OECONOMIA
COPERNICANA

VOLUME 10 ISSUE 1 MARCH 2019

p-ISSN 2083-1277, e-ISSN 2353-1827
www.oeconomia.pl

ORIGINAL ARTICLE

Citation: Dvorský, J., Petráková, Z., Zapletalíková, E., & Rózsa, Z. (2019). Entrepreneurial propensity index of university students. The case study from the Czech Republic, Slovakia and Poland. *Oeconomia Copernicana, 10*(1), 173–192. doi: 10.24136/oc.2019.009

Contact to corresponding author: j1dvorsky@utb.cz; Tomas Bata University in Zlín, Faculty of management and economics, Depart-ment of Business Administration, Mostní 5139, 76001 Zlín, Czech Republic

Received: 12.11.2018; Revised: 14.01.2019; Accepted: 27.01.2019; Published online: 15.02.2019

Ján Dvorský
Tomas Bata University in Zlín, Czech Republic
orcid.org/0000-0002-6078-2636

Zora Petráková
Slovak University of Technology, Slovakia
orcid.org/0000-0002-1398-9415

Eliška Zapletalíková
Tomas Bata University in Zlín, Czech Republic
orcid.org/0000-0002-0291-4282

Zoltán Rózsa
Alexander Dubcek University in Trencin, Slovakia
orcid.org/0000-0002-5748-5702

Entrepreneurial propensity index of university students. The case study from the Czech Republic, Slovakia and Poland

JEL Classification: *M13; D83*

Keywords: *entrepreneurship; university student; entrepreneurial propensity*

Abstract

Research background: Promotion of the entrepreneurship has an important role in the society, and the direct relationship between entrepreneurship and economic growth of the country is proven. Universities education should be one of the pillars to build the business environment and the entrepreneurial propensity of the students in the entrepreneurship.
Purpose of the article: The paper aimed to define and quantify significant factors that shape the entrepreneurial propensity of university students and create the entrepreneurial propensity index.

A part of this aim was a comparison of defined factors in the Czech Republic (CR), Slovakia (SR) and Poland (PL).
Methods: The survey-based research was conducted with students in the last year of their economic studies on the universities. 1,352 students from 25 universities in selected countries were approached during research. A custom Entrepreneurial Propensity Index was created that was implemented separately for CR, SR and PL.
Findings & Value added: The research brought interesting findings. The aggregated Entrepreneurial Propensity Index in the Czech Republic reached the value of 0.470, which was higher than that of Slovakia (0.424) and Poland (0.412). The evaluation of the quality of university education is similarly positive in all countries (CR: 0.659, PL: 0.589, SR: 0.592). Czech students gave access to the financial resources and the role of macroeconomic environment got a higher rating than Slovak and Polish students. On the contrary, Poland students gave the social environment and business advantages a higher rating than Czech and Slovak students. The evaluation of the personality traits is more positive in Slovakia. The most positive indicator for all students is that doing business enables to make use of own abilities and own solutions.

Introduction

With the retirement age rising in European countries, young people will soon work for 50 years or more. They realise that choosing the profession they want to follow — and the A-levels and university courses that will get them there — is a decision of paramount importance. However, young university graduates sometimes find it difficult to enter the labour market due to their over-qualification (Crecente-Romero *et al.*, 2018, pp. 223–228). The higher education system does not help much in that case (Birdthistle, 2008, pp. 552–567; Plotnikova *et al*., 2016, pp. 939–954). Universities often demand top grades and experience for certain courses (Morris *et al*., 2017, pp. 65–85). In the crush to get all this sorted, it is hard to find the time to consider your options.

The majority of students do not know what they want to do when they finish education — let alone when they are halfway through (Solomon *et al*., 2008, pp. 239–258). Moreover, the few who do know what they want often rethink their choice as they develop and grow. Who they are now is not who they might be in the future, and the education and recruitment system needs to give them space and time to make the right career choices (Pruett *et al.*, 2009, pp. 571–574). In this context, it is important to identify and quantify the keys factors of the entrepreneurial propensity of university students to the entrepreneurship.

This paper analyses important factors of the entrepreneurial propensity and quantifies their significance in the Czech Republic, Slovakia and Poland. The originality of this research lies in the definition and quantification of the factors shaping the entrepreneurial propensity of university students to entrepreneurship, as well as the comparison of business indicators in selected countries.

The structure of the paper is the following: the theoretical part presents the research results on the entrepreneurial propensity of the university students to entrepreneurship. The second part defines the aim of the research, the methodology, and data collection. The third part presents the research results and discussion about the issue. The conclusion offers subsequent research of authors, limitation and also the final summary of the research.

Literature review

University students have a key role in the growth of the business environment (Tredevi, 2016, pp. 790–811). Many authors explore their motivation and propensity for business (Jones *et al*., 2011, pp. 416–432; Fayolle *et al*., 2014, pp. 679–689; Staniewski & Awruk, 2015, pp. 583–592; Farhangmeh *et al.*, 2016, pp. 861–881).

There are many perspectives and studies about which factors decisively influence new entrepreneurial initiatives. The main variables mentioned are socio-demographic factors, perceptual variables, economic and social factors, motivational factors, environmental and some additional factors (Arenius & Minniti, 2005, pp. 233–247).

The students' perception of the country's social environment impacts their inclination towards entrepreneurship (Gurol & Atsan, 2006, pp. 25–38). Social environment indicators, as family (Heck *et al.*, 2006, pp. 80–105), politicians (Goktan *et al.*, 2015, pp. 95–112), media and society (Baryniene *et al*., 2014, pp. 497–512), play an important role in the context of shaping the entrepreneurial propensity of university students to the entrepreneurship. The perception of the business environment and its support by politicians is essential in decision–making about starting entrepreneur activities (Robertson *et al.*, 2000, pp. 89–102).

