ISSUES AND INSIGHTS REGARDING TERTIARY EDUCATION. A ROMANIAN PERSPECTIVE

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ABSTRACT
Education is one of the main pillars of wealth, prosperity and competitiveness worldwide and thus it deserves special attention when creating macro strategies and policies, as education leads to increased added value in the future (growth potential). This paper aims to address a series of major issues in tertiary education by looking especially at the distribution by field (specializations) in the Romanian education system.
Our paper is built on a brief literature review and on an analysis of the Romanian higher education, by taking into account official statistical data in this field. We observed there is an imbalance between supply and demand in education, if we consider the number of graduates and the needs of our economy.
We believe our results are useful for decisions-makers at both macro-level (state) and micro-level (universities) in formulating their strategies, in order to offer specializations in correlation with the labor market demand.

KEYWORDS: *education, students, education system, tertiary education, labor market.*

JEL CLASSIFICATION: *I21, I28, J11, J24*

1. INTRODUCTION

Education leads to increased added value in the future (growth potential). It is one of the main pillars of wealth, prosperity and competitiveness worldwide and thus it deserves special attention when creating macro strategies and policies.
The tertiary education is for sure a very important part of the knowledge economy. Better educated individuals are better innovators in the future that can lead to a faster technological development and economic growth.
This paper aims to address a series of major issues in tertiary education by looking especially at the distribution by field (specializations) in the Romanian education system.

2. TERTIARY EDUCATION – A BRIEF LITERATURE REVIEW

Strategies of higher education institutions have a direct impact on the dynamics of technology and social systems. Thus, universities have a major role in the process of social change are the ones who create the future through their graduates.
The globalization process and the increased competition led to a higher importance of creating and consolidating competences compared to the past (Armstrong, 2003). In a study comparing Romania and Portugal, Deaconu, Radu and Ramos (2013) found that career is generally a vague concept for students, who responded that salary was a good motivator and did not necessarily look at their

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intrinsic motivation. However, later studies of one of the above authors showed that students are intrinsically motivated, but this motivation depends on the quality of the educational process (Radu, 2014; Radu, 2016).

Habibov and Cheung (2017) consider that university education has a great potential of alleviating the negative outcomes of economic crises and thus public spending on university education is very important. In order to accomplish its important role in the knowledge economy and to successfully overcome the effects of the financial crisis, the university system needs to adapt to the market requirements (Mureșan and Gogu, 2012), by targeting the development of graduates' specific competencies. Goia, Marinaș and Igreț (2017) found five main factors that should be considered for an internship program: (1) job arrangement, (2) mentorship and employability benefits, (3) learning content, (4) academic supervision and (5) bureaucracy and accessibility. We consider that these factors prove one more time the need for a good connection between education and the labor market. Moreover, Rașcă and Deaconu (2014) demonstrated that education (this time with a focus on business education) has an impact on country performance.

It is also interesting to notice that education and research in one country can also affect others – cross-border externalities, which can be positive, i.e. flow of information, or negative, i.e. the brain drain phenomenon (Marginson, 2010). Thus, immigration has also to be analyzed, as it has important effects on the size and quality of public education across countries (Tanaka, Farre and Ortega, 2017).

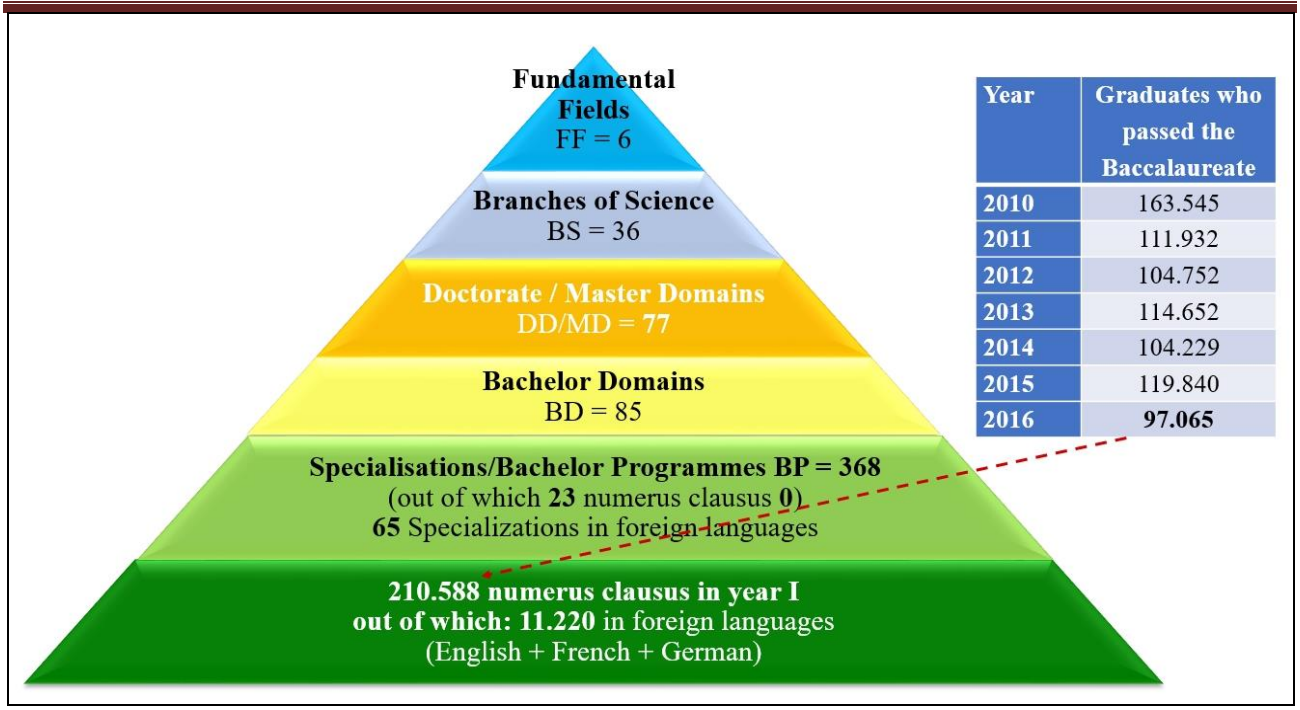
Reforms in education depend for sure on the general image created in the mind of the target-public. In a multi-country study, Busemeyer, Lergetporer and Woessmann (2017) draw an interesting picture of the public's opinion on various education policies and reforms, which showed that people consider education should become a priority for the government. They are very open to the educational reform proposals, and most of them support a series of fundamental structural changes in different sectors of the education system - comparative testing, decentralization, school choice, promoting competition between schools, social inclusion. The authors also noticed that national contexts shape patterns of public opinion.

