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## Article

# Exploring strategies for developing entrepreneurial behavior of students in Romanian universities

Management dynamics in the knowledge economy

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## Exploring Strategies for Developing Entrepreneurial Behavior of Students in Romanian Universities

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**Abstract:** Throughout this research paper we want to emphasize the correlations of theory and practice regarding the topic of the entrepreneurial university. The research combines a two-level approach by correlating both a qualitative-bibliometric analysis and a quantitative exploratory analysis. To identify the theoretical descriptors of the "entrepreneurial university" concept we performed a cluster analysis by using VOSviewer software selecting the published articles in the Scopus database since its beginning. The relevance of this analysis consists in the opportunity of extracting the most relevant information on the analyzed topic according to several criteria such as keywords, co-occurrence, co-citation, or publication topics by year. From this perspective the pieces of evidence are meaningful and we shall present them within the sections of the paper. On the other hand, for obtaining a practice grounded perspective, we applied 350 questionnaires to a target group involved in a university grant for young entrepreneurs. The purpose of the survey was to determine a series of characteristics and patterns of behavior of respondents related to their entrepreneurial orientation. The questionnaire contained a large number of variables for each individual to identify his/her distinct options and thus to draw the big picture. The variables were grouped into 6 dimensions which we identified as a priority for the entrepreneurial orientation framework: personal traits, motivation, attitude, framework conditions, and skills and knowledge. We statistically processed the survey data to identify the most meaningful correlations and interdependencies between the variables. The results of both research protocols are correlated and argued within the final section of the paper followed by conclusions and further research tracks.

**Keywords:** entrepreneurial university; entrepreneurial behavior; third mission; technology transfer; innovation; entrepreneurial ecosystem; student start-ups.

### Introduction

One of the major trends manifested in recent years in universities around the world, but especially in countries with emerging economies, such as Romania, is the development of entrepreneurial skills of students. Obviously, the focus is on students in university programs in economics, business administration, management, and marketing. The present research aims to explore the strategies that can be achieved within Romanian universities, which have study programs in the field of economics, for the development of students' entrepreneurial skills. Although there are various interpretations given to competencies, we will consider the definition given by Eizaguirre, Garcia-Feijo, and Laka (2019, p. 8): of ethical values ". The semantic structure used in this definition is also found in other significant works for the approached topic (Barth, et al., 2007; Cebrian & Junyent, 2015; Lambrechts, et al., 2013).

Universities have acquired a very important role in terms of their potential to shape future members of society and business through education. It is already well known that "the third mission" of the university is to support the business environment to prosper

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by infusing it with knowledge, technology, and the business skills of its graduates (Bratianu, 2014; Dinning, 2015; Prelipcean & Bejinaru, 2016). Over time universities have adapted by extending their traditional attributions of education and research to capitalizing on resources, knowledge, technology, intellectual capital to support the business environment and society in general (Bratianu, Hadad, & Bejinaru, 2020; Bratianu, Prelipcean, & Bejinaru, 2020; de la Torre, et al., 2017; Giuri, et al., 2019).

Even if their purpose is noble, dissenting perspectives have emerged in global research on the success of universities regarding their engagement in entrepreneurship. For example, according to the research conducted, the authors Garcia-Aracil and Palomares-Montero (2012) and de la Torre, et al. (2017) consider that the teaching process and entrepreneurial activities have a negative relationship and rather the connection between the research-development projects of the academic community and the entrepreneurial initiatives of the university have a positive connection. Sam and van der Sijde (2014) also have a reserved perspective, emphasizing the idea that the development of such entrepreneurial projects does not immediately certify the status of the entrepreneurial university but requires an assessment of the added value resulting from this two-way collaboration.

We consider that the “third mission” of the university is strategically important as it responds to the needs of society and business alike (Kapetanious & Lee, 2017; Rinaldi et al., 2017) and this relationship has become imperative (Abreu et al., 2016; Rubens et al., 2016; Urdari et al., 2017). As this “third mission” responds to a real need of society, it can no longer be considered just a trend of scientific debate but rather took the form of a complex phenomenon underway on several levels: challenges for academic leadership and students education to succeed on the labor market; a greater impact of research and development; a more efficient collaboration with the business environment and their needs (Bejinaru & Prelipcean, 2017; Bratianu & Bejinaru, 2016; Bratianu & Pinzaru, 2015; Frunzaru et al., 2018; Maresch et al., 2016; Rubens et al., 2017).

### **Research objectives and methodology**

As mentioned before, the overall goal of the research is to explore which are the strategies that can be achieved within Romanian universities, which have study programs in the field of economics, business administration, or management, for developing the entrepreneurship skills of their students. For achieving this general objective, we shall recur to the following specific objectives.

(I) Examining students' perception of entrepreneurship and development strategies applied by their university in relation to each component of the entrepreneurial university model through a questionnaire survey:

- Assessing students' perceptions of skills, abilities, and knowledge that allow them to become active in the field of entrepreneurship.
- Evaluating students' perception of the educational process regarding the stimulation and development of the entrepreneurial dimension.
- Evaluating students' perception of internship/collaboration programs with the business environment to develop entrepreneurship.
- Evaluating students' perception of the specialized infrastructure within the university to facilitate entrepreneurial experiments.

