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Article

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EVALUATION MODEL OF THE ENTREPRENEURIAL CHARACTER IN EU COUNTRIES

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Abstract
The evidence of entrepreneurship development as a factor of sustainable growth at national and regional level frequently calls for the interest of theorists and practitioners on identifying and outlining the best conditions and economic essential prerequisites for supporting the entrepreneurial initiatives on the long term. In this context, the objective of the present research is to analyse and measure the entrepreneurial character of the European Union member countries in an integrated manner, by developing an innovative model for proposing specific action lines and objectively evaluating the entrepreneurship development in the investigated states. Our model is based on a synthesis variable of the entrepreneurial national character, which was developed by sequential application of principal component analysis, while the initial variables are from secondary sources with good conceptual representativeness. Depending on the objective relevance of the three model components (cultural, economic and administrative, and entrepreneurial education components), the achieved results confirm the importance of a favourable cultural and economic and administrative background for entrepreneurship development and they reiterate the inefficiency of isolated entrepreneurial education unless supported by good entrepreneurial culture or adequate economic and administrative infrastructure. The case of Romania, in relation with the European Union member countries, is presented in detail.

Keywords: entrepreneurship, principal component analysis (PCA), EU member countries, culture, entrepreneurial education, economic and administrative measures

JEL Classification: L26, C38

Introduction

In the last decades and, mainly, after the recent economic crisis, the importance of entrepreneurship for sustaining economic growth and development at global level has become an issue of interest for researchers (Ács et al., 2014(b); Amorós and Bosma, 2014;

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Baran and Veličkaitė, 2008; Ratten, 2011; Terjesen et al., 2013; Wildeman et al., 1998) and practitioners, especially because of the multi-dimensional related-aspects, with broad implications at micro- and macro-economic level. At the same time, the proliferation of foreign direct investments (Săvoiu et al., 2013), the bankruptcy of some large corporations and a number of economic and financial institutions during the crisis (Robu and Ciora, 2010), as well as the corporate restructuring following the crisis (Dragotă et al., 2013) may decisively influence the entrepreneurial activity, as well as the entrepreneurship has the potential to somehow stimulate the regional and national economies (Terjesen et al., 2013).

Taking into account these considerations, the European Union (EU) policy on the subject of entrepreneurship constantly emphasizes the necessity of developing the most appropriate micro- and macro-environments for supporting the development of small companies and entrepreneurship (Román et al., 2013). One of the most stringent challenges of EU entrepreneurship is the lack of constant growth in newly incorporated companies (Hoffmann, 2013), and the structural areas that need deep reforms in Europe are the mitigation of economic, political, legislative and administrative barriers, as well as the support for education and entrepreneurial spirit in EU countries. In this context, along with the deepening of integration process, we consider that the development of entrepreneurial character in European countries should benefit both of political-institutional support and progress of specialized research in the field, for identifying the specific needs of member countries and drawing new action lines in accordance with their national peculiarities.

Considering the main entrepreneurship characteristics – *innovation*, *proactiveness* and *risk taking* (Ratten, 2011), a series of positive effects are generally associated with the entrepreneurship, in direct or indirect ways: sustainable development, overall growth of business performances and economic efficiencies, reducing unemployment by creation of new jobs, improvement of regional and national competitiveness, better and more efficient management of economic crisis, identifying and seizing opportunities (Ratten, 2011), technological and informational change or progress (Dragos et al., 2014; Marin-Pantelescu et al., 2009), increase of productivity and exports (Baran and Veličkaitė, 2008) etc.

Baran and Veličkaitė (2008) define entrepreneurship as a process developed in different environments and circumstances and that generates various changes in the economic system, through innovations created by individuals that recognize the economic opportunities with high potential for bringing value for them and for the societies in which they live. This definition emphasizes the proactive approach of entrepreneurship, where the main focus is on seizing opportunities, in contrast with the reactive approach, based on promoting entrepreneurship by necessity. Ács et al. (2014(b)) identify the entrepreneurship characteristics and effects frequently found in the specialized literature: distinctive abilities, risk taking, seizing opportunities, motivation and implication, efficient resource allocation, innovation, value creation, multiplication or dissemination effects, high growth.

In a broad research in the field, Terjesen et al. (2013) consider that there still is the need of continuing the international comparative research in entrepreneurship, although the studies concerning the legislative, political, economic, social and cultural premises and formal and informal institutional context of entrepreneurship have essentially evolved in the last years. As such, some of the main research action lines in international entrepreneurship are the following: comparative studies between countries with different levels of economic development; use of complex databases in entrepreneurship research; influence analysis of different types of institutions and their dynamics on entrepreneurship development and

evolution, especially in EU countries; broad research on the impact of integrated institutional framework on entrepreneurship; analysis of environment influence on entrepreneurship development in international comparative studies (Terjesen et al., 2013). Our study targets all these action lines, but it especially analyses how the integrated national context may support the entrepreneurship enhancement in EU countries, in order to meet some pre-identified needs and to provide a complex and objective methodological tool easy to be updated.

