

**СЕКЦІЯ 1. БІЗНЕС-СЕРЕДОВИЩЕ МАЙБУТНЬОГО:  
ТЕХНОЛОГІЧНІ ТА РИНКОВІ ТРЕНДИ / FUTURE BUSINESS  
ENVIRONMENT: TECHNOLOGICAL AND CONSUMER TRENDS**



**Gagnidze Ineza, Ph.D, Associate Professor,**

**Faculty of Economics and Business**

**Ivane Javakhishvili Tbilisi State University**

[ineza.gagnidze@tsu.ge](mailto:ineza.gagnidze@tsu.ge)

**FUTURE CHALLENGES AND PROBLEMS OF DEVELOPMENT OF THE  
CIRCULAR ECONOMY BUSINESS MODELS**

*Abstract. The paper discusses the changes and challenges expected in the digital era and the role of developing trending skills and entrepreneurial competencies among students in improving the business environment. University TTOs provide the fastest way to achieve the above goal with minimal costs. They can play a special role in the development of future circular economy business models (REduce, REuse, REmake, REcover, RENew).*

*Keywords:* Industry 4.0, entrepreneurial university, TTO, entrepreneurship competence, circular economy business models.

In 2018 the World Economic Forum published several reports, where the main issues are connected with the Fourth Industrial Revolution (4IR). “Across all industries, by 2022, growth in emerging professions is set to increase their share of employment from 16% to 27% (11% growth) of the total employee base of company respondents, whereas the employment share of declining roles is set to decrease from currently 31% to 21% (10% decline)” (1, viii). “The estimates suggest that at least 54% of all employees will require reskilling and upskilling by 2022. Of these, over a third will require more than six months of additional training” (2, 26).

Gaining the skills needed for employment is essential for mitigating the effects of the above-mentioned changes in the labor market. Table 1 illustrates top 3 trending skills 2022, their competencies and descriptions from We Forum reports prepared for 4IR. The report employed the Occupational Information Network (O\*NET) framework for its categories of analysis for jobs, skills and tasks. Therefore, developing the competencies needed in the future and preparing appropriate workforce for business sector are challenges for the education system.

**Table 1: Top three trending skills 2022 and classification of skills used, based on O\*NET content model**

Trending skills (competency bundle), top 3, 2022	Competencies, O*NET	Description
Analytical thinking and innovation	Analytical Thinking	Job requires analyzing information and using logic to address work-related issues and problems.
	innovation	Job requires creativity and alternative thinking to develop new ideas for and answers to work-related problems.
Active learning and learning strategies	Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.
	Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.
Creativity, originality and initiative	Initiative	Job requires a willingness to take on responsibilities and challenges.
	Creativity	Workers on this job try out their own ideas.
	Responsibility	Workers on this job make decisions on their own.
	Autonomy	Workers on this job plan their work with little supervision.
	Originality	The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.

*Source: 1, 12; 30.*

In these terms, development of entrepreneurship education and entrepreneurship competence are of critical importance. The survey conducted in Denmark in 2011 showed that “Over 29% of the entrepreneurship students and over 11% of the ordinary students are actively trying to start up a new business. These are very high levels for both of the groups compared to the population on an average, where this share is 2.7%”. (3 6) „Training in entrepreneurship often encourages desire and especially skills for innovation and start-up. 60% of the respondents answered that their skills in starting a business had improved and 43% said they were more motivated for doing so“ (3,8). We consider that some of the results of the study of entrepreneurship program graduates conducted by Charney and Libecap (2000) are quite interesting, in particular:

- “On average, graduates of the Berger Entrepreneurship Program were three times more likely to be involved in the creation of a new business venture than were their non-entrepreneurship business school cohorts;
- Controlling for the personal characteristics of the graduates and various environmental factors, entrepreneurship education increased the probability of an individual being instrumentally involved in a new business venture by 25% over non-entrepreneurship graduates;
- Entrepreneurship graduates received an average annual income that was 27% higher than the average annual income of non-entrepreneurship graduates” (4, 2-3).