Andreas (2018, pp. 47–56) said that through the process of building social capital college students gain the cultural and behavioural information and sensitivity they need to learn soft skills. College graduates are no longer accessing this experience; as a result, businesses and graduates are suffering the consequences of a decline in social capital.

The quality of university education is also a determinant of the entrepreneurial propensity of students to the entrepreneurship (Gorman *et al.*, 1997, pp. 56–77; Gavurova *et al.*, 2018, pp. 52–62; Beyhan & Findik, 2018, pp. 1346–1374). The knowledge of students from their studies fields has an impact on the entrepreneurial solutions of young people (Fiet, 2001, pp. 1–24). Entrepreneurial education is the only basic lever for real entrepreneurship (Isada *et al*., 2015, pp. 1251–1266). In this context, Kolarova

& Kolarova (2017, pp. 40–49) said that the training based on practical situations from real life sufficiently prepares students for the entrepreneurship.

According to Hattab (2014, pp. 1–18), the findings suggest a positive relationship between entrepreneurship education and intentions and perceived desirability, while no relation existed with perceived feasibility or self-efficacy. Given the significance and importance of entrepreneurship, it is desirable to reform the educational system to encourage creativity and innovativeness of students.

Marques *et al.* (2018, pp. 58–70) state that entrepreneurial education generally has a more significant impact on business and social sciences students. Family background and gender are moderating variables with a positive influence on individual entrepreneurial orientation.

Souitaris *et al.* (2007, pp. 566–591) argue that the entrepreneurship programmes raise some attitudes and the overall entrepreneurial intention and that inspiration (a construct with an emotional element) is the programmes' most influential benefit.

Experience and personality traits with the entrepreneurship are also important (Gerry *at al.*, 2008, pp. 46–54; Kerr *et al.*, 2018, pp. 279–356). Personality characteristics as risk aversion (Cramer *et al.*, 2002, pp. 29–36; Kozubikova *et al.*, 2018, pp. 913–928), soft skills (Andreas, 2018, pp. 47–56), competitiveness (Mate & Darabos, 2017, pp. 78–92), persistence (Caliendo *et al.*, 2014, pp. 787–814), optimism (Kozubikova *et al.*, 2017, pp. 220–233) and responsibility (Kerr *at al.*, 2018, pp. 279–356). Otherwise, the statements that every person has certain prerequisites for doing business think (Sitaridis & Kitsios, 2018, pp. 1854–1859).

According to Danes *et al.* (2009, pp. 199–215), Corsi & Prencipe (2018, pp. 397–460), Dvorsky *et al.* (2017, pp. 89–100), Dvorsky *et al.* (2018, pp. 11–20), the access to the financial resources and business support from state are also factors which determined the entrepreneurial propensity of university students.

Bekeris (2012, pp. 117–128) argues that macroeconomic factors are important determinants of the business conditions in the country, and hence, these factors can have a significant impact on the profitability of enterprises. According to Dragnic (2014), the macroeconomic slowdown has an utmost effect on the business condition of the firms. He found that the lack of demand for products had a negative effect on the growth of SMEs. The paper shows that SMEs faced high competition from unregistered SMEs, which was causing a problem for SMEs to sell products to their target customers.

Silva and Nobre (2018, pp. 1–7) conducted research which was based on a sample of 277 students (and their attitudes to the entrepreneurship)

who were, at the time of the research, enrolled in a Master's degree or a Bachelor´s degree. The results showed that student from management areas and students from more advanced curricular years present higher propensity to entrepreneurship but also, on the other hand, that knowing entrepreneurs examples and having previous management experiences potentiate such propensity, thus confirming the usefulness of higher connections between academia and firms.

Research methodology

The aim of the paper was to define and quantify significant factors that shape the entrepreneurial propensity of university students and create the entrepreneurial propensity index. A part of this aim was a comparison of defined factors in the Czech Republic (CR), Slovakia (SR) and Poland (PL).

With regard to the defined aim, survey-based research was conducted with students in the last year of their economic studies at universities. Data collection took place in the years 2017 (CR, SR) and 2018 (PL). The method of random choice using the "Randbetween" mathematical function was used to select the studied universities (and their study field) from all universities (study field — economic area) in the selected countries. The questionnaire was constructed from demographic characteristics of the student (country of his study, gender and name of the university which his study), selected factors of entrepreneurial propensity and their indicators, statements on the entrepreneurial propensity. The research team used the data from all (43) statements. Students could reply with one of the following answers: I agree completely, I agree, No attitude, I disagree, or I disagree completely.

The students were approached via email asking them to fill out the online questionnaire. We have managed to collect the total of 1352 (100%) fulfilled questionnaires, 409 of them were from the CR (30.3%); 568 were from SR (42.0%), and 375 (27.7%) students were from PL. The Czech students were from 14 universities, the Slovak students from 8 universities and the Polish students from 3 universities. Structure of students by gender studying at universities:

– in Slovakia: 216 males (38.03%), 352 females (61.97%). Students from Slovakia are studying at universities in the following cities: Bratislava, Trenčín, Žilina, Prešov, Banská Bystrica, Zvolen, Košice.

- in the Czech Republic: 156 males (38.14%), 253 females (61.86%). Students from the Czech Republic are studying at universities in the following cities: Liberec, Brno, Praha, Olomouc, Pardubice, Ostrava, Zlín.
- in Poland: 145 males (38.7%), 230 females (61.3%). Students from Poland are studying at universities in the following cities: Toruń, Gdańsk, Szczecin.