The main purpose of our research is to analyse and measure the entrepreneurial character in EU member countries in an integrated manner, by developing an innovative model useful for identifying specific action lines for supporting entrepreneurship, with a special focus on Romania. We use the term "entrepreneurial character" for covering the whole area of national contextual conditions – economic, political, administrative, social and cultural-educational circumstances – that create the favourable premises and generate the sustainable development of entrepreneurship on the long term.

For attaining the proposed objective, in the next sections we have structured the research as follows: literature review regarding entrepreneurship development at regional and global level; data and methodology, including the development of the model for evaluating the entrepreneurial character in EU member countries; achieved results and their interpretation, especially for the Romanian case; recommendations and conclusions.

1. Evaluation of entrepreneurship at regional and global level

In the last decade, along with consolidated scientific and empirical confirmation of entrepreneurship's role as a factor of economic growth at organizational and national level (Ács et al., 2014(b)), the issue of entrepreneurship evaluation has become of vivid interest in academic (Ács et al., 2014(a); Congregado, 2008; Marcotte, 2013) and pragmatic forums (EC, 2012; EIM Business and Policy Research, 2013; OECD, 2014; World Bank, 2013). The complexity of evaluating and measuring the entrepreneurship is evident in the diversity of related issues, like: operationalization of entrepreneurship for optimal measuring (Congregado, 2008; Baran and Veličkaitė, 2008); identification of the most appropriate indicators, indices and statistical methods for research in this domain (Congregado, 2008; Marcotte, 2013); development of a comprehensive system of indicators in order to be included in a complex index of entrepreneurship at global level (Ács et al., 2014(b); Amorós and Bosma, 2014); study of entrepreneurial phenomenon in its dynamics (Ács et al., 2014(b)); identification and justification of different types of relationships between entrepreneurship and economic growth (Ács et al., 2014(b); Zahra and Covin, 1995) etc. An optimal evaluation of entrepreneurship development should take into account not only the quantitative issues – for example, counting the newly-born companies in a specified period of time – but it should also be supplemented with a qualitative approach, regarding the long term sustainability (Țigu et al., 2013) and the growth potential of these new business initiatives, resulting the importance of the entrepreneurial character – economic, political, administrative, social, educational, technological and cultural conditions – in the analysed countries.

The last years led to the emergence of a series of indices and indicators for comparative evaluation of entrepreneurship in different countries, offering different perspectives regarding the complexity of the investigated phenomenon. Some of the most relevant are

the following:

- GEDI (Global Entrepreneurship and Development Index) – composite complex index developed by Global Entrepreneurship and Development Institute (GEDI), it evaluates the entrepreneurial attitudes, abilities and aspirations at individual and institutional level, in 120 countries (Ács et al., 2014(b); GEDI, 2014);

- REDI (Regional Entrepreneurship and Development Index) – composite index developed by four renowned research institutions at the express request of European Commission, it evaluates the entrepreneurship development in different regions of the EU member countries, by using a similar methodology with the one of GEDI (GEDI, 2014);

- GEM (Global Entrepreneurship Monitor) – large-scale project coordinated by Global Entrepreneurship Research Association (GERA), it measures the national entrepreneurship based on individual attitudes, perceptions, activities and aspirations, as well as experts' opinions regarding the environment factors and conditions influencing the development of entrepreneurship in more than 100 countries (Amorós and Bosma, 2014; GEM, 2014);

- OECD-Eurostat Entrepreneurship Indicators Programme (EIP) – joint initiative OECD-Eurostat based on relevant related-indicators, it measures the performance and the main determinants of entrepreneurship in more than 30 countries (OECD, 2014);

- Eurobarometer Survey on Entrepreneurship – research coordinated by European Commission – Directorate-General for Enterprise and Industry, it analyses the development of the entrepreneurial mentality and spirit in 40 EU and non-EU countries (EC, 2012);

- World Bank – Indicators Group – series of indicators and databases of World Bank, with a solid consistency in time and space, it targets the business development and the evolution of the business environment, in general, and the development of entrepreneurship and small companies, in particular: *Doing Business* (189 countries), *Entrepreneurship* (139 countries) and *Enterprise Surveys* (135 countries) (World Bank, 2013);

- Entrepreneurs International (COMPENDIA – COMParative ENtrepreneurship Data for International Analysis) – OECD-related database, it offers yearly data and information regarding entrepreneurship (number of entrepreneurs, entrepreneurship rate etc.) in 30 OECD countries (EIM Business and Policy Research, 2013).

Unlike the indices, indicators and databases sequentially addressing the issue of entrepreneurship, the need for this study is justified by the proposal of a synthetic and complex model for assessing the entrepreneurial character, by taking into account the specific requirements of the EU countries. We can highlight at least four fundamentals which assure the innovativeness of our model: 1. the integrated approach of the factors influencing the national entrepreneurial character in EU countries, based on renowned and representative indices for the envisaged dimensions; 2. the possibility of constant updating of the model, given that the indices are mainly annually issued; 3. the inclusion of specific elements – for example, cultural support and entrepreneurial education – that better settle on the complete panorama of the national entrepreneurial character, by assimilating the sociological considerations into the economic ones; 4. the use of the PCA multivariate statistical method for analyzing and simplifying the existent causal structure between the variables, the weights of the components being objectively and not empirically established.