(II) Examining the policies through which universities assume the role of leaders in preparing students and providing material and information resources for strengthening an entrepreneurial community;

- Examining curricular and extracurricular activities through which universities prepare conscious and responsible graduates to be able to approach entrepreneurship correctly and actively;
- Identifying initiatives to create a stimulating environment for inter- and multidisciplinary learning and research in the economic, social, and ecological fields;
- Recognition and involvement of students as valuable partners for promoting the implementation and development of entrepreneurship;

III. Investigating how the collaboration relations between universities and the business environment in the area where these universities operate have developed.

IV. Analysis of the strategic plans of universities in terms of concerns well-defined on the development of entrepreneurial dimensions of students in economics, business administration, management, and marketing programs.

The results estimated in this research bring to the fore the role of the university in preparing students and the strategies applied in forming the skills necessary for their future business success, with applications to the conditions in our country. Based on this research we will be able to conclude on the strategies applied by universities in developing the skills necessary for students to be able to think and act in an entrepreneurial spirit. Such skills are especially needed in emerging economies, as is the Romanian economy (Bratianu & Bejinaru, 2020).

The research will have the following operational stages: a) critical analysis of the specialized literature, on the approached topic, to obtain information on universities concerns for the development of students' entrepreneurial skills; b) carrying out an investigation based on a questionnaire among students from "Ștefan cel Mare" University of Suceava; c) Processing the statistical data obtained from this investigation and their interpretation. For the first stage, the research has a qualitative character, interpreting the publications from SCOPUS on the approached topic. We use the specialized program VOSviewer (Van Eck & Waltman, 2011, 2020), which allows us to create a semantic network of basic concepts on entrepreneurial skills and, respectively, entrepreneurial universities. Qualitative research in the first and second stages is based on a series of principles and methods that will be described in the following (Tracy, 2020). For the next stages of the research, we use quantitative methods and statistical processing of data obtained from questionnaires using the specialized functions of Excell (Salcedo & McCormick, 2017).

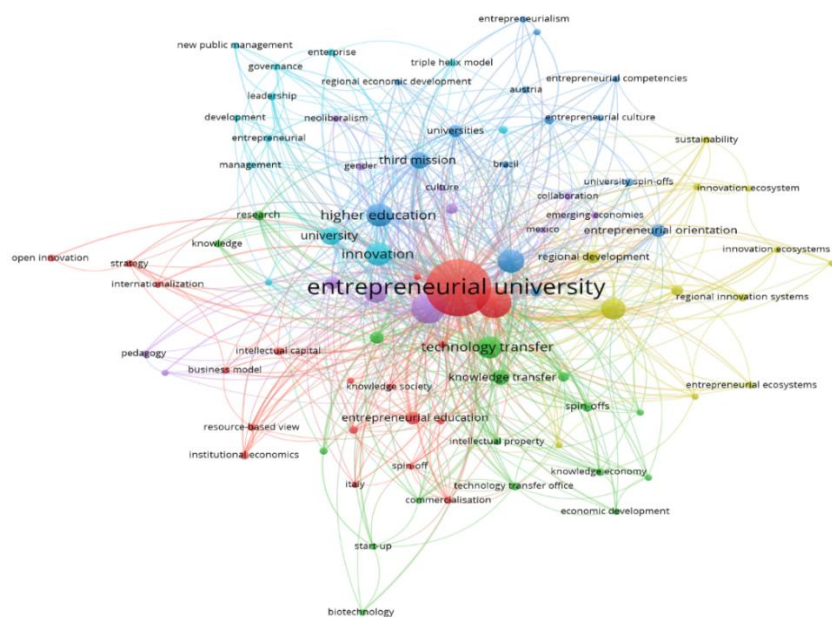
### **VOSviewer clusters' analysis**

We approached the research in two stages according to the following reasoning. The purpose of the first type of analysis was to discover the conceptual network and clusters of significant keywords related to the subject investigated in the existing literature. To fulfill the purpose of identifying the essential components of the entrepreneurial university, we will achieve a series of specific investigative actions: (1) the presentation of the bibliometric analysis concerning the essential components of the entrepreneurial university; (2) mapping the connections and correlations between the main components; and (3) the interpretation of the chronological evolution of the published works on this topic. The hypothesis we issue in connection with this type of analysis is that the existing debates about the concept of the entrepreneurial university are considerably more consistent in theoretical than practical problematization.

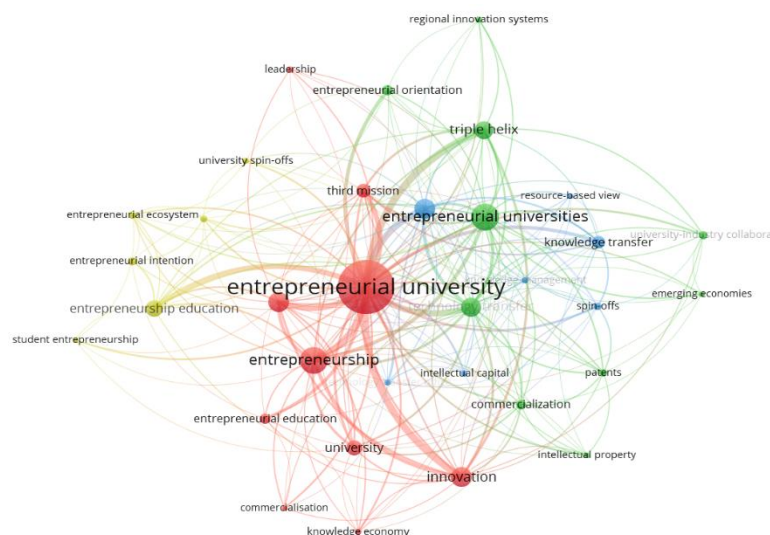
To achieve the presented objectives, we implemented a co-occurrence analysis, with the help of VOSviewer software, version 1.6.16. This procedure leads to the identification of the spread and consistency of the expression "entrepreneurial university" in the research articles published in the SCOPUS database since the start. Thus, the result consisted of a network-type bibliometric map (Van Eck & Waltman, 2011). On this graphic representation can be deciphered the strongest links of the core concept studied in correlation with other concepts in the same field or related fields and which are