Many authors focused on developing models aimed at improving the education system. Celikhan (2012) created a model – *IESM - Insured Education System Model* – as a response to the need for an easily affordable system of education. Faham, Rezvanfar, Mohammadi and Nohooji (2017) created a dynamic model to develop education for sustainable development in higher education, as a response to the growing concerns of the community about sustainability and to the many international pressures towards a sustainable future. Anand, Bisaillon, Webster and Amor (2015) developed a framework for integrating sustainability in education, with implementation via regional collaboration in Quebec, Canada, at the institutional level. Actually, no matter the country or the region, sustainability initiatives in education, research, operations and the external community could help higher education institutions to respond better to a series of challenges like attracting funding, promoting more effective management, efficiency - reducing costs, and meeting societal challenges (Aleixo, Leal and Azeitero, 2016).

3. CURRENT STATE AND PERSPECTIVES OF TERTIARY EDUCATION IN ROMANIA

3.1 General Framework of Higher Education in Romania

The Romanian Higher education system is structured in 6 fundamental fields that represent 36 branches of science, 77 doctorate / master domains, 85 bachelor domains, 368 specialisations / bachelor programmes, reflected in 210,588 numerus clausus in the year I, as presented in Figure 1. However, if we compare the numerus clausus to the number of graduates who passed the baccalaureate exam (97,065), it results that the situation in Romania cannot be seen through very optimistic lens.



Year	Graduates who passed the Baccalaureate
2010	163.545
2011	111.932
2012	104.752
2013	114.652
2014	104.229
2015	119.840
2016	97.065

Figure 1. Structure of the higher education system in Romania, academic year 2016/2017
Source: ARACIS processing of Government Decisions no. 376/2016 and no. 654/2016, http://www.aracis.ro/fileadmin/ARACIS/Publicatii_Aracis/2017/Prezentare/Oferta_sistemului_de_invatamant_superior_romanesc.pdf

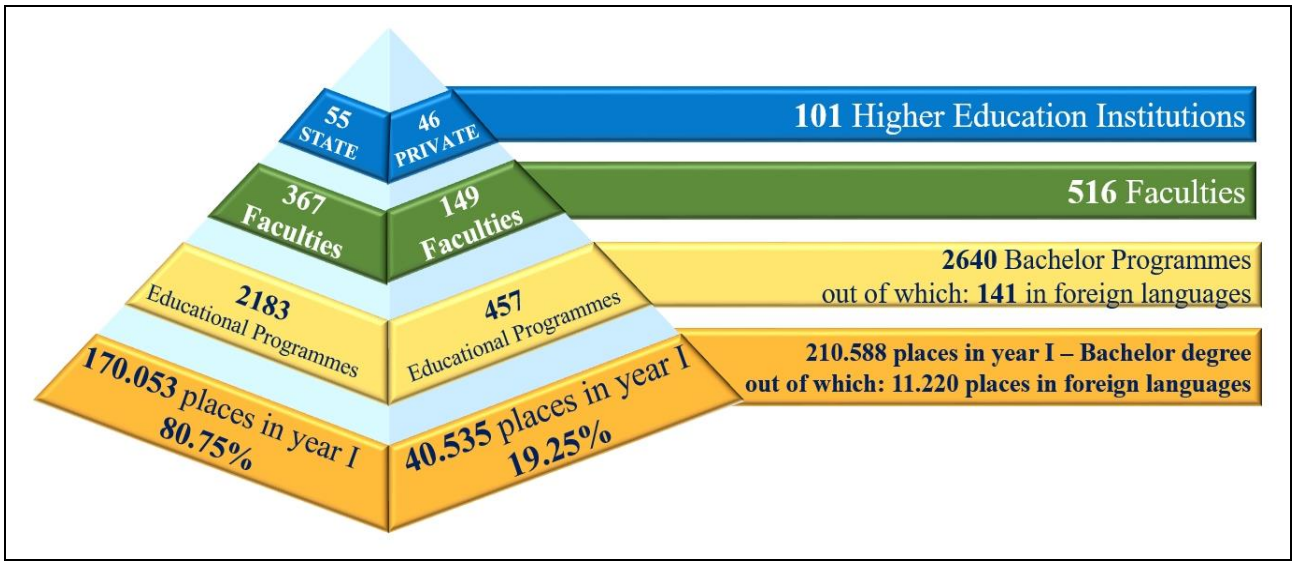


Figure 2. Structure of the higher education system in Romania for the academic year 2016/2017 by ownership - state and private
Source: ARACIS processing of Government Decisions no. 376/2016 and no. 654/2016, http://www.aracis.ro/fileadmin/ARACIS/Publicatii_Aracis/2017/Prezentare/Oferta_sistemului_de_invatamant_superior_romanesc.pdf

Figure 2 shows a deeper perspective of the numerus clausus in the academic year 2016/2017, by taking into account the ownership. Thus, we can see that there are 101 higher education institutions, out of which 55 are state universities that offer 170,053 places in year I, and 46 are private universities that offer 40,535 places.

