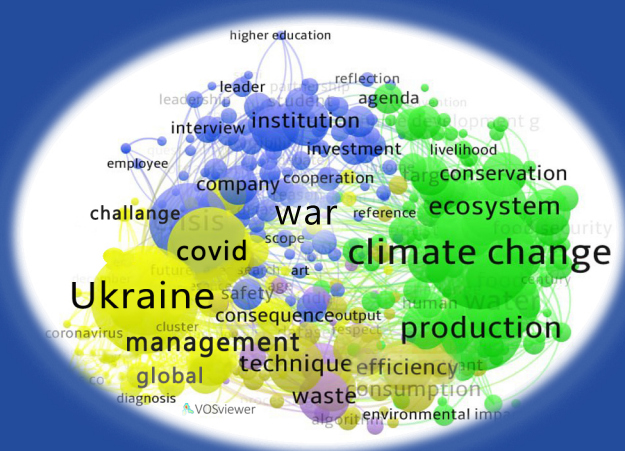


MANAGEMENT

CHALLENGES IN GLOBAL WORLD



MONOGRAPH

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
KYIV NATIONAL ECONOMIC UNIVERSITY
NAMED AFTER VADYM HETMAN

MANAGEMENT: CHALLENGES IN GLOBAL WORLD

MONOGRAPH

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Political, economic and climatic changes in recent years have led to
significant global and local challenges for humanity. The monograph
examines the impact of these challenges on business and industries through
the prism of management transformation in the new normal under
digitalization and the implementation of sustainable development goals.

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Table of contents

Foreword	5
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Chapter 1. Global Challenges & Business Responses

Whither Global Value Chains? Future Trends and the Role of Ukraine	7
<i>Carmela Di Mauro (Italy), Tetiana Sobolieva (Ukraine)</i>	
Hybrid Business Strategy in the Global Data Integration Market	17
<i>Rusheé Ramchuran (United Arab Emirates), Olha Yatsenko (Ukraine), Valeriia Osadchuk (Ukraine)</i>	
Ensuring the Resilience of Domestic Organizations in a Turbulent Environment	33
<i>Mykhailo Sahaidak (Ukraine), