

# A Chance for Engineers – Technology Entrepreneurship

Milena Damnjanović<sup>1\*</sup>

<sup>1</sup>University of Kragujevac, Faculty of Technical Sciences Čačak, Serbia

\*[milena.damnjanovic@ftn.kg.ac.rs](mailto:milena.damnjanovic@ftn.kg.ac.rs)

**Abstract:** *Technological inventions are often results of thorough research. Identifying inventions' market potential and preparing them for market commercialization are critical tasks, but they require development of entrepreneurial mindset and skills, knowledge about market, finance, how to start a business venture. Entrepreneurial education is necessary in order to get students of technical and engineering faculties involved in entrepreneurial activities. Technology entrepreneurship education requires introduction of entrepreneurship content in the curriculum of existing engineering study programs. Technology entrepreneurship could be a chance for engineers' self-employment, as youth unemployment and inactivity are serious problem especially in developing countries.*

**Keywords:** *technology entrepreneurship, engineers, skills and knowledge*

## 1. INTRODUCTION

Entrepreneurship is vital for economic growth in especially in developing countries. Entrepreneurship makes the economy more competitive and more innovative. Commercialization of new ideas improves productivity and creates wealth. New companies, especially small and medium, are great source of new jobs. Unemployment of youth and their inactivity at labor market are major problems, especially in transition economies. In order to exploit advantages of entrepreneurship business model, diverse skills and knowledge about entrepreneurship are required, so faculties are encouraged to introduce entrepreneurial competences in curriculum of almost all areas and courses of study [1]. Entrepreneurial education helps to unleash the entrepreneurial potential of young people. The exposure to entrepreneurship courses increases the intention of university students towards entrepreneurship, compared to the entrepreneurial intention of those who have not taken any courses related to entrepreneurship [2]. Development and implementation of information and communication technology (ICT) resulted in new products and services which created a chance for new form of business venture – technology entrepreneurship. Technological inventions are often results of thorough research and technology entrepreneurship could be a chance for engineers' self-employment. Identifying inventions' market potential and preparing them for market commercialization are critical tasks, but they require development of entrepreneurial mindset and skills, knowledge about market, finance, how

to start a business venture. Entrepreneurial education is necessary in order to get students of technical and engineering faculties involved in entrepreneurial activities.

## 2. ENTREPRENEURSHIP

Key factor of economic development based on innovativeness in European Union (EU) is considered to be entrepreneurship. Schumpeter (1934) explained entrepreneurship as a key process through which the economy as a whole is advanced [3]. European Commission defined entrepreneurship as an individual's ability to turn ideas into action. It includes creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to achieve objectives [4]. Entrepreneurship also refers to creation of new values through creative combination of business resources.

There are different types of entrepreneurship, which differs depending on the primary motives used for conducting of entrepreneurial venture, used resources, concepts applied in the relevant sector of economy. In recent years, the phenomenon of technology entrepreneurship has attracted the interest of researchers and policy makers that recognized its positive effect on economic development [5].

## 3. TECHNOLOGY ENTREPRENEURSHIP

Over the last three decades, technology entrepreneurship / technological entrepreneurship / technoentrepreneurship has become an increasingly important global phenomenon [6]. It is

important for growth, differentiation and competitive advantage.

Technology entrepreneurship is an investment in a project that assembles and deploys specialized individuals and heterogeneous assets that are intricately related to advances in scientific and technological knowledge for the purpose of creating and capturing value for a firm [7]. European commission defined technology entrepreneurship as forming new ventures and transforming existing businesses by developing new digital technologies and/or new usages of such technologies [8]. Some authors defined technology entrepreneurship as the interface of two well-established, but related fields—entrepreneurship and technological innovation [5]. Technology entrepreneurship is critically concerned with technical innovations and the nascent markets and new products they often enable. It exists when developments in science or engineering constitute a core element of the opportunity that enables the emergence of a venture, market, cluster, or industry [9]. Technology entrepreneurship involves a process of industrial innovation, technology transfer and the commercialization of innovative ideas [10].