discussed together in various academic papers. The correlation map is relevant because it facilitates the quick visualization, in the form of a graphic scheme, of the themes researched in the specialized literature. Moreover, the advantage is that it provides a concentrated picture of the state of knowledge on several levels (Karakus, et al., 2019; Zupic & Cater, 2015).

The search transcription is simple because we used the phrase “entrepreneurial university” and no other filters. Thus, the code is TITLE-ABS-KEY ( entrepreneurial AND university ) AND ( LIMIT-TO ( OA, "all" ) ). The obtained sample consists of 931 articles that were published from 1983 until present in the Scopus database. We chose this variant precisely to have an overview of the whole research on the studied concept. This network map, in Figure 1, contains raw, uncleaned, unsorted, and unlimited information concerning the software commands and indicators. The map consists of a total of 1918 keywords that at a threshold value of 5, reflect 87 keywords. Because this variant of the map is too crowded and difficult to interpret, we applied a reduction in the number of keywords by increasing the threshold value to 7. Thus, out of the total of 1918, we obtained 44 keywords that meet the threshold of 7 and the network map in Figure 2 is more structured.



**Figure 1. Network visualization (no.1) for “entrepreneurial university”, threshold 5 (authors’ research)**



**Figure 2. Network visualization (no.2) for “entrepreneurial university”, threshold 7 (authors’ research)**

The protocol for using VOSviewer 1.6.16 provides that in certain situations, data set cleaning can be applied so that the map provides a clearer picture (Van Eck & Waltman, 2020). For the current set of terms, the cleaning operation consisted of:

- Removal of insignificant expressions that showed a very weak connection with the research topic ("neoliberalism" or "gender" or "enterprise" or "academic capitalism" or "knowledge" or "institutional economics");
- Ignoring names, title, and abbreviations ("Africa" or "Brazil" or "SME");
- Exclusion of the general terms because they do not bring added value to the analyzed topic ("research" or "education");
- Selection of synonyms and plural forms of keywords to ensure a uniformly distributed network.

In the case of this data set, the cleaning procedure was a reduced one and we eliminated only a number of 11 terms, thus reducing the keyword base to 33. The remaining items were distributed by the software in 5 clusters, the composition of which we will analyze from *Table 1*, in the following, to reveal the types of academic discourse on the topic.

**Cluster 1:** A very important output of the analysis with VOSviewer is represented by *Table 1* because based on it we can discuss the composition of clusters. As can be seen in Figure 2, the most visible is the red cluster. We called it "entrepreneurial university" because it is the most representative, contains the largest number of keywords, and the highest values of the indicators "link strength" = 373 and "occurrences" = 374. Analyzing in detail the composition of the cluster we can note that it consists of terms that reflect the role of the entrepreneurial university, namely: entrepreneurship education, innovation, and entrepreneurship development (Neamtu et al., 2019). Also, within this cluster, a couple of terms such as "marketing" and "knowledge economy" highlight the mission of the entrepreneurial university in the economy, namely to transfer the knowledge created to the business environment (Prelipcean & Bejinaru, 2018; Svensson et al., 2012; Trencher et al., 2014). The terms contained in this cluster confirm the theory of the university's "third mission" in the field of entrepreneurship (El Hadidi & Kirby, 2016).

**Cluster 2:** Technology transfer, can be seen in green color in Figure 2. What we can better understand from *Table 1* is that it has a homogeneous composition based on specific terms, such as patents, university-industry collaboration, intellectual property, and regional innovation systems. This cluster shows the strong and direct link with the mission of the entrepreneurial university and leads to the idea that the development of entrepreneurship is strongly linked to the creation of patents, inventions, and intellectual property (Bejinaru, 2018).

**Cluster 3:** Academic entrepreneurship is the blue cluster. This cluster reveals how the strategy of the entrepreneurial university is carried out, namely: through knowledge transfer, through spin-offs, through technology transfer office, and knowledge management. Moreover, this cluster highlights the fact that entrepreneurship supported by the university is based on the creation of knowledge, the creation of technology, the creation of innovation, and their transposition into the business environment (Gibb, 2013). Academic entrepreneurship - is not alike wholesale or intermediation services, but is essentially a phenomenon of generating added value that is based also on a scientific perspective (resource-based view) not only on a business perspective (Prelipcean & Bejinaru, 2018; Svensson et al., 2012; Trencher et al., 2014).

