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## **DEVELOPMENT OF STUDENTS' INNOVATIVE COMPETENCES IN THE ACADEMIC ENVIRONMENT: DETERMINANTS AND CAREER PATHS**

**Marek Matejun**

*Department of Management, Faculty of Organization and Management, Lodz University of  
Technology, Lodz, Poland*

[Matejun@p.lodz.pl](mailto:Matejun@p.lodz.pl)

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### **Abstract**

*The aim of the paper is to assess the level and determine the factors of development of students' innovative competences in the academic environment of a selected university in Poland, as well as to identify the main directions of students' planned career paths. This aim is realized on the basis of the research carried out in the framework of the 2nd Edition of the international research project Global University Entrepreneurial Spirit Students' Survey (GUESSS) on a sample of 1,597 students of Lodz University of Technology, Poland. There were 3 research questions posed. The results indicate that the level of innovative competences is significantly and positively influenced by the level of entrepreneurship classes and the support on the part of university friends for entrepreneurial and innovative initiatives undertaken. People with the highest level of these competences often have much more definite professional plans. More than half of them plan to implement their innovative ideas in their own companies, established after gaining experience as employees of small, medium-sized and large enterprises.*

## **Keywords**

Individual Competences, Innovative Competences, University, Students, Career Paths, GUESSS

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## **1. Introduction**

Individual competences reflect interdependence and synergistic strengthening of people's knowledge, skills and attitudes manifested in the form of a specific potential that determines efficiency and effectiveness of their activities in a given field and the achievement of success in personal and professional life. Such competences include innovative competences, which are directly connected with entrepreneurial competences (Santandreu, Mascarell, Garzon & Knorr, 2013) and are considered as some of key competences in the European Union (Halász, & Michel, 2011). Universities play an important role in shaping these competences, thus influencing socio-economic development of regions and countries (Benneworth & Charles, 2005), often also determining graduates' further professional choices.

Based on the above, the aim of the paper is to assess the level and determine the factors of development of students' innovative competences in the academic environment of a selected university in Poland, as well as to identify the main directions of students' planned career paths. This aim is realized on the basis of the research carried out in the years 2013-2016 on a sample of 1,597 students of Lodz University of Technology (Poland) in the framework of the 2nd Edition of the international research project Global University Entrepreneurial Spirit Students' Survey (GUESSS), aimed at diagnosing students' entrepreneurial attitudes and behaviors. Based on the literature review, 3 research questions were posed. The results obtained indicate that the level of innovative competences is significantly and positively determined by the level of university entrepreneurship classes, as well as the acceptance and support on the part of university friends and acquaintances for entrepreneurial and innovative initiatives undertaken. Students with the highest level of innovative competences often have much more definite professional plans. More than half of them plan to set up their own companies, assuming they gain prior experience as employees in small, medium-sized and large enterprises.

## **2. Foundations of Developing Students' Innovative Competences in the Academic Environment: Literature Review**

Innovation and innovativeness are multidimensional and ambiguous concepts. In general, they refer to the course of innovative processes and effects of creative and ingenious activities aimed at creating things, ideas, and practices (Goldsmith & Foxall, 2003) which constitute strategically, commercially and economically justifiable changes or novelties (de Medeiros, Ribeiro & Cortimiglia, 2014). Defining innovations, M. Crossan and M. Apaydin (2010) show that they include both internal activities (production of innovations) as well as innovations derived from external sources (adoption of innovations). In their approach, innovativeness goes beyond the classic framework of the creation process, including also application/exploitation aimed at obtaining specific benefits in the form of added value. Innovations do not need to be absolute novelties, they also include e.g.: projects with the level of novelty relative to the area of a specific organization. P. Frankelius (2009) emphasizes that the degree of innovation originality should be substantial (often revolutionary), and innovation implementation should be adopted, accepted and seen as beneficial by company stakeholders.

Thus understood innovativeness and innovations are associated closely with entrepreneurship, constituting a synergistic factor determining success and sustainability of modern organizations in a dynamic and changing market environment (Zhao, 2005). They contribute to increasing the value of enterprises and to building a lasting and effective competitive advantage. They are also conducive to a substantial improvement of business performance, an increase in customer loyalty, internationalization of the scope of business activity and modernization of processes and management methods (Rosenbusch, Brinckmann, & Bausch, 2011; Rubera & Kirca, 2012).