2. Research data and methodology

The main research objective – the integrated evaluation of the entrepreneurial character in EU member countries – is implemented by: a) the development of a highly innovative model especially conceived and proposed by the authors after a broad critical analysis of the specialized literature; and b) the interpretation of the generated values for the analysed countries. **The Evaluation Model of Entrepreneurial Character of EU Countries (EMEC)** is based on a synthesis variable – The Evaluation Variable of Entrepreneurial Character of EU Countries (EVEC) – identified through sequential application of Principal Component Analysis (PCA) to four multidimensional spaces. The first three spaces were determined by the original variables of the main components of the entrepreneurial character, which we took into account according to their conceptual relevance for our research objective and presented in the following lines. These three (explained) synthesis variables – generated according to this method – formed together the fourth multidimensional space that lead to EVEC.

The structures and the reasons of selecting the three main components, each of them defined by one or more pillars summing up 16 initial variables, together with their corresponding synthesis variables, are next presented (Figure no. 1). We took into account the reliability vs. representation dilemma (Foa and Tanner, 2012) when selecting a relative high number of indicators and indices – globally well-known and issued by specialized international institutions and organizations – for being included as original variables in the components of EMEC. The variables that we used for determining EMEC are both actionable and perception-based indicators (Foa and Tanner, 2012), contributing to a relevant image of developing and perceiving the entrepreneurial character in EU member countries. More details about the selection of the components and their related elements could be provided by the authors on request.

- *The CULTURAL Component – Cult_EMEC:* one pillar – Cultural Dimensions – that comprises six initial variables. It generated *The Cultural Variable of Entrepreneurial Character of EU countries – Cult_EVEC:*

The consideration of national cultural background as a determinant factor of the entrepreneurial character at country level (Hoffmann, 2013; Terjesen et al., 2013; Thomas and Mueller, 2000; Wildeman et al., 1998), led us to include culture as one of the three main components of our model and to select for its representation (according to Terjesen et al., 2013) the dominant approach in the literature – the one of Hofstede et al. (2010) and Hofstede (2014). The "Cultural Dimensions" pillar according to Hofstede et al. (2010) and Hofstede (2014) was formed by six initial variables (evaluated later on – partially according to Wildeman et al., 1998 – as optimal indicators if minimal **(-)** or maximal **(+)** values are achieved, for answering to the specific research needs): Power distance (PODI) – PODI(-); Individualism (INDV) – INDV(+); Masculinity (MASC) – MASC(+); Uncertainty avoidance (UNAV) – UNAV(-); Pragmatism (PRAG) – PRAG(+); and Indulgence (INDL) – INDL(+).

- *The ECONOMIC AND ADMINISTRATIVE Component – EcAdm_EMEC:* four pillars – Innovation, Change, Competitiveness and Economic Freedom – that sum up five initial variables (two for Innovation and one for Change, Competitiveness and, respectively, Economic Freedom – composite indices). It generated *The Economic and Administrative Variable of Entrepreneurial Character of EU countries – EcAdm_EVEC:*

Following a broad review of the specialized literature (Ács et al., 2014(a); Baran and Veličkaitė, 2008; Bjørnskov and Foss, 2008; Drucker, 1985; Ratten, 2011; Román et al., 2013; Sharma and Chrisman, 1999; Terjesen et al., 2013; Thomas and Mueller, 2000; Wildeman et al., 1998; Zahra and Covin, 1995), we identified the fundamental economic, administrative and institutional characteristics of entrepreneurship, converging and contributing to the confirmation of the national entrepreneurial character: innovation (facilitator or result of the entrepreneurship); change (taking-managing risks and organizational adaptability/resilience as essential prerequisites of the entrepreneurship); competitiveness (proactiveness, rapid seizing of opportunities, benefitting of favourable context – premises of the entrepreneurship; real competitive advantages – results of the entrepreneurship); and economic freedom (aggregation of factors or 'freedoms' that contribute to the development and stimulation of entrepreneurship).

We synthesized these characteristics of entrepreneurship in the second main component of the model, by developing four corresponding pillars: the "Innovation" pillar was based on the Global Innovation Index (GII) (Cornell University et al., 2014) and the Summary Innovation Index (SII) (EC, 2014(a)) (the two initial/original variables); the "Change" pillar (with only one initial variable) was based on the FM Global Resilience Index (GRI) (FM Global, 2014); the "Competitiveness" pillar (also with only one initial variable) was developed by using the Global Competitiveness Index (GCI) (WEF, 2013); finally, similar to other approaches in the specialized literature (Ács et al., 2014(b); Bjørnskov and Foss, 2008; McMullen et al., 2008), we developed the "Economic Freedom" pillar (also with only one initial variable) by using the Index of Economic Freedom (IEF) (The Heritage Foundation and The Wall Street Journal, 2014). In developing this component of our model, we used well-known composite (aggregated) indices, highly complex in structure, benefiting of solid conceptual and geographic representativeness, from which we have taken the most recent values available for the EU countries members.

