

# ***Assessing Situational Awareness of Universities Concerning Student Dropout: A Web-Based Content Analysis of Romanian Universities' Agenda***

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**Abstract:** Universities have a strong internet presence where they publish large amounts of documents available for analysis. The relevance of these documents has been rarely put to scrutiny in a policy analysis context. In our paper we use data from Romanian universities to achieve two objectives: 1) to assess the actual presence of the issue of student dropout at the level of universities' agenda in Romania as it is apparent in their web pages; 2) to evaluate the degree to which the agenda of Romanian universities reflects the actual issue of student retention as reflected in factual data. The results show a significant correlation between the presence of the topic in documents and the actual dropout rate, but there are some limitations, though: the correlation is not linear, universities seem to be inertial in their public acknowledgement of the problem, web-scraping and web based content-analytic procedures still have numerous reliability issues.

**Keywords:** situational awareness, higher education agenda, web-based content analysis, student dropout

## ***Introduction***

Massification and the abundance of non-traditional students enrolling in universities, the increase in financial constraints upon tertiary education institutions, and the dominance of managerialism have put significant pressure on universities worldwide to focus on student success and to fight against dropout in higher education. Romania is one of the countries in Eastern and Central Europe that went through one of the most dramatic cycles of massification followed by a contraction in enrollment numbers (Hatos & Pop, 2015), and where retention should be an issue as well. However, as the article will illustrate further, it is hard to find any reliable measure of success rates in Romanian higher education to support evidence-based policies nor policy documents or strategies designed to decrease dropout at the tertiary level. As the dropout phenomenon is directly affecting the universities functioning through access to financing, it is expected to see the universities themselves are the most aware of the situation, and they are the first to put the topic on the agenda and devise plans and instruments to fight dropout.

We have, then, two objectives in our research paper:

1. To assess the actual salience of the issue of student dropout at the level of universities' agenda in Romania.
2. To evaluate the degree in which the public agenda of Romanian universities reflects the actual issue of student retention as reflected in factual data.

One further reaching off-shoot of our research is a practical and methodological one and pertains to the validity of assessing the university policy agenda using their own produced documents published online. To fulfill these objectives, we employ a content analytic approach to quantitatively describe the agenda of universities in Romania. At a second stage we statistically correlate the results of the content analysis with factual data on the dropout rate for the case of Romanian public universities to complete our second objective.

### ***Student retention as a global educational issue.***

Increased dependence of the university budgets on the increasingly unstable student intake should have made university managers aware of the topic of dropout. As higher education became massified, it enrolled more and more non-traditional students or students from underprivileged categories whose success rate is lower than that of the elite for which the university system was previously designed. Since university funding is almost everywhere in the public sector a result of the number of enrolled students, it is clear that for universities not only the marketing activities are economically important but also the ones dedicated to decreasing dropout rates. In Europe, in the EHEA, this shift in agenda became visible at the same time with the focus on increasing completion rates in the Bucharest Communiqué (European Commission, 2012) and once again in the Yerevan Communiqué (European Commission, 2015). Relevant in this context is that a well-established publisher has been publishing at least one academic journal devoted to the issue of student success in higher education: *Journal of College Student Retention: Research, Theory & Practice*.

Massification was also accompanied by the introduction of managerialism in university across the world, as the funders - both public and private - demanded in exchange for autonomy better results and more accountable leadership. All around the globe, universities are expected to be managed based on strategic planning principles and are expected to set higher targets for enrolment as well as to tackle the issue of student retention or dropout (Conway, Mackay, & Yorke, 1994; Kotler & Murphy, 1981). Increased competition and market orientation of universities require new structures and a different agenda, adapted to a more entrepreneurial university (Bui & Baruch, 2010; Liu & Dubinsky, 2000). Linking relevant objectives to planning and delivering actions requires, among other things, an increased capacity - including the use of instruments, competencies, and structures to be aware of the needs, opportunities or the threats against the organization (Bloodgood & Morrow Jr, 2003; Amrollahi & Ghapnchi, 2016).