Specific competences that enable creative activities and their effective market implementation are an important factor stimulating innovativeness and innovation. These competences can be defined as innovative competences and are linked with the ability to identify new business opportunities, employ creativity, as well as introduce, develop and commercialize products and services (Quintana-García & Benavides-Velasco, 2008; Li, Huang & Tsai, 2009). The competences can be considered at the individual, team, and organizational level. B. Lokshin, A. Van Gils and E. Bauer (2009) recommend in this case a specific configuration of customer, technological and organizational competences which contributes to an increase in the number of innovations introduced into the market, especially innovations with a high level of novelty. Development of these competences has the potential to help firms create more successful product offerings

(Michaelis & Markham, 2017), lead to new process, new products or new idea of an organization and also influence the creation of a competitive advantage (Gautam, Singh, Arya, Tiwari & Fartyal, 2016).

A. Skaržauskienė and S. Jonušauskas (2013) see cognitive, emotional and social intelligence competences as key components of innovative competences. By superimposing the specificity of innovative activity and its close links with entrepreneurship on these dimensions, the following key dimensions of innovative competences can be identified (Zhao, Seibert, Hills, 2005; Liñán, 2008; Kickul, Gundry, Barbosa & Whitcanack, 2009):

- Cognitive components, such as: the ability to manage employee teams and organizations (particularly in the area of innovation management) through the use of systems thinking, as well as capabilities to create new products and services,
- Emotional components, such as: acceptance of complexity and flexibility in the context of business activity, openness to the identification and development of market opportunities, as well as new opportunities to create business ventures and introduce new products and services into the market,
- Social components, such as: the use of network relationships and ties for development, commercialization and effective implementation of new, innovative ideas.

The academic environment is an important source of development of entrepreneurial and innovative competences (Henderson & Robertson, 1999; Yurtkoru, Kuşcu & Doğanay, 2014). Its role is associated primarily with the use of formal education to build and increase motivation and competences of graduates to become key persons in conducting innovative and entrepreneurial activities (Rasmussen & Sørheim, 2006). In the framework of the academic environment, a suitable university climate that encourages innovativeness and implementation of creative ideas comes to the fore (Franke & Lüthje, 2004; Askun, Yıldırım, 2011; Marzban, Moghimi & Ramezan, 2013). It should include the atmosphere of entrepreneurship stimulating to search for and develop market ideas, as well as new, promising business ventures, products and services. It is important to offer a range of options and to undertake specific initiatives aimed at the creative development of entrepreneurial ideas as well as to provide substantive and organizational mentoring and support for outstanding students who plan to set up their own companies. Nowadays, the academic environment should also include preferences of the new Generation Z students, especially in terms of technology usage within formal educational systems (Cilliers, 2017).

An appropriate scope and program of entrepreneurship classes creating the correct innovative attitude should also be an important part of the academic environment. A. Raichaudhur (2005) stresses the need to maintain the right proportions between the theory and practice of entrepreneurship, including education encompassing case studies and problem-based learning. P.E. Konstantinovna (2017) emphasizes that higher education system should concentrate more on entrepreneurial ways of thinking and acting. It can be provided by active methods for obtaining new knowledge, opportunities to achieve higher level of personal social activities, developing a training environment for stimulate creativity and supporting to bring the study to the practice of everyday life. The content of entrepreneurial classes conducted and specific educational outcomes which should be aimed at the following goals are also important (Souitaris, Zerbinati & Al-Laham, 2007):

- Increased understanding of attitudes, values and motivation of entrepreneurs,
- Understanding what steps and actions should be taken to set up one's own business,
- Increasing entrepreneurial and management competences necessary for the establishment and effective management of one's own business,
- Development of skills related to acquiring new contacts, building relationships and cooperation networks,
- Growth of the potential to perceive new market and business opportunities.

Support on the part of university friends and acquaintances complements the above-presented components. Pruett, et. al. (2009) includes them in the group of personal role model factors determining entrepreneurial intentions. D. Turker and S. Selcuk (2009) see these components within the framework of relational support, which in their model is supplemented by family support as well as support derived from financial institutions or public organizations. Regardless of the position of relationships with friends along with their acceptance and support in these business development models, these elements undoubtedly play an important role in shaping students' innovative competences.

