

Article

Measuring Entrepreneurial Orientation of University Employees in Developing Countries Using the ENTRE-U Scale

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Abstract: This research examines the difference in the level of entrepreneurial orientation among university employees within the European Union compared to university employees in non-EU countries. The EU Member States included in the research are the Republic of Slovenia and the Republic of Croatia, and the non-EU countries include the Republic of Serbia, the Republic of Montenegro, the Republic of Bosnia and Herzegovina, and the Republic of Northern Macedonia. In the sample of 1474 respondents, the ENTRE-U scale was used to measure the entrepreneurial orientation of universities, and multivariate analysis of MANOVA variance was used for data processing. The ENTRE-U scale has proven applicable not only to developed countries but also developing countries. Moreover, it proved that being a member of the European Union in this part of Eastern Europe does not significantly affect the entrepreneurial orientation of universities.

Keywords: entrepreneurial orientation; entrepreneurial university; ENTRE scale; triple helix model; entrepreneurial culture of the university

1. Introduction

Increasing globalization and internationalization [1], has influenced universities to become more entrepreneurially oriented [2] and to adapt to market demands [3]. Financial crises and declining public funds across Europe and other continents [4] mean that universities, despite different priorities, different histories, and different cultures and traditions, nevertheless decide to commercialize their research and make profit through research, patents, and establishing spin-off companies [5]. Increasing competition influences universities into becoming involved in entrepreneurship and that in addition to their two basic functions of teaching and research, generates another function—the commercialization of research [1,2].

Universities vary and depend on the countries in which they are located. Historical, cultural, and sociological differences can be key to the development and entrepreneurial inclination of a university [6,7]. Although the great importance of the commercialization of the research in academic institutions has been recognized [8], changes occur very slowly in some countries. The biggest problem in developing countries is the lack of adequate resources to encourage entrepreneurial orientation within institutions. This is very common in the countries of Southeast Europe or even more so in the Balkans. The commercialization of research is a role of a university that presents a challenge for all

university employees because, in addition to teaching and research, they are assigned with a new task, which is the application of knowledge and research. This new role of universities leads not only to the creation of new knowledge but also to the transferring of new knowledge and research results to industry and society [9]. Although it is difficult for employees to consolidate their primary jobs with the accompanying administration, more and more employees are consciously accepting the newly assigned role in order to conduct their research into action. This exploitation of research provides great satisfaction to employees at universities, which encourages them, even more, to look for new research and its application in order to solve certain problems. However, one should not only consider the economic return to the university and their employees but also to the great opportunity to employ a large number of young highly educated people as well as spread knowledge to the entire social community. In order to achieve balance in the realization of the three primary functions of universities, it is necessary to create external conditions for the development of entrepreneurially oriented universities [10]. Differences between institutions of higher learning exist within a country, and even between institutions within the same educational program. As the educational systems are not uniform, the university's ability to engage effectively in entrepreneurial activities is limited by its resource-based capabilities and capacities. According to Carnoy (1999), factors that influence education reforms include the country's financial situation as well as the educational role of universities [11]. When state funding becomes insufficient, universities are encouraged to diversify their funding sources, become more resourceful, and operate on their own.

ENTRE-U scale is an instrument that measures the entrepreneurial orientation of universities and, as stated by Todorovic et al. can successfully predict the number of patents, licenses, and spin-off companies. In the case of the six countries covered by this research (the Republic of Croatia, the Republic of Slovenia, the Republic of Serbia, the Republic of Montenegro, the Republic of Bosnia and Herzegovina, and the Republic of Northern Macedonia), there was no specific information on patents, licenses, and spin-off companies; but what is important is that the focus of this research has not changed, its goal is still the research of entrepreneurially oriented universities. The development of entrepreneurship at universities in transitional economies is characterized by a complex interaction of elements over time, which requires the research of phenomena based on qualitative data. Former socialist economies represent a new field of research and as such have the potential to bring new theoretical perspectives.

The subject of this paper is the measurement of the entrepreneurial orientation of all developing countries, which are located in the territory of the former Yugoslavia. The main focus of this paper is on the similarities and differences between EU and non-EU countries using the ENTRE-U scale and explaining the results through all four of its dimensions.

The scientific paper has the following structure which is explained in the following paragraph.

Section 2 provides an overview of the literature explaining the scales used to measure entrepreneurial orientation as well as the reason why the ENTRE scale is used for measuring entrepreneurial orientation at universities. In this segment, the importance of entrepreneurial universities will be explained as well as the importance of the triple helix model, also including a brief history of each of the countries covered by the research, on the basis of which a unique hypothesis was formed. Section 3 presents the research methodology (samples and procedures, instruments and methods of data preparation and analysis), then in Sections 4 and 5 the results and discussion of the research are presented, while Section 6 presents the conclusions and proposals for future research.