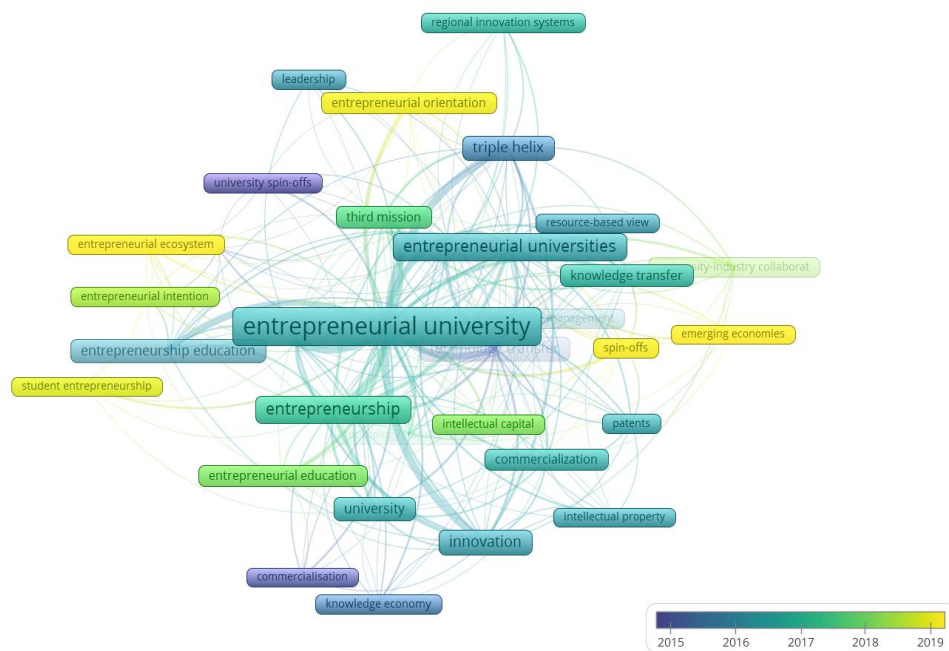
**Cluster 4:** Entrepreneurship education is represented in yellow. The composition of this cluster rather reflects the effects produced by entrepreneurship education in universities, namely: entrepreneurial ecosystems, university spin-offs, and student entrepreneurship. Through this cluster, we can make the connection between the importance of entrepreneurship education and the development of entrepreneurship in a region (Forliano et al. 2021). However, the fact that in this cluster the expression "student entrepreneurship" has the lowest values, i.e., "link strength" = 10 and "occurrences" = 7, denotes low attention for these stakeholders of the academic entrepreneurship ecosystem. We can thus deduce that the focus of researchers on

students, as potential entrepreneurs, is starting to increase and the existing discussions so far are only tangential. We will further analyze the chronological trend of the research topics based on Figure 3, the Overlay map.

**Table 1. Clusters' components**

Keywords	Cluster	Link strength	Occurrence
<b>Entrepreneurial university</b>	Cluster 1- RED  <b>Entrepreneurial university</b>  (373 total link strength)	373	374
Entrepreneurship		132	102
Innovation		109	62
Higher education		81	61
Third mission		64	31
University		44	36
Entrepreneurial education		25	18
Knowledge economy		18	8
Commercialisation		15	7
Leadership		11	8
Keywords	Cluster	Link strength	Occurrence
<b>Technology transfer</b>	Cluster 2 – GREEN  <b>Technology transfer</b>  (113 total link strength)	113	58
Entrepreneurial universities		99	103
Triple helix		91	52
Commercialization		36	17
Patents		29	11
Entrepreneurial orientation		25	20
University-industry collaboration		20	12
Intellectual property		18	7
Emerging economies		12	7
Regional innovation systems		12	8
Keywords	Cluster	Link strength	Occurrence
<b>Academic entrepreneurship</b>	Cluster 3 – BLUE  <b>Academic entrepreneurship</b> (97 total link strength)	97	61
Knowledge transfer		46	26
Spin-offs		27	11
Technology transfer office		16	8
Intellectual capital		15	8
Knowledge management		14	8
Resource-based view		12	7
Keywords	Cluster	Link strength	Occurrence
<b>Entrepreneurship education</b>	Cluster 4 – YELLOW  <b>Entrepreneurship education</b> (59 total link strength)	59	44
Entrepreneurial ecosystem		19	11
University entrepreneurship		16	9
University spin-offs		13	8
Entrepreneurial intention		11	13
Student entrepreneurship		10	7

*Source: (authors' research, extracted from VOSviewer Network Visualization window)*



