. ANOVA was used in each case, and the detailed results are provided in the following tables.

At the 1 % level of significance, ANOVA indicates relevant differences among different countries for all the previously mentioned questions regarding perceived feasibility and perceived desirability as can be observed in Table 6.

Countrywise differences with respect to desirability

Based on the significance values for desirability questions 1 through 4, there is a statistically significant difference between countries for the following: desirability question 1 ($D1P_v = 0.000$) regarding attitudes towards entrepreneurial initiatives, desirability question 2 ($D2P_v = 0.000$) regarding family support, desirability

Table 4 Perceived feasibility means by gender and country—descriptive statistics

Country	Gender		Feasibility 1	Feasibility 2	Feasibility 3	Feasibility 4	Feasibility 5
Croatia	Female	Mean	1.95	2.89	1.81	3.57	2.53
	Male	Mean	2.14	2.72	1.95	3.38	2.27
Austria	Female	Mean	2.10	3.53	2.04	3.76	2.78
	Male	Mean	2.23	3.15	2.20	3.12	2.26
France	Female	Mean	1.98	3.35	2.30	4.53	3.50
	Male	Mean	2.11	3.22	2.35	4.07	2.89
Israel	Female	Mean	2.17	2.78	2.50	3.69	2.61
	Male	Mean	2.12	2.39	2.27	3.47	2.20
Lithuania	Female	Mean	2.98	3.35	2.95	4.13	3.10
	Male	Mean	3.06	2.89	3.04	3.75	2.62
Poland	Female	Mean	2.50	3.31	2.45	3.67	3.12
	Male	Mean	2.69	3.43	2.60	3.62	2.77
Slovenia	Female	Mean	2.23	2.68	2.45	3.57	2.40
	Male	Mean	2.39	2.64	2.60	3.20	2.01
India	Female	Mean	1.80	2.80	2.00	3.80	2.20
	Male	Mean	1.91	2.18	2.00	3.36	1.91
Rest of the world	Female	Mean	2.13	3.25	1.88	4.13	3.13
	Male	Mean	2.13	3.75	2.13	3.63	2.00
Total	Female	Mean	2.16	3.09	2.14	3.76	2.76
	Female	Std. dev.	1.102	1.101	1.111	1.291	1.247
	Male	Mean	2.27	2.84	2.22	3.48	2.37
	Male	Std. dev.	1.105	1.543	1.113	1.257	1.208

question 3 ($D3P_v = 0.000$) regarding work-related stress as an entrepreneur, and desirability question 4 ($D4P_v = 0.000$) regarding enthusiasm about entrepreneurial initiatives.

Countrywise differences with respect to feasibility

Based on the significance values for feasibility questions 1 through 5, there is a statistically significant difference between countries for the following: desirability question 1 ($F1P_v = 0.000$) regarding level of difficulties associated with entrepreneurial activities, desirability question 2 ($F2P_v = 0.000$) regarding level of certainty associated with success, desirability question 3 ($F3P_v = 0.000$) regarding level of excess work associated with entrepreneurial activities, desirability question 4

Table 5 Summary of ANOVA results

	Among different countries	Among different genders	Among different genders in different countries
Differences in desirability	Significant differences were found in all cases	Significant differences were found in all but one case	Significant differences were found depending on the country
Differences in feasibility	Significant differences were found in all cases	Significant differences were found in all cases	Significant differences were found depending on the country

Table 6 Desirability and feasibility differences between countries—ANOVA

		Sum of squares	df	Mean square	*F*	Sig.
Desirability 1	Between groups	2775.778	8	346.972	159.710	.000
	Within groups	9144.115	4209	2.173		
	Total	11,919.894	4217			
Desirability 2	Between groups	3289.738	8	411.217	146.154	.000
	Within groups	11,833.948	4206	2.814		
	Total	15,123.685	4214			
Desirability 3	Between groups	1444.878	8	180.610	98.994	.000
	Within groups	7673.663	4206	1.824		
	Total	9118.541	4214			
Desirability 4	Between groups	2922.443	8	365.305	240.145	.000
	Within groups	6396.598	4205	1.521		
	Total	9319.041	4213			
Feasibility 1	Between groups	379.611	8	47.451	41.907	.000
	Within groups	4776.065	4218	1.132		
	Total	5155.675	4226			
Feasibility 2	Between groups	338.531	8	42.316	26.864	.000
	Within groups	6639.460	4215	1.575		
	Total	6977.991	4223			
Feasibility 3	Between groups	538.126	8	67.266	60.560	.000
	Within groups	4681.749	4215	1.111		
	Total	5219.875	4223			
Feasibility 4	Between groups	327.085	8	40.886	25.896	.000
	Within groups	6654.730	4215	1.579		
	Total	6981.814	4223			
Feasibility 5	Between groups	397.251	8	49.656	33.967	.000
	Within groups	6177.962	4226	1.462		
	Total	6575.213	4234			