2. Literature Review

Entrepreneurial orientation has been studied for over forty years [12–14] and in all research dealing with this matter, ENTRE SCALE is used to measure entrepreneurial orientation, which is not equally defined in these studies. Khandwalla (1977) was the first author and founder of the scale for measuring entrepreneurial orientation, then the scale was upgraded by Miller and Friesen (1978) and it contained nine strategic dimensions. Miller (1983) introduces three dimensions of entrepreneurial orientation, which are: innovation, proactivity, and risk-taking. Authors Morris and Paul (1987)

define entrepreneurial orientation as the ability of managers to demonstrate proactivity, be innovative, and take risks. Lumpkin and Dess (1996) added two more dimensions of entrepreneurial orientation that are just as important as the first three dimensions, namely autonomy and competitiveness. All dimensions of entrepreneurial orientation are equally important for the organization. ENTRE SCALE was used to measure the entrepreneurial orientation of for-profit organizations and could not measure the entrepreneurial orientation of universities as non-profit organizations, therefore, Todorovic [15] makes a new scale ENTRE-U scale, for measuring the entrepreneurial orientation of academic institutions (universities, faculties, departments) consisting of four dimensions which are: unconventionality, cooperation with industry, university policies, mobilization of research. Without any of these four dimensions, measuring entrepreneurial orientation loses its meaning and there is no successful measurement and prediction of spinout patents and licenses, as well as a general measurement of entrepreneurial orientation of an academic institution [3].

The whole process of making ENTRE scales is explained in detail in Todorovic's work [3]. Prof. Dr. Todorovic created the ENTRE scale by interviewing 40 heads of departments in the fields of computer science, health science and engineering at four large universities in America. First, a large list of questions was compiled, where 47 questions were reached through elimination, including general questions related to university policies (age, gender, etc.). Out of 47 questions, Todorovic singles out 26 questions and divides them into four dimensions: Unconventionality: this dimension is very similar to the dimension of entrepreneurial orientation—risk-taking; industry collaboration: represents the way a university interacts with industry; university policies: represent the culture of the university itself, as well as the organization of the university; research mobilization: represents how the university distributes its research. Interest in this scale has grown over time and presents a unique method of measuring entrepreneurial orientation in universities.

2.1. Entrepreneurial Orientation of Universities

It is difficult to define the entrepreneurial orientation of universities because a lot of authors have dealt with this topic and everyone has a different definition for this term [16]. An entrepreneurial university brings changes in the culture, routines, and policies of a university [17]. It consists of a number of formal and informal activities [18], of which scientific research is much more about formal activities based on intellectual property rights, which include patenting, licensing, and establishing spin-off companies within the university. The role of the entrepreneurial university is much more than the commercialization of research, the creation of patents, spin-off companies or business incubators [19], it essentially means providing leadership to create entrepreneurial thinking, actions, institutions, and capital [20]. An entrepreneurial university is a result of internal logic, i.e., academic development with an expanded focus on teaching and research [21]. There are multiple challenges for universities to become entrepreneurial. Examples of these challenges are: preserving research skills, lifelong learning, and creating a community that can maintain and develop essential knowledge alongside social principles and ethics [22]. Universities are entrepreneurial when they are not afraid to maximize their potential, diversify funding sources, and reduce their dependence on a state or public funding [23]. They are becoming vital for the development of this region of Europe and for the creation of a large number of jobs, companies, and economic growth in general [21,24]. Universities are a natural incubator that constantly re-creates new ideas, technologies, and promotes new business ideas to contribute to the creation of a sustainable competitive advantage [9]. Worldwide, it is universities that represent the link between needs and opportunities [25]. The role of entrepreneurial universities calls for the development of a broader perspective that reflects the changing role of universities in order to embrace greater diversity in the scope and nature of academic entrepreneurship. The university environment provides a context where academics and students can access knowledge through research and lectures including research projects, scientific publications, and an educational program. That encompasses the academic curriculum to a more specific form of entrepreneurial education. The spin-off dimension is key to university entrepreneurship and represents the development of business opportunities based

on new technology stemming from the academic arrangement. The success of spin-off companies has two factors, namely: national policy and institutional support [26]

The national priority of every country is the cooperation between the economic and the scientific sector [27]. The impact of universities can be of great importance, given that the employees are engaged in research at the international and global scale. However, the city and the region in which the university is located should not be neglected. Although they have a global impact, they can have a major impact on economic development and business innovation at the regional and local levels. Apart from the economy, universities, and the state, the quadruple helix model adds a fourth link—the community—as a very important link in the overall development process of a certain region [28]. The authors Kolehmainen et al. say that the triple helix model (triple helix: university–economy–state) is very applicable in urban areas for the development of innovation and knowledge. In contrast, in underdeveloped and rural areas, the quadruple helix model is much more pronounced, involving the community as an important factor in the development of a region (the influence of universities is much less pronounced in these areas). The impact of universities can be immense and on the one hand, it is very unusual that all these institutions and employees are engaged in research on a global level while neglecting their own city or region. Global and regional views are not mutually exclusive, in fact, even universities that have a global impact on economic development must have an impact on business innovation at the regional and local levels (“Think globally act locally”). Focusing solely on global research can result in neglecting your home base, or the city or region in which the university is located. In short, the quadruple spiral is considered as a specifically intense field of cooperation where the community (society) is involved. The goals are indirect and direct positive changes in the region. Achieving a sustainable competitive advantage requires visionary, insightful, and targeted strategic thinking [29].