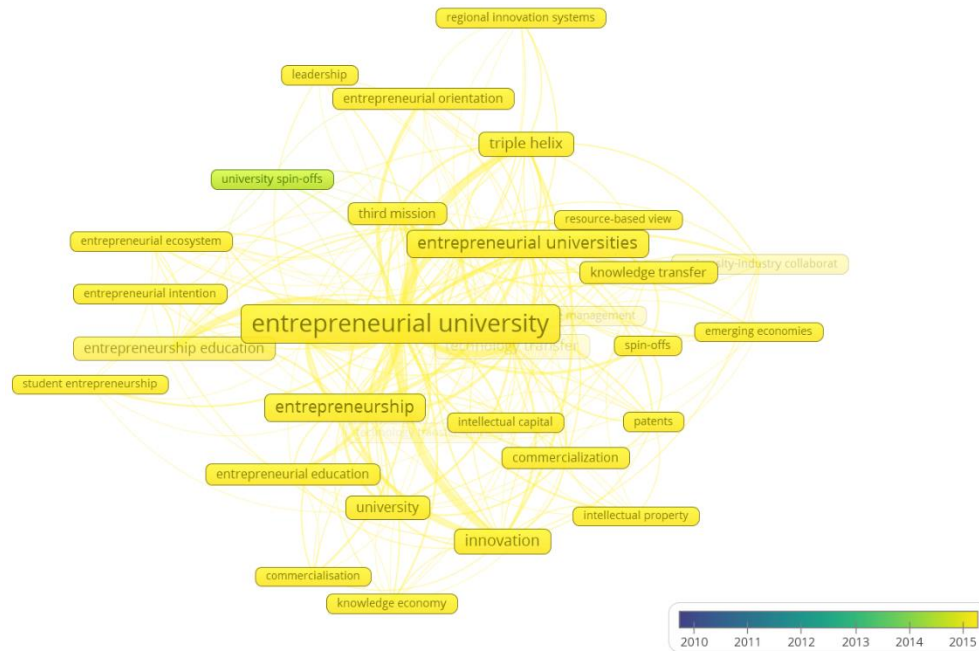
**Figure 3. Overlay visualization for “entrepreneurial university” between 2015-2019 (authors’ research)**

### Overlay bibliometric analysis

An important advantage of the VOSviewer program is that it performs several types of analysis on the data set entered, including an analysis of the temporal evolution of the subject. The Overlay map (Figure 3) shows in colors the chronological evolution of the investigated theme according to the legend displayed by years and color gradients. Interpreting the overlay map, we found that only after 2015, which corresponds to the navy-blue color, discussions began on the concept of the entrepreneurial university from the perspective of identifying marketing processes and developing spin-offs in the knowledge economy.

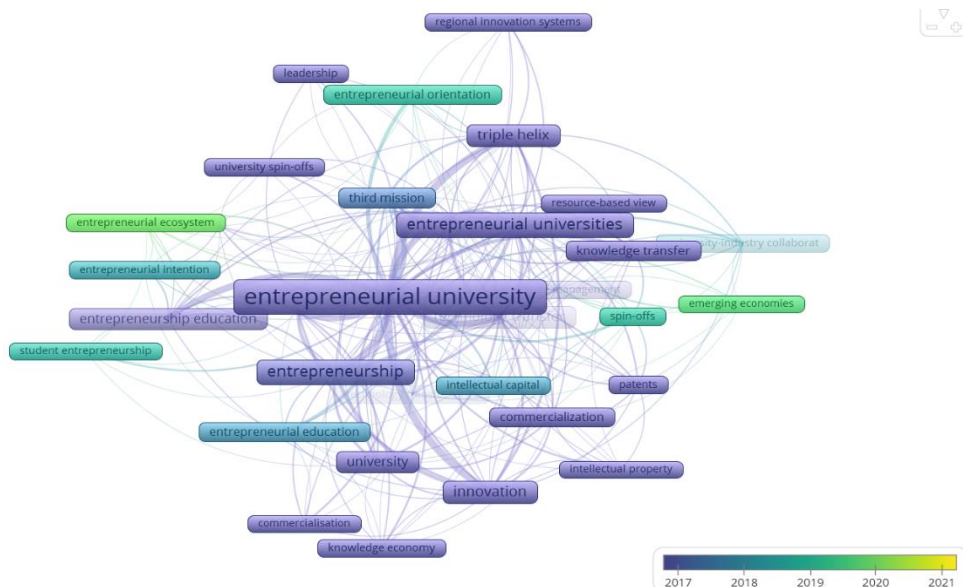
The considerably higher number of frames and ties in shades of blue and turquoise shows that the interest in the theme was more intense and widespread in the years 2016-2017, through publications that researched essential aspects of the theme, namely: the triple helix, innovation, regional innovation systems, intellectual property or patents, which are all closely linked to the core of the concept of the entrepreneurial university. The period 2018-2019, suggests a slight decrease in interest in the philosophy of entrepreneurship and a few yellow boxes send the message that interest is shifting to more pragmatic approaches which are highlighted by key terms such as ecosystem entrepreneurship, student entrepreneurship, and emerging economies (Hapenciuc et al., 2016).

To argue, that we have correctly interpreted this map, which corresponds to the period 2015-2019, we will present Figure 4, namely the map for the previous period 2000-2015. As can be easily seen, because the keyword boxes are completely yellow, it is confirmed that discussions on topics related to the entrepreneurial university began around 2015 and exactly as specified above, with publications on university spin-offs, knowledge, marketing, and technology transfer. The fact that on this map do not appear colored boxes in light green, corresponding to the years 2014-2013, neither turquoise, for the years 2013-2012, nor blue for the years 2012-2011, not even purple, corresponding to the years in 2011-2010 proves that during these years has not been written several significant papers. The culmination of the debates on this topic occurred in the period 2015-2017.



