

Analyzing the Abandonment Rates in Romanian HEIs

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Abstract. *The advancement of technology, the changing and competitive business environment has an impact also on higher education. Potential students are faced with a multitude of choices, without always having the proper guidance to choose a path that is suitable for each of them. Their sometimes-uninformed decision, along with other factors may lead to the phenomenon of dropout. This has a negative impact on universities environment in terms of programs, to society and economy, all being linked in a way. The issue of dropout in higher education is a complex one, a challenging one these days and therefore research on this subject to address it properly are essential. In this article it is presented the current situation on Romanian universities and their dropout rates. Also, an analysis of scientific papers and sources is carried out to identify and document the key factors that contribute to the student's choice of abandoning their university studies.*

Keywords: HEIs dropout, technical universities, study programs, students, dropout factors

Introduction

Analyzing university dropout at a systemic level is a relevant indicator for assessing the efficiency of the higher education system in Romania. Given the lack of a clear international definition for university dropout, practices vary among states. Until recently, national data needed to develop a cohort analysis were unavailable in Romania. It wasn't until 2022, through the POCU-Intl Project, that a definition for university dropout was introduced, allowing for the calculation of dropout rates for all study cycles. The proposed definition is "the percentage of the student population who has not graduated within two years from the theoretical completion date of the study program."

Scientifically, the issue of dropout in technical higher education is a subject of major research interest. The studies carried out in the last years have presented dropout rates that are high and that have a negative impact on the development of students from various perspectives: academic, social, economic, and personal. Research on higher education dropout is limited, and until recently, national data necessary for cohort analysis were missing.

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The phenomenon was first measured in the study "Dropout in Romanian Higher Education – Definition, Measurement, Interpretation," published in 2022 by UEFISCDI, focusing on student cohorts enrolled in 2015 and 2016 in bachelor's programs. For the bachelor's program the dropout rate is around 47%, for master 42% and for doctorate 70%. University dropout is most significant in the first year of studies, reaching approximately 44% (Alexe et al., 2022).

Factors influencing university dropout are diverse, ranging from student characteristics and the field of study to the baccalaureate grade and high school track. For instance, the dropout rate reaches 62.8% for those with baccalaureate grades between 6 and 7, and students from the technical track have the highest dropout rates, at 53.6%, according to data presented in the UEFISCDI study in 2022.

The new Bologna cycle in engineering includes bachelor's and master's degree and has an important role in the economic advancement of the country. The reform of engineering studies has been slower and faced more resistance than in other study areas. This dynamic is not unique to the Romanian context (Shuster et al., 2010). Following the Bologna reform, most bachelor's programs have a duration of 3 years. In Romania, the duration of engineering, law, and theology bachelor's programs remains 4 years (Parliament of Romania, 2018).

Increasing participation in higher education through specific measures to retain students, flexible study options, or reducing university dropout is an important goal embraced by Romania in both international structures and national policy documents. In this paper, by analyzing a series of scientific papers and national statistics documents, there were identified the main factors that contribute to student's dropout in HEIs. For each of these factors the authors have detailed the impact, along with measures that are designated to overcome this issue.

Literature review

Abandonment of HEIs in Romania

The number of Romanian citizens who graduated from the baccalaureate exam in 2018 is 91,004, of which 66,849 continued their regular academic journey and enrolled in a Romanian university according to the study of Hâj et al. (2021). This means that there is a loss of 26.54% of baccalaureate graduates who, although eligible to pursue university studies in a Romanian higher education institution, chose not to do so. It should be noted that within this 26.54%, there are also graduates who went abroad for studies (for whom there is no systematically collected data).

Despite having the highest rate of baccalaureate graduates, the North-East Region is the region with the lowest share of baccalaureate graduates, from the current promotion, who enrolled in higher education (Figure 1).

Moreover, if it is referred to the West Region, this was the region with the fewest final year students enrolled in the baccalaureate exam and the most students who were absent from at least one sample of the baccalaureate exam. But it is the region with the most baccalaureate graduates who enrolled in higher education.