Cooperation between the economy, universities, and industry is of key importance for the technological and regional development of a country [30,31]. This strong connection is otherwise called the triple helix model [10,15] and it results in the capitalization of knowledge [32]. With this kind of cooperation, universities get a new and very important role because, without these three functions that universities perform (teaching, research, and commercialization of knowledge), universities can be in an inconsistent relationship [16,33] with the whole dynamic environment. Research shows that academics and researchers who observe what the industry needs work on commercializing their research more than others [15,28,34]. Also, a study by Todorović et al. [3] shows that universities that support entrepreneurship have a higher number of spin-off companies and patents. In recent years, a new model, the quadruple helix model, has emerged, which includes the community as the fourth link in the innovation process in education [35].

Universities are becoming key factors in economic development, because they not only fulfill curriculums and research programs, but also actively participate in the innovation process, and innovation is the key factor for any entrepreneurial endeavor [36,37]. The complex nature of innovation makes formalization difficult, despite its important role in an economic sense [38], and a lot of effort has been made in the last two decades to formalize it in economic terms [39]. We can say with certainty that the commercialization of university research contributes to local and regional development [32] and the transformation of universities from traditional to entrepreneurial universities, encourages entrepreneurial activities of their academics [18].

2.2. Historical Development of Entrepreneurial Orientation in Countries That Are Included in This Research

Entrepreneurial orientation at universities varies from country to country [18,40]. The six countries covered by this study were once constituent republics of Yugoslavia. Entrepreneurship in old Yugoslavia almost did not exist. everything was owned by the state and all economic development was based on large economic complexes. With the disintegration of Yugoslavia (1991), each state moved in a different course of development in the economic and social sense. The Slovenian economy developed much faster than other countries of the former Yugoslavia [41]. This country has the best-ranked economy

of all the countries in Southeast Europe and is very successful in terms of innovation. According to Todorović (2005), countries seeking innovation are currently more important than the radical change in the university paradigm. Slovenia is a country that implements new laws every year that lead to constant prosperity [42]. The Republic of Croatia is one of the youngest members of the European Union, which still has difficulties in encouraging entrepreneurial activity at universities. Only in recent years has entrepreneurship started developing at universities, as stated in the research of Academic Entrepreneurship in the Republic of Croatia [43]. Bilić, Škoric, and Lovrinčević [43] state that the biggest obstacles to the development of technology transfer and the development of entrepreneurial orientation, in general, are in fact administrative and bureaucratic barriers. Only in the past few years have the results of technology transfer appeared at the Institution for Supporting Technology Transfer in Split (TTO in Split, Croatia). This institution also encourages cooperation between the economy and universities in the Republic of Croatia.

Comparing GEM and TEA in the Republic of Macedonia (Table 1) with GDP per capita, it is concluded that Macedonia has developed “necessary” entrepreneurship, which is low-intensity entrepreneurship arising from necessity or needs versus real motivated entrepreneurship led by a real entrepreneurial vision [44]. The situation is similar in all neighboring Yugoslav countries (except Slovenia). The most important individuals for the development of entrepreneurship are innovators and pioneering entrepreneurs, who represent the greatest contribution to the growth of an economy of a developing country. In the Republic of Serbia in the 1990s, the traditional ties between the universities and the economy were severed. Members of the scientific community at the faculties are trying to find a way to commercialize the results of their research. Universities in Serbia, as well as in all other countries of the former Yugoslavia, have the problem of financing research and material costs that should be financed by the state budget. The state invests insufficient funds in science, equipment, and researchers, and this is one of the main problems in the development of entrepreneurial orientation within universities in the Republic of Serbia [45]. The Serbian Government declared 2016 as the year of entrepreneurship and thus gave priority to the development of entrepreneurship. The departure of a large number of highly educated staff from the country is the biggest obstacle to the development of entrepreneurial orientation at universities in the Republic of Serbia. It is necessary to create good conditions and a healthy macroeconomic environment, in order to prevent the departure of educated people from the country and to develop conditions for the creation of spin-off companies and other forms of entrepreneurial orientation at universities. The Republic of Montenegro is another country in transition that is open to innovation and entrepreneurship [46]. In Montenegro, work is being done to encourage entrepreneurship through various strategies (strategy for the development of entrepreneurship LLL—Life Long Learning 2015–2020). A high level of corruption is a problem that hinders real entrepreneurship and is present in Montenegro [47]. The Republic of Bosnia and Herzegovina is characterized by great diversity in terms of culture and religion, as well as numerous wars fought in this area. After the wars and the disintegration of Yugoslavia, 90% of public companies that were privatized and bought for very low price. The events that took place in these territories slow down the development of entrepreneurship as well as entrepreneurial orientation in this area. Authors Popović and Nedeljko [48] state that the main challenge for the Republic of Bosnia and Herzegovina should be primarily to improve the quality of higher education.