3.2 Structure of Education – Specialisations

By looking even closer, we can observe that at the top of specialisations by numerus clausus in the academic year 2016/2017 there is Law, while a series of specialisations traditionally considered as drivers for innovation and progress (engineering) have a significantly lower number. Figure 3 graphically expresses this idea, which comes in contrast to data regarding unemployment rates per specialisations.

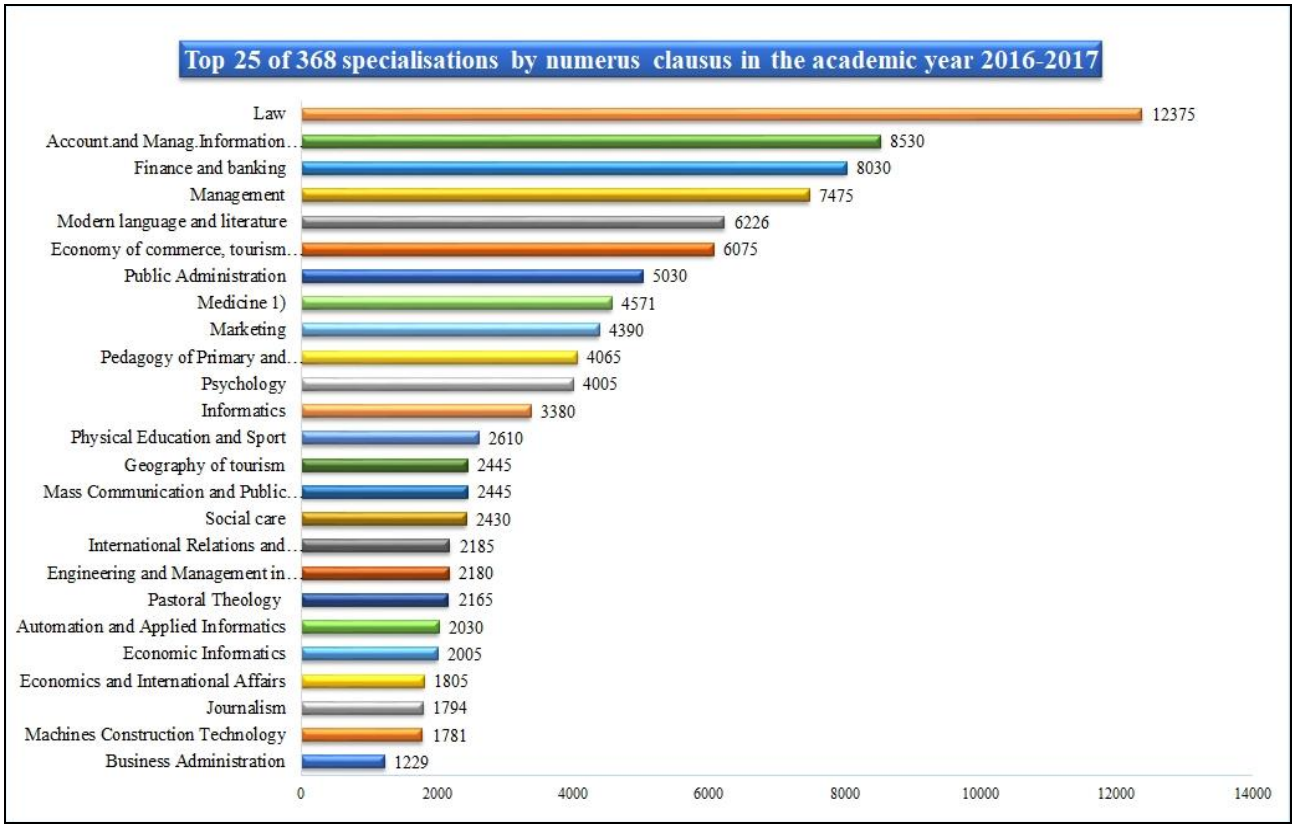


Figure 3. Top 25 specializations in Romania in the academic year 2016/2017
Source: ARACIS,
http://www.aracis.ro/fileadmin/ARACIS/Publicatii_Aracis/2017/Prezentare/Oferta_sistemului_de_invatamant_superior_romanesc.pdf

In Figure 4 we presented this situation by also looking at the ownership – state universities and private universities.

We consider macro-policies and the Romanian strategy in education should take into account this data when formulating reforms aimed at increasing innovation and supporting the sustainable development.

Figure 6 is the visual expression of the six fundamental fields – social science (44%, including law), engineering (26%), humanities and arts (12%), mathematics and natural science (8%), biological and biomedical science (8%) and science of sport and physical education (2%). Engineering does not have a big total (26%), since this is about more specialisations.