Technoentrepreneurship is about [6]:

- Operating small businesses owned by engineers or scientists
- Finding problems or applications for a particular technology
- Launching new ventures, introducing new applications
- Exploiting opportunities that rely on scientific and technical knowledge
- Working with others to produce technology change.

Technology entrepreneurship is a future trend in the era of the industrial revolution. It requires innovation and individuals who understand ICT. Changes in technology produce opportunities where entrepreneurs or entrepreneurial organizations can properly exploit and explain how entrepreneurial behavior can be a driver of change in adopting business technology. It talks about the combined concepts of creativity, innovation, entrepreneurship and technology [10].

Technology entrepreneur/ technopreneurs can be defined as an adult entrepreneur who has hybrid competence and who uses technology to create something new for modernization or some innovation [11]. They are individuals who have expertise in mastering technology so they can see business opportunities in the field of technology. They must succeed at two major, but fundamentally different, tasks: ensuring that the technology actually works and satisfy customers' needs, and that it can be sold for profit and provide benefits economically, socially and environmentally [6].

Technology entrepreneurs have more technical skills and competences than non-technical ones. One important step in the new venture success is the transformation of the entrepreneurial mind into managerial one. Technology entrepreneurs have to understand how their businesses will evolve and the importance of managerial skills, and the most important strategic oriented mindset [12]. They are motivated not only with an opportunity to earn, but also by an opportunity to launch an innovative product or solve social problem [13].

Technology entrepreneurship that necessarily deals with implementation of technological change in organization, implies [14]:

- Activities of research and development directed towards the development of new technology products, services and processes, modification and improvement of existing products (vertical technology transfer)
- Activities of acquisition of already developed, new technologies through different business arrangements and transactions (horizontal technology transfer).

Technology entrepreneurship in some point is wider concept from the concept of entrepreneurship, because it refers to entrepreneurship in vertical and horizontal technology transfer, not only horizontal where entrepreneurs see the opportunity (new technology) and bring it to the market [14]. Vertical technology transfer refers to the whole chain of activities which lead to development and implementation of new technology, which means that it involves activities of research and development. In order to monitor and analyze progress of technology entrepreneurship, some indicators must be identified. The most important technology entrepreneurship indicators are research and development expenditure (for vertical technology transfer) and gross fixed capital formation/investment (for horizontal technology transfer), both given as a percentage of gross domestic product (GDP) [14].

The indicators of technology entrepreneurship and the position of Serbia, comparing to the EU, the world and former Yugoslav countries, were analyzed for the period 2008-2018. Data was collected from World Bank reports [15, 16] for the period from 2008 till 2018.

Research and development (R&D) expenditure in Serbia, as percent of GDP, was given at Table 1 – part 1 and part 2. A trend of this indicator was given at Chart 1. This indicator was compared with figures in EU and in the World.

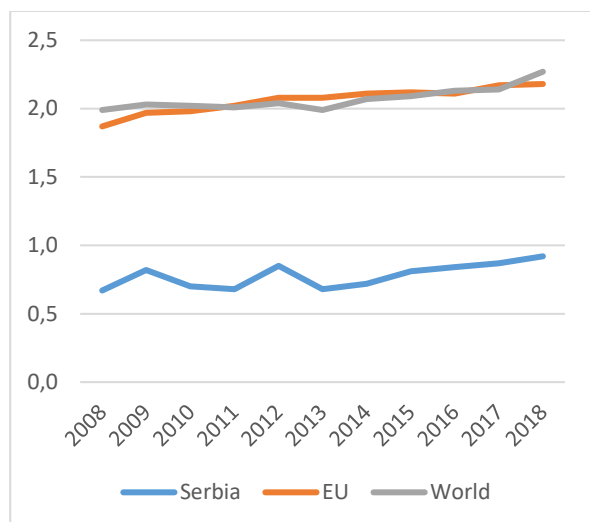
Table 1. R&D expenditure (% of GDP) in Serbia, EU and World during 2008-2018 (part 1)

	2008	2009	2010	2011	2012
<b>Serbia</b>	0,67	0,82	0,70	0,68	0,85
<b>EU</b>	1,87	1,97	1,98	2,02	2,08
<b>World</b>	1,99	2,03	2,02	2,01	2,04