Table 1. GEM indicators—general entrepreneurial monitoring in 2019 and TEA—total entrepreneurial activity in 2017.

	Slovenia	Croatia	Serbia	Montenegro	Bosnia and Herzegovina	Macedonia
GEM	/	53rd place	74th place	60th place	95th place	66th place
TEA	6.85	8.91	No data	No data	3.81	6.53

The issue of culture in entrepreneurship, which does not nurture individualism, is afraid of change and uncertainty, has great self-control and a low level of satisfaction [49], shows that culture is a very important factor in the development of entrepreneurship and innovation in Southeast Europe. A big problem of all former Member States of Yugoslavia is the departure of a large number of young people from the country looking for better living conditions [50]. This is a common problem of the entire region, and even of Slovenia and Croatia, even though they are Member States of the European Union. Countries located in the European Union (Republic of Croatia and the Republic of Slovenia) have greater opportunities for the development of research and projects because they are financially better supported by their state institutions. These countries were the first to start promoting entrepreneurship at universities, which does not necessarily mean that the countries covered by this research outside the European Union will not reach or exceed their level of entrepreneurship development at universities. In some scientific research projects, the Member States of the European Union included their colleagues from the territory of former Yugoslavia who do not belong to the EU, and thus important projects were jointly created (a good example would be the IPA projects) and a network of researchers was created as well. It is also more likely that a state would achieve a higher level of success if it is aware of the problems that another state was going through in the region.

Through the transformation of conventional universities toward more entrepreneurial universities, policymakers at universities should pay the most attention to the attitudes and behavior of the employees at those faculties. Universities represent a link between needs and opportunities, a key point for the creators of knowledge, innovation, and entrepreneurship—all areas where the EU has ambitious goals set. Therefore, this paper seeks to show whether there are differences between countries from the former Yugoslavia that belong to the EU and those that do not yet belong to the EU. Specifically, whether there is a difference in the attitudes and opinions of employees at universities in those regions.

This research highlights the differences and similarities between previously mentioned states. Despite them having *different cultures, religions, and customs, these states are united by a similar language and similar circumstances* when it comes to entrepreneurship. Therefore, the question of this research is: Does the entrepreneurial orientation of employees at universities differ depending on their membership in the European Union? Based on that, a hypothesis was defined which reads:

Hypothesis 1: *Countries belonging to the European Union (the Republic of Slovenia and the Republic of Croatia) are more entrepreneurially oriented at universities than countries who do not belong to the European Union (the Republic of Serbia, Republic of Bosnia and Herzegovina, Republic of Northern Macedonia and Republic of Montenegro).*

3. Method and Data

3.1. Samples and Procedures

Exact 1474 respondents participated in the research, of which 55.2% were male. The largest number of respondents are aged from 30 to 40 years of age (34.9%) or from 40 to 50 years of age (28.3%) while a slightly smaller number of respondents are aged from 50 to 65 years (24.2%) or from 20 to 30 years of age (12.6%). When it comes to the educational status of the respondents, the largest number of respondents have completed doctoral (70.9%) or master (15.8%) studies, while respondents with a university degree (3.7%) and masters studies (9.5%) are slightly less represented in this sample. In relation to the country of origin, 23.2% of respondents are from Croatia, 26.5% from Slovenia, 9.1% from Macedonia, 16.8% from Serbia, 11.0% from Montenegro, and 13.4% from the Federation of Bosnia and Herzegovina are present in the sample.

Data were collected on the territory of all six countries of the former Yugoslavia (the Republic of Serbia, Republic of Croatia, Republic of Slovenia, Republic of Montenegro, Republic of Bosnia and Herzegovina and Republic of Northern Macedonia). Respondents include employees from both state and private universities from all university fields (technical faculties, faculties of economics, medical

faculties, faculties of arts, faculties of sports, faculties of technology, etc.). We sent questionnaires asking for the e-mail addresses of employees at each university (from the university website) in each country individually and some were acquired via the social network “LinkedIn”. In a period of time slightly longer than one year, we sent over 5000 questionnaires to all employees that we found on all sites of the universities (faculties). The questionnaire was translated from English into Serbian and the respondents who filled in the questionnaire in Serbian were employed at universities in the Republic of Serbia, the Republic of Montenegro, and the Republic of Bosnia and Herzegovina. The questionnaire in English was filled in by the employees of universities located in the Republic of Croatia, the Republic of Slovenia, and the Republic of Northern Macedonia. In collecting the data, all employees from the six countries cooperated and supported this research very well. The questionnaire was filled out exclusively online and it took about 10–15 min to complete it.