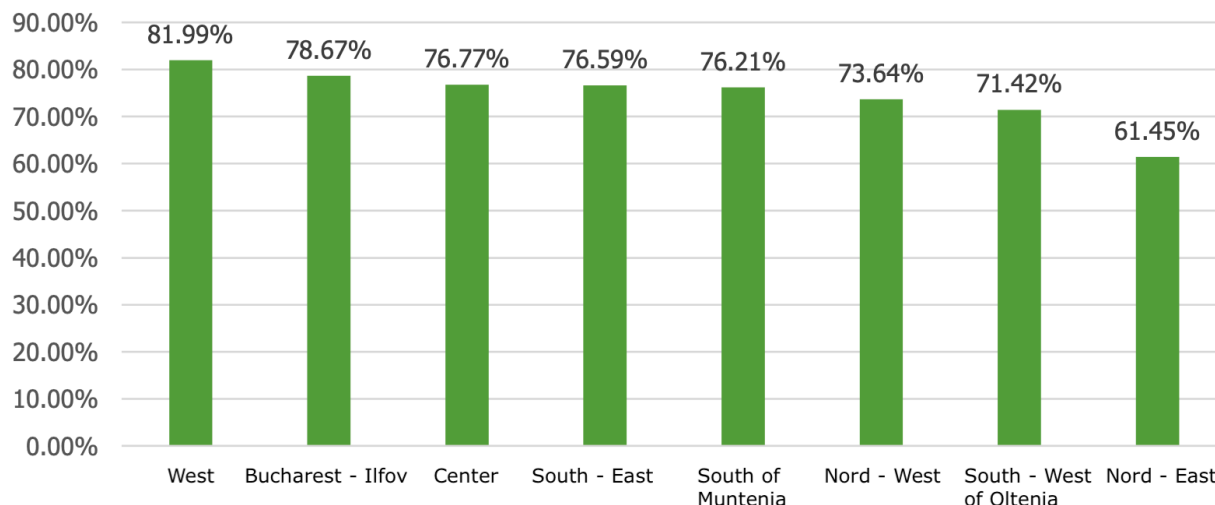


Figure 1. The proportion of high school graduates, enrolled in higher education, distributed at the regional level

Source: Access to higher education, a quantitative perspective. Analysis of the transition of the school generation 2017/2018, Hâj et al. (2021).

Students from the military profile, those who had a high participation in the baccalaureate exam, are also the ones with the highest percentage of graduates from the national exam who go on to pursue higher education. Furthermore, one can observe the stratification caused by the educational background of the educational institution.

The stratification caused by the environment of origin of the educational unit can be seen in Figure 2 as 58% of students from rural schools became students.

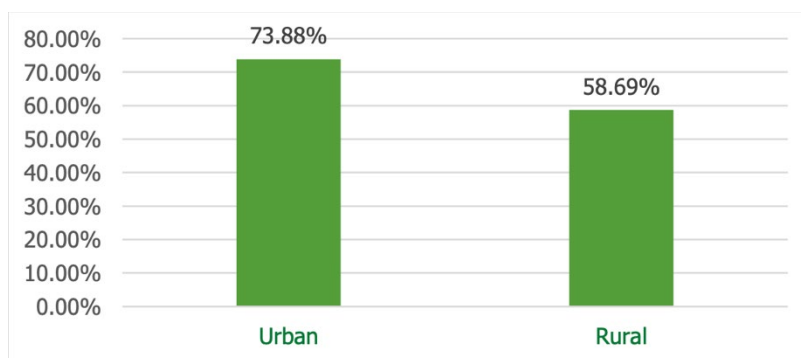


Figure 2. The percentage of high school graduates enrolled in higher education, distributed based on the educational institution's background

Source: Access to higher education, a quantitative perspective. Analysis of the transition of the school generation 2017/2018, Hâj et al. (2021).

According to the study carried out by Cotet et.al (2022), the highest university dropout rates are in the counties of Caras-Severin (83.3%), Mures (74.04%) and Prahova (77.27%), in time the lowest rates are in Bacau (34.74%) and Dolj (34.75%) (Figure 3).

Source: Dropout in Romanian HEIs - Definition, measurement, interpretation, Cotet et al. (2022).

On the other hand, in the small, comprehensive university centers that have technical faculties, the rates are higher: Hunedoara (64.71%), Prahova (58.18%) or Dambovita (57.30%), (Cotet et al. 2022).

A study was made at the University of Aveiro by Au-Yong-Oliveira et al. (2017), through a series of focus group sessions, brainstorming interactions, and comprehensive analyses conducted at the university's upper echelons, to identify the factors contributing to HEI dropout. Additionally, three interviews were conducted with students from various Higher Education Institutions (HEIs) who withdrew from higher education, validating the previously identified reasons. Recognizing and addressing these issues from a relationship marketing and services perspective at the institutional level, can contribute to success.

Each university has developed models of regression models to determine the key variables that have an impact on dropout rates. If similar models are implemented better action plans can be made for the universities.