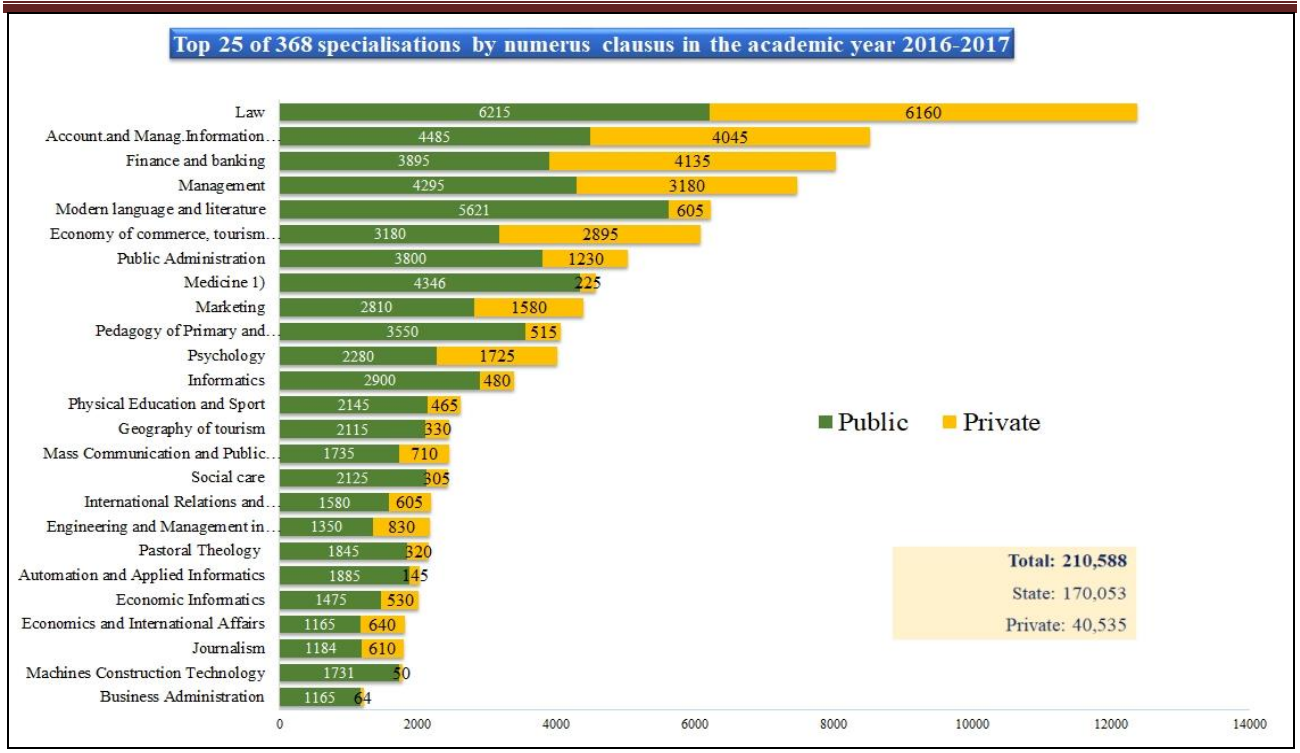


Figure 4. Top 25 specializations in Romania in the academic year 2016/2017, by ownership - state and private

Source: ARACIS, http://www.aracis.ro/fileadmin/ARACIS/Publicatii_Aracis/2017/Prezentare/Oferta_sistemului_de_invatamant_superior_romanesc.pdf

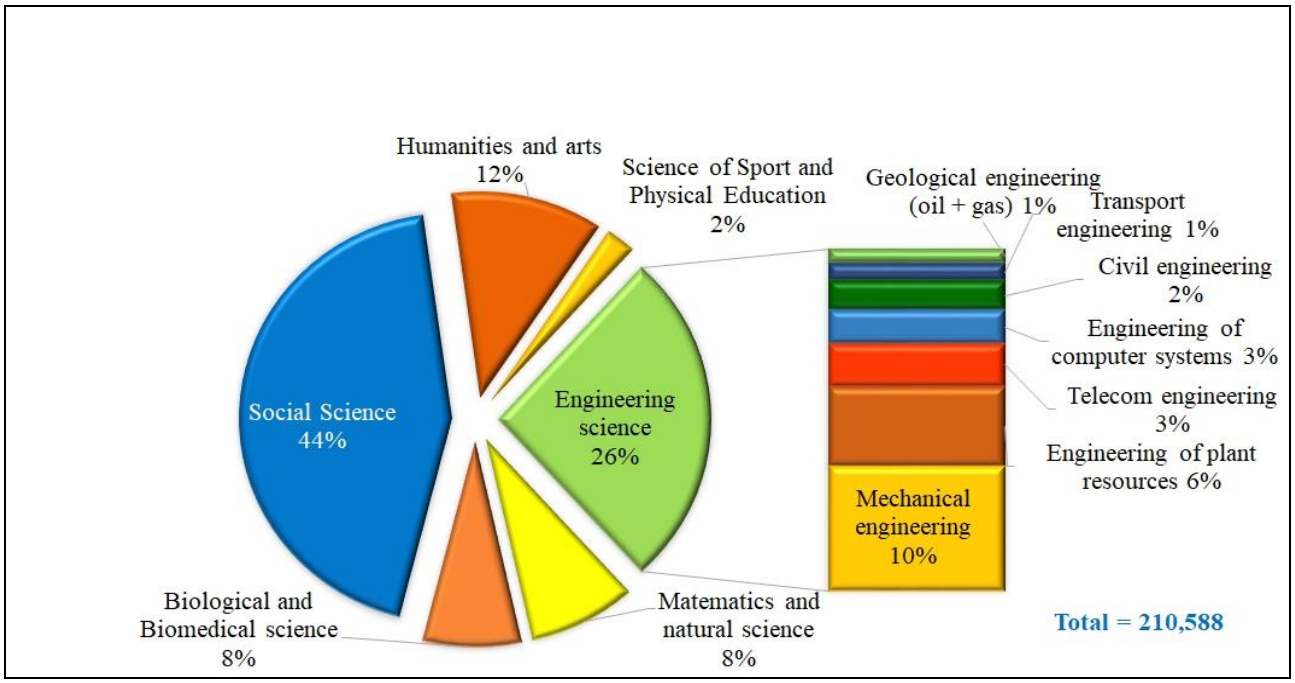


Figure 5. The structure of the university offer by fundamental fields – the Bachelor level, for the academic year 2016/2017