### ***Student success as a policy topic in the EU and Romania.***

At the EU level, lately, students' success is an indicator to be measured by higher education policies as this is justified by the Union's strategic goal of achieving a 40% rate of tertiary education graduation for the age group 30-34 yrs. This also comes in the context of current demographic projections showing a sharp decline in the number of Romanian students and having immediate and long-term implications for Romania's human capital and macroeconomic agenda. Such trends might reverse through measures that provide support for a constant enrollment rate at a high success rate as well (EU Commission, Europe 2020 Strategy).

However, at the level of strategies, institutions, programs, and practices, HE systems in the EU are mostly unprepared to tackle the issue of students' success.

On the one hand, there is a general lack of situational awareness concerning students' success. According to Vossensteyn, J. J. et al. (2015), there are difficulties at the level of strategic information / needs assessment both at country and institutional levels. Many countries lack operational definitions of success, indicators for measurement, and, consequently, monitoring and evaluation systems in place, which, in addition, makes difficult any effort to make international comparisons. Given the graduation rates reported in 2013, which were around 60-70 % at bachelor level, where data is available, there is no surprise seeing the issue of student success in 2015 ranked high and very high on the policy agenda in almost half of the European countries investigated in the Vossensteyn, J. J., Kottmann, A., Jongbloed B.W.A. et al. (2015) report while for the other countries it was either merely present or had no or little relevance (p. 7).

Romania is among the countries listed in Vossensteyn, J. J., Kottmann, A., Jongbloed B.W.A. et al. (2015) for merely having the topic of student success on the agenda without any special consideration. This mismatch in the policies is present although Romania is among the countries with the greatest concern regarding enrollment and graduation rates in tertiary education (the EU2020 targets for Romania

are among the lowest, yet there is a very slight chance of achieving them<sup>1</sup>).

In this context, Romania initiated a national program named "Support for the Baccalaureate, Access to University," which was approved through a Government Decision in April 2015. Since October 2015, a flagship project - the Romanian Secondary Education Project (ROSE) has been implemented. It has three components: School-based and Systemic Interventions, University-level Interventions and Project Management, Monitoring and Evaluation. With 243.10 million USD, it is the largest project financed by the World Bank in education in the Europe and Central Asia region, aimed at improving the transition of disadvantaged Romanian students from upper secondary into higher education and increasing retention in the first year of higher education by 2022. The ROSE project has provided support to address both academic and personal factors that lead to student drop out from school through a variety of activities such as remedial activities, tutoring, counseling, extracurricular activities, internships, summer bridge programs, and learning centers. Under the component for university grants launched in 2017<sup>2</sup>, 59 summer bridge programs were funded, offering campus-based summer courses for high-school students along with multi-year 202 non-competitive grants supporting students at risk of dropping out in their first year of study, and 38 learning centers aimed at increasing the academic support activities.

However, similarly to most other countries in the EU or OECD, no reliable estimations have been available regarding project enrollment, public data on student success, retention, or attrition in Romanian universities. An attempt at measuring dropout rates at university and field of study levels was revised in 2016<sup>3</sup> by the National Alliance of Romanian Students' Association using data reported by universities, but due to the incompleteness of reported data, the report of the research was released as an activity report. Therefore, the first step in the

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<sup>1</sup><https://ec.europa.eu/eurostat/web/europe-2020-indicators/europe-2020-strategy/headline-indicators-scoreboard> accessed on June 16, 2019.

<sup>2</sup><https://www.edu.ro/proiect-rose-lansarea-apelului-pentru-propuneri-de-proiecte-%C3%AEn-cadrul-schemei-de-granturi-pentru> accessed on June 16 2019.