**Figure 4. Overlay visualization for "entrepreneurial university" between 2010-2015 (authors' research)**

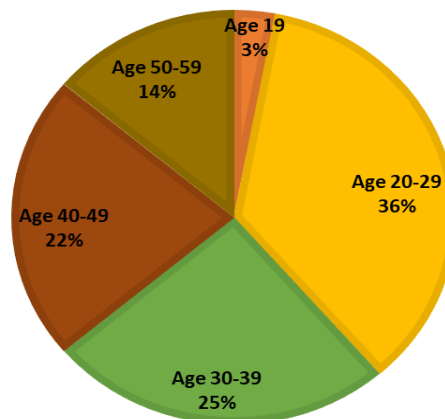
We also consider necessary the analysis of Figure 5, an overlay map more related to the present, for the period 2017-2021, based on which we want to highlight what research perspectives are outlined for the near future in connection with this topic. To our surprise, according to the color of the figure, another gap can be observed in the period 2019-2020 and for 2021 no publication contains the key expression investigated, but it might be justified by the small number of works indexed up to this date. However, it is worth continuing to observe as any keyword on the map can become a source of inspiration and a new avenue of research. Therefore, the overlapping map summarizes in a gradient of nuances, the evolution, distribution, and intensity over time of the debates on the main topic of the "entrepreneurial university" providing numerous clues on the state of research in the field, which can be considered a real benefit.



**Figure 5. Overlay visualization for "entrepreneurial university" between 2017-2021 (authors' research)**

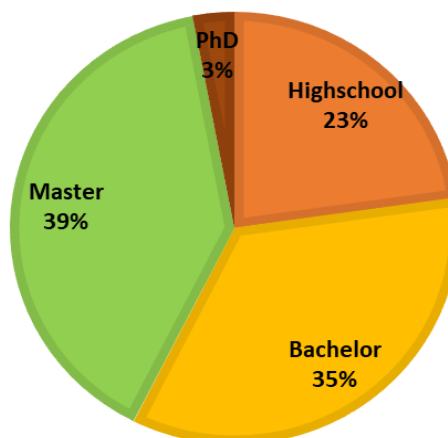
### Survey regarding the entrepreneurial university

The results of the bibliometric research we managed to analyze through a quantitative study on potential entrepreneurs in the target group of a project carried out under the “Stefan cel Mare” University umbrella. Thus, to research the similarities of “Stefan cel Mare” University - to an entrepreneurial university - we quantified the weight of certain key elements: the academic management regarding the relationship with entrepreneurs, the educational process in the direction of entrepreneurship as well as the transfer of knowledge and technology to stakeholders. Successful management implies the most precise knowledge of the business partners and thus in the first stage, we proceeded to draw the profile of the potential entrepreneurs participating in the grant. We applied a questionnaire containing 6 dimensions of an entrepreneur's profile to estimate whether the respondents possess the necessary features of a future entrepreneur and in what weights. We launched 350 questionnaires to the entire target group and received 202 responses. From descriptive statistics, we present the following:

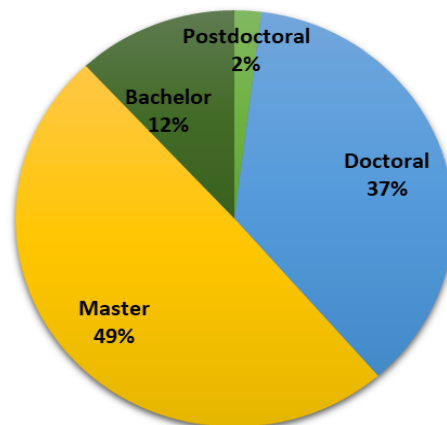


*Figure 5. Respondents age  
(authors' research)*

The geographical distribution was predictable as the project objective was to increase the occupation rate in an urban area, thus 45 were respondents from a rural area, and the majority of 157 were from urban areas. It is rather interesting to observe that the educational level of respondents is high, as we can observe from figure 6: only 23% are high school graduates, while the rest have bachelor's degrees – 35%, master's degrees – 39%, and Ph.D. degrees -3%. This fact shows that education in general and higher education, in particular, has a powerful and positive impact on the potential of entrepreneurs.



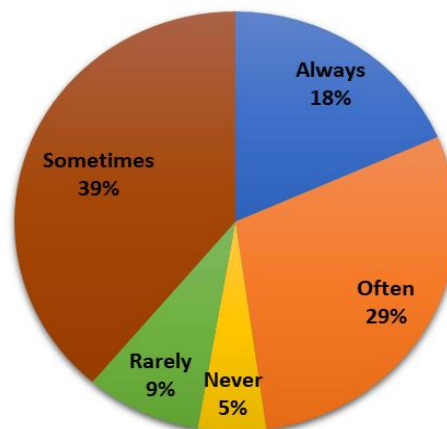
*Figure 6. Respondents' educational level  
(authors' research)*



**Figure 7. Respondents' aspirations for future education (authors' research)**

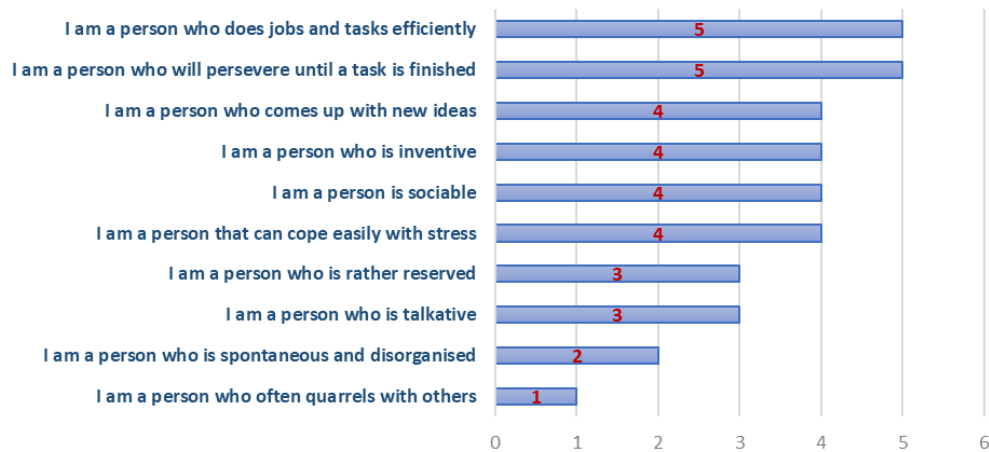
Furthermore, it is interesting to note that respondents aspire for continuing their studies as far as possible. As we can remark, all respondents wish to graduate from higher-level studies and no one wants to stop or refuses further studying. From this context, we deduce that the participants highly value the education system and acknowledge the benefits of superior education levels. The motivation towards engaging in further education resides in the perspective of meeting interesting opportunities in the field of entrepreneurship.

From the results obtained for the question: *Have you ever thought of becoming an entrepreneur?* – we notice that the majority are positive responses that reveal a consistent perspective and strong aspirations of becoming future entrepreneurs. As previous research shows, this is the strongest antecedent of entrepreneurial success – motivation (Botha et al., 2019; Zbucea & Vidu, 2018).



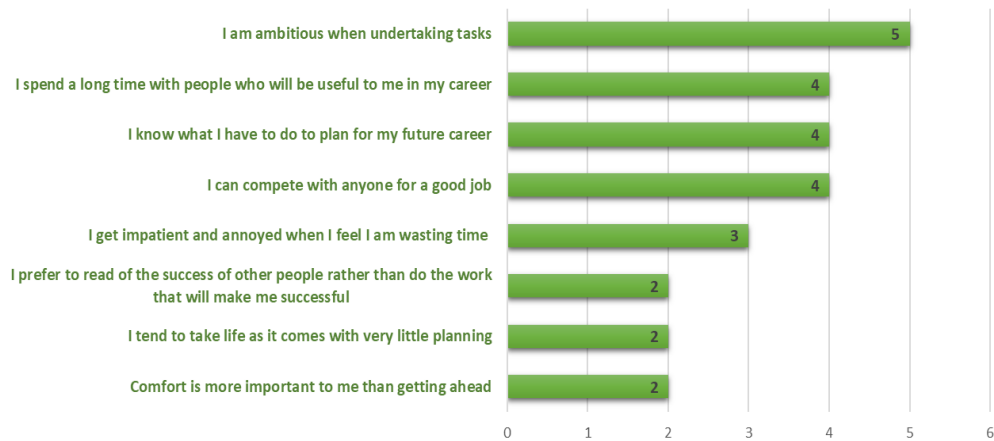
**Figure 8. "Have you ever thought of becoming an entrepreneur?" (authors' research)**

On a scale from 1 to 5 (1=strongly disagree, 2=disagree, 3=neither/nor agree, 4=agree, 5=strongly agree), we evidence below a synthesis of the most relevant personal traits of the respondents.



**Figure 9. Respondents' personal traits  
(authors' research)**

The third section of the questionnaire included items investigating the level of motivation. At this dimension, we have only high levels of positive motivation for the majority of the items. The items quantifying a mean of 2 have reversed meanings and thus a low value is good as it eliminates the negative behavior of respondents. The other five items registered high levels of agreement which signifies that the respondents are aware of their entrepreneurial goal and are determined to achieve it.



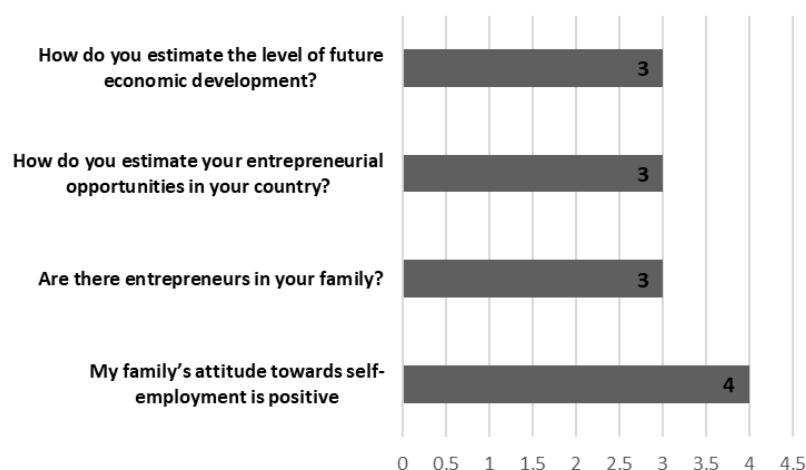
**Figure 10. Respondents' motivation  
(authors' research)**

The fourth section of the questionnaire has investigated the respondents' attitudes towards entrepreneurial engagement. In figure 9 we can observe also an extremely positive attitude towards several aspects of entrepreneurial life. Firstly, the enthusiasm for new challenges, self-control in a stressful situation, and innovative behavior to solve new tasks. Secondly, we measured the business attitude by questioning the straightforward behavior of entrepreneurs. The results show a rejecting attitude towards practices like nonethical, misleading, or unfair behavior among entrepreneurs. In this way, the respondents show a wide understanding of entrepreneurship as they react positively towards social and interpersonal values. Combining the two types of items (positive and negative affirmations) was a verification key to reveal the respondents' real way of thinking.



