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Entrepreneurial Competencies in Research Based on EntreComp Among Student Youth in Poland

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Katarzyna Chudy- Laskowska[1], Marta Czyżewska[2], Karolina Jezierska[3], Teresa Piecuch[4]

Abstract:

Purpose: *The aim of the paper is to assess the level of creativity and the ability of student youth to spot business opportunities, generate, assess and develop business ideas with ethical and sustainable thinking approach - as important part of entrepreneurial competencies crucial in the process of innovative business venture creation.*
Design/Methodology/Approach: *The research was conducted in 2020 on students' groups studying at three different universities in Poland in South-Eastern Poland. The survey with use of questionnaire was conducted according to EntreComp Framework in the area of "ideas and opportunities".*
Findings: *The overall results are optimistic as the youth surveyed feel innovative, curious, open and able to recognize the value of ideas that are promising traits for their future business creation. The results show that the surveyed youth was differentiated in the competency's assessment regarding the field of study and university, study degree, gender, professional situation and place of residence.*
Practical Implications: *Research enabled to examine entrepreneurial competencies among student youth and form recommendations for focusing in educating student youth in the area of developing ideas that create value for others, sharing and protecting ideas, and uncovering needs and strengthening efforts in order to drive sustainable thinking.*
Originality/value: *The originality of the research is based on the use of the EntreComp methodology, which allows to diagnose and then develop key competencies for the development of entrepreneurship according to the framework promoted by European Commission. The added value of the research is elaboration of the synthetic index "ideas and opportunities", which allows a joint assessment of the individual competences included in this area.*

Keywords: *Entrepreneurial competencies, entrepreneurship education, competencies assessment, EntreComp Framework.*

JEL code: *L26, I29.*
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[1]*Rzeszów University of Technology, Rzeszów, Poland, ORCID: 0000-0002-7797-2858* *kacha877@prz.edu.pl*
[2]*Pedagogical University of Krakow, Kraków, Poland, ORCID: 0000-0001-6709-6842* *marta.czyzewska@up.krakow.pl*
[3]*Corresponding author, same as in 1, ORCID: 0000-0002-2195-6373* *kakoziol@ur.edu.pl*
[4]*Same as in 1, ORCID: 0000-0003-2656-662X* *tpiecuch@prz.edu.pl*

1. Introduction

Entrepreneurship is a key competence described as "the discipline of the 21st century" (Farrell, 2018) that is crucial for competitive business development in the contemporary economy. It is important for an organization and an individual as well. Entrepreneurial competencies are also perceived as "higher level traits" that need to be promoted and developed to increase the entrepreneurial ability to succeed. They contribute to personal development and are crucial for enterprises aimed at implementing innovations.

The article concerns entrepreneurial competencies, mainly in the area of ideas creation, spotting and assessing opportunities, which was thoroughly researched in the survey among representatives of the young generation using the EntreComp methodology proposed by the European Commission, which has not yet been thoroughly tested in many research (Nikitina, Lapin, Ozolin, Irbe, Priem, Smits, and Nemilentsev, 2020; Czyżewska and Mroczek, 2020; Czyżewska and Kozioł, 2020). EntreComp was developed in order to create a common reference framework for entrepreneurship as a set of competencies that enables active participation in social and economic life, and is crucial in managing one's own life and career, and in undertaking value-creating initiatives.

The aim of the research was to assess the level of creativity and the ability of student youth to spot business opportunities, generate, assess and develop business ideas with ethical and sustainable thinking approach - as important part of entrepreneurial competencies crucial in the process of innovative business venture initiation. It was conducted among young people from three universities in Poland, located in Małopolskie and Podkarpackie regions. The results analysis examined whether demographic and other metrics features, such as gender, study degree, university, field of study, professional status, place of residence differentiate the youth in measurement of the competencies.