($F4P_v = 0.000$) regarding level of knowledge required for entrepreneurial activities, and desirability question 5 ($F5P_v = 0.000$) regarding level of self-esteem.

From Table 7, at the 5 % level of significance, ANOVA results for genderwise differences with respect to perceived desirability- and perceived feasibility-related variables can be seen.

Genderwise differences with respect to desirability

Based on the significance values for desirability questions 1 through 4 in Table 7, there is a statistically significant difference between genders for the following: desirability question 1 ($D1P_v = 0.000$) regarding attitudes towards entrepreneurial initiatives, desirability question 3 ($D3P_v = 0.001$) regarding work-related stress as an entrepreneur, and desirability question 4 ($D4P_v = 0.000$) regarding enthusiasm about entrepreneurial initiatives whereas there is no statistically significant

Table 7 Desirability and feasibility differences between genders—ANOVA

		Sum of squares	df	Mean square	*F*	Sig.
Feasibility 1	Between groups	13.774	1	13.774	11.314	.001
	Within groups	5139.783	4222	1.217		
	Total	5153.557	4223			
Feasibility 2	Between groups	58.238	1	58.238	35.508	.000
	Within groups	6919.753	4219	1.640		
	Total	6977.991	4220			
Feasibility 3	Between groups	6.668	1	6.668	5.397	.020
	Within groups	5211.806	4219	1.235		
	Total	5218.474	4220			
Feasibility 4	Between groups	80.262	1	80.262	49.082	.000
	Within groups	6899.205	4219	1.635		
	Total	6979.467	4220			
Feasibility 5	Between groups	149.169	1	149.169	98.202	.000
	Within groups	6425.371	4230	1.519		
	Total	6574.540	4231			
Desirability 1	Between groups	140.515	1	140.515	50.267	.000
	Within groups	11,776.839	4213	2.795		
	Total	11,917.354	4214			
Desirability 2	Between groups	2.593	1	2.593	0.722	.396
	Within groups	15,118.361	4210	3.591		
	Total	15,120.953	4211			
Desirability 3	Between groups	23.155	1	23.155	10.720	.001
	Within groups	9093.382	4210	2.160		
	Total	9116.536	4211			
Desirability 4	Between groups	75.164	1	75.164	34.225	.000
	Within groups	9243.556	4209	2.196		
	Total	9318.720	4210			

difference between genders for desirability question 2 ($D2P_v = 0.396$) regarding family support.

Genderwise differences with respect to feasibility

Based on the significance values for feasibility questions 1 through 5, in Table 7, there is a statistically significant difference between genders for the following: desirability question 1 ($F1P_v = 0.001$) regarding level of difficulties associated with entrepreneurial activities, desirability question 2 ($F2P_v = 0.000$) regarding level of certainty associated with success, desirability question 3 ($F3P_v = 0.000$) regarding level of excess work associated with entrepreneurial activities, desirability question 4 ($F4P_v = 0.000$) regarding level of knowledge required for entrepreneurial activities, and desirability question 5 ($F5P_v = 0.000$) regarding level of self-esteem.

ANOVA results for perceived desirability and perceived feasibility differences among different genders in different countries can be seen in the Appendix as Tables (Tables 9

and 10). ANOVA results show that there are further significant differences between male and female students in different countries in terms of their attitude towards entrepreneurship.