Following the approach by Morris *et al.* (2017, pp. 65–85), individual factors and their indicators were defined using the following statements:

*Social environment (S*E)

SE1: There is a businessperson in my family, and I highly respect him/her.
SE2: Society in general appreciates businesspersons.
SE3: Politicians, as well as the public, consider businesspersons to be beneficial for society.
SE4: Media provide true information regarding status and activities of businesspersons.

Business support from the state (BSS)

BSS1: The state supports entrepreneurship by using its tools.
BSS2: The state creates high-quality conditions for starting a business.
BSS3: The state financially supports business.
BSS4: Legal conditions for doing business are of high quality.

Macroeconomic environment (ME)

ME1: I consider the macroeconomic environment of my country to be positive for doing business.
ME2: The state of the macroeconomic environment of my country supports starting a business.
ME3: Presents macroeconomic environment does not prevent me from starting a business.
ME4: Present level of basic macroeconomic factors (GDP, employment, inflation) supports business and creates interesting business opportunities.

Quality of business environment (QBE)

QBE1: The business environment of my country is of good quality and convenient for starting a business.

QBE2: The business environment of my country is relatively risk-resistant and enables to start a business.
QBE3: Conditions for doing business have improved in my country in the last five years.
QBE4: The amount of administrative work of businesspersons in my country has decreased in the last five years.

Access to financial resources (AFR)

AFR1: There is no intensive financial risk in the business environment, i.e. having limited access to external financial sources, bad payment habits, etc.
AFR2: Business entities have easy access to bank credits.
AFR3: I consider the credit conditions of commercial banks in my country to be appropriate.
AFR4: The interest rates of commercial banks support business activities.

Quality of university education (QUE)

QUE1: I consider university education of my country to be of good quality.
QUE2: O consider the educational structures at my faculty (university) to be of high quality.
QUE3: The knowledge acquired at my faculty (university) will help me when doing business.
QUE4: The knowledge acquired by students in my country will help them to start a business.

Personality traits (PT)

PT1: A businessperson does not have to have any special innate abilities.
PT2: The most important characteristics of a businessperson are specialisation, persistence, responsibility, and risk-resistance.
PT3: It is easier to do business if close relatives are in business.
PT4: Every person has certain prerequisites for doing business.

Business advantages (BA)

BA1: The advantages of entrepreneurship outnumber the disadvantages.
BA2: A businessperson is wealthier and having higher social status.
BA3: Doing business enables to have career growth and interesting job opportunities.
BA4: Doing business enables to make use of own abilities.

Entrepreneurial propensity (EP)

EP1: I am very interested in business.
EP2: I am convinced that I will start a business after I graduate from university.
EP3: In case nothing unexpected happens, I will start a business within three years latest.
EP4: At present, I have business activities.

Individual factors were incorporated into the questionnaire by a random selection, in order to achieve the highest possible objectivity level. In order to quantify and compare important factors determining the entrepreneurial propensity of students to the entrepreneurship, an aggregated *index of the entrepreneurial propensity* of students to the entrepreneurship was created. It can be characterised as the average/mean value of the positive evaluation of individual factors:

$$AI_{EP} = \frac{(\emptyset\text{SE}+\emptyset\text{BSS}+\emptyset\text{ME}+\emptyset\text{QBE}+\emptyset\text{AFR}+\emptyset\text{QUE}+\emptyset\text{PT}+\emptyset\text{BA})}{8} \quad (1)$$

where:
AI_{EP} – aggregated index of the entrepreneurial propensity;
$\emptyset\text{SE}, \emptyset\text{BSS}, \emptyset\text{ME}, \emptyset\text{QBE}, \emptyset\text{AFR}, \emptyset\text{QUE}, \emptyset\text{PT}, \emptyset\text{BA}$ – the average/mean value of the positive evaluation of individual constructs integrated into the aggregated index.

$$\emptyset\text{SE} = \frac{\sum_{i=1}^{4} SE_i}{4};\ \emptyset\text{BSS} = \frac{\sum_{i=1}^{4} BSS_i}{4};\ \ldots;\ \emptyset\text{BA} = \frac{\sum_{i=1}^{4} BA_i}{4}.$$

Also, a *partial index of the entrepreneurial propensity* (PI_{EP}) was created, which can be calculated as the average value of positive answers to the respective EP indicators:

$$PI_{EP} = \frac{\sum_{i=1}^{4} EP_i}{4} \quad (2)$$

In theory, the following should be true: AIEP = PIEP. It means that the evaluation of important factors determining the entrepreneurial propensity of students to the entrepreneurship should equal the direct evaluation of the entrepreneurial propensity of students to the entrepreneurship. If the difference between the given indexes is less than 10%, it can be said that this model has a good predictive potential. The evaluation of indexes: the interval of 0.001 to 0.250: the value is low, the interval of 0.251 to 0.500: the

value is below average; the interval of 0.501 to 0.750: the value is above average, the index value of over 0.750 is high. When developing this paper, the following hypotheses were constructed:

H1: The aggregated index of the entrepreneurial propensity of university students to the entrepreneurship in selected country (the Czech Republic — H1A, Slovakia — H1B, Poland — H1C) will be below average (lower than 0.501).

H2: The difference between the aggregated and the partial index of the entrepreneurial propensity of university students to the entrepreneurship will be lower than 10 % in the Czech Republic (H2A), Slovakia (H2B) and Poland (H2C).