<sup>3</sup>[https://www.anosr.ro/wp-content/uploads/2016/02/Raport\\_Tab\\_%C4%83ra-ANOSR-pentru-studen%C8%9Bi-2015-v2.pdf](https://www.anosr.ro/wp-content/uploads/2016/02/Raport_Tab_%C4%83ra-ANOSR-pentru-studen%C8%9Bi-2015-v2.pdf) accessed November 1<sup>st</sup> 2019.

implementation of the ROSE project was a thorough measurement of retention after first year of bachelor level at faculty level in all public civil universities (48 in total) during the academic year 2015-2016, which produced the primary comprehensive data set concerning student retention in Romanian public universities which we are going to use in this research<sup>4</sup>.

The lack of proper data on student retention in Romania comes in stark contrast with the known problems of student enrollment and graduation rates mentioned above, which raises questions about the situational awareness, reflexivity, and the capacity to respond to environmental pressures on behalf of the Romanian public universities. However, although country-wide policies and programs other than the ROSE program (through its university grants component) are missing, more localized concerns, reflections, and interventions on the topic may have emerged in the absence of state-level intervention. As such, some universities issued documents that are indicators of institutional reflexivity and responsiveness to external pressures. Moreover, the more capable a higher education institution (HEI) is to react concerning its own problems, by recognizing, assessing and intervening upon them, the more such reflections should be correlated with the actual severity of the issues and should be visible in the documents, reports and outputs produced and published at the institutional level.

### ***Managerialism and situational awareness in Romanian universities.***

Within the last two decades, managerialism has been deployed in the governance of Romanian universities. According to the provisions of the National Education Law 1/2011, any managerial position is filled according to a management plan; any structure is required to publish annually or periodically such a management plan and to account for its achievements in a report presented yearly. Moreover, student records from the National Students Registry can be used by the ministry and

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<sup>4</sup>Access to the ROSE project's needs assessment research results by courtesy of Alina Sava (education specialist at the World Bank).

universities to monitor efficiency at levels of various granularity and help universities to provide statistical data on enrollments and progression. The data provided by HEIs to the national overseeing bodies allow for linking performance to financing, for public HEIs, and supporting the accreditation process. In 1996, the per capita financing for public HEIs was introduced together with fee-based paying places triggering new challenges related to the increase of student dropout. At the time, there were high expectations that this issue would be considered a top priority on the agenda of universities and included in their policies. Data on student enrollments at bachelor and master levels in public universities in Romania (Figure 1) shows a sharp decline in the total enrollment figure which is mostly at the expense of tuition-paying enrollments.

However, there is no evidence of particular policy concern, except the ROSE project itself, whose implementation, via projects financed through grants, started in 2017. This is the first national project managed by the Romanian Ministry of Education, that links transition from upper secondary to higher education, looking at increased access and progression while retaining students in their first years of academic studies. Fighting dropout in universities is a signal that finally the national educational policies acknowledge that there is an issue concerning student success.

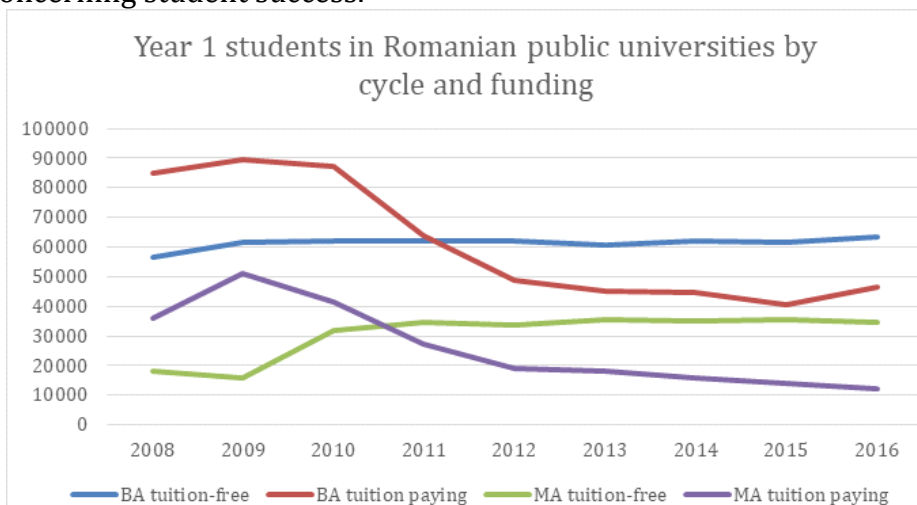


Figure 1. Year 1 students in Romanian public universities by cycle and funding (source of data: 2017 CNFIS report)