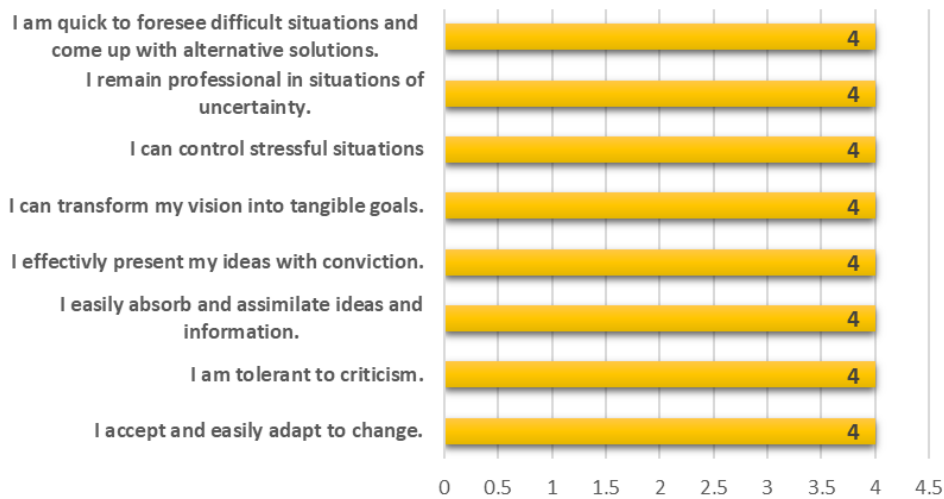
**Figure 11. Respondents' attitude**  
(authors' research)

Items in section five are designed to reveal the perspective of respondents about the entrepreneurial framework to understand their personal vision about their future success. Actually, the items are focused on some factors that might influence entrepreneurial success. The item with the highest result is claiming the family's support for self-employment and further for entrepreneurship which encourages participants. Also, the existence of previous entrepreneurs in the family was investigated, and, in this survey, only for half of the respondents, this is a fact which reveals that this is not anymore, a critical prerequisite for future entrepreneurs. The other two items try to correlate the motivation for entrepreneurship with the positive vision about their success. It is known that positive thinking is driving action and on the contrary negative thinking is preventing any initiatives. Thus, all the items in section five have similar levels which means that the target group has a consistent and homogeneous view about the entrepreneurial framework and that is a rather positive one than negative.



**Figure 12. Respondents' Framework**  
(authors' research)

In Figure 11, we present a selection from the sixth section of the questionnaire, namely information about the respondents' skills and knowledge in the entrepreneurial field. As we can notice from the figure, all selected items have the same level which means that respondents have consistency in acknowledging their entrepreneurial skills and knowledge. Among the selected items we can notice good levels for skills like vision, finding alternative solutions, stress-control, perseverance, tolerance to criticism, and change adaptability.



**Figure 13. Respondents' skills and knowledge (authors' research)**

## Conclusions

The conclusions we provide are on three levels: bibliometric analysis, survey analysis, and correlated analysis. For the first level of the research, we conclude that the originality of this research consists in the framework and the applied investigation methods, in the first phase, and then in the interpretation and argumentation of the results. The fact that we have obtained a schematic description of the chronological evolution of the concept of "entrepreneurial university" is a concrete advantage for other researchers as the clear message is that debates on this topic have intensified since 2015 and the connections of the subject with other topics are summarized based on the clusters in table 1: 1. entrepreneurial university; 2. technology transfer; 3. academic entrepreneurship; and 4. entrepreneurship education. Based on the first stage of the research, namely the bibliometric analysis, we can conclude that the study of the role, position, or involvement of the student - as a stakeholder - in the equation of the "entrepreneurial university" is in its infancy and offers great potential for future research.

For the second level of research, we state that investigating the 6 dimensions of entrepreneurial values from the perspective of students is extremely relevant for the university in question but also for other stakeholders in this field, whether they are businessmen, professors, researchers, or academic leaders. The questionnaire-based research, as a whole, reflected students' perceptions of the importance of university involvement in supporting entrepreneurship among young people. Specifically, the dimensions selected for investigation define the essence of the "entrepreneurial university". We consider that the answers offered by the students best reflect the result of the university education, namely the real impact that the entrepreneurial education has on the students and later on the society and the business environment. The results obtained are gratifying as they show a good level of awareness of the importance of entrepreneurial education, a very good level of entrepreneurial motivation, a very good level of knowledge and entrepreneurial skills, and a high level of interest in pursuing further higher education cycles.

As a final conclusion, by correlating the two-level research results, we state that the combination and especially the simultaneous analysis of their results can bring important benefits for research in the field but also for practice. The concomitant investigation of the 2 plans, theoretically and practically, can highlight both the common issues and the gaps existing in one of the plans or both. In this case, the combination of

the two studies showed that the students surveyed are aware of the importance of entrepreneurship education, and moreover, they have a strong motivation in their development as entrepreneurs, as well as they acknowledge the key role of the university in the field of entrepreneurship. Thus, we can say that the general objective of the research was achieved based on the confirmatory results from both qualitative and quantitative researches investigations

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