- *The ENTREPRENEURIAL EDUCATION Component – Edu_EMEC:* one pillar – Entrepreneurial Education – that has five initial variables. It generated *The Entrepreneurial Education Variable of Entrepreneurial Character of EU countries – Edu_EVEC:*

Assuming the role of entrepreneurial education as one of growth enhancers in the newly incorporated companies and one of the EU priorities in the entrepreneurship area (Hoffmann, 2013), and also for capturing the role of tertiary education in forming the national entrepreneurial character or corresponding behaviour, we included entrepreneurial education as the third main component of our model. The "Entrepreneurial Education" pillar was formed by five initial variables (and their corresponding values were taken from Flash Eurobarometer 354), about the perception of the EU population on the entrepreneurial education: Attending entrepreneurship courses and activities (AECA); Developing entrepreneurial spirit and attitude (DESA); Better understanding of entrepreneur's role in society (BUER); Developing the interest for becoming an entrepreneur (DIBE); and Developing the necessary knowledge and abilities for operating a business (DNKA) – as a result of entrepreneurial education in an organized institutional framework (EC, 2012).

The choice of using the multivariate statistical method for data processing Principal Component Analysis (PCA) in this research was based on a series of thorough fundamentals: the frequent use of PCA as a global renowned technique for evaluating the economic and social differences specific to various nations (Vyas and Kumaranayake, 2006; Gwatkin et al., 2000; Nagar and Basu, 2002), which reflects the characteristics of the

three main components selected by us in order to encompass the national entrepreneurial character; the validation of PCA as a method for evaluating the economic and social status of countries by diverse researchers (Filmer and Pritchett, 2001); the contribution of PCA to solving the drawbacks induced by different measuring of original variables, high variations of the covariance coefficients, data seasonality or different moments in time for data collection (Vyas and Kumaranayake, 2006); the easier running of data by using PCA in comparison with other statistical methods, PCA considering all the initial variables when reducing the dimensionality of the spaces (Jobson, 1992).

In addition, the proposed methodological framework – building EMEC by applying PCA for a set of representative data – ensures research objectivity and refinement, compared to the empirical method of weighting variables when the indicators are divided into theoretical sub-categories with equal weights (Foa and Tanner, 2012) and that is commonly used in social and economic research. The innovative methodological tool adopted in this research is scientifically rigorous and it clearly eliminates the subjectivity in establishing the links between different components. EMEC is based on secondary yearly data and it synthesizes the complex and multi-dimensional phenomenon of entrepreneurial character in EU countries in an easily replicable way, for supporting the initiatives mainly targeting the identification and mitigation of entrepreneurial weaknesses at European level.

The software that we used for data processing was IBM SPSS Statistics.

Firstly, we sequentially applied PCA for each of the three main components considered by us (Cult_EMEC, EcAdm_EMEC and Edu_EMEC) and we achieved three synthesis variables (Cult_EVEC, EcAdm_EVEC and Edu_EVEC). Secondly, these three synthesis variables formed the initial causal space that generated the final synthesis variable (EVEC), measuring the entrepreneurial character of the 28 EU countries (Figure no. 1). We present further on the process performing and the relevant information that we obtained.

The correlation analysis emphasizes, in three (EcAdm_EVEC, Edu_EVEC and EVEC) out of the four possible situations, the existence of sufficiently strong correlations for keeping all the initial variables that we considered. There is only one exception for the Cultural Component (Cult_EVEC), where 3 out of the 6 original variables were eliminated (MASC, PRAG and INDL), because of the low values registered by their coefficients of linear correlation. The correlation matrices could be provided by the authors on request.

The formation of the four synthesis variables (Cult_EVEC, EcAdm_EVEC, Edu_EVEC and EVEC) was achieved by sequentially applying the Kaiser's criterion and retaining the components associated with eigenvalues greater than unity (Houweling et al., 2003). In all four situations that we considered, only one eigenvalue greater than 1 was identified for each case, their associated components retrieving between 69.31% and 83.49% of the existing information.

The information recovered from the initial variables certifies a significant informational overlap of above 70% in most of the cases, for each of the four components (Table no. 1). Taking into account the minimal informational loss registered by the representation of the analysed objects in the reduced spaces, it could be considered that the transformation of the characteristics from the initial causal spaces was optimal.