There is a 10-year gap between the studies conducted in the US and in Denmark. However, the results of both indicate the huge importance of entrepreneurial education in the development of business environment.

The development of the entrepreneurial capacity of European citizens and organisations is one of the key policy objectives for the EU and Member States. According to Science for Policy report by the Joint Research Centre the EntreComp Framework is made up of 3 competence areas: “Ideas and opportunities”, “Resources” and “Into action”. “EntreComp defines entrepreneurship as a transversal competence. It builds upon a broad definition of entrepreneurship that hinges on the creation of cultural, social or economic value. It thus embraces different types of entrepreneurship, including intrapreneurship (An intrapreneur is someone within a company that takes risks in an effort to solve a given problem), social entrepreneurship, green entrepreneurship and digital entrepreneurship” (6, 5).

One more issue we would like to focus on is university TTOs. Researches by well-known scholars indicate the efficiency and other benefits of TTOs despite their diversity and various policies. In particular, Schoen et al. (2016) based on 16 case studies of universities from six European countries (Belgium, France, Germany, Switzerland, the Netherlands, and the United Kingdom),

identify “four main types of TTOs: (1) classical TTO; (2) autonomous TTO; (3) discipline-integrated Technology Transfer Alliance; and (4) discipline-specialized Technology Transfer Alliance” (6, 435). Fini et al. (2017) based on three European countries (Italy, Norway, and the UK) cases, found that, “three countries adopting differing approaches to framework conditions, to test whether national and university level initiatives have an influence on the number of spin-offs created and the quality of these spin-offs...authors find that changes in the institutional framework conditions at both national and university levels are conducive to the creation of more spin-offs, but that the increase in quantity is at the expense of the quality of these firms” (7, 361). Yuan et al. (2016) findings in China (829 universities cases) reveal “(1) that universities create more ideas and capture more licensing value through dynamic management and active orchestration of assets, (2) that a developed factor market accelerates value creation and commercialization, and (3) that a developed institutional environment at the subnational level stimulates value creation but inhibits value capture” (8,35). Iqbal et al. (2010) outline that, “in the United Arab Emirates, TTOs are taking an important role in the evolution of a successful spin-off company from innovation to production to sales to sustainable profit” (9, 1).

Sustainable development is one of the challenges faced by the development of business environment. It is worth mentioning that in scientific literature there is active discussion on circular economy. “The circular economy’s central aim is to extend the life of all the goods and materials being bought, sold, used and discarded daily, throughout our societies, in order to curb extraction, pollution and waste”(10, 2). One of the latest researches carried out by Newsweek Vantage indicates that “companies are prioritizing the following strategies and business models: *REduce*, *REuse*, *REmake*, *REcover*, *REnew*” (10, 2). We believe that the cheapest way to develop such business models of the future is to work on them in university TTOs.

Why do we think so? Sustainable development and the development of business models of circular economy require changes in the behavior of individuals, which is impossible without enhancing propaganda and teaching at all levels of the education system. Therefore, the efficiency of university TTOs is conditioned by their functioning in educational space along with research. In this context, rethinking the university system (11, 210) and the formation of entrepreneurial universities gain special importance. Transferring new technologies from foreign countries becomes easy by including these universities into international research programs (12, 419). Such universities create many new spin-offs and clusters around them through the TTOs (13, 189). In this way, they contribute to the region's innovative development (14, 188).

The Georgian scientist-economists also actively discuss the importance of management of Innovations and challenges at HEIs (15, 283; 16), Industry 4.0 challenges (17, 256; 18, 448), use of Internet in higher education (19, 479), problems of Gaining Competitive Advantages in digital era (20, 135), innovative cluster development (21, 219) and other issues related to the formation of future business environment in Georgia.