Perceived desirability differences between genders per country

ANOVA results (Table 9) for genderwise differences per country, with respect to desirability questions 1 through 4 for the 5 % level of significance, exhibit that for desirability question 1 regarding attitudes towards entrepreneurial initiatives there is a statistically significant difference between genders in Croatia ($D1P_v = 0.000$), Austria ($D1P_v = 0.000$), France ($D1P_v = 0.000$), Israel ($D1P_v = 0.000$), and India ($D1P_v = 0.015$) whereas there is statistically no significant difference between genders in Lithuania ($D1P_v = 0.863$), Poland ($D1P_v = 0.954$), Slovenia ($D1P_v = 0.076$), and the rest of the world ($D1P_v = 0.568$).

Based on the significance values for desirability question 2 regarding family support, there is a statistically significant difference between genders in Croatia ($D2P_v = 0.001$) whereas there is statistically no significant difference between genders in Austria ($D2P_v = 0.894$), France ($D2P_v = 0.974$), Israel ($D2P_v = 0.257$), Lithuania ($D2P_v = 0.787$), Poland ($D2P_v = 0.064$), Slovenia ($D2P_v = 0.579$), India ($D2P_v = 0.087$), and the rest of the world ($D2P_v = 0.855$).

Based on the significance values for desirability question 3 regarding work-related stress as an entrepreneur, there is a statistically significant difference between genders in Croatia ($D3P_v = 0.002$), France ($D3P_v = 0.015$), and Israel ($D3P_v = 0.019$) whereas there is statistically no significant difference between genders in Austria ($D3P_v = 0.810$), Lithuania ($D3P_v = 0.871$), Poland ($D3P_v = 0.448$), Slovenia ($D3P_v = 0.957$), India ($D3P_v = 0.589$), and the rest of the world ($D3P_v = 0.559$).

Based on the significance values for desirability question 4 regarding enthusiasm about entrepreneurial initiatives, there is a statistically significant difference between genders in Croatia ($D4P_v = 0.000$), Austria ($D4P_v = 0.000$), France ($D4P_v = 0.005$), and India ($D4P_v = 0.027$) whereas there is statistically no significant difference between genders in Israel ($D4P_v = 0.096$), Lithuania ($D4P_v = 0.874$), Poland ($D4P_v = 0.970$), Slovenia ($D4P_v = 0.303$), and the rest of the world ($D4P_v = 0.723$).

Perceived feasibility differences between genders per country

ANOVA results (Table 10) for genderwise differences per country, with respect to feasibility questions 1 through 5 for the 5 % level of significance, exhibit that for feasibility question 1 regarding level of difficulties associated with entrepreneurial activities there is a statistically significant difference between genders in Croatia ($F1P_v = 0.000$) whereas there is statistically no significant difference between genders in Austria ($F1P_v = 0.227$), France ($F1P_v = 0.162$), Israel ($F1P_v = 0.698$), Lithuania ($F1P_v = 0.639$), Poland ($F1P_v = 0.102$), Slovenia ($F1P_v = 0.179$), India ($F1P_v = 0.812$), and the rest of the world ($F1P_v = 1.000$).

Based on the significance values for feasibility question 2 regarding the level of certainty associated with success, there is a statistically significant difference between genders in Croatia ($F2P_v = 0.001$), Austria ($F2P_v = 0.002$), Israel ($F2P_v$

= 0.000), and Lithuania ($F2P_v = 0.001$), whereas there is statistically no significant difference between genders in France ($F2P_v = 0.209$), Poland ($F2P_v = 0.681$), Slovenia ($F2P_v = 0.751$), India ($F2P_v = 0.244$), and the rest of the world ($F2P_v = 0.483$).

Based on the significance values for feasibility question 3 regarding the level of excess work associated with entrepreneurial activities, there is a statistically significant difference between genders in Croatia ($F3P_v = 0.003$) whereas there is statistically no significant difference between genders in Austria ($F3P_v = 0.136$), France ($F3P_v = 0.598$), Israel ($F3P_v = 0.053$), Lithuania ($F3P_v = 0.562$), Poland ($F3P_v = 0.198$), Slovenia ($F3P_v = 0.220$), India ($F3P_v = 0.384$), and the rest of the world ($F3P_v = 0.622$).

Based on the significance values for feasibility question 4 regarding the level of knowledge required for entrepreneurial activities, there is a statistically significant difference between genders in Croatia ($F4P_v = 0.001$), Austria ($F4P_v = 0.000$), France ($F4P_v = 0.000$), Lithuania ($F4P_v = 0.008$), and Slovenia ($F4P_v = 0.012$) whereas there is statistically no significant difference between genders in Israel ($F4P_v = 0.080$), Poland ($F4P_v = 0.699$), India ($F4P_v = 0.384$), and the rest of the world ($F4P_v = 0.524$).