H3: There are no statistically significant differences in the evaluation of individual factors of the entrepreneurial propensity by Czech and Slovak students (H3A), by Czech and Poland students (H3B), by Slovak and Poland students (H3C).

The method of descriptive statistics (indexes) was used to evaluate the first and second hypothesis. The Z score method was used to evaluate the third hypothesis. Statistically significant differences between positive answers of the university students according to nationality were compared through Chi-square Goodness of Fit test at the significance level of 5%. If the calculated p-value was lower than 5%, the null hypothesis was rejected, and the alternative hypothesis was adopted. All these results were performed using the SPSS Statistics analytical software for data evaluation.

Results

The research results are listed in the tables below.

The results in Table 1 indicate that Poland students rated the social environment more positively than the Slovak and Czech students (Index SE/PL = 0.418; Index SE/SR = 0.374; Index SE/CR = 0.344). Partial indicators SE1, SE2, SE3, and SE4 weren´t rated similarly. For example: Index SE1 ϵ (0.624; 0.687), but index SE4 ϵ (0.071; 0.144). The assessment of selected social environment indicators (SE1, SE2, SE3, SE4) is different. Statistically significant differences in positive answers were discovered in indicators SE1 (SR/PL), SE3 (CR/PL, SR/PL) and SE4 (CR/SR; CR/PL).

The results also show that Czech students rated the business support from state more positively than the Slovak and Poland students (Index BSS/CR = 0.285; Index BSS/SR = 0.202; Index BSS/PL = 0.213). Partial indicators BSS1, BSS2, BSS3, and BSS4 were rated similarly. Statistically significant differences in positive answers were discovered in indicators BSS1, BSS2, BSS4 (CR/SR) and BSS1, BSS2 (CR/PL).

The results in Table 2 indicate that Czech students rated the macroeconomic environment more positively than the Slovak and Poland students (Index ME/CR = 0.512; Index ME/PL = 0.393; Index SE/SR = 0.294). Partial indicators ME1, ME2, ME3, and ME4, were rated similarly. Statistically significant differences in positive answers were discovered: in all indicators ME between CR and SR; in indicators ME1, ME2, ME4 (CR/PL) and in indicators ME2, ME3 (SR/PL).

The results also show that Czech students rated the quality of business environment more positively than the Slovak and Pol and students (Index QBE/CR = 0.400; Index QBE/SR = 0.294; Index QBE/PL = 0.276). Partial indicators QBE1, QBE2, QBE3, and QBE4, were not rated similarly. For example: Index QBE4 ϵ (0.195; 0.130), but index QBE3 ϵ (0.313; 0.411). The assessment of selected quality business environment indicators (QBE1, QBE2, QBE3, QBE4) is different. Statistically significant differences in positive answers were discovered: in indicators QBE1, QBE2, QBE3 (CR/SR); in indicators QBE1, QBE2, QBE3 (CR/PL) and in indicators QBE1, QBE2, QBE3 (SR/PL).

The results in Table 3 indicate that Czech students rated the access to the financial resources more positively than the Slovak and Poland students (Index AFR/CR = 0.472; Index AFR /SR = 0.406; Index AFR /PL = 0.322). Partial indicators AFR 1, AFR2, AFR 3, and AFR 4 weren´t rated similarly. For example: Index AFR1 ϵ (0.195; 0.274), but index AFR2 ϵ (0.507; 0.592). Statistically significant differences in positive answers were discovered: in all indicators AFR (CR/SR; CR/PL) and indicators AFR3, AFR4 (SR/PL).

The results also show that Czech students rated the quality of university education more positively than the Slovak and Poland students (Index QUE/CR = 0.659; Index QBE/SR = 0.592; Index QBE/PL = 0.589). Partial indicators QUE1, QUE2, QUE3, and QUE4, were rated similarly. Statistically significant differences in positive answers were discovered: in indicators QUE1 (CR/SR, CR/PL).

The results in Table 4 indicate that Slovak students rated the personality traits more positively than the Czech and Poland students (Index PT/SR = 0.586; Index PT/CR = 0.493; Index PT/PL = 0.462). Partial indicators PT1, PT2, PT3, and PT4, were not rated similarly. For example: Index PT3 ϵ

(0.864; 0.632), but index PT4 ϵ (0.161; 0.319). The assessment of selected personality traits indicators is different. Statistically significant differences in positive answers were discovered: in indicators PT2, PT4 (CR/SR); in indicators PT1, PT2, PT3 (CR/PL) and in indicators PT1, PT3, PT4 (SR/PL).

The results also show that Poland students rated the quality of business advantages more positively than the Slovak and Czech students (Index BA/PL = 0.651; Index BA/SR = 0.647; Index BA/CR = 0.591). Partial indicators BA1, BA2, BA3, and BA4, were rated similarly. Statistically significant differences in positive answers were discovered: in indicators BA2, BA3 (CR/SR); in all indicators between CR and PL; in indicators BA1, BA2, BA4 (SR/PL).

The results in Table 5 indicate that Polish students rated the entrepreneurial propensity more positively than the Slovak and Czech students (Index EP/PL = 0.356; Index EP/SR = 0.347; Index EP/CR = 0.303). Partial indicators EP1, EP2, EP3, and EP4, were rated similarly. Statistically significant differences in positive answers were discovered: in indicators EP1, EP2 (CR/SR); in all indicators between CR and PL; in indicators EP4 (SR/PL).

Based on the research results, an aggregated and a partial index of the entrepreneurial propensity of students to the entrepreneurship in CR, SR and PL were quantified in Table 6.