Source: ARACIS processing of Government Decisions no. 376/2016 and no. 654/2016, http://www.aracis.ro/fileadmin/ARACIS/Publicatii_Aracis/2017/Prezentare/Oferta_sistemului_de_invatamant_superior_romanesc.pdf

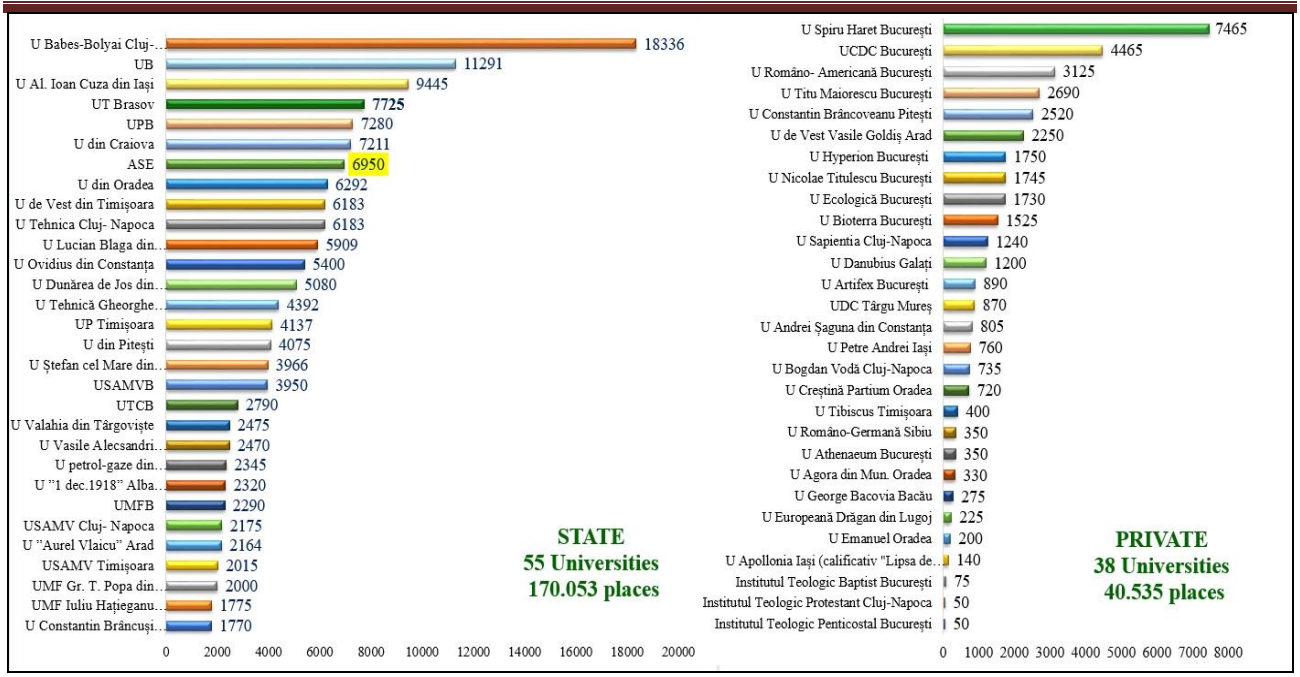


Figure 6. Top of higher education institutions in Romania by numerus clausus in year I, academic year 2016/2017

Source: ARACIS processing of Government Decision no. 654/2016, http://www.aracis.ro/fileadmin/ARACIS/Publicatii_Aracis/2017/Prezentare/Oferta_sistemului_de_invatamant_superior_romanesc.pdf

In Figure 6 we can see the number of places offered by the main universities in Romania.
Also, it is interesting to look at the number of graduates and students in the 1st year of study – specialisations ISCED F-2013. Numbers, structures and a comparison to the situation in Germany, Poland and the United Kingdom can be seen in tables 1, 2 and 3.

Table 1. Number and structure of graduates and year I students, by fields ISCED F-2013

Specialisation ISCED F-2013	Graduates 2015 (thousands)	Year I Students 2015 (thousands)	*Structure by fields 2015*	
			Graduates	Year I Students
Education	2.948	3.106	3.84%	3.03%
Arts and humanities	7.389	10.85	9.62%	10.59%
Social sciences, journalism and information	7.246	10.15	9.44%	9.91%
Business, administration and law	26.1	29.83	33.99%	29.12%
Natural sciences, mathematics and statistics	4.558	6.265	5.94%	6.12%
Information and Communication Technologies	4.855	8.134	6.32%	7.94%
Engineering, manufacturing and construction	13.64	20.95	17.76%	20.45%
Agriculture, forestry, fisheries and veterinary	3.234	4.4	4.21%	4.29%
Health and welfare	3.427	4.071	4.46%	3.97%
Services	3.388	4.693	4.41%	4.58%
Total	**76.78**	**102.4**	**100.00%**	**100.00%**

Source: http://appsso.eurostat.ec.europa.eu/ accessed May 2017, authors' own processing

Table 2. Graduates by fields in Romania, Germany, Poland and the United Kingdom in 2015