The development of students' entrepreneurial and innovative competences results in building an awareness of their own strengths, capabilities and effectiveness of operation as well the ability to identify and exploit market opportunities. Because learning outcomes are often correlated with proper career assessment (Ferrer & Dela Cruz, 2017), it can be assumed that these effects influence graduates' determination and preferences in the selection of further career paths, especially related to

the founding and running of their own companies (Moi, Adeline & Dyana, 2011). The above considerations led to the formulation of three research questions:

- Q1: What components of the academic environment foster students' innovative competences?
- Q2: What changes in the academic environment should be introduced to increase the effectiveness of development of students' innovative competences?
- Q3: To what extent and in what way do innovative competences of students affect their planned career paths?

In order to obtain the answers to these questions in relation to a selected Polish university, empirical research was conducted for which a report is presented further on in the paper.

### **3. Research Methodology and Respondent Characteristics**

The aim of the paper is realized and the answers to the questions are provided on the basis of the research carried out in the years 2013-2016 on a sample of 1,597 students of Lodz University of Technology (Poland) in the framework of the 2nd Edition of the international research project Global University Entrepreneurial Spirit Students' Survey (GUESSS). This is an international project and its main objective is the diagnosis of entrepreneurial attitudes and behaviors among students from different countries of the world. The preferred career paths of students after completion of their education, plans for starting their own business and experiences related to family business are also analyzed.

The project was initiated in 2003 by the Center for Family Business at the University of St. Gallen in Switzerland. The first study covered 2 countries, after 10 years (2013) 34 countries joined the project and 109,026 students from 759 higher educational institutions sent their responses to the questionnaire (Gubik & Farkas, 2016). In the final, 7th edition (2016), the study was conducted in 50 countries at more than 1,000 universities by obtaining more than 122,000 complete responses (Data Collections, 2017).

The results shown in this paper were collected in two recent editions of project GUESSS (2013 and 2016) at Lodz University of Technology. In Poland, these projects were coordinated by Institute of Family Business. The research methodology was imposed by the organizers and included the technique of electronic surveys with the use of a survey questionnaire available on [www.qualtrics.com](http://www.qualtrics.com). Invitations to participate in the study were sent to all students of Lodz University of Technology (approx. 20,000 people) using their email addresses, accompanied by the

information and promotion actions concerning the project. As a result of these efforts, the survey was correctly completed by a total of 1,597 students, including 1,108 in 2013 and 489 in the 2016 edition. The study encompassed 396 (24.8%) business students (management, management and production engineering, economic sciences) and 1,199 (75.1%) non-business students of mostly technical studies, including computer science and architecture (902 people, 56.5%). The respondents were mainly students of first-cycle degree programs (engineering degree and bachelor's degree, a total of 79.7%), to a lesser extent students of second-cycle degree programs (17.5%) and doctoral studies (2.5%). The respondents were mostly men (51.9%), aged 19-22 years (56.2%). Table 1 presents detailed characteristics of the respondents.

**Table 1: Characteristics of Respondents Participating in the Study**

<b>Age</b>	<b>n</b>	<b>%</b>	<b>Gender</b>	<b>n</b>	<b>%</b>
Under 19 years	12	0.8%	Female	767	48.1%
19 - 20 years	447	28.0%	Male	828	51.9%
21 - 22 years	451	28.2%	No data	2	0.1%
23 - 25 years	296	18.5%	<b>Main field of study</b>	<b>n</b>	<b>%</b>
Over 25 years	80	5.0%	Business/Management	396	24.8%
No data	311	19.5%	Technical and architecture studies	902	56.5%
<b>Cycle of studies</b>	<b>n</b>	<b>%</b>	Mathematics and natural sciences	268	16.8%
I cycle studies	1272	79.7%	Other fields of study	29	1.8%
II cycle studies	280	17.5%	No data	2	0.1%
PhD studies	40	2.5%			
No data	5	0.3%			

Source: The Author's Own Elaboration based on the Research Results

A statistical analysis of the obtained results was conducted with the use of IBM SPSS Statistics (Wagner, 2015). To assess the accuracy of the scales of the synthetic indices, Cronbach's alpha for which the acceptable level was at alpha Cr. > 0.7 was used (Sarstedt & Mooi, 2014). Within the framework of the statistical analysis, the following types of analysis were used: (1) response count analysis, (2) arithmetic mean as a measure of location, (3) standard deviation as a measure of response variance, (3) the Kruskal-Wallis H test to assess diversity of responses between

different groups of respondents, and (4) linear regression analysis including the impact of individual elements of the academic environment on the level of development of students' innovative competences in the assessment.