Table 1. - part 2

	2013	2014	2015	2016	2017	2018
<b>Serbia</b>	0,68	0,72	0,81	0,84	0,87	0,92
<b>EU</b>	2,08	2,11	2,12	2,11	2,17	2,18
<b>World</b>	1,99	2,07	2,09	2,13	2,14	2,27

Chart 1. R&amp;D expenditure (% of GDP) in Serbia, EU and World



From Chart 1 it could be concluded that Serbian R&D expenditure were lower than 1% of GDP, which puts Serbia in the group of countries with smallest expenditures in R&D, in the world and in the EU. Serbia was far behind in EU when it comes to investment in R&D, but encouraging fact was that these investments were constantly growing since 2013 and that they were almost 1% of GDP in 2018.

Countries, that invested the most in R&D, had dedicated more than 4% of GDP for R&D (Israel and Korea). In Europe, Austria, Germany, Denmark and Sweden invested more than 3% of GDP in R&D.

Comparing to the countries that used to be part of Yugoslavia, Slovenia invested more than double amount in R&D than Serbia, and Croatia was almost at the same level. Other countries were far behind Serbia. Research and development expenditure in former Yugoslav countries are presented in Table 2 – part 1 and part 2.

Table 2. R&amp;D expenditure (% of GDP) in former Yugoslav countries (part 1)

	2008	2009	2010	2011	2012
<b>Bosnia and Herzegovina</b>	0,02	0,02			0,27
<b>Croatia</b>	0,88	0,84	0,74	0,75	0,75
<b>North Macedonia</b>	0,22	0,20	0,22	0,22	0,33
<b>Montenegro</b>				0,31	
<b>Serbia</b>	0,67	0,82	0,70	0,68	0,85
<b>Slovenia</b>	1,63	1,82	2,06	2,42	2,57

Table 2. – part 2

	2013	2014	2015	2016	2017	2018
<b>Bosnia and Herzegovina</b>	0,32	0,26	0,22	0,22	0,20	0,20
<b>Croatia</b>	0,81	0,78	0,84	0,86	0,86	0,97
<b>North Macedonia</b>	0,44	0,52	0,44	0,44	0,36	0,36
<b>Montenegro</b>	0,37	0,36	0,37	0,32	0,35	0,37
<b>Serbia</b>	0,68	0,72	0,81	0,84	0,87	0,92
<b>Slovenia</b>	2,58	2,37	2,20	2,01	1,87	1,94

The second analyzed indicator of technology entrepreneurship was gross fixed capital formation/investment, as percentage of GDP. This indicator is relevant for horizontal technology transfer. This indicator was presented in Table 3 – part 1 and part 2 for the period 2008 – 2018. The data showed the value of investments in Serbia, EU and in the world. The trend of these investment was given in Chart 2.

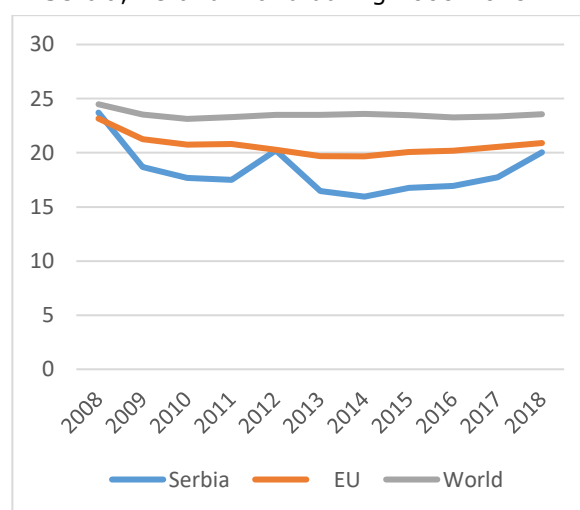
Table 3. Gross fixed capital formation (% of GDP) in Serbia, EU and World during 2008-2018 (part 1)

	2008	2009	2010	2011	2012
<b>Serbia</b>	23,71	18,69	17,68	17,51	20,21
<b>EU</b>	23,16	21,25	20,75	20,82	20,29
<b>World</b>	24,48	23,52	23,13	23,29	23,51