## References

1. The Future of Jobs Report 2018, Centre for the New Economy and Society. World Economic Forum. Committed to Improving the State of the World. ISBN 978-1-944835-18-7. [http://www3.weforum.org/docs/WEF\\_Future\\_of\\_Jobs\\_2018.pdf](http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf)
2. Globalization 4.0 Shaping a New Global Architecture in the Age of the Fourth Industrial Revolution. World Economic Forum. White Paper, April 2019, available at: [http://www3.weforum.org/docs/WEF\\_Globalization\\_4.0\\_Call\\_for\\_Engagement.pdf](http://www3.weforum.org/docs/WEF_Globalization_4.0_Call_for_Engagement.pdf)
3. FFE-YE. (2012). Impact of Entrepreneurship Education in Denmark - 2011. In L. Vestergaard, K. Moberg & C. Jørgensen (Eds.). Odense: The Danish Foundation for Entrepreneurship - Young Enterprise. [https://eng.ffe-ye.dk/media/202248/impact\\_of\\_entrepreneurship\\_education\\_in\\_denmark\\_2011.pdf](https://eng.ffe-ye.dk/media/202248/impact_of_entrepreneurship_education_in_denmark_2011.pdf)
4. Charney, A. and Libecap, G.D. (2000). "Impact of Entrepreneurship Education," Insights: A Kauffman Research Series (Kauffman Center for Entrepreneurial Leadership) [https://www.unm.edu/~asalazar/Kauffman/Entrep\\_research/e\\_ed\\_grow.pdf](https://www.unm.edu/~asalazar/Kauffman/Entrep_research/e_ed_grow.pdf)
5. Bacigalupo, M., Kampylis, P., Punie, Y., Van den Brande, G. (2016) EntreComp: The Entrepreneurship Competence Framework. Luxemburg: Publication Office of the European Union; EUR 27939 EN; doi:10.2791/593884
6. Schoen, A., Potterie, B. P., Henkel, J. (2014) "Governance typology of universities' technology transfer processes," *The Journal of Technology Transfer*, Springer, vol. 39, No.3, pp. 435-453, (June). DOI: 10.1007/s10961-012-9289-0
7. Fini, R., Fu, K., Mathisen, M.T., Rasmussen, E., Wright, M. (2017) Institutional determinants of university spin-off quantity and quality: A longitudinal, multilevel, cross-country study, Springer, *Small Business Economics*, Vol.48, No. 2, pp.361-391. <http://dx.doi.org/10.1007/s11187-016-9779-9>
8. Yuan, Ch., Li, Y., Vlas C.O., & Peng, M.W. (2016) Dynamic capabilities, subnational environment, and university technology transfer, *Strategic Organization*, Vol. 16, No. 1, pp. 35-60. DOI: 10.1177/1476127016667969
9. Iqbal, F., Hung, P. C.K. and Suaad M.Q.A.M. (2017) A Preliminary Study of Research-Driven University Spin-off Companies in UAE, working paper No. ZU-WP 2017-04-24. Zayed University.
10. Shields, K. (2019) Going Circular: How Global Business is Embracing the Circular Economy. Ed: Cheah, P-K. Newsweek Vantage. Newsweek and Think Big Partners WLL. <https://www.newsweek.com/vantage-how-global-business-embracing-circular-economy-1302720>
11. Vesperi, W. and Gagnidze, I. (2018) Rethink University system: towards Entrepreneurial University, E-Book of Abstract, Fifth Business Systems Laboratory International Symposium, Cocreating Responsible Futures in the Digital Age: Exploring new paths towards economic, social and environmental Sustainability, University "Federico II" of Naples, January 22-24, pp.210-211. ISBN 9788890824265 <http://bslab-symposium.net/Napoli-2018/BOA-BSLAB-Symposium-2018.pdf>