#### **4. Measures and Scales**

'Students' innovative competences' were determined on the basis of a synthetic index in the construction of which the specificity of innovative activity and its close links with entrepreneurship were taken into account (Sahut & Peris-Ortiz, 2014). To measure this variable, 4 items were used (based on Zhao, Seibert, Hills, 2005; Liñán, 2008; Kickul, Gundry, Barbosa & Whitcanack, 2009): focus on discovering new business opportunities, focus on creating new products and services, innovation management skills and the ability to develop and commercialize new ideas. The items were rated by the respondents on a 1-7 scale, and alpha Cr. for the adopted scale is 0.897.

The academic environment was described using 4 dimensions including: entrepreneurship climate at the university, the scope and level of entrepreneurship classes that shape innovative attitudes, as well as acceptance and support for entrepreneurial and innovative activities on the part of other students. 'University entrepreneurship climate' was determined on the basis of a synthetic index covering 3 items (based on Franke & Lüthje, 2004; Marzban, Moghimi & Ramezan, 2013): the atmosphere inspiring to create new, promising market ideas, engaging and motivating students to participate in initiatives related to entrepreneurship, as well as favorable organizational and substantive conditions preparing students to start their own business activity. The items were rated by the respondents on a 1-7 scale, and alpha Cr. for the adopted scale is 0.861.

'The scope of entrepreneurship classes' was determined on the basis of an ordinal variable of the 1-4 range. Its levels express the following elements: a lack of participation in entrepreneurship classes, participation in at least one class as an auditing student, participation in at least one mandatory entrepreneurship class or studying a major closely associated with the subject of entrepreneurship. 'The level of entrepreneurship classes' was expressed on the basis of a synthetic index consisting of 5 items (based on Souitaris, Zerbinati & Al-Laham, 2007). These items describe the extent to which the classes have contributed to the understanding of entrepreneurial intentions and procedures related to running one's own business, as well as to the development of management skills, the ability to build interpersonal relationships and cooperation networks, along with an increase in the potential of perceiving new opportunities. The items were rated by the respondents on



a 1-7 scale, and alpha Cr. for the adopted scale is 0.905. 'Acceptance for innovative activities' was described by a synthetic index consisting of 2 items (based on Liñán & Chen, 2009) expressing acceptance and support for entrepreneurial and innovative activity on the part of (1) close university friends and (2) acquaintances in the academic environment. The items were rated by the respondents on a 1-7 scale, and alpha Cr. for the adopted scale is 0.795.

Their preferred career paths were evaluated based on two time perspectives: (1) immediately after the graduation, and (2) 5 years after the completion of studies. The respondents could choose the following directions of activity (based on Küttim, Kallaste, Venesaar & Kiis, 2014): the career of an employee (in a small, medium-sized or large company, a non-profit organization, a public institution or a university), the establishment of their own business, the role of a successor in a family-owned company or a lack of specific plans.

## **5. Results and Discussion**

The results obtained indicate that students assess their entrepreneurial competences at a moderate level ( $M = 4.22$ ), and their main explanatory variable is focus on the development and commercialization of new ideas ( $M = 4.44$ ). The analyses carried out using the Kruskal-Wallis H Test show that the level of these competences:

- Does not differ significantly statistically between women and men,  $H = 0.25$ ,  $p > 0.05$ ,
- Does not show any differences between the individual age groups,  $H = 2.65$ ,  $p > 0.05$ ,
- Does not differ significantly from the point of view of the level of studies,  $H = 4.17$ ,  $p > 0.05$ .

The level of these competences, however, is significantly higher ( $H = 17.49$ ,  $p < 0.01$ ) among business students ( $M = 4.43$ ) than non-business students ( $M = 4.15$ ) at the same  $SD = 1.40$ .

Subsequently, the assessment dealt with the factors related to the development of innovative competences. The climate of entrepreneurship at the university was rated at a moderate level ( $M = 4.1$ ), slightly higher rated by I-cycle students ( $M = 4.17$ ) than II-cycle students ( $M = 3.84$ ) and doctoral students ( $M = 3.88$ ). The level of entrepreneurship classes was similarly rated, at a relatively lower level ( $M = 3.82$ ), and it is statistically ( $H = 157.88$ ,  $p < 0.01$ ) significantly higher assessed by Management and Economics students ( $M = 4.61$ ) than non-business students ( $M = 3.56$ ). It is significantly related to the scope of entrepreneurship classes,  $r_s$  ( $n = 1597$ ) = 0.41,  $p < 0.01$ . The scope of these classes is insufficient at non-business studies, where many students (39%) say that they have not participated in any entrepreneurship classes. On the other hand, 34% of these students

indicate that they have participated in at least one entrepreneurship class which constituted a mandatory subject. These results are much worse than the responses provided by business students, 58% of whom believe that their major is closely related to entrepreneurship, and 20% indicate that they have taken part in at least one entrepreneurship class. Support on the part of university friends and acquaintances for undertaking innovative and entrepreneurial activities is assessed at a fairly high level ( $M = 5.37$ ).