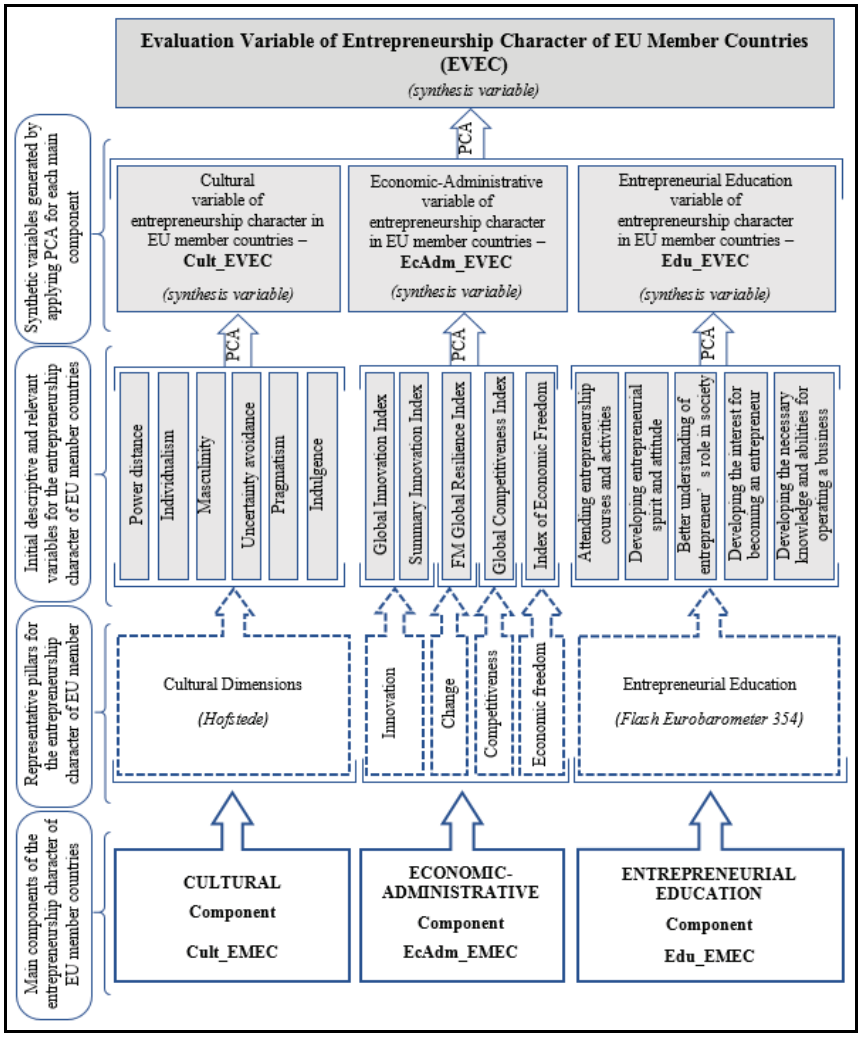

Figure no. 1: The evaluation model of the entrepreneurial character in EU countries

Table no. 1: The information recovered from the initial variables

Cult_EVEC			EcAdm_EVEC				
PODI	INDV	UNAV	GII	SII	GRI	GCI	IEF
0.72	0.71	0.73	0.93	0.86	0.85	0.92	0.61
EVEC			**Edu_EVEC**				
Cult_EVEC	EcAdm_EVEC	Edu_EVEC	AECA	DESA	BUER	DIBE	DNKA
0.88	0.75	0.46	0.09	0.85	0.92	0.83	0.87

The rescaling through standardization of the variables from the initial space was accomplished by using the correlation matrix (Bolch and Huang, 1974). The new configurations of the principal components accurately reflect the existing relationships between the initial characteristics. This finding was supported by the high absolute values

of the correlation coefficients (in average of above 0.8), indicating a strong intensity of the inclusion (participation) of the original variables in the synthesis variables (Table no. 2).

Table no. 2: The correlations between the original and the synthesis variables

Cult_EVEC			**EcAdm_EVEC**				
PODI	INDV	UNAV	GII	SII	GRI	GCI	IEF
0.8485	-0.8439	0.8534	0.9642	0.9288	0.9230	0.9567	0.7838
EVEC			**Edu_EVEC**				
Cult_EVEC	EcAdm_EVEC	Edu_EVEC	AECA	DESA	BUER	DIBE	DNKA
0.9355	-0.8646	0.6753	0.2936	0.9244	0.9589	0.9092	0.9337

The simplification of the existent causal structure in the initial space of the variables was needed in order to identify the evolution of the investigated phenomena. In this way, the relevant information was expressed by using four new synthesis variables, as linear combinations of the original variables. The computing of the synthesis variables was obtained through a multidimensional analysis and it aimed to eliminate the informational redundancies from the initial causal space and to synthesize the data in just a few main categories. According to the component score coefficient matrices, the linear combinations of original variables generating the computation of the four synthesis variables are:

$$\mathbf{Cult_EVEC} = 0.399 * \mathbf{PODI} - 0.390 * \mathbf{INDV} + 0.395 * \mathbf{UNAV} \quad (1)$$

$$\mathbf{EcAdm_EVEC} = 0.230 * \mathbf{GII} + 0.222 * \mathbf{SII} + 0.221 * \mathbf{GRI} + 0.229 * \mathbf{GCI} + 0.187 * \mathbf{IEF} \quad (2)$$

$$\mathbf{Edu_EVEC} = 0.230 * \mathbf{AECA} + 0.222 * \mathbf{DESA} + 0.221 * \mathbf{BUER} + 0.229 * \mathbf{DIBE} + 0.187 * \mathbf{DNKA} \quad (3)$$

$$\mathbf{EVEC} = 0.4499 * \mathbf{Cult_EVEC} - 0.4158 * \mathbf{EcAdm_EVEC} + 0.3248 * \mathbf{Edu_EVEC} \quad (4)$$

The low number of uncorrelated synthesis variables and the maximum recovery of information from the initial multidimensional spaces confirm that the informational synthesis through principal components is appropriate for identification and explanation of the analysed phenomena, respectively the entrepreneurial character of the investigated populations, in all four situations. However, the achieved scores are relative values and they enable only the comparison and classification of the EU member countries, without providing absolute information about any of the investigated elements (McKenzie, 2003).