Evaluation the statistical hypotheses are in Table 7.

Discussion

The aggregated index of the entrepreneurial propensity of Czech students reached the value of 0.470. It can mean that the average value of the positive ratings of factors determining the entrepreneurial propensity reached the value of 47.0%. The partial index of the entrepreneurial propensity of Czech students to the entrepreneurship reached the value of 0.303. It is interesting to see that the value of the aggregated index is higher than that of the partial index (difference of 16.7%).

The aggregated index of the entrepreneurial propensity of Slovak students reached the value of 0.424. It can mean that the average value of the positive ratings of factors determining the entrepreneurial propensity reached the value of 42.4%. The partial index of the entrepreneurial propensity of Slovak students to the entrepreneurship reached the value of 0.347. The value of the aggregated index is higher than that of the partial index. The difference between these indexes is 7.7%.

The aggregated index of the entrepreneurial propensity of Poland students reached the value of 0.415. It can mean that the average value of the positive ratings of factors determining the entrepreneurial propensity reached the value of 41.5%. The partial index of the entrepreneurial propensity of Poland students to the entrepreneurship reached the value of 0.356. The value of the partial index is lower than the value of aggregated index (difference of 5.9%).

The presented results indicate that the presented model used for the evaluation of the entrepreneurial propensity of students to entrepreneurship is of adequate propensity, as the difference between the aggregated index value and the partial index value oscillates around 10%. It is interesting to see that the value of the aggregated index is higher than that of the partial index in all countries. It may be explained by the fact that the value of the aggregated index is influenced by extreme values in the model used: the lowest index value was recorded in the evaluation of business support from state and the highest in the evaluation of the business advantages.

Our results show that the business advantages (doing business enables: to have career growth; interesting job opportunities; to make use of own abilities). It is in contrast with Silva and Noble (2018, pp. 1–7), their results showed that the most influential factors in explaining student´s entrepreneurial propensity are both the university education and the risk propensity.

Our results also demonstrated that university education is also a significant factor in selected countries (CR: ØQUE = 0.659, SR: ØQUE = 0.952, PL: ØQUE = 0.589). Entrepreneurial education is the most important factor in the entrepreneurial propensity of university students to the entrepreneurship. Our results (university entrepreneurial education) are in accordance with results of the following researchers: Fiet (2001, pp. 1–24) and Marques *et al.* (2018, pp. 58–70). The authors result also demonstrated, that the general entrepreneurial education is also an important factor in the entrepreneurial propensity of university students to start their business activities.

Conclusions

The paper aimed to define and quantify significant factors that shape the entrepreneurial propensity of university students and create the entrepreneurial propensity index. A part of this aim was a comparison of defined factors in the Czech Republic (CR), Slovakia (SR) and Poland (PL).

The aggregated Entrepreneurial Propensity Index in the Czech Republic reached the value of 0.470, which was higher than that of Slovakia (0.424) and Poland (0.412).

Czech students gave the business support from the state a higher rating than Slovak and Polish students. Similarly, Czech students rated the importance of access to financial resources and the role of the macroeconomic environment more positively. In contrast, the Polishstudents gave the social environment and business advantages a higher rating than Czech and Slovak students. Personality traits are more important for Slovak students than other (CR and PL) students.

The evaluation of business support from the state of students is relatively negative in Slovakia and Poland, as the value of this index is below 0.250. The evaluation of Czech students according to this index is 0.285. The evaluation of the quality of the business environment of students is also relatively negative in Slovak and Poland, as the value if this index is below 0.300. On the other hand, the evaluation of Czech students according to this index is 0.400.

The results of this paper are interesting for career guidance centres; graduate offices and career fairs, entrepreneurship support organisations and also for business subjects in selected countries.

The authors are aware of the research limits (e. g. regional character of the study — central Europe´s countries, the sample size — only 1352 students of tree countries, basic statistical methods as aggregated and partial index of the entrepreneurial propensity and Z-score analysis). The authors believe that the paper has brought several interesting findings and new incentives for further research and discussion regarding assessing the selected factors and their indicators in the propensity and new attributes of entrepreneurship of students.

It is worth to concentrate our future research on the comparison of the evaluation of the factors and their indicators with western countries of Europe. The authors would like to cooperate with western researchers. We believe that the factors and their indicators differently influencing the entrepreneurial propensity of the students to the entrepreneurship in this countries.

References

Andreas, S. (2018). Effects of the decline in social capital on college graduates´ soft skills. *Industry and Higher Education, 32*(1). doi: 10.1177/09504 2217749277.

Arenius, P., & Minniti, M. (2005). Perceptual variables and nascent entrepreneurship. *Small Business Economics, 24*(3). doi: 10.1007/s11187-005-1984-x.

Baryniene, J., Paužaite, Ž., & Cibulskaite, J. (2014). Political and legal initiatives for systemic education of entrepreneurship. *Public Policy and Administration, 13*(3). doi: 10.5755/j01.ppaa.13.3.8385.

Bekeris, R. (2012). The impact of macro-economic indicators upon SME's profitability. *Ekonomika*, *91*(3).

Beyhan, B., & Findik, D. (2018). Student and graduate entrepreneurship: ambidextrous universities create more nascent entrepreneurs. *Journal of Technology transfer, 43*(5). doi: 10.1007/s10961-017-9590-z.

Birdthistle, N. (2008). An examination of tertiary students' desire to found an enterprise. *Education + Training, 50*(7). doi: 10.1108/00400910810909027.

Caliendo, M., Fossen, F., & Kritikos, A. S. (2014). Personality characteristics and the decisions to become and stay self-employed. *Small Business Economics, 42*(4). doi: 10.1007/s11187-013-9514-8.