Specialisation ISCED F-2013	Number of graduates in 2015			
	Romania	Germany	Poland	UK
Education	2,948	33,148	46,231	18,182
Arts and humanities	7,389	28,277	23,406	77,193
Social sciences, journalism and information	7,246	21,637	32,096	48,626
Business, administration and law:	26,098	82,865	72,606	76,499
Out of which, only Law:	7,611	4,445	4,112	17,329
Natural sciences, mathematics and statistics	4,558	20,712	11,730	64,498
Information and Communication Technologies	4,855	15,836	11,795	15,567
Engineering, manufacturing and construction	13,637	82,297	49,666	33,319
Agriculture, forestry, fisheries and veterinary	3,234	6,323	4,890	3,783
Health and welfare	3,427	15,172	50,961	52,965
Services	3,388	11,632	30,852	0
Generic programmes and qualifications	0	0	0	4,004
Total	**76,780**	**318,662**	**334,259**	**394,636**

Source: http://appsso.eurostat.ec.europa.eu/ accessed May 2017, authors' own processing

Table 3. Structure by fields of students enrolled in year I Bachelor in Romania, Germany, United Kingdom and Poland in the academic year 2015/2016

Specialisation ISCED	Structure by fields			
	Romania	Germany	United Kingdom	Poland
Education	3.03%	9.19%	4.24%	7.42%
Arts and humanities	10.59%	8.76%	19.17%	10.44%
Social sciences, journalism and information	9.91%	7.17%	12.67%	10.41%
Business, administration and law	29.12%	25.41%	18.98%	18.77%
Natural sciences, mathematics and statistics	6.12%	8.03%	18.23%	4.54%
Information and Communication Technologies	7.94%	7.17%	5.69%	5.99%
Engineering, manufacturing and construction	20.45%	25.55%	13.31%	12.83%
Agriculture, forestry, fisheries and veterinary	4.29%	1.68%	0.81%	1.52%
Health and welfare	3.97%	4.06%	11.23%	8.94%
Services	4.58%	2.94%	0.00%	10.88%
Generic programmes and qualifications	0.00%	0.00%	0.89%	0.00%
Total	***100.00%***	***100.00%***	***100.00%***	***100.00%***

Source: http://appsso.eurostat.ec.europa.eu/ accessed May 2017, authors' own processing

Thus, it is clear that the proportion of graduates in Law is the highest in Romania, while education and health and welfare have lower proportions compared to the other three analysed countries.

3.3. Education as a Culture – Past, Present and Future

In order to obtain a more valuable picture, we could look at the top of European countries by population with tertiary level (ISCED level 5-8), 25-64 year-olds in 2016 (%), because this age segment represents the economic potential (labor force).

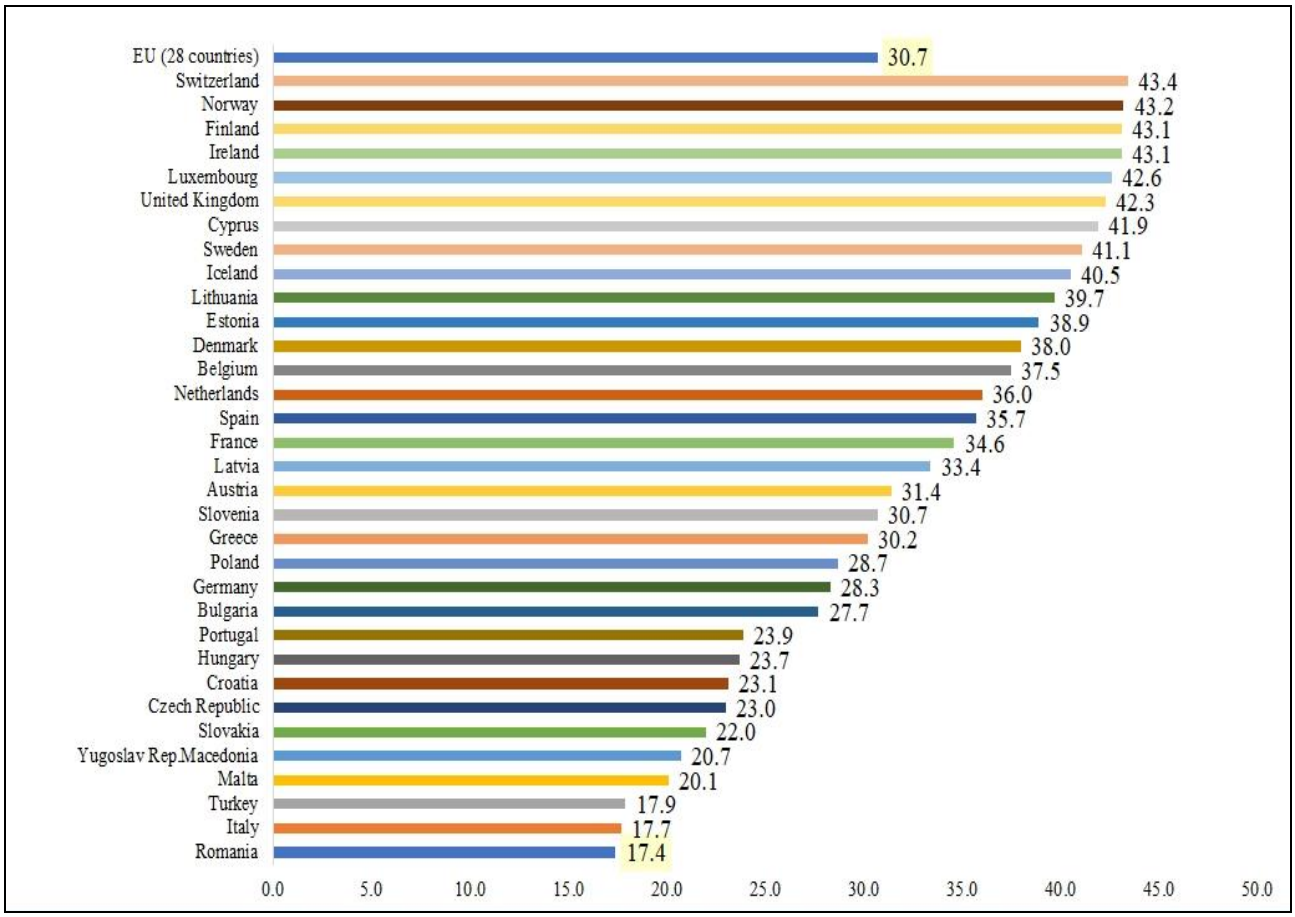
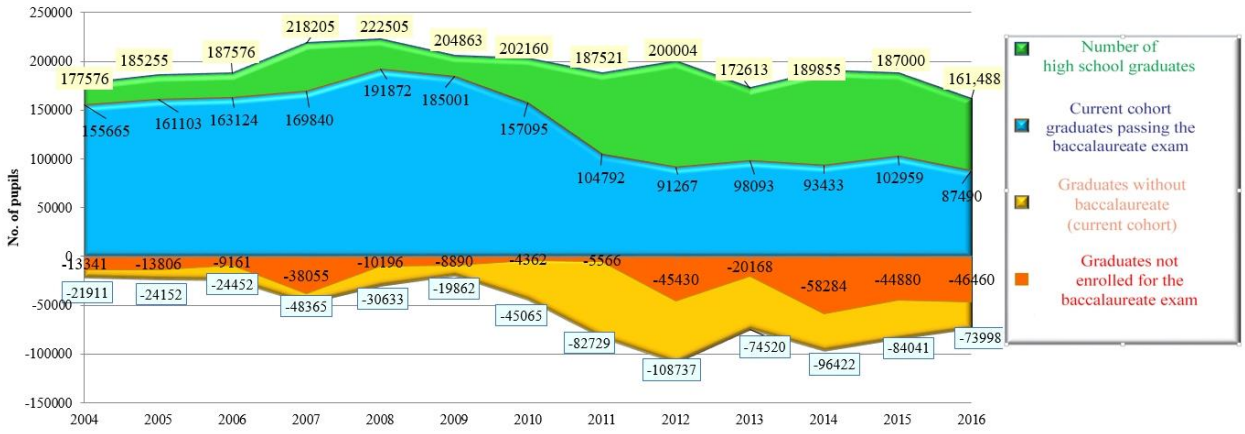