Given this situation, we aim to assess the situational awareness of Romanian universities concerning the student dropout topic, including measuring the position of the issue of student dropout in the Romanian higher education agenda at the level of universities. At the same time, we aim to evaluate the correlation between the importance of the topic in the university policy and the severity of the topic, as evidenced by the factual data.

### ***Data and methodology***

The position of the topic of student dropout on university agenda was assessed using a rather complex online text analysis procedure which involved several steps. We assumed that the university's web interface (page, presence) is an accurate reflection of its overt agenda.

In the first stage, we parsed data from the available official web pages - as of November 2017 - of 98 public and private universities, down to a depth of 8 directory levels from their homepages, and identified all web text files (HTML, PHP, ASP, PDF) containing the string “*abandon*” [*dropout*] and any of its variations, in Romanian. The string was extracted together with its context measuring 50 characters left and 50 characters right of the targeted word and the output was cleaned of special markup symbols with the aid of Linux BASH scripts.

In the second stage, we have manually curated all the documents making sure that the ones remaining refer to student success/dropout. Duplicate documents were also eliminated. This second stage was mandatory as many occurrences of the string “*abandon*” refer to dropout from the pre-tertiary education - the universities being involved rather often in activities concerning this issue, or not having any relation to the topic at hand (“*abandon*” being used in a literary context, or regarding sporting activities, for example).

Finally, we have identified 212 (189) online documents referring to student dropout in higher education, published by 35 universities, out of which 5 are private universities, and 4 are non-civil (military) public universities. Almost two-thirds of the documents found meeting



the inclusion criteria are PDF-files (63%), and the rest are web documents (37%).

Besides identifying properly the references to the university dropout, we measured the importance of the document, and consequently its reference, by using the depth index of the web page as a proxy of importance (files found on deeper levels are considered of lower importance compared to those published closer to the index).

For the second objective, the results obtained in the first stage on the public universities except for the military ones were correlated with the data collected from universities for the initial needs assessment in preparation for the ROSE project. The data were collected from 47 public (non-military) universities, disaggregated at the faculty level (356 faculties) on several measures, including the number of students expelled at the end of the first bachelor year in the 2015-2016 academic year. The rate of expelled students to the total number of students enrolled in their first of studies is a good measure of retention and a proxy for dropout, available at faculty level.

## ***Results***

### **Incidence and depth**

A web page including documents related to the dropout from university studies was found in the case of 35 universities out of a total of 89 universities whose web pages were parsed. It means that only 39.2% of university web pages have references to dropout. Another relevant finding is the absence of reference in the case of the majority of universities, including the largest comprehensive universities in Romania. The breakdown of data at university level displays large differences across types of universities: while around half of public universities, both civil and military have documents referring to the issue of dropout, the incidence of such documents is much scarce in the case of private universities.

Type of university	N	Presence of topic of dropout
civil state	48	24 (50%)
military state	7	4 (57%)
private	34	7 (20%)
Total	89	35 (39.2%)

The depth of the web documents, which refers to the issue of dropout also varies significantly across universities. Of course, this measure depends not only on the importance attributed to the topic but also on the structure of web pages, too. There are only two universities with the topic present right on the top level.

Most frequently, documents related to dropout are at a depth of 4 levels (38.6%). The average depth is 3,74 and the median of the indicator is 4. Still there are relevant documents that can be found right on the index (level 1) or at a depth of 8 levels.