3. Achieved results and their interpretation

The principal component analysis (PCA) proved to be a practical method for reducing the dimensionality of the causal spaces determined by the selected 16 original variables. The final results clearly and concisely present the main aspects of the investigated phenomena and the existent causal relationships between the influence factors, by separating the essential information from the irrelevant elements included in the initial data sets. However, one of the main dilemmas related to this model refers to the relevance of the resulted synthesis variables, considering their multiple dependencies on the nature, validity and reliability of the original variables or the relationships between them.

Vyas and Kumaranayake (2006) consider that ordering, grouping and interpreting the results after applying PCA should be conducted by taking into account the features of the

initial data and the specific methodological aspects. In our case, the negative correlation between the Cult_EVEC values and the ones of the original variables included in this component lead us to a reverse interpretation (where the lowest value is the most favourable one) of the registered scores in the cultural variable of entrepreneurial character. Not the same is true for EcAdm_EVEC and Edu_EVEC, where higher registered values mean more favourable positions for the respective countries. The positive correlation between the evaluation variable of the entrepreneurial character (EVEC) and Cult_EVEC and the negative correlation between EVEC and EcAdm_EVEC (equation (4) in the system presented above) lead us to a reverse interpretation of the EVEC scores.

At first sight, the presented approach – the reverse interpretation of the EVEC scores – would disadvantage the countries with strong entrepreneurial education, standing as an inadvertence of the model and leading to cautious interpretation of the results. In real terms, a more careful assessment of the situation shows that the reverse interpretation of the EVEC values is correct even when considering the entrepreneurial education. Although education is an overwhelmingly positive factor, the analysis of the model supports for an inverse correlation with the development of national entrepreneurial character, justified by enhancing entrepreneurial education especially in countries where entrepreneurship is not yet highly developed. The reasoning confirms the correlation of entrepreneurial education with development of necessity entrepreneurship, the support for private initiatives – including from a sociological point of view – being considered as a panacea for overcoming the major hindrances of economic growth. Entrepreneurial education is a basic requirement prior to growth of entrepreneurship; as nations consolidate their entrepreneurial nature, the educational efforts are replaced by investments in developing the economic and administrative infrastructure.

The -0.7972 intensity correlations between EVEC and GEDI (index presented in Ács et al., 2014(b)) is an additional issue confirming the fairness of our approach and validating the results. The high correlation between EVEC and GEDI reaffirms the essential role of culture in shaping the national entrepreneurial character and the difference in correlation (approx. 0.2) is partly due to the entrepreneurial education that "penalizes" our model and that is based on the corresponding perception of the EU population.

Considering all these aspects, we presented below (Table no. 3) the classification of the 28 EU member countries according to their values of the evaluation variable of the entrepreneurial character (EVEC) and the three synthesis variables that define it: the cultural variable (Cult_EVEC), the economic and administrative variable (EcAdm_EVEC) and the entrepreneurial education variable (Edu_EVEC).

Table no. 3: The values of the synthesis variables of the entrepreneurial character in the 28 EU member countries

No.	Country	Cult_ EVEC	EcAdm_ EVEC	Edu_ EVEC	EVEC
1	United Kingdom (UK)	-1.6517	1.2293	-2.1736	**-1.9605**
2	Denmark (DK)	-1.8670	1.2904	-0.2685	**-1.4640**
3	Ireland (IE)	-1.3736	1.0231	-0.8467	**-1.3186**
4	Sweden (SE)	-1.4458	1.4924	0.1063	**-1.2367**
5	Netherlands (NL)	-1.0760	1.2962	-0.4629	**-1.1736**