Cramer, J. S., Hartog, J., Jonker, N., & Van Praag, C. M. (2002). Low risk aversion encourages the choice for entrepreneurship: an empirical test of a truism. *Journal of Economic Behavior and Organization, 48*(1). doi: 10.1016/S0167-2681(01)00222-0.

Crecente-Romero, F., Gimenez-Baldazo, M., & Rivera-Galicia, L.F. (2018). Can entrepreneurship channel overqualification in young university graduates in the European Union? *Journal of Business Research, 89*. doi: 10.1016/j.jbusres. 2018.01.056.

Corsi, C., & Prencipe, A. (2018). Foreign ownership and innovation in independent SMEs. A cross-european analysis. *Journal of Small Business and Entrepreneurship, 30*(5). doi: 10.1080/08276331.2017.1413751.

Danes, S. M., Stafford, K., Haynes, G., & Amarapurkar, S. S. (2009). Family capital of family firms: bridging human, social, and financial capital. *Family Business Review, 22*(3). doi: 10.1177/0894486509333424.

Dvorsky, J., Rozsa, Z., Petrakova, Z, & Kotaskova, A. (2018). Evaluation of state aid for entrepreneurs and their access to financial resources: students´ attitudes in Czech Republic, Poland and Slovakia. *Marketing and Management of Innovations, 3*. doi: 10.21272/mmi.2018.3-01.

Dvorsky, J., Cepel, M., Sopkova, G., & Kotaskova, A. (2017). The quality of macro-environment and business environment and university student entrepreneurship – comparison of the Czech and the Slovak Republic. *International Journal of Entrepreneurial Knowledge. 5*(2). doi: 10.1515/ijek-2017-0014.

Farhangmehr, M., Goncalves, P., & Sarmento, M. (2016). Predicting entrepreneurial motivation among university students: the role of entrepreneurship education. *Education + Training, 58*(7/8). doi: 10.1108/ET-01-2016-0019.

Fayolle, A., Liñán, F., & Moriano, J. A. (2014). Beyond entrepreneurial intentions: values and motivations in entrepreneurship. *International Entrepreneurship and Management Journal, 10*(4). doi: 10.1007/s11365-014-0306-7.

Fiet, J. O. (2001). The theoretical side of teaching entrepreneurship. *Journal of Business Venturing, 16*(1). doi: 10.1016/S0883-9026(99)00041-5.

Gavurova, B., Belas, J., Kotaskova, A., & Cepel, M. (2018). Management of education concepts in the field of entrepreneurship of university students in the Czech Republic. *Polish Journal of Management Studies, 17*(2). doi: 10.17512/pjms.2018.17.2.05.

Gerry, C., Marques, C. S., & Nogueira, F. (2008). Tracking student entrepreneurial potential: personal attributes and the propensity for business start-ups after graduation in a Portuguese university. *Problems and Perspectives in Management, 6*(4).

Goktan, A. B., & Gupta, V. K. (2015). Sex, gender, and individual entrepreneurial orientation: evidence from four countries. *International Entrepreneurship and Management Journal*, 11. doi: 10.1007/s11365-013-0278-z.

Gorman, G., Hanlon, D., & King, W. (1997). Some research perspectives on entrepreneurship education, enterprise education and education for small business management: a ten-year literature review. *International Small Business Journal, 15*(3). doi: 10.1177/0266242697153004.

Gurol, Y., & Atsan, N. (2006). Entrepreneurial characteristics amongst university students: some insights for entrepreneurship education and training in Turkey. Education + Training, *48*(1). doi: 10.1108/00400910610645716.

Hattab, H. W. (2014). Impact of entrepreneurship education on entrepreneurial intentions of university students in Egypt. *Journal of Entrepreneurship, 23*(1). doi: 10.1177/0971355713513346.

Heck, R. K. Z., Danes, S. M., Fitzgerald, M. A., Haynes, G. W., Jasper, C. R., Schrank, H. L., & Winter, M. (2006). The family's dynamic role within family business entrepreneurship. In *Handbook of research on family business*. Edward Elgar Publishing.

Isada, F., Lin, H., & Isada, Y. (2015). Entrepreneurship of university students in Taiwan and Japan. *Management Research Review, 38*(12). doi: 10.1108/MRR-06-2014-0131.

Jones, P., Miller, C., Jones, A., Packham, G., & Zbierowski, P. (2011). Attitudes and motivations of Polish students towards entrepreneurial activity. *Education + Training, 53*(5). doi: 10.1108/00400911111147721.

Kerr, S. P., Kerr, W. R., & Xu, T. (2018). Personality traits of entrepreneurs: a review of recent literature. *Foundations and Trends in Entrepreneurship, 14*(3). doi: 10.1561/0300000080.

Kolarova, E., & Kolarova, V. (2017). The factors influencing college students´ choice of elective subjects. *Journal of Competitiveness. 9*(4). doi: 10.7441/joc.2017.04.03.

Kozubíková, L., Čepel, M., & Zlámalová, M. (2018). Attitude toward innovativeness based on personality traits in the SME sector. Czech Republic case study. *Management and Marketing, 13*(2). doi: 10.2478/mmcks-2018-0013.

Kozubíková, L., Dvorský, J., Cepel, M & Balcerzak, A. P. (2017). Important characteristics of an entrepreneur in relation to risk taking: Czech Republic case study. *Journal of International Studies, 10*(3). doi: 10.14254/2071-8330.2017/10-3/16.