2. Entrepreneurial Competencies and EntreComp Methodology

Entrepreneurial competencies, directly influencing the results of the companies draw attention of many scholars (Boyatzis, 1982; Bird, 1995; Komarkova, Gagliardi, Conrads, and Collado, 2015; Reis, Fleury, and Carvalho, 2021; Tehseen and Anderson, 2020), practitioners as business coaches, teachers, youth workers. They are behavioral in nature and are considered to contribute to the success of the tasks performed and help people to perform tasks (Mitchelmore and Rowley, 2010). They create the sum of experiences, knowledge, skills and attitudes that a person acquires in the course of life in order to effectively perform the tasks entrusted to him (Arafeh, 2016).

Abdelgawad, Zahra, Svejenova, and Sapienza (2013) categorized entrepreneurial competencies into four different but interrelated dimensions, including sensing, shaping, selecting, and synchronizing to pursue opportunities. Sensing is the ability to see or imagine opportunities inside and outside industry boundaries. Shaping refers to the aptitude to integrate available resources to create and realize opportunities, and selecting refers to the ability of employers and managers to assess and evaluate potential opportunities while synchronizing means to harmonize opportunities through internal and external resource and capability arrangements (Abdelgawad *et al.*, 2013; Olugbola, 2017; Zahra *et al.*, 2011, Gustomo *et al.*, 2019).

Entrepreneurs and their business opportunities are a product of the interplay between the entrepreneurs' own creativity and their organizational environment (Kirzner, 1997) which is in line with the research of Sigrist (1999), who claims that perceiving and exploiting business opportunities involves the creative discovery of something new (Sarasvathy, 2001).

Relatively new approach elaborated for European Commission is EntreComp – the methodology developed with the aim of creating a common, flexible reference framework for entrepreneurial competencies (Bacigalupo, Kampylis, Punie, and Brande, 2016). In this approach, entrepreneurship as a competence can be used by individuals, groups, as well as by already existing organizations in all spheres of human life and activity. EntreComp stresses the importance of lifelong learning and the use of entrepreneurship in all situations, for example for personal development, active participation in society, all kinds of work, or re-entering the labor market as an employee or self-employed person. It covers three main areas of competence, "ideas and opportunities", "resources" and "into action" that directly reflect the definition of entrepreneurship as the ability to turn an idea into an action that creates value for others. The value created can be financial, social, cultural and more (McCallum, Weicht, McMullan, and Prince, 2018). The methodology distinguishes the following groups of competencies:

- ideas and opportunities - including: ability recognition, creativity, vision, idea evaluation, ethical and sustainable thinking;
- resources - self-awareness and self-efficacy, motivation and perseverance, resource mobilization, financial resources, mobilizing others;
- activity - it is initiative, planning and management, dealing with uncertainty and risk, cooperation, learning through experience.

The learning outcomes in the framework for the individual competencies are measured on the 8 levels of proficiency, divided into 4 levels, foundation, intermediate, advanced and expert. In most of the questions EntreComp measures the competencies on 8-level scale to reflect the developing increasing autonomy and responsibility in acting upon ideas to create value and to reflect developing capacity to generate value from simple contexts up to complex and changing environments.

Due to the size limitations of this article, and the complexity of the EntreComp framework the focus is on the first area "ideas and opportunities" which is constituted by the competencies of (Bacigalupo, Kampylis, Punie, and Van den Brande, 2016);

1. spotting opportunities – revealing the ability of learners to recognize opportunities, address the unmet needs, but on the advanced level also seize and shape opportunities to respond to challenges and create value for others (individual competencies: Identify, create and seize opportunities; Focus on challenges; Uncover needs; Analyze the context),
2. creativity – shows the learners' skills in developing, testing, refining ideas and transforming them into solutions that create value for others (competencies: Be curious and open; Develop ideas; Define problems; Design value; Be innovative),
3. vision – reflects the learners' ability of imaging a desirable future, building an inspiring vision engaging others, and using the vision in guiding of strategic decision-making (competencies: Imagine; Think strategically; Guide action),
4. valuing ideas – shows the learners' ability of imagining the future, developing a vision to turn ideas into action and visualizing future scenarios to help guide effort and action (competencies: Recognize the value of ideas; Share and protect ideas),
5. ethical and sustainable thinking – enables to recognize the impact of choices and behaviors within the community and the environment, and how the learners are driven by ethics and sustainability when making the decisions (competencies: Behave ethically; Think sustainably; Assess impact; Be accountable).