Table 3. – part 2

	2013	2014	2015	2016	2017	2018
<b>Serbia</b>	16,47	15,95	16,77	16,95	17,75	20,05
<b>EU</b>	19,68	19,67	20,06	20,19	20,54	20,89
<b>World</b>	23,49	23,59	23,48	23,26	23,36	23,56

Chart 2. Gross fixed capital formation (% of GDP) in Serbia, EU and World during 2008-2018



From Chart 2 it could be concluded that gross fixed capital investments in Serbia were growing since 2012, and that they are close to European average. This indicator is a good sign of conditions improvement of for technology entrepreneurship

development. Comparing to former Yugoslav countries, the level of gross fixed capital investments was almost equal in all countries, except Montenegro where these investments were significantly higher than in all other countries.

#### **4. THE ROLE OF UNIVERSITIES IN TECHNOLOGY ENTREPRENEURSHIP DEVELOPMENT**

An important element of engineering education is the use of laboratories and workshops in the development and application of technical products and systems. This part of the problem-based focus of engineering education is essential in the development of engineering-related desired learning outcomes [17]. The use of laboratories and workshops, creates a reference to real-world problems and contextualizes learning content and objectives in application-oriented scenarios. For instance, this could happen through the use of new technical equipment, software development, and exercises in prototype development that imitates the activities and tasks of potential future engineering professions. For example, professional engineers could give important feedback and support for development of a technical prototype which creates an in-depth learning experience for students that goes beyond classroom learning. Actual hands-on experience is especially important in the development and application of tangible products and services, which is often a shared focus of engineering education and technology entrepreneurship [17]. Thus, the interaction with appropriate spaces and practice is essential in the development of capabilities for technology entrepreneurship. This applies not only to the development of technical products and services, but also to the process of identifying and evaluating market opportunities for the respective products and services.

Collaboration between universities, research centers, start-ups, corporations, small and medium enterprises and other regional entities is very important to foster innovation, know - how transfer and human resource development [12]. The benefits characteristic for science and technology would not be exploited until they are transformed to products and services through innovation and diffusion.

Start-ups can be used as a tool for actualizing students' professional competencies, but there are several conditions for its success. The university should take the initiative to create a regional start-up ecosystem, create a university entrepreneurial network that includes students and graduates, open its own funding platform, and launch a start-up factory [18]. Start-up firms which start as small and medium sized enterprises are considered to be the driving force of the economy, both in developing and developed countries [10].

Universities also have an important role of spin-off generators. Students can play a significant role in the activation of academic spin-offs that commercialize university research, so there is a need for development of students' skills and capabilities for technology entrepreneurship. Many times innovation dies because of lack of supports. Many engineering students are doing so many innovative things but most of the time they end up as a certificate on a piece of paper as they do not find any support to commercialize their ideas [19].

Engineering students can play a major role in developing new technological firms. However, entrepreneurship courses are not well spread in the engineering schools, the courses should not focus solely on business plan development, but they should also enhance the entrepreneurial attitudes, intentions, and awareness among students [20].

Universities can also support entrepreneurship education by providing extra-curricular activities such as the participation in entrepreneurial competitions and associations in addition to internships. It could be wise to create teams consisted from students from different departments, engineering and management for example, so the team could have more perspectives in problem solution and creating a venture. That way all students will be given a chance to become entrepreneurs.

While engineering education had a clear focus on the development and application of technology without any relation to market contexts, entrepreneurship education pursued the objective to create new products, services, and ultimately ventures. Technology entrepreneurship education aims to bridge this gap between the disciplines with the objective to develop entrepreneurial knowledge and competences along in-depth understanding of technology [17].

Entrepreneurship education has to be integrated with the normal curricular being taught to engineering students.

#### **5. TECHNOLOGY ENTREPRENEURSHIP EDUCATION**

Technology entrepreneurship education combines concepts from technology commercialization and entrepreneurship. It directly connects the development of the technology with its commercialization and thereby suggests a path towards effective technology transfer of promising research developments [21]. While engineering education in the technical faculties had its focus on technology creation and development, entrepreneurship education in the business and management faculties promoted the commercialization of products or services through the creation of new ventures. Cooperation between universities and companies is important, because it

allows to explore and test innovative knowledge transfer. Such cooperation will allow students, at the educational level, to become more familiar with work at enterprises or to see their functioning from the inside, which in the future can help them to start their own business.