On the basis of the results obtained, the assessment of the impact of individual factors on the development of innovative competences of students (dependent variable) was made with the use of linear regression analysis. The following predictors were adopted: the climate of entrepreneurship at the university, the level and scope of entrepreneurship classes, and acceptance on the part of university friends and acquaintances for innovative and entrepreneurial activities undertaken. In addition, the model takes into account the following variables: the gender and age of the respondents, the level of studies and the field of study divided into business and non-business studies. The results of the regression analysis are presented in Table 2.

The results obtained indicate that the level of innovative competences of the students surveyed is significantly influenced by the level of entrepreneurship classes. These classes develop, among others, the ability to see new possibilities for action and resource allocation by young people, as well as the understanding of attitudes, values, and motivation of entrepreneurs, and they also influence the ability to shape human relations. These skills are useful to build relationships with university friends and acquaintances whose acceptance and support for entrepreneurial activities also positively influence the shaping of innovative competences of the students surveyed.

**Table 2:** *Factors of Development of Students' Innovative Competences at the Surveyed University*

<b>Variables</b>	<b>Research model</b>
Dependent variable:	Level of innovative competences
The climate of entrepreneurship at the university	-0.01 (0.03) [-0.01]

The level of entrepreneurship classes	<b>0.28** (0.03) [0.29]</b>
The scope of entrepreneurship classes	0.00 (0.03) [0.00]
Acceptance of friends for innovative activities	<b>0.43** (0.02) [0.44]</b>
Gender	-0.06 (0.06) [-0.02]
Age	0.02 (0.02) [0.02]
Level of studies	-0.05 (0.07) [-0.02]
Field of study	-0.06 (0.09) [-0.02]
Constant	1.10 (0.29)
Observations	1597
R <sup>2</sup> / R <sup>2</sup> corrected	0.31 / 0.31
F-stat	76.426**

\* p < 0.05; \*\* p < 0.01. A linear regression analysis. Standard errors in parentheses, the coefficients standardized in square brackets.

Source: The Author's Own Elaboration based on the Research Results

An insufficient impact of entrepreneurship climate at the analyzed university on the development of students' innovative competences is a weak point of the studied academic environment. Lodz University of Technology should therefore more effectively build the atmosphere that inspires young people to create new ideas as well as encourage students to participate in entrepreneurial initiatives. One of the possibilities of building this positive atmosphere can be an increase in the scope of practical entrepreneurship classes whose content, especially in the non-business fields of study, is insufficient and does not significantly affect the development of students' innovative competences.

The regression analysis conducted shows no significant impact of the control variables on the level of the analyzed competences, which points to the appropriate selection of substantive variables for the research model. The analyzed model has proven to be statistically significant and its fit, measured with the coefficient of determination, indicates that more than 30% of the variance in the level of innovative competences of the students surveyed is explained by the adopted predictors. This level of fit of the model should be considered satisfactory in the context of multidimensionality and high complexity of the model variables, as well as the presence of many determinants that are non-measurable or difficult to measure.

In the last part of the study, the impact of the level of innovative competences on the preferred career paths of the students surveyed was assessed. To facilitate interpretation of the results, a three-tier distribution of the level of these competences was adopted: low – average values within the range < 1-3), medium < 3-5) and high < 5-7). The summary of the results is shown in Table 3.

The results obtained indicate significant diversity of the preferred career paths of the students surveyed depending on the level of their innovative competences. Immediately after graduation, the majority of the respondents plan to work in companies of different sizes. However, during this period, an increased interest in setting up their own business is clearly displayed by individuals with a higher level of innovative competences. Focus on the establishment and development of their own business definitely grows in this group of respondents over a period of 5 years after the completion of studies. Along with an increase in the level of innovative competences, the students have more definite professional plans and more often plan to opt out of working in enterprises (especially small and medium-sized ones) in order to run their own business.