The entitlement to education is universally guaranteed by international conventions; hence, society should intensify efforts in scrutinizing the primary factors contributing to dropout rates. In 2006, a team of researchers conducted by Artan et al. analysis the main factors that contribute to the dropout of students through a series of questionnaires. The first questionnaire is completed by students, while the second is administered to teachers. A total of 450 students and 229 teachers from both elementary and high schools in the Republic of Kosovo participated in this survey.

The decision of students to dropout from university is given by a cumulus of factors. Therefore, there are first presented definitions, models, and researchers' perspective on this subject. Building on previous theoretical and empirical evidence across various disciplines, the research of Behr et al. (2020) then delves into a detailed discussion of determinants influencing students' decisions to discontinue their studies. The application of latest data mining techniques are analyzed to cover a larger set of determinants and offer new insights towards school dropout.

Another contribution is drawn from an extensive literature review on student dropout in Europe, conducted by a research group at the Danish Clearinghouse for Education in collaboration with an international expert group formed of Kehm et al (2019). A difference between formal abandonment and transfer is investigated by 44 empirical studies and as a result, there are determined nine main dimensions that are the base of dropout. The aim is to offer a start for following researchers and guidelines.

The dropout of students is happening at a global level with impact on society, economy, and humans. Contributing factors include social aspects (student background, income), psycho-pedagogical factors (inadequate academic training, mismatch with prior education, lack of counseling), and personal elements (poor adaptability, low socio-emotional intelligence). The current challenges must be debated and measures to diminish the high dropout rate taken by universities. In this regard, Stăiculescu, C. and Ramona (2018) conducted a study at University of Economic Studies, at Bucharest, and potential solutions were determined.

Another scientific research (Aina et al., 2022) offers a thorough review of the socio-economic literature on determinants influencing tertiary education dropout. Based on the link between choices and results of students a theoretical model is searched. The retention of students is based on a combination of factors, the most important one being represented by academic integration. Therefore, finding ways to easier integrate the students and adapt to the higher education system is an important element.

Methodology

This article aims to present a comprehensive view on Romanian student's dropout rates from technical universities. Therefore, multiple studies are carried out to analyze the existing sources that address this phenomenon. The sources are academic ones or studies that were developed by scientific institutions with the goal of identifying all the known factors that contribute to the dropout rate. By being aware of these factors, measures and strategies can be implemented to prevent the dropout of students.

This methodology involves a systematic exploration of existing data, trend identification, and a comparative analysis to illuminate patterns and inform evidence-based recommendations for enhancing student retention in technical higher education. The authors of this research have the goal of gathering from specialized literature the key factors that influence the dropout rates on higher education from technical faculties. To achieve this objective, specific activities include: a literature review of relevant reports and studies on dropout rates in technical universities in Romania; analysis and comparison of data obtained from documentary sources to assess variations in dropout rates across different technical universities; in-depth data analysis to identify trends and factors influencing the dropout rate in each specific technical university.

There were several steps executes as methodology:

1. Literature review: using keywords there was carried out a search for scientific or reliable sources that address the subject of student's dropout.

2. Documentary research: collect relevant data from official reports, statistical databases, and academic publications focusing on technical universities in Romania.

3. Data analysis: examine overall trends, variations in dropout rates among different technical universities, and specific patterns over time. A comparison between all the finds is done to keep only the essential and not duplicated information.

4. Factor identification: conduct a detailed analysis to identify main factors influencing the dropout rates in university.

5. Refinement and final analysis: refine the methodology based on feedback and conduct a final analysis. After gathering the entire information and filter it, this is organized on different perspectives to be clear and to encompass the main notions and findings.

Results and discussions

After the refinement and final analysis of the specialized literature from the last years, were identified key factors that play a role in the student's dropout rates. All these different factors are presented in Table 1 with details and measures for each of them. The dropout rate of universities can be mitigated if these factors are thoroughly analyzed to see if apply and what are the best possible measures that can be adopted. Therefore, this research serves as a guideline for higher educational institutions and research on this subject.

Understanding all the factors that have an impact on the dropout rate individually and the relations between them, if the case, generate a more comprehensive overview for the universities and allow them to develop models and strategic plans. Also, knowing them, shows that this phenomenon is a complex one, a real concern nowadays, that must be addressed properly and not neglected. Higher education is a difficult path for the new generations and adjustments must be taken to keep up with their expectations and aspirations as well as the economic environment requirements that are evolving and changing day by day.