## The content of documents

There is a vast diversity of content in the documents which relate to the issue of student dropout. Although it is not our intention to deliver a systematic account, using content analytic instruments, a short description with examples is necessary.

One can identify four/five broad categories of documents containing relevant references to the issue of dropout:

1. Mission statements and strategic documents of the universities, including reports of the rectors or strategic plans of the universities. For example, the Declaration of the National Council of Rectors adopted in Târgu-Mureş in October 2016, for the first time, stated clearly the fight against student dropout as a necessary objective of higher education policies right in the first statement of the communique. At the levels of universities, we can highlight the case of the University of Petroşani that constantly indicated in all its strategic documents the objective of

fighting against student dropout. A similarly permanent concern can be found in the documents issued by the Petru Maior University in Târgu-Mureş (which merged in the meantime with the local University of Medicine and Pharmacy). On the other hand, the report of the rectors of universities such as the Academy of Economic Studies or the Technical University of Cluj-Napoca include references to the issue of student dropout.

2. Documents of the universities' counseling centers, including their mission statements – which, according to the Ministry of Education regulations (OM 650 of Nov. 19, 2014), includes combatting student dropout. For example, the Career Counselling Center of the University of Transylvania has implemented a broad project that also monitored the fight against university dropout and produced several outputs - instruments, reports, strategy proposals.
3. Other documents that are by-products of activities related to the topic of students dropout - debates, trainings, projects - research-oriented or intervention focused a.s.o. For instance, "Valachia" University of Târgovişte has implemented a project (ISOSTUD) financed by international and national funds that supported 180 students from underprivileged categories (poor, Roma, rural) in order to mitigate the risks of dropout.
4. Management plans of candidates to various elected or appointed offices in the universities. For example, numerous Management Plans published by candidates for positions of Deans and Rectors across the country state in various ways that the future manager - if elected or appointed - would implement activities aimed at increasing student retention.

### ***Dropout from higher education***

Data on student success from the ROSE program's initial assessment represents the rate of which students enrolled in the first year transitioned successfully to the second year of bachelor studies (or vice versa, the rate of failure). It is a measure of success (or retention) that synthesizes the topic at hand. However, the ROSE program collected data only from 48 civil public universities.

For the academic year considered (2015-2016), the pooled dropout rate after the first year in the 48 universities considered was 15,9%. It varies quite widely, from 0,00% to 33%. The lowest (i.e., null) dropout rates can be found primarily at the medical universities while the most substantial dropout rates are recorded in comprehensive universities, classified by the Ministry of Education in the tier of 'universities focused on education', located usually in smaller urban settlements (as contrasted to the other types, focused on research, or research and education, or arts and vocational universities).

### ***Does the occurrence of dropout-related documents correlate with the rate of student retention?***

The number of relevant documents in the population of civil public universities has already been described: for 28 of the 48 (58%), we did not find any relevant documents while the average is of 3.22 documents per university. Three outlier universities inflate the average with a very large number of relevant documents found (23, 32 and 35, respectively).

In order to control according to the size of the university, we have computed an additional indicator of the incidence of relevant documents by reporting the number of relevant documents to the size of the university measured in the number of students enrolled in the first year. The rationale for controlling the number of students is that larger universities are more complex, have more activities and structures and, therefore, the likelihood of publishing documents on dropout should increase by a certain degree because of size and complexity alone.

The dropout rate weakly predicts the number of relevant documents ( $r=0.258$ ,  $p(r)<0.1$ ) but has a much stronger correlation with the number of relevant documents normalized with the number of students ( $r=0.442$ ,  $p(r)<0,01$ ). The strength of the relationship becomes even more apparent on a scatterplot where a quadratic function linking the two variables explains 44.3% of the variation of the rate of relevant documents (the explanatory power increases to more than 60% using a

cubic function but that is a less reliable model of our data given the small number of data points.