No.	Country	Cult_ EVEC	EcAdm_ EVEC	Edu_ EVEC	EVEC
6	Germany (DE)	-0.6359	1.3016	-0.7229	**-1.0623**
7	Estonia (EE)	-0.4785	0.2293	-1.1632	**-0.6885**
8	Austria (AT)	-0.7445	0.7992	0.1219	**-0.6278**
9	Finland (FI)	-0.6952	1.4408	1.1533	**-0.5374**
10	Luxembourg (LU)	-0.2988	1.0996	0.3335	**-0.4834**
11	Italy (IT)	-0.3647	-0.7330	-1.3835	**-0.3083**
12	France (FR)	0.2852	0.4170	-0.7493	**-0.2885**
13	Belgium (BE)	0.2849	0.7351	-0.1188	**-0.2161**
14	Hungary (HU)	-0.4021	-0.7689	-0.3505	**0.0249**
15	Czech Republic (CZ)	0.1412	-0.0593	0.0277	**0.0972**
16	Latvia (LV)	-0.5649	-0.8770	0.3711	**0.2310**
17	Malta (MT)	0.4957	-0.5400	-0.5431	**0.2712**
18	Lithuania (LT)	-0.3504	-0.6693	0.8070	**0.3828**
19	Spain (ES)	0.5085	-0.1036	0.6562	**0.4851**
20	Poland (PL)	0.6494	-0.7781	-0.2501	**0.5345**
21	Slovakia (SK)	0.6797	-0.8855	-0.2606	**0.5894**
22	Slovenia (SI)	1.3322	-0.5157	-0.3414	**0.7030**
23	Cyprus (CY)	1.0741	-0.3958	0.3251	**0.7535**
24	Greece (EL)	1.1642	-1.4889	-0.5750	**0.9562**
25	Croatia (HR)	1.0966	-1.2264	0.6120	**1.2023**
26	Bulgaria (BG)	1.1942	-1.3200	0.8241	**1.3536**
27	Portugal (PT)	1.3770	-0.4618	2.7481	**1.7043**
28	Romania (RO)	1.6661	-1.5310	2.1238	**2.0763**

The leading countries, the ones that registered the best scores of the evaluation variable of the entrepreneurial character (EVEC), were the ones that registered good values for the cultural variable (lower) and for the economic and administrative variable (higher), as it could be noticed for United Kingdom and Denmark. As we have mentioned before, strong entrepreneurial education is rather a characteristic of the nations with less favourable contexts for opportunity entrepreneurship development or, at least, not yet fully mature in economic and administrative terms or less culturally suitable to support long-term opportunity entrepreneurship – see, for example, the last two countries, Romania and Portugal. The entrepreneurial education is not enough and it could not compensate for national deficiencies – the cases of Romania and Portugal are very relevant in this sense – unless supported by appropriate cultural, economic and administrative foundations prone to enhance the national entrepreneurship development.

The EVEC values confirm the natural delineation of specific groups of countries based on their entrepreneurial performance. UK stands out in this ranking, followed, at large distance, by Denmark, Ireland, Sweden, Netherlands and Germany – Anglo-Saxon, Nordic and Germanic European countries, generally recognized for their professionalism and favourable conditions provided for business development. The threshold between UK and Denmark should be considered with caution, because Denmark scores better than UK for

all three main components, but the interpretation of the entrepreneurial education has the decisive role, which leads to the final result of UK outperforming Denmark.

Analysing the ranking of countries, we note that two other significant thresholds are the ones between Germany and Estonia, respectively between Belgium and Hungary, both of them being generated by consistent differences recorded within the economic and administrative component (it is worth mentioning the great difference between Belgium and Hungary for this component, partially mitigated by the values of Hungary for Cult_EVEC and Edu_EVEC). After a relatively homogeneous large group of countries, there is a series of three thresholds delimiting the last four countries (Croatia, Bulgaria, Portugal and Romania) from the rest of the ranking. Excepting Portugal – whose poor performance is partially due to the "penalty" induced by the very good score of entrepreneurial education (the best of all EU countries) – the other three countries are the newest EU members. The gap fundamentally determined by entrepreneurial education is also found between Greece and Croatia, respectively between Bulgaria and Portugal, the results registered by Croatia and Bulgaria being relatively similar. The large difference between Portugal and Romania – the last threshold in the ranking – is largely generated by the economic and administrative variable. Romania is the most worrying case – the last positioned in the ranking and at large distance from all the others – with two times weaker results than Greece and four times worse than UK for developing the entrepreneurial character. Romania has the most unfavourable values for the cultural, economic and administrative suitability of the national context to the requirements of developing the entrepreneurial initiatives on the long run.

The outcomes of Romania confirm the inefficiency of entrepreneurial education (very well represented in this case), unless accompanied by an adequate cultural, economic and administrative framework. On the other hand, the deficient national entrepreneurial character is recognized in Romania and, as a consequence, the first steps have been already taken in this direction by facilitating the procedures for starting-up a business (more favourable conditions for Romanian start-ups in comparison with other EU countries or European average) and strongly supporting and investing in entrepreneurial education. According to EC, 2014(b), in 2013, Romania is one of the five EU countries – along with Denmark, Latvia, Slovenia and the UK – which already meets all three major European objectives concerning the time, cost and centralization of formalities (one-stop-shop) in the formation of a new company. According to the interpretation of the model, Romania is the country with the lowest values for the cultural and economic-administrative components of the entrepreneurial character, resulting that the Romanian policy for supporting the national entrepreneurship should be mainly aimed at tackling economic-administrative objectives, because the national culture hardly changes and it essentially depends on the economic and social context. Moreover, investments in entrepreneurial education and educational projects widely proliferated in Romania in the last years are not enough – no matter the efforts – unless they are based on specific economic, social and administrative infrastructure for really supporting the Romanian entrepreneurial character.