3.2. Instruments

We used the Entrepreneurial orientation scale for universities (ENTRE-U) questionnaires as an instrument [3]. The questionnaire is intended to assess entrepreneurial orientation and consists of four dimensions: research mobility (6 items, $\alpha = 0.88$), unconventionality (8 items, $\alpha = 0.87$), cooperation with industry (5 items, $\alpha = 0.88$), university policy (8 items, $\alpha = 0.89$). The format of the response to the items is a five-point Likert scale (from 1—I completely disagree to 5—I completely agree).

3.3. Preparation Methods and Data Analysis

The initial data set is the response of 1478 respondents to 27 items, as well as to the elementary socio-demographic variables (gender, age, education, and country of origin). Summation scores were defined for the four dimensions of the ENTRE questionnaire, which were then standardized. Subjects whose Z values were outside the range of ± 3.29 Z were treated as univariate outliers. Two univariate outliers were identified, which were excluded from the database. Multivariate outliers were identified with respect to Mahalanobis distance values. In relation to the criterium $p < 0.001$, for the critical value of the test χ^2 which is $\chi^2(4) = 18.47$, 11 multivariate outliers ($M > 18.47$) were identified, which were also excluded from the data set. After the removal of outliers, the final set of data is represented by the data received from 1465 respondents, out of which all analyses were conducted.

In order to examine the differences in the dimensions of the ENTRE questionnaire in relation to the countries from which the respondents originate (EU Member States or non-EU countries), multivariate analysis of variance (MANOVA) was applied.

Cronbach’s α coefficient was used to check the reliability of the questionnaire. These analyses were performed in the lavaan package [51] in the R environment [52]. The status of the variables for each individual analysis was considered in detail before presenting the results of the analyses.

4. Results

Descriptive statistical indicators for the whole sample, individual countries in relation to the membership of countries in the European Union, are shown in Table 2. As the values of flatness and skewness do not exceed ± 1.5 [53] it was concluded that all variables are normally distributed at the level of the whole sample and in all subsamples. The correlation pattern between the dimensions of the ENTRE questionnaire is almost identical on all subsamples. All correlations are positive, statistically significant, and moderately high ranging from 0.57 to 0.81.

Table 2. Descriptive statistics in relation to a region and a country.

Region/Country	Dimension	N	AS	SD	SK	KU	Correlation		
							RM	UC	IC
Total	RM	1461	28.32	7.69	−0.53	−0.31			
	UC	1461	38.52	8.89	−0.69	0.24	0.800 **		
	IC	1461	23.65	6.56	−0.50	−0.34	0.745 **	0.728 **	
	UP	1461	18.00	5.79	−0.35	−0.53	0.659 **	0.702 **	0.655 **
EU	RM	727	29.04	7.10	−0.65	0.00			
	UC	727	39.53	8.16	−0.76	0.63	0.762 **		
	IC	727	23.17	6.41	−0.49	−0.32	0.722 **	0.711 **	
	UP	727	18.06	5.35	−0.39	−0.29	0.626 **	0.658 **	0.624 **
Croatia	RM	337	27.89	7.37	−0.52	−0.48			
	UC	337	38.69	8.18	−0.67	0.06	0.757 **		
	IC	337	22.31	6.66	−0.45	−0.53	0.725 **	0.720 **	
	UP	337	17.71	5.71	−0.40	−0.50	0.660 **	0.689 **	0.668 **
Slovenia	RM	390	30.04	6.71	−0.74	0.60			
	UC	390	40.25	8.08	−0.85	1.24	0.764 **		
	IC	390	23.90	6.10	−0.49	−0.19	0.709 **	0.697 **	
	UP	390	18.37	5.01	−0.31	−0.16	0.586 **	0.627 **	0.573 **
Non-EU	RM	734	27.61	8.17	−0.40	−0.57			
	UC	734	37.53	9.47	−0.59	−0.11	0.825 **		
	IC	734	24.13	6.68	−0.54	−0.34	0.787 **	0.772 **	
	UP	734	17.95	6.20	−0.32	−0.74	0.686 **	0.739 **	0.687 **
Macedonia	RM	132	29.11	6.90	−0.53	−0.31			
	UC	132	41.08	8.02	−0.75	0.73	0.797 **		
	IC	132	24.92	5.46	−0.38	−0.72	0.770 **	0.735 **	
	UP	132	20.52	5.57	−0.69	−0.14	0.717 **	0.714 **	0.696 **
Bosnia and Herzegovina	RM	243	28.68	8.65	−0.58	−0.41			
	UC	243	38.19	9.44	−0.69	0.20	0.842 **		
	IC	243	25.04	6.72	−0.72	0.05	0.802 **	0.828 **	
Montenegro	UP	243	19.04	6.10	−0.54	−0.42	0.682 **	0.757 **	0.639 **
	RM	161	26.12	8.21	−0.15	−0.78			
	UC	161	35.71	9.94	−0.50	−0.42	0.814 **		
	IC	161	22.91	7.31	−0.39	−0.80	0.801 **	0.791 **	
Serbia	UP	161	16.27	6.33	−0.14	−1.01	0.667 **	0.717 **	0.651 **
	RM	198	26.51	8.02	−0.31	−0.58			
	UC	198	35.82	9.30	−0.38	−0.43	0.821 **		
	IC	198	23.47	6.65	−0.40	−0.37	0.750 **	0.702 **	
	UP	198	16.25	5.73	−0.04	−0.59	0.669 **	0.704 **	0.639 **