Marques, C. S. E., Santos, G., Galvao, A., Mascarenhas, C., & Justino, E. (2018). Entrepreneurship education, gender and family background as antecedents on the entrepreneurial orientation of university students. *International Journal of Innovation Science, 10*(1). doi: 10.1108/IJIS-07-2017-0067.

Mate, D., & Darabos, E. (2017). Measuring the accuracy of self-assessment among undergraduate students in higher education to enhance competitiveness. *Journal of Competitiveness. 9*(2). doi: 10.7441/joc.2017.02.06.

Morris, M. H., Shirokova, G., & Tsukanova, T. (2017). Student entrepreneurship and the university ecosystem: a multi-country empirical exploration. *European Journal of International Management, 11*(1). doi: 10.1504/EJIM.2017.081251.

Plotnikova, M., Romero, I., & Martínez-Román, J. A. (2016). Process innovation in small businesses: the self-employed as entrepreneurs. *Small Business Economics, 47*(4). doi: 10.1007/s11187-016-9743-8.

Pruett, M., Shinner, R., Toney, B., Llopis, F., & Fox, J. (2009). Explaining entrepreneurial intentions of university students: a cross cultural study. *International Journal of Entrepreneurial Behavior and Research, 15*(6). doi: 10.1108/13552550910995443.

Robertson, M., Line, M., Jones, S., & Thomas, S. (2000). International students, learning environments and perceptions: a case study using the Delphi technique. *Higher Education Research & Development, 19*(1). doi: 10.1080/07294360050020499.

Silva, A., & Nobre, N. (2018). Students´ entrepreneurial propensity: an exploratory study from a Portuguese polytechnic school. *Journal of Entrepreneurship & Organization Management. 7*(1). doi: 10.4172/2169-026X.1000226.

Sitaridis, I., & Kitsios, F. (2018). Entrepreneurial intentions in the field of IT: the role of gender typed personality and entrepreneurship education. Paper presented at the IEEE Global Engineering Education Conference, EDUCON, 2018-April 1854-1859. doi: 10.1109/EDUCON.2018.8363460.

Solomon, G., Dickson, P. H., Solomon, G. T., & Weaver, K. M. (2008). Entrepreneurial selection and success: does education matter? *Journal of Small Business and Enterprise Development, 15*(2). doi: 10.1108/14626000810871655.

Souitaris, V., Zerbinati, S., & Al-Laham, A. (2007). Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. *Journal of Business Venturing, 22*(4). doi: 10.1016/j.jbusvent.2006.05.002.

Staniewski, M., & Awruk, K. (2015). Motivating factors and barriers in the commencement of one's own business for potential entrepreneurs. *Economic Research, 28*(1). doi: 10.1080/1331677X.2015.1083876.

Tredevi, R. (2016). Does university play significant role in shaping entrepreneurial intention? A cross-country comparative study. *Journal of Small Business and Enterprise Development, 23*(1). doi: 10.1108/JSBED-10-2015-0149.

Annex

Table 1. Evaluation of social environment (SE) and business support from the state (BSS) in CR, SR and P

Factor		SE1	SE2	SE3	SE4	*Index SE*
Ratio of positive answers	**CR/SR**	0.680/0.687	0.435/0.467	0.188/0.199	0.071/0.144	*0.344/0.374*
	CR/PL	0.680/0.624	0.435/0.461	0.188/0.469	0.071/0.117	*0.344/0.418*
	SR/PL	0.687/0.624	0.467/0.461	0.199/0.469	0.144/0.117	*0.374/0.418*
Z-score p-value	**CR/SR**	0.818	0.332	0.674	0.001	
	CR/PL	0.101	0.465	0.000	0.026	
	SR/PL	0.046	0.872	0.000	0.234	
Factor		**BSS1**	**BSS2**	**BSS3**	**BSS4**	***Index BSS***
Ratio of positive answers	**CR/SR**	0.330/0.222	0.298/0.164	0.254/0.246	0.259/0.174	*0.285/0.202*
	CR/PL	0.330/0.213	0.298/0.205	0.254/0.224	0.259/0.208	*0.285/0.213*
	SR/PL	0.222/0.213	0.164/0.205	0.246/0.224	0.174/0.208	*0.202/0.213*
Z-score p-value	**CR/SR**	0.001	0.000	0.779	0.001	
	CR/PL	0.000	0.002	0.322	0.091	
	SR/PL	0.757	0.103	0.429	0.193	

Table 2. Evaluation of macroeconomic environment (ME) and quality of business environment (QBE) in CR, SR and PL

Factor		ME1	ME2	ME3	ME4	Index ME
Ratio of positive answers	**CR/SR**	0.487/0.217	0.445/0.241	0.606/0.431	0.511/0.285	*0.512/0.294*
	CR/PL	0.487/0.611	0.445/0.317	0.606/0.621	0.511/0.325	*0.512/0.393*
	SR/PL	0.217/0.611	0.241/0.317	0.431/0.621	0.285/0.325	*0.294/0.393*
Z-score p-value	**CR/SR**	0.000	0.000	0.000	0.000	
	CR/PL	0.000	0.000	0.667	0.000	
	SR/PL	0.161	0.010	0.000	0.190	
Factor		**QBE1**	**QBE2**	**QBE3**	**QBE4**	**Index QBE**
Ratio of positive answers	**CR/SR**	0.408/0.215	0.677/0.472	0.386/0.313	0.130/0.174	*0.400/0.294*
	CR/PL	0.408/0.285	0.677/0.211	0.386/0.411	0.130/0.195	*0.400/0.276*
	SR/PL	0.215/0.285	0.472/0.211	0.313/0.411	0.174/0.195	*0.294/0.276*