Four characteristics are necessary for an effective teaching model in technology entrepreneurship education. The teaching model need to be real, intensive, interdisciplinary and iterative [21]. *Real* means that students' projects can become new ventures by the end of the education; *intensive* means there is exposure to several experiences (including setbacks and failures) in a short period of time; *interdisciplinary* implies a diversity of skills not only in the teams, but also in the tasks that need to be accomplished; and *iterative* as in offering opportunities to revise and learn through multiple iterations of the process activities.

Technology entrepreneurship education focuses on increasing the entrepreneurial engagement and mind-set of students that had previously none or only limited experience with entrepreneurship [17]. This way an option for technology transfer and commercialization could be made.

Technology entrepreneurship education occurs either through the introduction of entrepreneurship content in the curriculum of existing engineering programs or the creation of entirely new programs that focus on competences that utilize the intersection between engineering and business [17]. That way development and application of technology are provided, but also it puts the respective technologies into a market context.

## 6. THE NECESSITY OF ENTREPRENEURSHIP EDUCATION

Entrepreneurship education provides new knowledge, skills and attitudes relevant for self-employment, active citizenship and new jobs creation. It empowers people with capabilities to transform ideas into actions, which requires creativity, initiative and risk taking, planning and project management in order to fulfill defined goals [22]. The main aim of entrepreneurship education is to develop all necessary entrepreneurial skills for establishing the performance specifics of big, middle and small companies that will be from the risks and will generate an expected level of profit on annual basis [23].

In the pursuit of their goals, entrepreneurs commonly use competences like creativity, innovation, problem-solving, risk-taking and pro-activity; these competences can generally be acquired and developed [24]. Entrepreneurship Competence study (EntreComp) defines entrepreneurship as a transversal competence, which applies to all spheres of life: from nurturing personal development, to actively participating in

society, to (re)entering the job market as an employee or as a self-employed person, and also to starting up ventures [25]. Flexibility, innovativeness, negotiation, among other competences, become necessary, so education of engineers needs to prepare students for economy where they will be working [26]. Entrepreneurial competences enable individuals to develop their own personal development, to find their own place at labor market, to start own entrepreneurial ventures [27].

Entrepreneurship education should raise students' awareness of entrepreneurship as possible career options, as well as provide specific business skills and knowledge about starting and running a business. Entrepreneurial orientation can be affected greatly by the education process. Entrepreneurship should improve graduates' attitudes towards self-employment, risk taking, creative thinking, as well as the skills necessary to manage newly created business projects, and not just to train students in the functions and roles of entrepreneurship [28].

Entrepreneurial education should be a part of all forms of education (formal and informal and non-formal) in order to spread entrepreneurial initiative at all forms of life and work of people, because the benefits from entrepreneurship education are multiple [27].

## 7. CONCLUSION

The importance of entrepreneurship increases the responsibility of universities in providing students with adequate entrepreneurial skills and mindset.

Technology entrepreneurship could be a chance for engineers' self-employment. In 2019 the unemployment rate of youth age 15 – 24 was 27,5%, but even bigger problem was the youth inactivity rate which was 70,4%, which was almost the same and the year before [29]. National Youth Strategy of Serbia 2015-2025 promotes entrepreneurship education at all levels of formal education and development of programmes for teaching entrepreneurship competences and financial literacy as part of educational plans and programs [30]. Also, there are recommendations for creation of business development support centers at universities and local business incubators for start-ups that could help commercialization of technology innovations. Technology entrepreneurship represents a promising option for universities to commercialize technology research and contribute directly to communities. More interactions between research groups, technology venture and support organizations such as university incubators, accelerators and science and technology parks are necessary in order to help students achieve first commercial success with their innovations.