Considering the dimensions included in the cultural component of our model and their corresponding values for Romania (according to Hofstede, 2014: high power distance, low individualism and high uncertainty avoidance), our country ranked the lowest also in cultural terms, because of the factors that generate a sceptical approach of the highly-risky and personal-involvement initiatives in Romania: dependence on the current job, high degree of conservatism, and economic and social uncertainty. In this context, improving the

economic and administrative conditions in Romania may indirectly lead to an improvement in the way people perceive the opportunity to develop entrepreneurial initiatives, even if this change takes place on medium-long run.

Overall, the presented model highlighted the vital role of culture in determining the national entrepreneurial character: the decision-making ability and capacity of assuming responsibilities on their own; the ability of acting in individual and/or innovative ways, by positively appreciating the opportunities arising on the market; the importance of risk-taking and overcoming problematic situations. The prevalence of the cultural factors over the economic-administrative and educational ones in shaping the national entrepreneurial character is yet emphasized in equation (4), and the similar trend of the cultural variable (Cult_EVEC) with the one of the variable for assessing the entrepreneurial character in EU member countries (EVEC) reconfirms the consistency of the achieved results.

Summarizing the interpretation of the results, it could be considered that a natural cultural propensity towards entrepreneurship development partially replaces the need for massive investments in entrepreneurial education, and the available financial resources are rather assigned to promote a series of economic and administrative measures – especially in the fields of infrastructure, research-development and innovation – that are meant to contribute to strengthening the entrepreneurial framework. Conversely, the reverse of this assertion is also true: in countries where the national cultural dimensions are not conducive to assuming entrepreneurial initiatives, the allocated efforts for supporting entrepreneurial education are even higher as they also envisage the formation of a pro-entrepreneurship mentality, which could generate – at least, in its initial stage – an excessive orientation of funds from the economic to the social sphere. Thus, the investments in entrepreneurship should be dynamically linked to cultural factors in the first place, and the development of entrepreneurial character is more "expensive" in countries that show cultural reluctance to risk taking and conducting economic activities on their own.

Recommendations and conclusions

The distribution of the EVEC values indicate a high difference between the scores of the extreme positions (United Kingdom, respectively Romania) and the rest of the top, due to the cumulative effect of the three variables – cultural, economic and administrative, and educational variables – that generate the national entrepreneurial character. In general, in the EVEC ranking, the differences from one position to another are relatively constant, especially in the central part of the top.

The three components (Cult_EVEC, EcAdm_EVEC and Edu_EVEC) of the evaluation model of the entrepreneurial character in EU countries are intimately intertwined and they cannot substitute one another. Registering good entrepreneurial performance requires favourable scores for each component, especially because they support each other and may generate a synergistic effect: the improvement of economic and administrative conditions (EcAdm_EVEC) increases public confidence and therefore its cultural readiness to assume new risks (Cult_EVEC) by developing their own businesses, which allows for the reorientation of the funds initially allocated to entrepreneurial education (Edu_EVEC) to support the objectives of economic growth (and the analysis could be resumed at a higher level). The achieved findings (re)confirm the role of entrepreneurial education as a binder between economic and social-cultural domains.

The proposed model is an innovative, consistent and necessary solution for assessing the national entrepreneurial character in EU countries. Some of the most innovative elements of the model, that enhance its potential of useful tool for comparative analyses in international entrepreneurship, are the following: high appreciation of the role of culture and entrepreneurial education, inclusion of global composite indices and use of EU-specific variables. In order to confirm the achieved results, future research may address both developing the analysis on a longer period of time and using alternative statistical and mathematical methods.

Based on the EVEC values for the EU countries, some conclusions are emphasized and they are pragmatically reflected in potential action lines at European level, for enhancing the national economic competitiveness through sustainable support of the entrepreneurial phenomenon.

Firstly, the main investment in economic and administrative infrastructure is a basic requirement for influencing the development of entrepreneurial character, the only prerequisite that may generate a real improvement in the public perception regarding the central and local support for entrepreneurial initiatives.

Secondly, the awareness of the fundamental influence of culture on national entrepreneurial character requires a special attention to the economic and social factors that support or inhibit the growing of entrepreneurial mindset (ability to take risks, possibility of developing individual business initiatives, trust in public institutions etc.) and it claims for a continuous correlation with the entrepreneurial education and its role at national level.

Thirdly, the entrepreneurial education only is not enough to compensate for economic, administrative and cultural factors, and supporting it is just an initial step in the early entrepreneurial development stage; it should be replaced later on by economic and administrative measures (strengthening the legal and institutional environment, investing in R&D – innovation and human capital formation – continuous improvement, developing the general and communication infrastructure, promoting corporate sustainability and value chain creation, controlling and eradicating corruption, increasing economic freedom and efficiency, opening the markets, reducing bureaucracy and fiscal barriers, providing tax incentives for entrepreneurs and financial support from the state budget etc.), as the experience of the top-ranked countries is proving. Finally, two basic recommendations could be emphasized, situated at the confluence of the three dimensions of the proposed model: adequate information, particularly regarding the entrepreneurship financing, but also strengthening public-private partnerships between academic environment, state institutions and business companies for developing the entrepreneurial character in order to efficiently direct entrepreneurial education to pre-identified specific needs in the field at national level.

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