**Table 3:** Preferred Career Paths according to the Level of Development of Innovative Competences of the Students Surveyed

<b>Level of innovative competences:</b>	<b>low</b>	<b>average</b>	<b>high</b>	<b>low</b>	<b>average</b>	<b>high</b>
<b>Career path:</b>	<b>immediately after graduation</b>			<b>5 years after graduation</b>		

An employee in a small company	27%	30%	24%	6%	5%	3%
An employee in a medium-sized company	29%	31%	25%	18%	12%	6%
An employee in a large company	18%	17%	22%	27%	25%	17%
An employee in a non-profit organization	1%	1%	1%	0%	0%	1%
A university employee	3%	2%	2%	6%	5%	3%
An employee in a public institution	1%	0%	1%	1%	2%	1%
A business owner	5%	7%	15%	22%	35%	55%
A successor in a family-owned company	1%	2%	3%	0%	3%	5%
No defined plans	15%	9%	6%	20%	14%	10%

Source: the author's own elaboration based on the research results.

At the same time, a negative correlation between the level of innovative competences and academic career preferences can be seen. The involvement of people with relatively low innovative competences in academic work may be a significant barrier to progress, scientific discoveries, and stimulating the country's innovativeness and economic development.

## **6. Conclusion**

Innovative competences play a major role in building competitive capacity of modern enterprises and economy. Their formation can begin at the stage of formal education, and universities should perform the leading role in fostering increasing motivation and encouraging students and graduates to undertake entrepreneurial and innovative activities. The university where the survey presented in this paper was conducted faces similar tasks. The results obtained allows to formulate the answers to the research questions posed:

- Q1: What components of the academic environment foster students' innovative competences? The development of students' innovative competences at Lodz University of Technology, Poland, is primarily fostered by the level of entrepreneurship classes as well as acceptance and support on the part of university friends and acquaintances for undertaking entrepreneurial and innovative initiatives. The correlation between these two elements should also be noted as entrepreneurship classes allow students to develop, among others, skills to build relations and cooperation networks that subsequently translate into the ability to exploit the social potential of the academic environment to support innovative activities.

- Q2: What changes in the academic environment should be introduced to increase the effectiveness of development of students' innovative competences?

In order to improve the effectiveness of the impact of the academic environment at Lodz University of Technology on its students' innovative competences, creating entrepreneurship climate on the university campus should be the primary goal. Currently, the university insufficiently inspires its students to create new, promising market ideas and also does not foster comprehensive involvement of its students in entrepreneurial initiatives. Increasing the scope of mandatory entrepreneurship classes, especially for non-business students, should also be another important objective.

- Q3: To what extent and in what way do innovative competences of students affect their planned career paths?

Innovative competences significantly influence career paths planned by the surveyed students of Lodz University of Technology. Along with an increase in the level of these competences, the students have much more definite plans. They most often also prefer setting up their own businesses, which is especially noticeable in the long term (approx. five years after graduation), after obtaining professional experience in small, medium-sized and large enterprises. It seems that the students see their own companies as the primary place of implementation of their innovative ideas.

The research will certainly require continuation, which will be possible in the next editions of the international research project Global University Entrepreneurial Spirit Students' Survey (GUESSS).

### **6.1 Scope of Future Research**

The significance of presented issues prompts the continuation of the research. In-depth research on the impact of internationalization of studies and international student exchanges on the development of the level of students' innovative competences can be indicated among prospective directions of further analysis. Longitudinal studies to assess the actual choice of directions in respondents' professional activity and the effectiveness of implementation of innovative ideas and activities undertaken in the course of employment and in the framework of running one's own business would also be interesting.

### **6.2 Research Limitations**

Methodological limitations arising from the adopted methods and research techniques should be taken into account while analyzing the research results obtained and formulating cognitive and application-related conclusions based on these results (Geletkanycz & Tepper, 2012). These limitations include first and foremost high subjectivity of answers provided by the respondents resulting from different perception of the questions asked, as well as a lack of direct contact between the students participating in the study and its organizers. The limitations also include a high level of complexity, relativism and contextuality of the studied issues, as each of them is a multidimensional construct ambiguously defined in the literature. As a result, only selected dimensions (items), which allow to explore the realities of the academic environment only to a limited extent, were adopted for their identification and assessment. A lack of consideration of the criterion of time in the research is also its weak point. Conducting the research over a longer period of time would have allowed to obtain more accurate results concerning changes to the level of innovative competences as well as entrepreneurial plans, attitudes and intentions of the students surveyed.

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