## REFERENCES

- [1] Mesquita, C., Lopes, R.P., Bredis, K. (2016). Entrepreneurship in higher education as a horizontal competence. In Peris-Ortiz, M., Gómez, J.A., Vélez-Torres, F., Rueda-Armengot, C. (ed.) *Education Tools for Entrepreneurship – Creating an Action-Learning Environment through Educational Learning Tools*, pp. 223-243, Springer International Publishing Switzerland
- [2] Abualbasal, A.M., Badran, R.E. (2019). From course project to entrepreneurship: the case of engineering students at Princess Sumaya University for Technology. *Journal of Entrepreneurship Education*, 22(5)
- [3] Austin, J., Stevenson, H., Wei-Skillern, J. (2006). Social and commercial entrepreneurship: same, different or both? *Entrepreneurship: Theory and Practice Journal*, vol. 30, n. 1, pp. 1-22
- [4] European Economic and Social Committee. (2006). *Implementing the community Lisbon Programme: fostering entrepreneurial mindsets through education and learning*. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions. COM (2006) 33 final, 13 February 2006. Available at [http://aei.pitt.edu/42889/1/com2006\\_0033.pdf](http://aei.pitt.edu/42889/1/com2006_0033.pdf)
- [5] Mosey, S., Guerrero, M., Greenman, A. (2017). Technology entrepreneurship research opportunities: insights from across Europe, *The Journal of Technology Transfer*, Vol. 42, Iss. 1, pp. 1-9
- [6] Baporikar, N. (2015). Distinctiveness of techno-entrepreneurship, *International Journal of Strategic Information Technology and Applications*, 6(1), pp. 15-25
- [7] Bailetti, T. (2012). Technology entrepreneurship: overview, definition and distinctive aspects, *Technology Innovation Management Review*, February 2012, pp. 5-12.
- [8] Eliakis, S., Kotsopoulos, D., Karagiannaki, A., Pramataris, K. (2020). Survival and growth in innovative technology entrepreneurship: a mixed-methods investigation. *Administrative Sciences*, Vol. 10, Iss. 3, 39; <https://doi.org/10.3390/admsci10030039>
- [9] Beckman, C., Meyer, A., Kotha, S., Rajagopalan, N. (2012). Technology entrepreneurship, *Strategic Entrepreneurship Journal*, June 2012, <https://doi.org/10.1002/sej.1134>
- [10] Mahmud, M., Akinwale, Y.O., Khan, R.A., Alaraifi, A. (2019). Techno entrepreneurship adoption: an intention based assessment study of start-ups in the Kingdom of Saudi Arabia. *Journal of Entrepreneurship Education*, 22(5)
- [11] Machmud, A., Suwatno, Nurhayati, D., Aprilianti, I., Fathonah, W.N. (2019). Effect of self-efficacy ICT on technopreneurship intention of technopreneurial learning mediation: the case young generation in Indonesia. *Journal of Entrepreneurship Education*, 23(1)
- [12] Roja, A., Nastase, M. (2014). Technology entrepreneurship and entrepreneurial strategies, *Proceedings of the 8th International Management Conference "Management Challenges for Sustainable Development"*, pp. 107-117 November 6th-7th, 2014, Bucharest, Romania
- [13] Nazarov, M., Butryumova, N., Sidorov, D. (2017). Development of technology entrepreneurship in a transition economy: an example of the Russian region with high scientific potential, *DIEM: Dubrovnik International Economic Meeting*, Vol. 3 No. 1, pp. 89-104
- [14] Levi Jaksić, M., Marinković, S., Kojić, J. (2013). Održivo tehnološko preduzetništvo i razvoj, U Levi Jakkšić, M., Lečić-Cvetković, D., (ur.) *IX Skup privrednika i naučnika SPIN '13 Nova industrijalizacija, reinženjering i održivost – zbornik radova*, str. 61-68. Beograd, 5-6. novembar 2013. Univerzitet u Beogradu, Fakultet organizacionih nauka
- [15] World Bank - Research and development expenditure (% of GDP), Available at [https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?end=2018&name\\_desc=false&start=2008](https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?end=2018&name_desc=false&start=2008)
- [16] World Bank - Gross fixed capital formation (% of GDP), Available at <https://data.worldbank.org/indicator/NE.GDI.FTOT.ZS?end=2019&start=2008>
- [17] Kleine, K. (2020). Technology entrepreneurship - enriching entrepreneurship education. In *Encyclopedia of Educational Innovation*. Springer Nature, DOI: 10.1007/978-981-13-2262-4\_172-1
- [18] Mutalimov, V., Volkovitckaia, G., Buymov, A., Syzdykov, S., Stepanova, D. (2020). Entrepreneurship education: Start-up as a tool for actualizing student's professional competencies. *Journal of Entrepreneurship Education*, 23(1)
- [19] Bulsara, H., Gandhi, S., Porey, P.D. (2008). Techno-innovation to techno-entrepreneurship through technology business incubation in India: an exploratory study - *Proceedings of presentation papers the 5th International Conference on Innovation & Management*. pp. 56-67, December 10-11, 2008, UNU-MERIT, MAASTRICHT, The Netherlands
- [20] Abualbasal, A.M., Badran, R.E. (2019). Students' attitude towards entrepreneurship at Princess Sumaya University for Technology. *Journal of Entrepreneurship Education*, 22(1)
- [21] Kleine, K., Giones, F., & Tegtmeyer, S. (2019). The Learning Process in Technology Entrepreneurship Education - Insights from an Engineering Degree. *Journal of Small Business Management*, 57(SI), pp. 94-110
- [22] European Commission (2011). *Entrepreneurship Education: Enabling Teachers as a Critical Success Factor (A report on Teacher Education and Training to prepare*