The quadratic model shows that up to a dropout rate of around 20%, the incidence of relevant documents is indifferent to variations in dropout rates. However, above this point, the likelihood that university web pages contain documents referring to student dropout increases exponentially with the increase of dropout rate. One cannot ignore, though, that there are still universities that ignore the topic even if they suffer losses of more than 20% of their year 1 of enrollment.

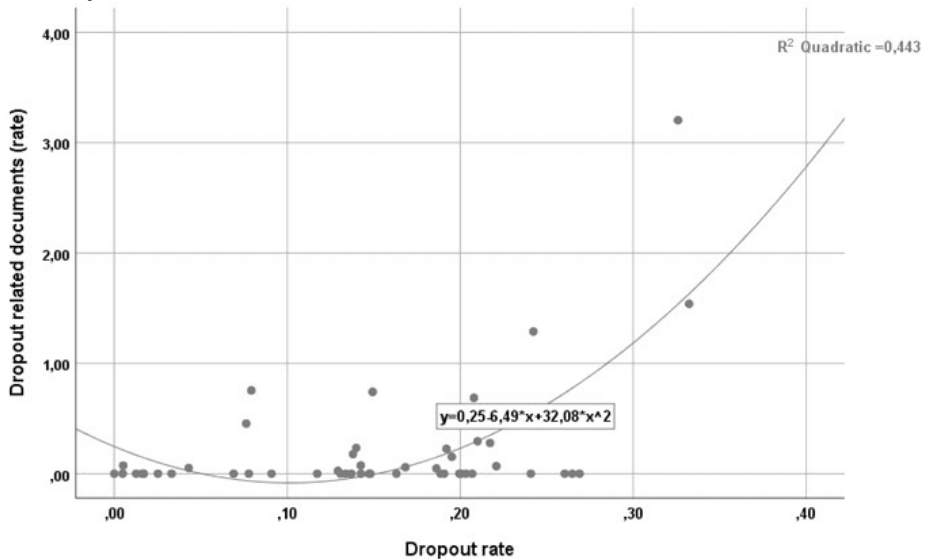
Table 2. Corelations of main variables (N=48)

	No of documents	Dropout rate	Dropout related documents rate (No of documents/Number of students)
No of documents (related to dropout)	1	0,258 (p=0,077)	0,610***
Dropout rate		1	0,442**
Dropout related documents rate (No of documents/Number of students)			1

\*\* p<0,01

\*\*\* p<0,001

Figure 2. Correlation of dropout rate and rate of dropout related documents per university



The graph above illustrates that the answer to the second question is a positive one starting from a certain level of student dropout. Moreover, the correlations support our assumption that the production of online documents by universities is partially dependent on the size and/or complexity of the higher education organization. On the aggregate, though, we can say that the relationship of measures of occurrence of documents mentioning student dropout and the dropout rate provides a proof that universities display awareness of their problems and are sensitive to the problems that affect their functioning.

### ***Conclusions***

We have investigated the position and relevance of the issue of student dropout on the Romanian higher education agenda in the context of pressures entailed by declining enrollment numbers and a policy narrative increasingly focused on efficiency.

Our web-based content analytic survey of 98 Romanian universities' internet interface as of November 2017 shows that less than half of them mention dropout ("*abandon*") in the documents uploaded on their web pages. While the incidence is higher for the civil-public universities (50%), these figures still show large inertia on behalf of these tertiary education institutions in including the topic of dropout in their policy and strategy discourse. In this regard, the inclusion of this topic in mission statements and management plans is especially encouraging.

Moreover, this presence in the online published textual materials of the topic of dropout is correlated with the actual severity of the problem at university level. The rate of student dropout after the first year of bachelor studies has a significant correlation with the rate of relevant documents/number of students. Our analysis shows, on the one hand, that the document production of universities is dependent on their size, which makes the normalization by university size mandatory. The relation of the rate of dropout-related documents to the number of students to the rate of dropout appears to be non-linear; documentary evidence of institutional concern about dropout skyrockets after the dropout rate after the first year of bachelor studies exceeds a threshold situated around 20%.