Table 2. Continued

Factor		ME1	ME2	ME3	ME4	Index ME
Z-score p-value	**CR/SR**	0.000	0.000	0.018	0.057	
	CR/PL	0.000	0.000	0.484	0.013	
	SR/PL	0.013	0.000	0.002	0.429	

Table 3. Evaluation of access to the financial resources (AFR) and quality of university education (QUE) in CR, SR and PL

Factor		AFR1	AFR2	AFR3	AFR4	Index AFR
Ratio of positive answers	**CR/SR**	0.274/0.224	0.592/0.516	0.560/0.491	0.460/0.391	*0.472/0.406*
	CR/PL	0.274/0.195	0.592/0.507	0.560/0.344	0.460/0.243	*0.472/0.322*
	SR/PL	0.224/0.195	0.516/0.507	0.491/0.344	0.391/0.243	*0.406/0.322*
Z-score p-value	**CR/SR**	0.072	0.019	0.034	0.031	
	CR/PL	0.009	0.017	0.000	0.000	
	SR/PL	0.289	0.779	0.000	0.000	
Factor		**QUE1**	**QUE2**	**QUE3**	**QUE4**	**Index QUE**
Ratio of positive answers	**CR/SR**	0.685/0.516	0.709/0.667	0.680/0.641	0.560/0.544	*0.659/0.592*
	CR/PL	0.685/0.488	0.709/0.669	0.680/0.640	0.560/0.560	*0.659/0.589*
	SR/PL	0.516/0.488	0.667/0.669	0.641/0.640	0.544/0.560	*0.592/0.589*
Z-score p-value	**CR/SR**	0.000	0.164	0.208	0.624	
	CR/PL	0.000	0.230	0.242	1.000	
	SR/PL	0.401	0.944	0.940	0.613	

Table 4. Evaluation of personality traits (PT) and business advantages (BA) in CR, SR and PL

Factor		PT1	PT2	PT3	PT4	Index PT
Ratio of positive answers	**CR/SR**	0.330/0.386	0.633/0.776	0.848/0.864	0.161/0.319	*0.493/0.586*
	CR/PL	0.330/0.203	0.633/0.803	0.848/0.632	0.161/0.211	*0.493/0.462*
	SR/PL	0.386/0.203	0.776/0.803	0.864/0.632	0.319/0.211	*0.586/0.462*
Z-score p-value	**CR/SR**	0.075	0.000	0.477	0.000	
	CR/PL	0.000	0.000	0.000	0.075	
	SR/PL	0.000	0.568	0.000	0.000	

Table 4. Continued

Factor		BA1	BA2	BA3	BA4	Index BA
Ratio of positive answers	**CR/SR**	0.533/0.518	0.355/0.423	0.609/0.778	0.868/0.870	*0.591/0.647*
	CR/PL	0.533/0.619	0.355/0.501	0.609/0.725	0.868/0.760	*0.591/0.651*
	SR/PL	0.518/0.619	0.423/0.501	0.778/0.725	0.870/0.760	*0.647/0.651*
Z-score p-value	**CR/SR**	0.631	0.032	0.000	0.936	
	CR/PL	0.015	0.000	0.000	0.000	
	SR/PL	0.002	0.000	0.064	0.000	

Table 5. Evaluation entrepreneurial propensity (EP) in CR, SR and PL

Factor		EP1	EP2	EP3	EP4	Index EP
Ratio of positive answers	**CR/SR**	0.494/0.588	0.269/0.357	0.259/0.266	0.191/0.178	*0.303/0.347*
	CR/PL	0.494/0.688	0.269/0.381	0.259/0.312	0.191/0.043	*0.303/0.356*
	SR/PL	0.588/0.688	0.357/0.381	0.266/0.312	0.178/0.043	*0.347/0.356*
Z-score p-value	**CR/SR**	0.003	0.003	0.818	0.610	
	CR/PL	0.000	0.001	0.101	0.000	
	SR/PL	0.002	0.453	0.123	0.000	

Table 6. Evaluation aggregated and a partial index of the entrepreneurial propensity of students

Selected Country	Aggregated index of the entrepreneurial propensity (AI_{EP})	Partial index of the entrepreneurial propensity (PI_{EP})
Czech Republic	0.470	0.303
Slovakia	0.424	0.347
Poland	0.415	0.356

Table 7. Evaluation the statistical hypotheses

Hypothesis	Evaluation of hypothesis	Explanation
H1A	Confirmed	The aggregated index of the entrepreneurial propensity in CR was lower than 0.501.
H1B	Confirmed	The aggregated index of the entrepreneurial propensity in SR was lower than 0.501.
H1C	Confirmed	The aggregated index of the entrepreneurial propensity in PL was lower than 0.501.
H2A	Rejected	The difference between the aggregated index of the entrepreneurial propensity and the partial index of the entrepreneurial propensity in CR was higher than 10%.
H2B	Confirmed	The difference between the aggregated index of the entrepreneurial propensity and the partial index of the entrepreneurial propensity in SR was lower than 10%.
H2C	Confirmed	The difference between the aggregated index of the entrepreneurial propensity and the partial index of the entrepreneurial propensity in PL was lower than 10%.
H3A	Rejected	Statistically significant differences were discovered in the evaluation of individual factors between Czech and Slovak students.
H3B	Rejected	Statistically significant differences were discovered in the evaluation of individual factors between Czech and Poland students.
H3C	Rejected	Statistically significant differences were discovered in the evaluation of individual factors between Slovak and Poland students.