In the literature there are more competency models described that are similar to EntreComp framework (Chouhan and Srivastava, 2014; Loué and Baronet, 2012; Tovar, Tabuenca, and Piedra, 2020). The comparison of three models was conducted by Gianesini, Cubico, Favretto, and Leitão (2018), who contrasted the EntreComp with Bartram's (2005) the Great Eight Model and the 13 Entrepreneurial competencies model elaborated by Morris, Webb, Fu and Singhal (2013). Gianesini *et al.* (2018) concluded that approach of EntreComp better than the other two balance the number and type of competencies and best captures the unique characteristics of entrepreneurship competencies in regard with stimulation entrepreneurship, incentives and barriers to launching of new ventures and development of a business.

Regarding the role and importance of individual competencies categorized into the area of "ideas and opportunities" few studies have been carried out or they cover only part of the area. The research carried out in Slovenia, USA and Serbia among entrepreneurs by Jerai *et al.* (2015) shows that openness is positively related to entrepreneurial curiosity and that entrepreneurial curiosity is positively related to company's growth. In turn, other studies reveal, that the competence of "looking for opportunities" is the weakest entrepreneurial competence among student youth e.g.,

Philippines (Bautista, Barlis, and Nazario, 2007) and also in Latvia they postulate to strengthen it and verify the study programs (Kyguolienė and Švipas, 2019).

Research in Finland, Latvia and the Netherlands (done only in small focus groups) show that the student youth in Finland and Latvia are much better trained in spotting opportunities, and creativity, whereas the youth in all countries are less trained in ethical and sustainable thinking (Nikitina, Lapin, Ozolin, Irbe, Priem, Smits, and Nemilentsev, 2020).

Engagement of higher education to the development of entrepreneurial competencies and the emphasis also on sustainable thinking in educating future professionals are postulated by many scientists (Schaltegger and Wagner, 2011; Rieckmann 2012; Wals and Jickling, 2002; Lans, Blok, and Wesselink, 2014).

It would be advisable to disseminate one methodology (eg EntreComp) and assess entrepreneurial competences in all three areas in order to prepare an international ranking and a fair comparison of entrepreneurial competences.

3. Results and Discussion

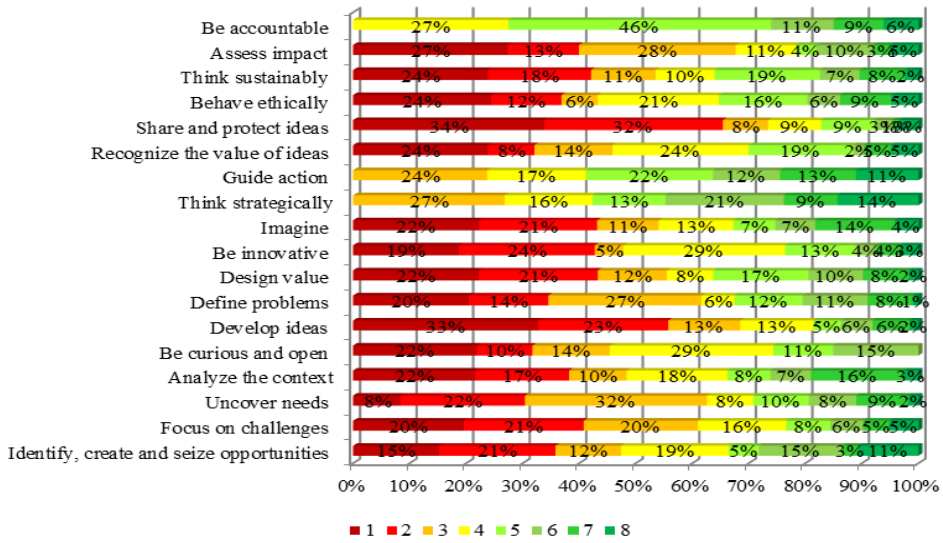
The research instrument most appropriate to achieve the pre-determind in this research, 500 young people took part - students from Małopolska and Podkarpacie (South-Eastern regions of Poland). They were mostly women (85%), studying full-time studies (73%), 53% of the first-cycle studies, (43% of first-year students and 10% of third year), the rest 47% on the second cycle (18% fourth-year and 29% fifth-year studies).