12. Gagnidze, I. (2018), The Role of International Educational and Science Programs for Sustainable Development (Systemic Approach), *Kybernetes*. Vol. 47 Issue: 2, pp. 409-424. <https://doi.org/10.1108/K-03-2017-0114>
13. Gagnidze, I. (2018) From clusters to entrepreneurial universities and vice versa: ways of developing the local economy: a systemic approach. *Int. J. Markets and Business Systems*, Vol. 3, No.2, pp. 181-196; DOI:[10.1504/IJMABS.2018.10011650](https://doi.org/10.1504/IJMABS.2018.10011650)
14. Gagnidze, I. (2016) The Impact of Entrepreneurial Universities on the Innovative Development of Economy. III International scientific and practical conference “Strategic Imperatives of Modern Management”, KNEY, Kiev, 2016, pp. 186-192. <http://wiki.kneu.kiev.ua/bitstream/2010/20956/1/186-192.pdf>
15. Lekashvili, E. (2019). Management of Innovations in Georgian Higher Educational Institutions: Key Problems with Teaching Economic Science. *Marketing and Management of Innovations*, 1, 281-293. <http://doi.org/10.21272/mmi.2019.1-23>
16. Paresashvili, N. & Okruashvili, N. (2019) The Main Challenges of Higher Education System Management in Georgia. . 6th Business Systems Laboratory International Symposium, BORDERS WITHOUT BORDERS: Systemic frameworks and their applications for sustainable well-being in the global era. *BOOK OF ABSTRACTS*, ISBN 9788890824272, Pavia, Italy, Ab.60. <http://bslab-symposium.net/Pavia-2019/BSLAB-%20Book%20of%20Abstract-Pavia-2019.pdf>
17. Gogorishvili I. (2018). Small and Medium Enterprise Perspective in the Development of Digital Economy, E-Book of Abstract, Fifth Business Systems Laboratory International Symposium, Cocreating Responsible Futures in the Digital Age: Exploring new paths towards economic, social and environmental Sustainability, University “Federico II” of Naples, January 22-24, pp.255-257. ISBN 9788890824265 <http://bslab-symposium.net/Napoli-2018/BOA-BSLAB-Symposium-2018.pdf>
18. Papachashvili, N. (2018) Industry 4.0 and its impact on the international trade. IV International scientific and Practical Conference “Strategic Imperatives of Modern Management” (SIMM-2018), Kiev, Ukraine, pp.444-453. <http://ir.kneu.edu.ua/bitstream/2010/24244/1/444-453.pdf>
19. Surmanidze Z., Tsetskhladze M., (2018) Internet in Educational System of Georgia: Challenges, Perspectives, IV International scientific and practical conference “Strategic Imperatives of Modern Management” (SIMM-2018), KNEY, Kiev, pp. 476-482. [https://www.researchgate.net/publication/324679140\\_Internet\\_in\\_Educational\\_System\\_of\\_Georgia\\_Challenges\\_Perspectives](https://www.researchgate.net/publication/324679140_Internet_in_Educational_System_of_Georgia_Challenges_Perspectives) (accessed 22 October 2019).
- 20 Mermanishvili, T. (2019). *Digital Marketing - a Modern Technological Tool for Gaining Competitive Advantages in Global Markets*, Business Systems Laboratory 6th International Symposium, “Borders without Borders: Systematic Frameworks and their Applications for Sustainable Well-being in the Global Era”. University De Pavia, Italy, ISBN: 9788890824272, 2019. pp. 134-139; retrieved from: <http://bslab-symposium.net/Pavia-2019/BSLAB-%20Book%20of%20Abstract-Pavia-2019.pdf>
21. Sepashvili, E. (2018) Innovative Clusters – A Model for Rising International Competitiveness. E-Book of Abstract, Fifth Business Systems Laboratory International Symposium, Cocreating Responsible Futures in the Digital Age: Exploring new paths towards economic, social and environmental Sustainability, University “Federico II” of Naples, January 22-24, pp.219-221. ISBN 9788890824265 <http://bslab-symposium.net/Napoli-2018/BOA-BSLAB-Symposium-2018.pdf>