Based on the significance values for feasibility question 5 regarding the level of self-esteem, there is a statistically significant difference between genders in Croatia ($F5P_v = 0.000$), Austria ($F5P_v = 0.000$), France ($F5P_v = 0.000$), Israel ($F5P_v = 0.001$), Lithuania ($F5P_v = 0.001$), Poland ($F5P_v = 0.004$), and Slovenia ($F5P_v = 0.001$) whereas there is statistically no significant difference between genders in India ($F5P_v = 0.639$) and the rest of the world ($F5P_v = 0.060$).

Table 8 is a summary of the gender differences. Those cells with an "X" represent no significant difference between genders. All the other cells indicate significant difference. Croatia seems to be the only country in which females and males exhibit significantly different attitudes regarding all perceived desirability and feasibility aspects.

Based on Table 8, it can be observed that responses to questions D2 (My immediate family members would encourage me to do it), F1 (It would be very hard to do), and F3 (I would be overworked) indicate nearly no significant difference between genders for all cases except Croatia whereas F4 (I know enough to start a

Table 8 Summary of perceived desirability and feasibility differences between genders per country

Country	D1	D2	D3	D4	F1	F2	F3	F4	F5
Croatia									
Austria		x	x		x		x		
France		x			x	x	x		
Israel		x		x	x		x	x	
Lithuania	x	x	x	x	x		x		
Poland	x	x	x	x	x	x	x	x	
Slovenia	x	x	x	x	x	x	x		
India		x	x		x	x	x	x	x
Rest of the world	x	x	x	x	x	x	x	x	x

business), F5 (I trust myself), and D1 (I would love to do it) indicate quite a bit difference between genders for the majority of the countries included in the study. This might mean that although both genders are aware of the required work and dedication for starting a new business, generally male students are more self-confident and keen to do it. If Table 8 is analyzed countrywise, then Poland, Slovenia, and India appear not to have considerable amount of difference between male and female genders whereas responses from male and female students from Croatia, Austria, France, and Israel indicate quite strong difference. In the case of India, D1 and D4 are expected to show significant difference in terms of female students scoring higher than males. This result is consistent with the GEM 2002 report where India and Poland are in the top 6 among 29 countries regarding the female share in total entrepreneurial activity. Interestingly, in the same list, Slovenia occupies the 21st position.

Conclusions

This paper makes significant contributions to the understanding of entrepreneurial perceptions among students. One of the key strengths of this study is that it is based on a wide range of data for students from 10 different countries. Thus, the results are not culturally related but reflect more globally oriented intentions.

This paper explores the factors impacting entrepreneurial behavior in order to identify new educational opportunities for its development. Specifically, there are three major findings. Significant differences were found between genders and countries on their perceptions of desirability and feasibility towards entrepreneurial behavior. This adds to the findings of prior research on gender differences in entrepreneurial attitudes. Moreover, there were differences in how genders differ in different countries which would require further research.

Insights from this study can help educators plan entrepreneurship-oriented programs or courses in a manner that aims to minimize the gender differences in entrepreneurial motivation. Also, policy makers of countries willing to increase the number of female entrepreneurs would benefit from the results regarding which perceptions females show significant differences from males, so they can shape their entrepreneurship-related policies aiming to reduce these differences or alter the perceptions. There were also differences in how countries differ in terms of perceived feasibility and desirability. These differences can result from social security policies, economic activity, regulatory issues, or sectoral concentration of recent entrepreneurial activities, etc. specific to each country, which can affect the intention of starting a new business negatively. Further research revealing that differences' direction would also help policy makers to understand their countries' potential entrepreneurs' perceptions about those aspects and to alter them.

One shortcoming of this study might be the varying sample sizes from different countries. Sample sizes vary from 1918 to 16, and they are not determined relatively to the student population in those countries. More balanced sample size from examined countries would lead to more meaningful results. For further research also, the effect of students' training areas (engineering, business, social sciences, etc.) on their entrepreneurial perceptions can be examined.