The respondents are mainly students of administration (38%), economics (20%), management (16%) and 26% of other fields of studies. 54% represented Pedagogical University of Krakow, 27% of University of Rzeszow and 19% of Rzeszów University of Technology. 56% inhabited villages, 20% cities up to 20 thousand of inhabitants, 19% cities over 100 thousand inhabitants, 5% cities from 51 to 100 thousand of inhabitants. 42% of the surveyed students were professionally inactive, 32% worked as part-time employees, 20% were employed in private company, 5% - in public administration and 1% were self-employed. 89% assessed their material status as average or good, 7% as very good, and 4% unsatisfactory.

In the area of entrepreneurial competencies: “ideas and opportunities” assessment of 18 detailed competencies of the surveyed youth is presented in Figure 1. It can be concluded that the surveyed students most often assessed their competencies at expert level in the areas related to initiating innovative business ventures - i.e., in thinking strategically, guiding action and identifying, creating and seizing opportunities. In the research according to EntreComp not all the questions evaluating the competences in the area "ideas and opportunities" had the same 8-level scale of answers. So, to reliably compare the competences’ level, the answers

were standardized, and the median was applied to identify the best and weakest assessed competences.

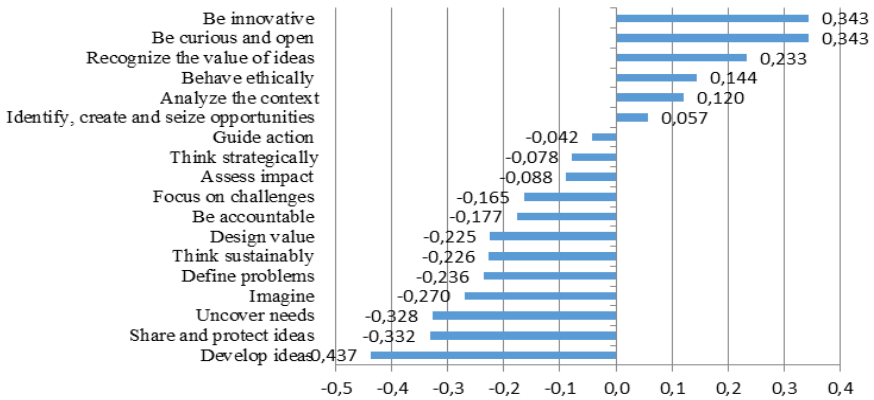
Figure 1. *Ideas and opportunities - frequency distribution*



Source: *Own study based on the conducted research.*

The results (Figure 2) show that the highest scored were the competencies: being innovative, curiosity and openness (Me = 0.343) and recognizing the value of ideas (Me = 0.233). Curiosity and openness can generate new, unusual, innovative ideas and as Jeraj et al. derived (2015) are important competences to initiate and grow a company.

Figure 2. *Ranking of competencies after standardization according to the median value*



Source: *Own study based on the conducted research.*

The lowest level of competencies ("foundation level" - sum of levels 1 and 2 of the 8-level scale), which means relying on the support of others and the preference for working under the supervision of others, was declared in the field of:

- developing ideas that create value for others (Me= -0,437; 56% of the answers were the sum of levels 1 and 2),
- sharing and protecting ideas (Me= -0,332; 66% of responses were the sum of levels 1 and 2),
- uncovering needs (Me=-0,328; were the sum of levels 1 and 2).

Thus, it can be concluded that the respondents' competencies in the field of commercialization of knowledge, intellectual and industrial property protection and customer needs development should be strengthened, but this may be due to the fact that majority of the group (73%) were first-year students. In the next step of the analysis of entrepreneurial competencies in the area of "ideas and opportunities", it was checked whether there were differences in the competency's assessment regarding the demographic characteristics of respondents.