Although the pressure of numbers and funding is intense, Romanian universities have been slow in including the topic of dropout in their institutional discourse. As of 2017 less than half of them had references to this issue in the HTML and PDF documents published on their official web pages. However, for the case of public civil universities, the incidence of these documents is correlated with the factual dropout rate. This highlights the fact that the official discourses of the universities reflect their actual problems, proving that universities - at least the public ones - are aware of their own challenges and reacting to them.

### ***Limits of the research***

The main limits of the current research are related to the validity and reliability of the web content analysis. On the validity side, restriction of the analyzed documents to those referring to the notion of dropout (Romanian “*abandon*”) may have induced some biases as it excluded textual references to strings like “student success” or “graduation rate”. Our research could be replicated using a broader dictionary of strings to be retained during the content analysis.

Reliability issues are though more worrisome. First, we have limited the parsing of the documents to those available on pages published using the university official domain name. This excluded the documents that have been published on pages with other domain names, which are also of the universities or structures within the university. Situations of this kind might be quite frequent; depending on the internal regulations of universities, some faculties or other structures might have their web presence on different domains than the official web domain of the university. Another reliability issue comes from the impossibility to analyze the contents of the non-searchable PDF files which may have artificially reduced the number of relevant documents. All in all, these issues may have affected significantly our results if they were correlated with the investigated phenomena, including the rate of dropout.



## References

- Amrollahi, A., & Ghapnchi, A. H. (2016). *Open strategic planning in universities: a case study. Paper presented at the 2016 49th Hawaii International Conference on System Sciences (HICSS)*.
- Bloodgood, J. M., & Morrow Jr, J. (2003). Strategic organizational change: exploring the roles of environmental structure, internal conscious awareness and knowledge. *Journal of management studies*, 40(7), 1761-1782.
- Bui, H., & Baruch, Y. (2010). Creating learning organizations in higher education: applying a systems perspective. *The Learning Organization* 17(3), 228-242.
- European Commission (2012). Making the Most of Our Potential: Consolidating the European Higher Education Area (Bucharest Communiqué) [Press release]. [http://www.ehea.info/media.ehea.info/file/2012\\_Bucharest/67/3/Bucharest\\_Communique\\_2012\\_610673.pdf](http://www.ehea.info/media.ehea.info/file/2012_Bucharest/67/3/Bucharest_Communique_2012_610673.pdf)
- European Commission (2015). Yerevan Communiqué, EHEA Ministerial Conference [Press release], [http://www.ehea.info/media.ehea.info/file/2015\\_Yerevan/70/7/YerevanCommuniquéFinal\\_613707.pdf](http://www.ehea.info/media.ehea.info/file/2015_Yerevan/70/7/YerevanCommuniquéFinal_613707.pdf)
- Conway, T., Mackay, S., & Yorke, D. (1994). Strategic planning in higher education: Who are the customers. *International journal of educational management*, 8(6), 29-36.
- Hatos, A., & Pop, A. (2015). Evoluția selectivității învățământului superior din România sub impactul expansiunii și contracției. O analiză descriptivă. *Romanian Sociology/Sociologie Românească*, 13.
- Kotler, P., & Murphy, P. E. (1981). Strategic planning for higher education. *The Journal of Higher Education*, 52(5), 470-489.
- Liu, S. S., & Dubinsky, A. J. (2000). Institutional entrepreneurship-A panacea for universities-in-transition? *European Journal of Marketing*, 34(11/12), 1315-1337.
- Vossensteyn, J. J., Kottmann, A., Jongbloed, B. W., Kaiser, F., Cremonini, L., Stensaker, B., Hovdhaugen, E., Wollscheid, S. (2015). *Dropout and completion in higher education in Europe: Main report*. <https://doi.org/10.2766/826962>