Figure 7. European countries by population with tertiary education (ISCED level 5-8), 25-64 year-olds, in 2016 (%)

Source: ARACIS, http://www.aracis.ro/fileadmin/ARACIS/Publicatii_Aracis/2017/Prezentare/Oferta_sistemului_de_invatamant_superior_romanesc.pdf

As it can be observed in Figure 7, Romania does not have a position, with only 17.4%. Compared to the average of the European Union, our country has a gap of 13.3% (EU average = 30.7%). The highest level was attained in Switzerland (43.4%).

Our pessimistic view continues by looking at the evolution of high-school graduates passing or failing the Baccalaureate Exam in 2004-2016 – Figure 8.



Year	2010	2011	2012	2013	2014	2015	2016
Real passing rate of current graduating cohort (%)	77.71	55.88	45.63	56.83	49.21	55.06	54.18

Figure 8. Evolution of high-school graduates passing or failing the Baccalaureate Exam in 2004-2016

Source: ARACIS, http://www.aracis.ro/fileadmin/ARACIS/Publicatii_Aracis/2017/Prezentare/Oferta_sistemului_de_invatamant_superior_romanesc.pdf

We would like to point out that the real passing rate of current graduating cohort is lower than the one officially known, because there are many graduates who are not enrolled at all for the baccalaureate exam (the rate is calculated by dividing the number of current graduates who pass the baccalaureate exam to the total number of graduates who are enrolled for this exam).
Last but not least, we would also like to look at the number and proportion of 0-24 year-olds in total Romanian population in 1992, 2010 and 2016. Thus, in Figure 9, we can see a negative trend.