Legend. N—number of respondents. AS—arithmetic mean. SD—standard deviation. SK—skewness. KU—kurtosis. RM—research mobilization. UC—unconventionality. IC—industry collaboration. UP—university policies. ** $p < 0.01$.

Regional Differences in Relation to the Dimensions of the ENTRE Questionnaire

In order to examine the differences between EU Member States (the Republic of Croatia and the Republic of Slovenia) and non-EU countries (the Republic of Serbia, the Republic of Northern Macedonia, the Republic of Bosnia and Herzegovina and the Republic of Montenegro), one-way multivariate analysis of variance (MANOVA) was applied. The independent variable is membership in

the European Union (EU, not EU), while the dependent variables are the scores on the four dimensions of the ENTRE questionnaire.

The multivariate effect of the independent variable on the linear combination of dependent variables is statistically significant ($\lambda = 0.05$, $F(4, 1456) = 7050.4$, $p < 0.001$). The univariate effect of the independent variable is significant in the case of dimensions RM ($F(1, 1459) = 12.82$, $p < 0.001$), UC ($F(1, 1459) = 18.69$, $p < 0.001$), and IC ($F(1, 1459) = 7.09$, $p < 0.01$), but is not significant in the case of dimension UP ($F(1, 1459) = 0.15$, $p > 0.05$). In the RM dimension, respondents from EU countries (AS = 29.04, SD = 7.10) achieved significantly higher scores (ASDIF = 1.45, $p < 0.001$) than respondents from non-EU countries (AS = 27.64, SD = 8.17). In the UC dimension, respondents from EU countries (AS = 39.52, SD = 8.16) achieved significantly higher scores (ASDIF = 2.00, $p < 0.001$) than respondents from non-EU countries (AS = 37.52, SD = 9.46). In the IC dimension, respondents from EU countries (AS = 23.16, SD = 6.40) achieved significantly lower scores (ASDIF = -0.93 , $p < 0.001$) than respondents from non-EU countries (AS = 24.13, SD = 6.67), as shown in Figure 1.

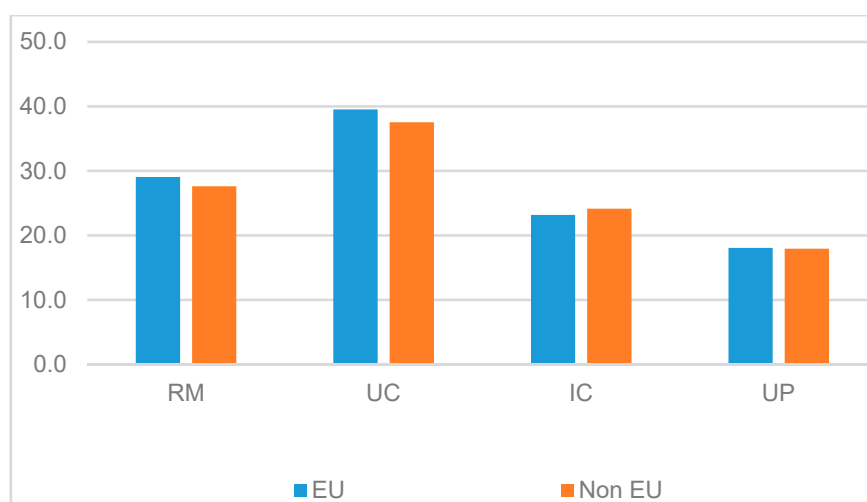


Figure 1. Differences in the dimensions of the ENTRE questionnaire in relations to EU membership.

5. Discussion

Following suggestions from the research of Cvijić et al. [50], we investigated all the countries of the former Yugoslavia, i.e., a large part of the southeastern countries in Europe. Also, this is a unique paper that includes a large number of employees at universities from six similar and yet different countries whose main difference is membership in the European Union. We performed the test using the ENTRE-U scale, which led us to the conclusion that our unique hypothesis is partially confirmed. Respondents at universities in countries in the European Union are more entrepreneurially oriented than their counterparts at universities outside the European Union. The hypothesis was partially confirmed on the dimensions of RM—research mobilization and UC—unconventionality; while on the dimension of IC—industry collaboration, the hypothesis was not accepted because respondents who are outside the European Union have better results on this dimension than their colleagues who are at universities in the European Union. In the last dimension of UP—university policies, there is no significant difference between these two groups of countries.

