MARIANA CERNICOVA-BUCĂ, LILIANA CISMARIU, DANIEL CIUREL, GABRIEL-MUGUREL DRAGOMIR, VASILE GHERHEȘ, *Tinerii Politehniști. Valori Culturale Și Intenții Migraționale* [Young Engineering Students. Cultural Values and Migration Intentions] (Bucharest: Tritonic, 2021)

Today's globalised society favours, more than ever, the interaction between peoples and cultures, on a professional and personal level, encouraging the labour force mobility for better professional prospects and, implicitly, for a better living standard. Since technology is ubiquitous in the present-day society, it is no wonder that the engineering profession is one of the most coveted professions at the moment, offering a multitude of professional paths that can be taken and a freedom of movement within the profession or the country as well as across the globe. Considering all this, the engineering students have aroused the interest of various professionals who strive to understand the engineers'-to-be needs, expectations, cultural values and migration intentions, to mention but a few, because such knowledge underlies the choices made by the decision makers in the fields of education, economics, human resources and engineering in order to contribute to building a better and more prosperous society, a society in which each and everyone's personal and professional needs are satisfied since people are the most important asset both to the education system and to the labour market.[1]

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[1] Marc Effron, Robert Gandossy, and Marshall Goldsmith, *Human Resources in the 21st Century* (New Jersey: John Wiley & Sons Inc., 2003). OECD 2018, *Education 2030: The future of education and skills*, available at: https://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf (Last access: January 2022). National Academy of Engineering, *Understanding the Educational and Career Pathways of Engineers* (Washington, DC: The National Academies Press, 2018), available at: https://doi.org/10.17226/25284 (Last access: January 2022); Simona Șimon, Anca M. Dejica-Carțiș, Claudia E. Stoian, and Andrea Kriston, *Dicționar explicativ poliglot de termeni din domeniul educației (română, engleză, germană, franceză)* (Timișoara: Editura Politehnica, 2018); Simona Șimon, Claudia E. Stoian, Anca M. Dejica-Carțiș, and Andrea Kriston, *A Multilingual Dictionary of Education: English-German-French-Romanian* (Szeged: Jate Press, 2018).

In this context, the book *Tinerii politehniști. Valori culturale și intenții migraționale*[2] [Young Engineering Students. Cultural Values and Migration Intentions] by Mariana Cernicova-Bucă, Liliana Cismariu, Daniel Ciurel, Gabriel-Mugurel Dragomir and Vasile Gherheș adds value to the educational and socio-economic landscape as it highlights the results of the research carried out between 2019 and 2020 among the students pursuing an engineering degree at one of the five universities making up the Romanian Alliance of Technical Universities (ARUT), namely *Politehnica* University of Bucharest (UPB), the Technical University of Civil Engineering Bucharest (UTCB), the Technical University of Cluj-Napoca (UTCN), "Gheorghe Asachi" Technical University of Iași (TUIASI) and *Politehnica* University of Timișoara (UPT). The research aimed at identifying the cultural and professional values, practices, perceptions, and expectations of the young generation of engineering students in the digital society and was completed due to the grant awarded by ARUT to the UPT research team for the research proposal *Valori culturale și profesionale ale studenților din Universități Tehnice românești* [Cultural and Professional Values of Students at Romanian Technical Universities]. The research results presented in this volume are just a starting point for singling out the engineering students' values, beliefs, aspirations and needs that may constitute the prerequisite for creating more appropriate educational policies and career guidance strategies, on the one hand and on the other, for understanding the behaviour of the future engineers, as the authors themselves highlight in the *Argument.*[3] Yet, the research results showcased in this volume do not reflect the engineering students' preferences taking into account the degree that they pursue, an aspect that could be approached in other studies as it might be relevant for certain specialisations. Nevertheless, this does not diminish the contribution brought by the study to the development of the Romanian society. On the contrary, the research results may be used to predict and anticipate the behaviours of a professional category on which the industry heavily relies.