- teachers for the challenge of entrepreneurship education), Bruxelles: European Commission
- [23] Akhmetshin, E.M., Mueller, J.E., Chikunov, S.O., Fedchenko, E.A., Pronskaya, O.N. (2019). Innovative technologies in entrepreneurship education, *Journal of Entrepreneurship Education*, 22(1)
- [24] Edwards-Schachter, M., Sánchez-Ruiz, L.M., Tovar-Caro, E., Ballester-Sarrias, E. (2009). Engineering Students' Perceptions of Innovation and Entrepreneurship Competences. 39th ASEE/IEEE Frontiers in Education Conference, October 18 - 21, 2009, San Antonio, Texas, USA. In *Proceedings - Frontiers in Education Conference - Imagining and Engineering Future CSET Education* (pp. 1-5), Institute of Electrical and Electronics Engineers. Available at <https://www.researchgate.net/publication/224088942>
- [25] Bacigalupo, M., Kampylis, P., Punie, Y., Van den Brande, G. (2016). *EntreComp: The Entrepreneurship Competence Framework*. Luxembourg: Publication Office of the European Union. Dostupno na [http://publications.jrc.ec.europa.eu/repository/bitstream/JRC\\_10158\\_1/Ifna27939en.pdf](http://publications.jrc.ec.europa.eu/repository/bitstream/JRC_10158_1/Ifna27939en.pdf)
- [26] Bjekić, D., Stojković, M., Đorić, B., Damnjanović, M., Aleksić, V. (2019). *Priručnik za buduće nastavnike: o preduzetničkom obrazovanju i profesionalnom razvoju*. Čačak: Fakultet tehničkih nauka
- [27] Bjekić, D., Stojković, M., Kuzmanović, B. i Rendulić, G. (2017). Preduzetničko obrazovanje uokvireno profesionalnim razvojem nastavnika, u A. Veljović (ur.). *Zbornik radova ITOP2017* (str. 17-30), Čačak: Fakultet tehničkih nauka
- [28] Demin, S.S., Lukyanova, A.V., Vershitsky, A.V. (2019). Trends in the technology start-ups - integration in the educational process of future entrepreneurs, *Journal of Entrepreneurship Education*, 22(4)
- [29] Republički zavod za statistiku. (2020). *Bilten - Anketa o radnoj snazi u Republici Srbiji 2019*, Beograd, available online at <https://publikacije.stat.gov.rs/G2020/Pdf/G20205658.pdf>
- [30] Ministry of Youth and Sports. (2015). *National Youth Strategy 2015-2025*, Available at <http://mos.gov.rs/public/ck/uploads/files/Dokumentacija/Omladina/zakoni-i-strateska-dokumentacija/Nacionalna%20strategija%20za%20mlade%20-%20ENG.pdf>