Appendix

Table 9 Desirability differences between genders per country—ANOVA

ANOVA							
Country			Sum of squares	df	Mean square	*F*	Sig.
Croatia	Desirability 1	Between groups	29.840	1	29.840	13.322	.000
		Within groups	4291.598	1916	2.240		
		Total	4321.437	1917			
	Desirability 2	Between groups	17.688	1	17.688	11.284	.001
		Within groups	3003.501	1916	1.568		
		Total	3021.189	1917			
	Desirability 3	Between groups	15.785	1	15.785	9.263	.002
		Within groups	3265.144	1916	1.704		
		Total	3280.929	1917			
	Desirability 4	Between groups	26.133	1	26.133	18.588	.000
		Within groups	2693.657	1916	1.406		
		Total	2719.790	1917			
Austria	Desirability 1	Between groups	36.911	1	36.911	14.370	.000
		Within groups	1384.538	539	2.569		
		Total	1421.449	540			
	Desirability 2	Between groups	0.046	1	0.046	0.018	.894
		Within groups	1392.398	539	2.583		
		Total	1392.444	540			
	Desirability 3	Between groups	0.085	1	0.085	0.058	.810
		Within groups	786.721	539	1.460		
		Total	786.806	540			
	Desirability 4	Between groups	32.178	1	32.178	16.737	.000
		Within groups	1036.255	539	1.923		
		Total	1068.433	540			
France	Desirability 1	Between groups	30.707	1	30.707	12.411	.000
		Within groups	1088.643	440	2.474		
		Total	1119.351	441			
	Desirability 2	Between groups	0.002	1	0.002	0.001	.974
		Within groups	946.848	440	2.152		
		Total	946.851	441			
	Desirability 3	Between groups	11.560	1	11.560	5.979	.015
		Within groups	850.669	440	1.933		
		Total	862.229	441			
	Desirability 4	Between groups	14.302	1	14.302	7.905	.005
		Within groups	796.080	440	1.809		
		Total	810.382	441			
Israel	Desirability 1	Between groups	54.667	1	54.667	22.442	.000
		Within groups	643.092	264	2.436		
		Total	697.759	265			
	Desirability 2	Between groups	20.394	1	20.394	1.292	.257
		Within groups	4151.847	263	15.786		
		Total	4172.242	264			

Table 9 Desirability differences between genders per country—ANOVA *(Continued)*

	Desirability 3	Between groups	8.673	1	8.673	5.589	.019
		Within groups	411.245	265	1.552		
		Total	419.918	266			
	Desirability 4	Between groups	4.859	1	4.859	2.795	.096
		Within groups	458.979	264	1.739		
		Total	463.838	265			
Lithuania	Desirability 1	Between groups	0.027	1	0.027	0.030	.863
		Within groups	358.950	394	0.911		
		Total	358.977	395			
	Desirability 2	Between groups	0.075	1	0.075	0.073	.787
		Within groups	402.497	393	1.024		
		Total	402.572	394			
	Desirability 3	Between groups	0.021	1	0.021	0.026	.871
		Within groups	321.751	393	0.819		
		Total	321.772	394			
	Desirability 4	Between groups	0.020	1	0.020	0.025	.874
		Within groups	306.425	394	0.778		
		Total	306.444	395			
Poland	Desirability 1	Between groups	0.004	1	0.004	0.003	.954
		Within groups	406.531	312	1.303		
		Total	406.535	313			
	Desirability 2	Between groups	14.849	1	14.849	3.452	.064
		Within groups	1337.777	311	4.302		
		Total	1352.626	312			
	Desirability 3	Between groups	2.832	1	2.832	0.576	.448
		Within groups	1518.898	309	4.916		
		Total	1521.730	310			
	Desirability 4	Between groups	0.002	1	0.002	0.001	.970
		Within groups	394.269	308	1.280		
		Total	394.271	309			
Slovenia	Desirability 1	Between groups	7.720	1	7.720	3.177	.076
		Within groups	738.806	304	2.430		
		Total	746.526	305			
	Desirability 2	Between groups	0.488	1	0.488	0.308	.579
		Within groups	481.185	304	1.583		
		Total	481.673	305			
	Desirability 3	Between groups	0.004	1	0.004	0.003	.957
		Within groups	421.748	304	1.387		
		Total	421.752	305			
	Desirability 4	Between groups	2.017	1	2.017	1.064	.303
		Within groups	576.470	304	1.896		
		Total	578.487	305			
India	Desirability 1	Between groups	9.828	1	9.828	7.598	.015
		Within groups	18.109	14	1.294		
		Total	27.937	15			