Apart from the *Foreword* and *Argument*, the book contains five chapters that are structured like research articles, i.e. title, name(s) of the author(s), abstract, key words, introduction, body of the article, discussion and/or conclusions, and references. The volume ends with a book abstract in English, which partly resumes the chapter abstracts, translating them from Romanian.

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[2] Mariana Cernicova-Bucă, Liliana Cismariu, Daniel Ciurel, Gabriel-Mugurel Dragomir, and Vasile Gherheș, *Tinerii politehniști. Valori culturale și intenții migraționale* [Young Engineering Students. Cultural Values and Migration Intentions] (Bucharest: Tritonic, 2021).

[3] Ibid., 13.

The first two chapters, "Învățământul (poli)tehnic, în contextul învățământului superior din România" [(Poly)technical Education, in the Context of Higher Education in Romania] by Daniel Ciurel and Designul cercetării [Research Design] by Gabriel-Mugurel Dragomir, Vasile Gherheș and Mariana Cernicova-Bucă, create the framework within which the research, thoroughly described in the next three chapters, was conducted. Thus, the first chapter gives an overview of the emergence of the universities in Europe in the Middle Ages and of their constant change in time from 'ivory towers' to entrepreneurial and sustainable universities,[4] from universities fostering research to universities put to the service of the society or, nowadays, of the student. Furthermore, it also shortly describes "the emergence and development of STEM (Science, Technology, Engineering and Mathematics) education in the country."[5] As it is widely known, the technical education, along with the socio-humanistic one, has gained ground and socio-economic recognition, particularly because of the Industrial Revolutions. Although both universities and technical schools emerged sooner in Europe than in Romania, this time lag was overcome in the second half of the 19th century once the first two modern universities were established in Iași and Bucharest, respectively, at a four-year distance from each other. Taking into account the European experience, these two universities emphasised both the importance of research and teaching activities, and of a diverse educational offer that fulfils the labour market needs. After World War 2, three reforms were introduced in the Romanian education system, in 1948-1949, in 1958 and, finally, in 1972. Since 1989, the higher education in Romania has been constantly reformed and reorganised. However, the author of this chapter argues that the Romanian higher education stresses rather the theoretical aspects than the practical ones, not preparing its students for an ever-changing society. Moreover, the difficulties experienced by the Romanian universities in the first two decades after the Romanian Revolution of 1989 were also singled out by the author: insufficient spaces for teaching activities, insufficient teaching staff, underfunding, insufficient extra-budgetary resources for research or institutional development projects, development of study programmes only for financial reasons, large number of graduates which the labour market

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[4] Claudia E. Stoian, Simona Şimon, and Vasile Gherheş, "A Comparative Analysis of the Use of the Concept of Sustainability in the Romanian Top Universities' Strategic Plans," in *Sustainability 2021. The Role of Higher Education Institutions for Sustainability*, 13(19), 10642, 2021, available at: https://doi.org/10.3390/su131910642 (Last access: January 2022); Simona Şimon, Claudia E. Stoian, and Vasile Gherheş, "The Concept of Sustainability in the Romanian Top Universities' Strategic Plans," in *Sustainability 2020. Communication on Sustainability in Universities: A Bridge between Academia and Society*, 12 (7), 2757, 2020, available at: https://doi.org/10.3390/su12072757 (Last access: January 2022).
[5] Cernicova-Bucă et al., 228.

cannot absorb and bad communication between the higher education providers and the representatives of the labour market with a view to the number of graduates and to the qualifications these should have.[6] These challenges have been faced differently at a university and national level, for example by creating the necessary mechanisms and tools to assess the quality of the educational process and of the educational offer. Moreover, the Bologna Process has contributed to the harmonisation of the educational system across Europe, thus favouring the mobility of students and of professionals alike. This professional mobility has caused the phenomena termed as *brain drain* and *brain gain*, respectively, which pose problems both to the country that loses working force and to the one that gains it. The higher the employability rate of the graduates, at a national as well as an international level, the better the university's reputation is on the labour market and in the community in which it operates, being a reliable indicator of the quality of the study programmes it offers.