The first dimension of the ENTRE Research Mobilization Scale is the way in which the university and university staff share their research with external organizations. Research mobilization is very important for generating research results through the research process. Items corresponding to this dimension of the ENTRE questionnaire relate mostly to activities outside the university as well as to the regular research and teaching activities of university staff. Research mobilization actually means how much university staff contributes to the economy and society as well as how much university staff encourages students to look for research that has practical applications. Research mobilization

also means how much university staff collaborates with non-university professionals. Employees who understand the value of research projects outside the university and collaborate with external stakeholders have greater innovative potential than those who do not. In the first dimension of the ENTRE scale, there are significant differences in terms of entrepreneurial orientation, and employees in countries located in the EU achieve significantly higher results than employees located in universities outside the EU. It can be assumed that this dimension has been confirmed because of the much better conditions for employees at universities in the European Union as well as the available resources they have. A highly qualified faculty requires a lot of time, effort, investment, and resources, which means that it will be more successful in the efforts of technology transfer [54].

The second dimension of the ENTRE scale, unconventionality is very similar to the dimension of entrepreneurial orientation—risk-taking. Unconventionality is actually the research of university staff trying to explore new ideas. Identifying and exploiting new opportunities and opportunities as well as searching for new means of financing, in addition to the existing standard sources of financing. In this research, significant differences are observed between countries that are in the European Union, which have a higher degree of unconventionality than their counterparts that are not in the European Union. This leads to the conclusion that countries in the European Union are more inclined to take risks and explore new ideas as well as seek new additional sources of funding. The reasons for this are presumably also in the greater degree of autonomy (as a dimension of entrepreneurial orientation) that employees at universities in the European Union have. Employees who are at universities outside the European Union are afraid of financial loss with already limited resources, and so they are more inclined to keep the status quo. Research shows that university employees looking for new sources of funding have much better performance as well as better research results [31]. Canadian universities that have collaborated with outside organizations have had much better performance and have been transferring technology through patents and licenses [3]. In order to develop the unconventionality dimension in developing countries, it is necessary to increase the mobility of teaching staff to other more developed countries, in order to develop new ideas and adopt existing tried and tested methods of developing entrepreneurial orientation [22]. The focus should be on innovation and a wide range of teaching activities [55]. A degree of autonomy is also needed, both at the individual level and at the departmental level.

On the third dimension of the ENTRE scale, which represents cooperation with industry, respondents from countries belonging to the European Union had significantly lower results than respondents from outside the European Union. Cooperation with industry is a relationship between faculties or departments and the industry or in other words a situation where industry hires university staff to solve a particular problem. The obtained results indicate that certain researchers and employees outside the European Union are much more engaged than employees located in the European Union. The reason for this is probably that countries that have a less developed economy and industry, hire more scientific staff and believe that the cooperation of a certain department with industry can solve a certain problem. That is why the departments at certain academic institutions are highly respected by the economy in countries outside the European Union.

As stated by Guerrero et al. [1], it is a great contribution to compare universities from different countries with similar or the same economic situation. This provides an opportunity to learn about the entrepreneurial orientation of their employees as well as the business policy of these universities. In this research, the countries covered by the research have different economic situations in the country and differ in membership in the European Union (those that belong to the EU and those that do not belong to the EU), what connects them is a very similar history, similar language, customs, and business policy. From this statement, we can draw a conclusion for the fourth dimension of the ENTRE scale where it was noticed that there are no significant differences in research results between employees at universities located in the European Union and those not part of European Union. We come to the conclusion that although countries are part or are not part of the European Union, their university policies in this research are very similar and have no significant differences. Since these two groups of

countries used to make up one state in not-so-distant history, it is probably not surprising that the results on the university policy dimensions are very similar. All six countries used to belong to one state, the Socialist Federal Republic of Yugoslavia, and the remnants of socialism are still felt in most state institutions. University policy has probably not changed much and all countries have kept the same work principle. The influence of culture is very strong and still insufficiently researched [3], we hereby confirm that countries that have a very similar culture, as is the case with these two groups of countries, will probably have very similar results on the fourth dimension of the ENTRE scale.

Universities are the ones who should decide to transform from traditional to entrepreneurially oriented institutions [1]. Although they have different economic and social conditions, although they differ in tradition, culture, and characteristics, all universities should strive for the European goal of developing universities into dynamic knowledge-based economies.