Two non-parametric U-Mann-Whitney and ANOV Kruskal-Wallis tests were used for the study, which allow to assess whether there are relationships between two features (quantitative and qualitative), and therefore whether the levels of the quantitative feature are the same in the groups designated by the qualitative feature. The Mann-Whitney U-test is used when a categorical variable has two categories and the Kruskal-Wallis ANOVA when a categorical variable has more than two categories. The research was carried out at the significance level $\alpha = 0.05$.

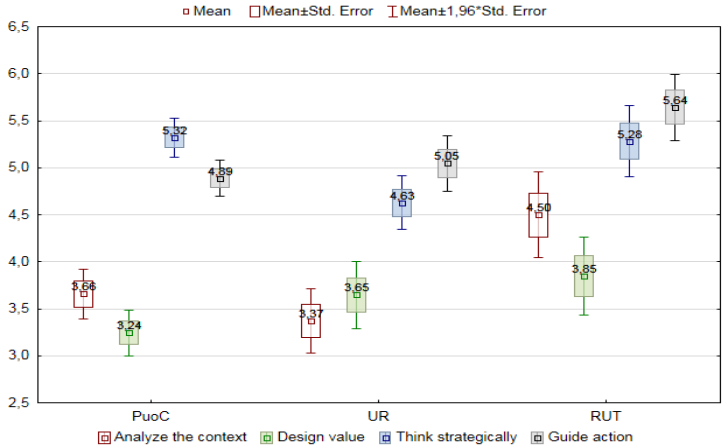
The research shows that:

- the most statistically significant characteristic differentiating the respondents is the field of study in regard with the following competencies: identifying, creating and seizing opportunities $p<\alpha$ (0,0144), analyzing the context $p<\alpha$ (p=0,0029), designing value $p<\alpha$ (p=0,0053), thinking strategically $p<\alpha$ (p=0,003) and guiding action $p<\alpha$ (p=0,001);
- university shows the relationship with: analyzing the context $p<\alpha$ (p=0,0009), designing value $p<\alpha$ (p=0,0193), thinking strategically $p<\alpha$ (p=0,0004) and guiding action $p<\alpha$ (p=0,0017);
- study degree differentiated opinions on: uncovering needs $p<\alpha$ (p=0,0328), analyzing the context $p<\alpha$ (p=0,002) and thinking strategically $p<\alpha$ (p=0,0079);
- slightly less statistically significant relations were revealed with gender which influenced the assessment of: identifying, creating and seizing opportunities $p<\alpha$ (p=0,023), analyzing the context $p<\alpha$ (p=0,0256), behaving ethically $p<\alpha$ (p=0,0129) and thinking sustainably $p<\alpha$ (p=0,0,277);

- year of studies influenced the evaluation of: analyzing the context p<α (p=0,0026) and thinking strategically p<α (p=0,0065)
- place of residence influenced the assessment of: imagining p<α (p=0,0116), recognizing the value of ideas p<α (p=0,0241); behaving ethically p<α (p=0,0464) and thinking sustainably p<α (p=0,0057);
- current professional status differentiated respondents in evaluation of: being curious and open ethically p<α (p=0,0311), recognizing the value of ideas p<α (p=0,0128) and being accountable p<α (p=0,0457).
- the least statistically significant relations are observed for study programs with: being curious and open p<α (p=0,0351) and recognizing the value of ideas p<α (p=0,034).

For illustration, Figure 3 presents how the university differentiates the assessment of the competencies.

Figure 3. *Statistically significant relationships for university*



Source: *Own study based on the conducted research.*

Students of Rzeszów University of Technology (mainly from the faculty of management) demonstrated much greater entrepreneurial competencies than students of University of Rzeszów and Pedagogical University of Krakow in the field of: analysis of the context, designing value and guiding actions. In terms of strategic thinking, students from Krakow obtained better result - 5.32 (whereas students of the Rzeszów University of Technology 5.28). The biggest difference, in favor of the respondents from Rzeszów University of Technology, is observed in analyzing the context (average 4.5, while students of Pedagogical University of Krakow 3.68, and of University of Rzeszów 3.37).