Table 9 Desirability differences between genders per country—ANOVA *(Continued)*

	Desirability 2	Between groups	7.092	1	7.092	3.383	.087
		Within groups	29.345	14	2.096		
		Total	36.437	15			
	Desirability 3	Between groups	1.023	1	1.023	0.306	.589
		Within groups	46.727	14	3.338		
		Total	47.750	15			
	Desirability 4	Between groups	8.210	1	8.210	6.138	.027
		Within groups	18.727	14	1.338		
		Total	26.938	15			
Rest of the world	Desirability 1	Between groups	1.000	1	1.000	0.341	.568
		Within groups	41.000	14	2.929		
		Total	42.000	15			
	Desirability 2	Between groups	0.062	1	0.062	0.034	.855
		Within groups	25.375	14	1.812		
		Total	25.438	15			
	Desirability 3	Between groups	0.250	1	0.250	0.359	.559
		Within groups	9.750	14	0.696		
		Total	10.000	15			
	Desirability 4	Between groups	0.250	1	0.250	0.131	.723
		Within groups	26.750	14	1.911		
		Total	27.000	15			

Table 10 Feasibility differences between genders per country—ANOVA

ANOVA							
Country			Sum of squares	df	Mean square	*F*	Sig.
Croatia	Feasibility 1	Between groups	15.230	1	15.230	14.211	.000
		Within groups	2053.466	1916	1.072		
		Total	2068.697	1917			
	Feasibility 2	Between groups	11.942	1	11.942	10.714	.001
		Within groups	2135.786	1916	1.115		
		Total	2147.729	1917			
	Feasibility 3	Between groups	8.513	1	8.513	8.708	.003
		Within groups	1873.149	1916	0.978		
		Total	1881.662	1917			
	Feasibility 4	Between groups	16.340	1	16.340	11.625	.001
		Within groups	2693.071	1916	1.406		
		Total	2709.412	1917			
	Feasibility 5	Between groups	31.051	1	31.051	22.386	.000
		Within groups	2657.637	1916	1.387		
		Total	2688.689	1917			
Austria	Feasibility 1	Between groups	1.741	1	1.741	1.463	.227
		Within groups	641.408	539	1.190		
		Total	643.150	540			
	Feasibility 2	Between groups	14.370	1	14.370	9.240	.002
		Within groups	838.281	539	1.555		
		Total	852.651	540			
	Feasibility 3	Between groups	2.421	1	2.421	2.235	.136
		Within groups	584.000	539	1.083		
		Total	586.421	540			
	Feasibility 4	Between groups	42.879	1	42.879	17.309	.000
		Within groups	1335.276	539	2.477		
		Total	1378.155	540			
	Feasibility 5	Between groups	27.350	1	27.350	18.554	.000
		Within groups	794.509	539	1.474		
		Total	821.860	540			
France	Feasibility 1	Between groups	1.748	1	1.748	1.963	.162
		Within groups	391.809	440	0.890		
		Total	393.557	441			
	Feasibility 2	Between groups	1.859	1	1.859	1.585	.209
		Within groups	516.315	440	1.173		
		Total	518.174	441			
	Feasibility 3	Between groups	0.358	1	0.358	0.278	.598
		Within groups	565.663	440	1.286		
		Total	566.020	441			
	Feasibility 4	Between groups	22.219	1	22.219	12.823	.000
		Within groups	762.426	440	1.733		
		Total	784.645	441			