Table 1. Factors that contribute to HEI's abandonment

Factors	Details and measures
Challenges adapting to the initial university year.	The step from high school education system to the university one can bring challenges to students. These challenges encompass forming new relations with new people, changing the daily routine to courses and laboratories that have a different and more complex program, the subjects that are various notions and a higher volume of information, the requirements for each studied subject. Therefore, in this transition timeframe support should be offered to them by both family and academic environment.
Financial constraints and unsuccessful attempts to secure a student scholarship.	These constraints that come from their financial situations may impact students with worries or restrictions to resources that can be seen in their results. Unsuccessful attempts to secure a scholarship, despite earnest efforts, further exacerbate financial strain. Universities should have a clear situation for the students that encounter financial difficulties and support them with scholarships and materials.
Inability to complete a satisfactory number of subjects in the first year.	This might result from various factors, including the complexity of the coursework, unfamiliar academic expectations, or personal adjustments. Academic support is not enough here and it must also be sustained by orientations programs and mentors that facilitate the students to adapt at this new environment.
Irregular attendance, hindering academic progress.	Students who miss a substantial number of lectures face challenges in grasping essential course content, leading to difficulties in meeting academic requirements. Here, a system to monitor their presence and evolution through the entire year should be implemented. When a issues does occure, interventions and discussions should be

Factors	Details and measures
	made to see the cause and the potential measures that can address it. By having an overview on a weekly basis the students can be more easily engaged and supported in their educational journey.
Immaturity and difficulty adjusting to the challenges, often far from home.	In universities there are students from different cities and even countries. Being far from home requires to be more mature and independent. Some of them find this hard, an need guidance and advices from specialized people to develop themselves into more discipline and resilient individuals.
Joining the university in a later recruitment stage, complicating alignment with the curriculum.	Joining the university in a later recruitment stage, implies missing courses and laboratories. The information presented until that point of time should be recovered by the students alone and may cause them frustration along with difficulties in keeping up with their colleagues. The knowledge that was lost can not be understood by them alone or entirely. Universities should have bridging programs and courses to integrate the students easily and bring them up to date with the information.
Pursuing a degree that wasn't the first choice due to inadequate marks, resulting in diminished motivation.	Pursuing a degree that wasn't the first choice may lead to a complete devotion of the students. Since their is not their main field of interest, motivation is reduced and they may struggle with the university courses. Here, guidance and counseling to possible job options in the future, that can bring together their passion, abilities and the university offerings should be offered.
Struggling to keep up as one of the lower-performing students in class.	The risk of dropout increases when students consistently face academic setbacks and feel overwhelmed by the coursework. Universities should adopt learning plans after hours, online materials and customized help to support the students that need extra help. By having all these, students that initially find difficulties to keep up with their colleagues will be prepared and aligned in time to the rest of the group / year.
Juggling part-time studies with a full-time job, posing challenges in passing subjects.	This situation has become more and more comun in romanian universities and measures to allow students to participate to courses / laboratories in a more flexible manner must be adopted to prevent their dropout.
Undertaking an internship, subsequently receiving a job offer, leading to premature abandonment of studies.	This situation underscores the delicate balance between academic commitments and real-world opportunities, emphasizing the need for institutions to support students in navigating such career-defining choices while ensuring the importance of degree completion is not overlooked.
Facing difficulty in passing a specific subject (e.g., Calculus or Statistics), prompting complete abandonment of higher education.	Difficulty in grasping and succeeding in these core areas may lead to frustration and a sense of insurmountable obstacles. Before entering the university, only some students analyse the course plan and the studied subjects along their entire education journey. Therefore, when facing knowledge that is more complex or technical they tend to abandon the university. Having mentors and support to make them more confident in themselves an up to new challeges is essential.
Perceiving higher education as excessively theoretical, opting to enter the job	To overcome the feeling of students towards the university education being too theorethical, the importance of the fundamentals of each course should be explained from the begining. Also, their role in the economical environment must be detailed and practical exampled should play an important role. Maintaing a close relationship between the university curricula and the business expactations from their potential