Regarding the field of study, the highest average results were obtained by students of internal security, however they constituted only 2% of the respondents, so the results cannot be considered reliable. With regard to the field of study, it can be assumed

that students studying in fields related to business, including economics and management should represent higher levels of competence. Research shows that students of management represented much higher mean values in five aspects, in which statistically significant relationships were revealed, namely they had higher entrepreneurial competencies, especially in:

- identifying business opportunities (average 4.02, while students of economics 3.33),
- analysis of the context related to the conducted activity (average 4.56, and the average of economics students is 3.30),
- designing value for customers (average 3.90, and the average of economics students is 3.49),
-strategic thinking about the conducted activity (average 5.24, and the average of economics students is 4.93; in this aspect, the difference between the two analyzed majors turned out to be the smallest).

Third-cycle (doctoral) students accounted for a very small percentage of respondents - only 1%, and their answers were very varied. The main groups of respondents were students of the first-cycle (53% of respondents) and second-cycle of studies (46%). It would seem that students of 2nd cycle-studies should have greater competencies in this field. However, the research showed that both groups obtained very similar mean in aspects that turned out to be statistically significant. First-cycle students declared in average higher competencies in the following areas: discovering new market needs (3.74 on average, whereas second-cycle students 3.42), analysis of the context of the business activity (4.06, and second-cycle students 3.39) and strategic thinking (5.34, second-cycle students 4.09).

Very interesting information was obtained by analyzing gender in the competencies of the identification of market opportunities and creating value, analysis of the business context, ethical behavior and thinking about sustainable development. In each of the analyzed competencies, men represented significantly higher mean values. The largest discrepancy occurred in the identification, creation and seizing opportunities (men 4.43, women 3.77), whereas the smallest difference occurred in thinking sustainably (men 3.93, women 3.38).

As this research concerns entrepreneurial competencies, it seems interesting to analyze two groups of people: currently working and those who are not yet professionally active. It turns out that working people, especially in private companies show higher mean values in each statistically significant aspect analyzed in the area of "ideas and opportunities" - curiosity and openness (3.75 mean for respondents working in private companies, whereas 3.23 part-time working and 3.31 non-working), evaluation of business ideas (3.67 mean for working in private companies, 3.49 part-time, 3.35 non-working) and being accountable (5.32 mean of working in private companies, 5.2 part-time working and 5.09 non-working). It is

worth adding that the research showed statistically significant relation of "being accountable" only with the professional status of the respondents.

For a comprehensive assessment of the whole area of "ideas and opportunities" in the study the entrepreneurial competencies of young people, a synthetic index was constructed, which is the sum of the points obtained from all the questions used for the study in this area. The basic descriptive statistics relating to the indicator are in Table 3.

Table 3. *Basic descriptive statistics of the "ideas and opportunities" index*

Specification	N	Mean	Median	Modal	N_{Mo}	Min	Max	Std. dev.	Coef. of var.
Ideas and opportunities	500	66,4	65	63	20	27	140	17,3	26,0

Source: *Own study based on the conducted research.*

It can be concluded that the mean value of the scores in the area of "ideas and opportunities" is 66.4 points. 27 points were the lowest scores given by the respondents, and the highest was 140. Most often (20 times), the respondents gave 63 points. Median shows that half of the grades were equal to 65 or less, and half were higher. The coefficient of variation amounting to 26% proves the differentiation of entrepreneurial competencies assessments in the area.

Table 4 presents the results of the Kruskal-Wallis ANOVA test for the "ideas and opportunities" index and the demographic characteristics. The research was carried out at the significance level of $\alpha = 0.05$.