The second chapter presents the research design, i.e. "the strategy employed for data collection, processing, and interpretation, starting with a web-based sociological survey."[7] The research was carried out between November 2019 and February 2020. The five ARUT universities aforementioned were visited by three members of the research team, namely Vasile Gherheş, Gabriel-Mugurel Dragomir and Liliana Cismariu, due to the hospitality of the rectors of these higher education institutions. The research methodology was presented to the students, who were asked to complete an online survey. From the 80,000 bachelor's, master's and doctoral students enrolled at these 5 universities, about 1,800 students validly responded to the questionnaire. The respondent distribution rate was, for each university, about 20% of the pool of respondents, which was important for the relevance of the study. The survey aimed at identifying the cultural/personal values of the investigated population, its attitudes towards the labour market and the migration trends of the young engineering students. The obtained research results were analysed with the SPSS 2.0 program, being described and discussed in detail in the next three chapters of the book.

Thus, the third chapter, "Valorile personale ale studenților și sustenabilitatea socială" [Students' Personal Values and Social Sustainability] by Gabriel-Mugurel Dragomir, Mariana Cernicova-Bucă and Vasile Gherheş, highlights "the human values that students bring with them into the educational environment as benchmarks in the constellation by which they guide themselves."[8] Since the 21st century has aroused the interest in the student-centred education, the analysis of the young generation's personality traits has become fundamental

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[6] Ciurel in Cernicova-Bucă et al., 32-33.

[7] Cernicova-Bucă et al., 230.

[8] Ibid., 231.

for the purpose of better adapting the educational system to the students' needs. At the core of the human personality are the values, from which attitudes and behaviours derive, influencing the individual's, organisation's and country's productivity and sustainability.[9] As such, the 18 values included in the questionnaire focused on the students' relationship with their families, friends, (future) employers and the society, pointing to the future Romanian engineers' sustainable development, i.e., becoming "professionals, socially accepted and belonging to a group."[10] Varying in intensity degrees, the surveyed values were personal dignity (identity/education), prestige or social dignity (social status or position), selflessness, financial security, tolerance, competitiveness, fairness, ingenuity and innovation, family protection, authenticity, self-respect, freedom (of thought and action), friendships, health and physical condition, sense of belonging, independence, and, finally, professional fulfilment. The authors conclude that, although the Romanian students are educated locally, they perceive the 21st century world globally, envisioning a future that they freely choose to live at home or abroad.[11] Moreover, the authors stress that "the findings are useful to teachers, who need to constantly verify their assumptions about the profile of the younger generation, within the framework of the student-centred education philosophy."[12]

The fourth chapter, "Jobul ideal, brandul angajatorului, proiecții asupra realității pieței muncii" [The Ideal Job, the Employer's Brand, Projections on the Reality of the Labour Market] by Liliana Cismariu and Gabriel-Mugurel Dragomir, focuses on the engineering students' perceptions and expectations regarding the labour market, namely the employers' offers and employees' benefits, the ideal jobs in the technical field, the type of organisation targeted for their first employment, e.g. multinational companies or small enterprises, public institutions or NGOs, their own firm or someone else's firm. The responses given by the engineering students vary from university to university, being essential in creating the profile of the student

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[9] Mohammad A. Rickaby, Jacqueline Glass, and Scott Fernie, "Conceptualizing the Relationship between Personal Values and Sustainability—A TMO Case Study" in *Administrative Sciences*, 10 (1), 15, 2020, available at: https://doi.org/10.3390/admsci10010015 (Last access: January 2022); Kristen M. Watrous, Ann H. Huffman, and Robert D. Pritchard, "When coworkers and managers quit: The effects of turnover and shared values on performance," in *Journal of Business and Psychology*, 21 (1), 2006, available at: https://doi.org/10.1007/s10869-005-9021-2 (Last access: January 2022). Xiaoxing Zhang, Simon Austin, Jacqueline Glass, and Grant Mills, "Toward collective organizational values: a case study in UK construction" in *Construction Management and Economics*, 26:10, 2008, available at: https://doi.org/10.1080/01446190802422146 (Last access: January 2022).