Table 10 Feasibility differences between genders per country—ANOVA *(Continued)*

	Feasibility 5	Between groups	39.155	1	39.155	19.977	.000
		Within groups	862.401	440	1.960		
		Total	901.557	441			
Israel	Feasibility 1	Between groups	0.124	1	0.124	0.151	.698
		Within groups	222.016	271	0.819		
		Total	222.139	272			
	Feasibility 2	Between groups	10.525	1	10.525	14.152	.000
		Within groups	200.795	270	0.744		
		Total	211.320	271			
	Feasibility 3	Between groups	3.361	1	3.361	3.780	.053
		Within groups	239.178	269	0.889		
		Total	242.539	270			
	Feasibility 4	Between groups	3.061	1	3.061	3.095	.080
		Within groups	266.994	270	0.989		
		Total	270.055	271			
	Feasibility 5	Between groups	11.414	1	11.414	10.930	.001
		Within groups	282.982	271	1.044		
		Total	294.396	272			
Lithuania	Feasibility 1	Between groups	0.476	1	0.476	0.220	.639
		Within groups	857.484	397	2.160		
		Total	857.960	398			
	Feasibility 2	Between groups	19.815	1	19.815	10.473	.001
		Within groups	751.087	397	1.892		
		Total	770.902	398			
	Feasibility 3	Between groups	0.672	1	0.672	0.337	.562
		Within groups	791.168	397	1.993		
		Total	791.840	398			
	Feasibility 4	Between groups	12.899	1	12.899	7.141	.008
		Within groups	717.091	397	1.806		
		Total	729.990	398			
	Feasibility 5	Between groups	21.679	1	21.679	10.985	.001
		Within groups	783.494	397	1.974		
		Total	805.173	398			
Poland	Feasibility 1	Between groups	2.398	1	2.398	2.693	.102
		Within groups	276.874	311	0.890		
		Total	279.272	312			
	Feasibility 2	Between groups	0.972	1	0.972	0.169	.681
		Within groups	1777.523	309	5.753		
		Total	1778.495	310			
	Feasibility 3	Between groups	1.547	1	1.547	1.662	.198
		Within groups	288.441	310	0.930		
		Total	289.987	311			
	Feasibility 4	Between groups	0.137	1	0.137	0.150	.699
		Within groups	282.358	309	0.914		
		Total	282.495	310			

Table 10 Feasibility differences between genders per country—ANOVA *(Continued)*

	Feasibility 5	Between groups	8.307	1	8.307	8.188	.004
		Within groups	324.665	320	1.015		
		Total	332.972	321			
Slovenia	Feasibility 1	Between groups	1.659	1	1.659	1.810	.179
		Within groups	278.606	304	0.916		
		Total	280.265	305			
	Feasibility 2	Between groups	0.106	1	0.106	0.101	.751
		Within groups	317.894	304	1.046		
		Total	318.000	305			
	Feasibility 3	Between groups	1.485	1	1.485	1.510	.220
		Within groups	299.015	304	0.984		
		Total	300.500	305			
	Feasibility 4	Between groups	9.357	1	9.357	6.430	.012
		Within groups	442.408	304	1.455		
		Total	451.765	305			
	Feasibility 5	Between groups	10.480	1	10.480	11.246	.001
		Within groups	282.385	303	0.932		
		Total	292.866	304			
India	Feasibility 1	Between groups	0.041	1	0.041	0.059	.812
		Within groups	9.709	14	0.694		
		Total	9.750	15			
	Feasibility 2	Between groups	1.314	1	1.314	1.479	.244
		Within groups	12.436	14	0.888		
		Total	13.750	15			
	Feasibility 3	Between groups	0.000	1	0.000	0.000	1.000
		Within groups	8.000	14	0.571		
		Total	8.000	15			
	Feasibility 4	Between groups	0.655	1	0.655	0.808	.384
		Within groups	11.345	14	0.810		
		Total	12.000	15			
	Feasibility 5	Between groups	0.291	1	0.291	0.230	.639
		Within groups	17.709	14	1.265		
		Total	18.000	15			
Rest of the world	Feasibility 1	Between groups	0.000	1	0.000	0.000	1.000
		Within groups	19.750	14	1.411		
		Total	19.750	15			
	Feasibility 2	Between groups	1.000	1	1.000	0.519	.483
		Within groups	27.000	14	1.929		
		Total	28.000	15			
	Feasibility 3	Between groups	0.250	1	0.250	0.255	.622
		Within groups	13.750	14	0.982		
		Total	14.000	15			
	Feasibility 4	Between groups	1.000	1	1.000	0.427	.524
		Within groups	32.750	14	2.339		
		Total	33.750	15			

Table 10 Feasibility differences between genders per country—ANOVA *(Continued)*

Feasibility 5	Between groups	5.062	1	5.062	4.200	.060
	Within groups	16.875	14	1.205		
	Total	21.938	15			

Competing interests
The authors declare that they have no competing interests

Authors' contributions
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