Table 4. *The results of the Kruskal – Wallis ANOVA test*

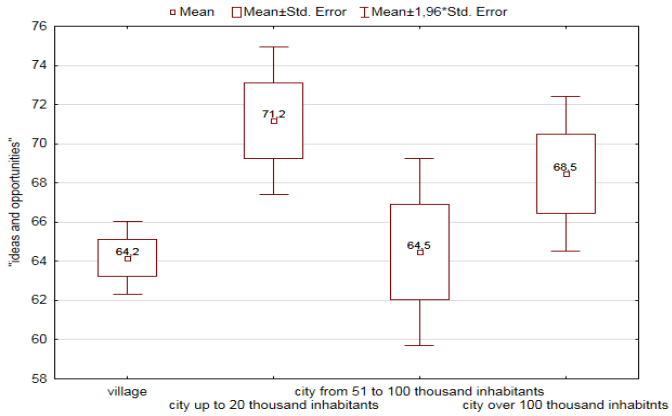
Demographic characteristics	p
Gender	0,0564
Study degree	0,0909
Study programs	0,5206
Year of studies	0,2215
Field of study	0,0935
University	0,0221*
Place of residence	0,0066**
Place of residence	0,2998
Current professional situation	0,4994
Assessment of material status	0,8108

Source: *Own study based on the conducted research.*

The research showed only two statistically significant relations between the "ideas and opportunities" index and the demographic characteristics of the respondents. It turns out that competencies levels in this area are influenced by the university where the respondents studied and the place of residence (Figure 4).

Students of Rzeszów University of Technology studying mainly management) declared the highest levels of entrepreneurial competencies in the area of "ideas and opportunities" (RUT – 69,83 points), whereas students of University of Rzeszów (mainly of economics) - the lowest (64,70 points).

Figure 4. *Place of residence vs. index „ideas and opportunities"*



Source: *Own study based on the conducted research.*

Students living in villages declared relatively low levels of competencies (64,2 points), while students from small cities (up to 20 thousand inhabitants) – the highest. The inhabitants of cities from 51 to 100 thousand citizens represented similar levels to the youth from villages, but their responses were more differentiated, whereas the highest competencies levels can be observed among the youth living in large cities with over 100 thousand inhabitants (68,5).

The results are in line with findings of Freire-Gibb and Nielsen (2014) who stated that creativity is found to lead to start-ups in urban areas, where the environment is not only more supportive but also more competitive, but not in rural areas. Thus, the highest competence levels in the area of ideas and opportunities among the youth living in large cities support the process of creating new business ventures there.

4. Conclusions

The theoretical considerations and research presented in the study contribute to the broadening the state of knowledge about the importance of entrepreneurial competencies in the area of ideas and opportunities in the process of creating and developing business ventures, especially by young people. The conducted analysis enabled to indicate which competencies should be developed, which are crucial for the process of building innovative business ventures.

The paper's objective was to assess the level of creativity and the ability of student youth to spot business opportunities, generate, assess and develop business ideas

with ethical and sustainable thinking approach - as important part of entrepreneurial competencies crucial in the process of innovative business venture creation and identify what features and how differentiate the student youth.

The results show that the surveyed youth was differentiated in the competency's assessment regarding the field of study and university in regard with the following competencies, analyzing the context, designing value, thinking strategically and guiding action. Students studying management had higher entrepreneurial competencies than students of other fields of studies, especially in identifying business opportunities, analysis of the context related to the conducted activity, designing value for customers and strategic thinking.

The degree of study differentiated the youth in: discovering market needs, analysis of the context of business and strategic thinking. Surprisingly students of the first-cycle studies declared in average higher competencies in discovering new market needs, analysis of the context of business activity and strategic thinking.

In turn, men represented higher levels of competences comparing to women in many areas but the highest difference can be observed in identification, creation and seizing opportunities, and the smallest difference in thinking sustainably. Working people, especially in private companies show higher mean values in: curiosity and openness, evaluation of business ideas and being accountable. Also, the highest competencies levels of competencies can be observed among the youth living in large cities.

General results are optimistic as the surveyed youth feels as being innovative, curios, open, and able to recognize the value of ideas which are promising features for their business creation in the future. So significant practical implications from the study are the conclusions about the entrepreneurship education recommendations, mainly in developing ideas that create value for others, sharing and protecting ideas, and uncovering needs. Another important implication from the study is to strengthen efforts in order to drive sustainable thinking among youth which is less trained competence not only in Poland.

In the future, it is worth extending the research on entrepreneurial competencies in the other areas: “resources” and “into action”, as well as managerial competencies. While entrepreneurial competencies contribute to the establishment of a company, managerial competencies are necessary for its development.

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