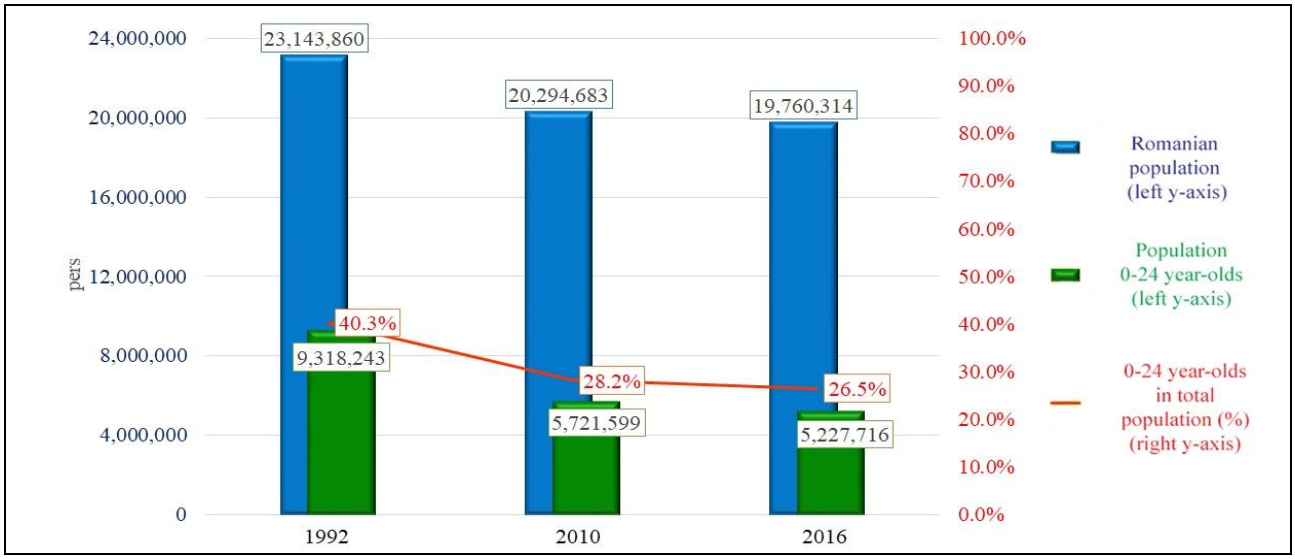


Figure 9. Number and proportion of 0-24 year-olds in total Romanian population in 1992, 2010 and 2016

Source: ARACIS, http://www.aracis.ro/fileadmin/ARACIS/Publicatii_Aracis/2017/Prezentare/Oferta_sistemului_de_invatamant_superior_romanesc.pdf

Unfortunately, there are problems both because of natality and from the brain drain phenomenon, as many young Romanian people go abroad.

4. CONCLUSIONS

The current position of Romania, when compared to other European countries, is for sure below its potential. There are a series of issues that should be addressed in the educational reform. We observed there is an imbalance between supply and demand in education in Romania, if we consider the number of graduates and the needs of our economy and for sure this imbalance needs to be addressed. Tus, we believe our results are useful for decisions-makers at both macro-level (state) and micro-level (universities) in formulating their strategies, in order to offer specializations in correlation with the labor market demand.

However, we would like to end this paper with an important idea that the Romanian potential in education is higher than the one observed through our main findings, when we looked only at the numbers.

We tend to compare to the best, but we need to recognize that our context is significantly different to the ones of the top countries in terms of history (higher education in Romania is *younger*), economic perspective (especially incomes and public spending on education), political development in the country. An optimistic final perspective is reflected by the current adaptation of higher education curricula to the European standards and the success Romanian teachers and students have abroad, in their mobility programmes.

REFERENCES

Aleixo, A.M., Leal, S. & Azeitero, U.M. (2016). Conceptualization of sustainable higher education institutions, roles, barriers, and challenges for sustainability: An exploratory study in Portugal. *Journal of Cleaner Production*, http://dx.doi.org/10.1016/j.jclepro.2016.11.010.

Anand, C.K., Bisaillon, V., Webster, A. & Amor, B. (2015). Integration of sustainable development in higher education – a regional initiative in Quebec (Canada). *Journal of Cleaner Production*, 108 (A), 916-923.

Armstrong, M. (2003). *Managementul resurselor umane. Manual de practică*, Bucharest: Codecs.

Busemeyer, M., Lergetporer, P. & Woessmann, L. Public opinion and the political economy of educational reforms: A survey. European Journal of Political Economy, http://dx.doi.org/10.1016/j.ejpoleco.2017.08.002.

Celikhan, S. (2012). The model of participating, payable, profitable, prepotent, (4PES) insured education system (IESM). *Procedia - Social and Behavioral Sciences*, 47, 1292-1298.

Deaconu, A., Radu, C. & Ramos, M.C. (2013). Students' perception on career in Romania and Portugal - a comparative analysis, *Review of International Comparative Management*, 14(1), 5-13.

Faham, E., Rezvanfar, A., Mohammadi S.H.M & Nohooji, M.R. (2017). Using system dynamics to develop education for sustainable development in higher education with the emphasis on the sustainability competencies of students. *Technological Forecasting & Social Change*, 123, 307-326.

Goia, S., Marinaș, C.V. & Igreț, R.Ș. (2017) A plea for quality in internship programmes – evidence from the business and administration students' experience. *Management & Marketing. Challenges for the Knowledge Society*, 12, 49-60.

Habibov, N. & Cheung, A. (2017). The role of university education in selecting active strategies for coping with the 2007 global crisis in 28 transitional countries. *International Journal of Educational Development*, 57, 65-72.

Marginson, S. (2010). Higher education in the global knowledge economy. *Procedia Social and Behavioral Sciences*, 2, 6962-6980.

Mureșan, M. & Gogu, E. (2012). Tertiary education's role in research and innovation. *Procedia - Social and Behavioral Sciences*, 46, 3681-3688.

Radu, C. (2014). Emotional intelligence - How do we motivate our students? *Procedia - Social and Behavioral Sciences*, 141, 271-274.

Radu, C. (2016). Motivating students - How great teachers should be? *Proceedings of MAC-ETL 2016*, 231-239.

Rașcă, L. & Deaconu, A. (2014). The Importance of managerial education and training for country performance, chapter in Dima, A.M Handbook of Research on Trends in European Higher Education Convergence, IGI Global, 264-280.

Tanaka, R., Farre, L. & Ortega, F. (2017). Immigration, assimilation, and the future of public education. European *Journal of Political Economy*, http://dx.doi.org/10.1016/j.ejpoleco.2017.06.001

http://www.aracis.ro/fileadmin/ARACIS/Publicatii_Aracis/2017/Prezentare/Oferta_sistemului_de_invatamant_superior_romanesc.pdf

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