6. Practical and Theoretical Implications

Universities are the only ones who need to decide to be entrepreneurially oriented and to carry out the process of transformation from traditional to entrepreneurially oriented institutions. This research can be used for a practical application for managers and policymakers at universities in developing countries. Any university in any country [56], can play an important role on a global scale. A study that was conducted by Spanish universities showed that Spanish universities invest in entrepreneurship mostly from their own sources and that if there was support from external institutions, as in other European countries, entrepreneurship at these universities would experience great entrepreneurial progress. Increasingly, universities are used to solve current problems (some universities are also looking for a vaccine for COVID-19). In the United States, the concept of Entrepreneurship and Entrepreneurial Orientation of Universities has been in the process of developing over the past thirty years. The development of entrepreneurship training has conditioned the development of research centers, academic journals, and various entrepreneurship associations. European Countries have been following this trend, but with a long delay, so that the difference between the American model of entrepreneurial universities and the European model can still be seen. Besides America, the countries that stand out are Great Britain, Finland, Sweden, Norway, Poland, etc. China presents a unique example because it is developing rapidly in the direction of entrepreneurship and entrepreneurial universities, where entrepreneurship during the communist era almost did not exist before 1990. Following the introduction of MBA studies, China has been completely transforming its economy and focusing on developing entrepreneurial orientation [56].

7. Concluding Remarks and Suggestions for Future Research

Most countries of the former Yugoslavia accepted entrepreneurship as a “necessary evil” after the collapse of large companies in the 1990s. From the time of socialism when it was possible to establish their own companies starting from 1986 until today (for about 35 years), there has not been enough time to develop real entrepreneurship in these countries. Entrepreneurial orientation is necessary not only for universities but also for the countries in which these universities are located. It is necessary to develop real entrepreneurship as much as possible, as opposed to the necessary entrepreneurship that does not have a clear vision. What is most needed is to establish strategic management within each scientific institution in order to achieve a competitive advantage by commercializing knowledge and research, establishing spin-off companies, participating in business incubators, consulting services, and developing all other types of entrepreneurial orientation [50]. Cultural factors affect the entrepreneur’s propensity to engage in entrepreneurship. If cultural factors change to seek and encourage risk, entrepreneurial activity is also encouraged. The absence of corruption and the presence of an effective regulatory environment can increase the sense of stability and reduce the risk taken with new ventures [41]. Visionary (high quality) entrepreneurship is set as the main driver of economic development, which is the result of advancing culture and abundance of resources. Developing countries and their cultures are usually traditional, which, because of their

low economic standards and political instability, do not celebrate entrepreneurship. In developing countries, the entrepreneur must develop broad networks to compensate for their resource-dependent environment, in order to provide political and economic services. Consequently, understanding the local culture in these countries is very important.

The aim of this paper was to investigate the differences but also similarities between countries located in the same territory that differ based on their membership in the European Union. Also, the main goal of this paper is to help developing countries and universities located in these countries to move from traditional to entrepreneurial-oriented universities with a clear vision that will lead them to further prosperity and development. Developing countries have great potential that has not been developed because of various circumstances. This research confirmed that the ENTRE scale for measuring entrepreneurial orientation is suitable not only for measuring the entrepreneurial orientation of universities within developed countries, as is the case of Canada, the Scandinavian countries, and other EU Member States. Moreover, this scale can also predict the entrepreneurial orientation of developing countries that are not in the European Union. This scale provides a realistic picture that proves evidence that it is possible to develop entrepreneurial orientation within universities in developing countries.

One of the main limitations of this research is that there is no exact number of patents, licenses, and spin-off companies in non-EU countries covered by this research, but as some scientists say, concentrating exclusively on patents and licenses can be counterproductive for university employees [31]. What is important is that the focus of the research has not changed since the original research, and the research of the level of entrepreneurial orientation within academic institutions is still in the foreground. The results of the research show that the questionnaire corresponds well, that it is applicable and that it accurately predicts the entrepreneurial orientation of academic institutions. Future research can be conducted on the same sample where a comparative analysis would be performed between countries as well as between private and public faculties. Also, the research can very easily be extended to the whole of Southeast Europe, where the problem of developing countries would be shown and explained even more widely. What would be interesting is the comparison of these six countries with a country in which entrepreneurship has long been developed at universities, as is the case, for example, with Canada. What may be considered as an oversight of this research is that there are not enough comparative analyses of such a large sample where the perception of employees in each of these six countries would be explained in more detail. The plan is to expand the analyses as well as the sample size in the following research papers. In the future, it would also be very interesting to do a comparative analyses between, say, countries in Asia and eastern Europe; or comparative analyses between eastern and western Europe, where the results would provide us with more information and lead to new assumptions.

The transformation of the educational system and the transition to a more entrepreneurial way of functioning would create the conditions for a great turnaround for all the countries of the former Yugoslavia. The development of entrepreneurial orientation at individual universities in all countries of the former Yugoslavia would lead to joint solutions and encourage the development of spin-off companies at universities. Spin-off companies, which are one of the forms of commercialization of knowledge and research, would actually be an opportunity to solve common problems and respond to current challenges coming from the environment. This would contribute to the development of all universities and the knowledge acquired there, as well as the development of students and staff at those universities and ultimately the development of the entire region. It is necessary to redirect the educational program in order to meet the needs of the industry, to transfer knowledge from universities to industry, in order to create good conditions for the development of each country individually [11]. We believe that this work will encourage further debates and entrepreneurial spirit not only in the countries of the European Union but also in countries that do not belong to the European Union.

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