[10] Cernicova-Bucă et al., 231.

[11] Dragomir, Cernicova-Bucă, and Gherheș in Cernicova-Bucă et al., 74.

[12] Cernicova-Bucă et al., 231.

pursuing a degree in the technical field, and thus helping him/her to be successful in the profession and, as such, to integrate into the labour market.[13] Surprisingly, this survey has revealed that the young generation of engineering students are still very traditional in the professional choices they make, although they were born in an extremely dynamic and nonconformist world. Moreover, the authors emphasise that, although the ideal job differs from person to person, from country to country, the local culture is a powerful factor for the decisions made by the young generation.[14]

The final chapter, "Acasă sau „afară"? Diagnoza intențiilor de emigrare a studenților din instituțiile tehnice românești după absolvire" [At Home or "Abroad"? Diagnosis of the Emigration Intentions of Students from Romanian Technical Institutions after Graduation] by Vasile Gherheș, Gabriel-Mugurel Dragomir and Mariana Cernicova-Bucă, pinpoints the engineering students' migration intentions, "highlights the motivations behind these preferred intentions and destinations, and provides predictive elements on the extent of the migration phenomenon of highly skilled labor."[15] The engineering students that participated in the survey expressed a high intention to migrate, mainly for financial reasons, but also for personal reasons, better job opportunities, better living and working conditions. 22% of the respondents expressed their firm intention to migrate, while 32.9% of the sample still ponder all the alternatives, moderately considering migrating. As for the destination countries, they prefer Germany, the USA, and Great Britain. Moreover, they would like to live and work abroad up to three years (22.3%), five years (14.6%), but also forever (18.9%). This analysis has revealed data that might be helpful in assessing the relationship established between the fresh graduates and the labour market, "developing regional and national human capital policies and anchoring development plans towards sustainable economic growth on solid foundations in the engineering profession."[16]

Therefore, the book *Tinerii politehniști. Valori culturale și intenții migraționale* [*Young Engineering Students. Cultural Values and Migration Intentions*] by Mariana Cernicova-Bucă, Liliana Cismariu, Daniel Ciurel, Gabriel-Mugurel Dragomir and Vasile Gherheș is an extremely useful resource for the decision makers in the educational, socio-economic, engineering, diplomatic and political field because they are the ones that could adapt the development

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[13] Holly Schroth, "Are You Ready for Gen Z in the Workplace?" in *California Management Review*. 61(3), 2019, available at: https://cmr.berkeley.edu/assets/documents/sample-articles/61-3-schroth.pdf (Last access: January 2022).

[14] Cismariu and Dragomir in Cernicova-Bucă et al., 181.

[15] Cernicova-Bucă et al., 232.

[16] Ibid., 233.

strategies to the community's needs. Furthermore, the book is remarkable for the novelty brought into the Romanian society, some of its most relevant benefits being summarised by the authors at the end of the book:

> "At the same time, the book is an invitation to reflect on current educational strategies, on career orientation plans, on the pursuit of employment and school-to-work transition, and even on the relationship between educational institutions and major employers on recruitment strategies and benefit packages that they offer to graduates of Romanian technical universities. The book is also an important pedagogical tool, to help engineering students consider whether they are conscious of their values, chances and choices as emerging adults and professionals-to-be. It is possible that the maps of values and expectations of the students could be used to help engineering employees and employers check their assumptions and reflect on their roles and impact within society. Most of all, the authors hope to fuel the public debate on the future of the engineering profession in Romania, on retaining and return policies, to reduce the migration wave and the loss of highly skilled labour, vital for the country's sustainable development."[17]

Considering all this, the research results presented in the book are extremely valuable for the development of the Romanian society and the global one alike in the direction established by the policy makers.

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[17] Ibid., 233.