Factors	Details and measures
market for practical experience.	employees must be aligned. Through this, the students will understand the role of education and will be prepared to offering a quality contribution to society.
The student body is the deficiency of capacities or abilities to face up to the demands of university studies, previous inadequate knowledge, inappropriate attitudes toward learning and low psychological resilience.	For this particular situations may be adopted mentorship programs and health services to offer students support and improve their capacity / resilience.
Student-teacher relationships towards learning or deficiency of attention individualized to the student	The conflicts with teachers frequently escalated and ultimately resulted in a pivotal moment that precipitated leaving education.
Institution-related risk factors associated with dropping out include absence of clearly defined objectives, restriction in the offer of determined degrees	The lack of clear goals may lead to disorientation and a sense of purposelessness among students. Having a limited offer of programs, a university limits its students to have access to the desired courses and information. This may lead to their dropout since their requirements are not met. A potential measure here ist o revise the offer and also to make a research on the new market demand.
Low affective support, low cohesion among family members and a high rate of conflict fuel the family turmoil and increase the drop out probability	Low affective support, poor cohesion among family members, and a high rate of conflict contribute to family turmoil, creating an environment that amplifies the probability of dropout. When students lack emotional backing and experience discord within their family, the impact on their academic journey can be substantial. Establishing interventions that foster family support and communication is imperative to mitigate these risk factors and enhance students' resilience in the face of academic challenges.
Other opportunities	Understanding and considering these external opportunities are crucial for comprehensively addressing university dropout rates. Different institutions must collaborate to presents students a path that takes into considerations their aspirations and guidance to choose their own path for educational development. Having access to a lot of information can be confusing and the right support is needed to show them options for the near and far future in terms of education and jobs.
The national education system	The national education system plays a pivotal role in influencing university dropout rates. It is formed by different elements which do affect the student's journey. An alignment of these elements must be clear and concise and established a procedure that does not meet modifications on a year basis. This can have a negative impact on potential students and bring them confusion.

Factors	Details and measures
Quality of teaching	Universities should have a team of teachers that are well prepared and up to challenges from their students. Trainings can be implemented for the educational staff in terms of using new technology and teaching techniques to engage students. By presenting difficult concepts in an attractive manner students can be inspired and are more willing to participate in the learning process.
Study conditions	These conditions include the availability and quality of educational resources, classroom environments, and overall institutional support. It can include access to books and materials from libraries, modern softwares and equipments.
Academic integration	Presents a comprehensive range of aspects, but the main one is results in their presence and activity during the courses, laboratories and events that are designated to learning and competition. These students should be able to find support from their teachers and also from the university to improve their knowledge, to find answers to their questions and guidance to elaborate projects.
Social integration	The university culture is very important. By adopting a beneficial environment will facilities, support, extra curricular activities can help in integrating easier a student. Once the student finds a welcoming environment, where social connexions can be made easier, that student will engage more with the university and all its aspects.
Personal efforts and motivations for studying	Personal efforts and motivations for studying differ from one individual to another. All of them may lead a student to dropout university and that is why determining the cause in the early stage may allow interventions. Guiding a student and offering support to resolve their own personal factors and to persevere during their higher education is challenging. Mentoring programs, counseling can be adopted and presented to them if the case.
External conditions	Addressing these external conditions requires a comprehensive approach involving collaboration between educational institutions, policymakers, and community stakeholders to create an environment that supports all students, irrespective of their socio-economic background or external circumstances.
University requirements	These requirements may include academic standards, standardized test scores, or other criteria for admission. Stringent or unclear university requirements can act as barriers, especially for students who may not fully understand or meet the expectations. This can be overcome by evaluating the current requirements and make the necessary modifications to develop more clear assignments for the students. Also, support for them can be provided
Prior academic achievement in highschool	Students who have a history of low academic achievement in high school are more susceptible to facing challenges in the university setting. Students previous results from highschool may indicate their level of knowledge and has an impact on their university achievements. Knowing this information can be taken measures to improve their fundamental basis and better prepare them for their academic journey.

Source: Au-Yong-Oliveira et al. (2017), Araque et al. (2009), Artan et al. (2016), Behr et al. (2020), Kehm et al. (2019)

Conclusion

From a socio-economic perspective, countering the phenomenon of dropout in higher education is a crucial priority for developing a skilled workforce and meeting the dynamic demands of the job market. The universities study programs contribute to the development of each individual and have an impact on the country's economic competitiveness and innovation in different areas.

Significant determinants of dropout rates are the profile's high school graduation rate and the course chosen. The technical stream in the graduating stream has the greatest dropout rate, 53.6%, whereas the average dropout rate for students in the theoretical stream is 44.5%.

Bachelor's study dropout rates are also predicted by the junction of the high school graduate profile and the core field of the program. For instance, it is 36% in the arts and 57% in engineering.

Compared to the national average, high school graduates often have lower dropout rates. They are distinguished, nonetheless, based on the core subject of the undergraduate curriculum. For instance, the dropout rate in engineering is somewhat lower than the overall dropout rate of students from the real profile, while it is over eight percentage points higher in the humanities (Cotet et al., 2022).

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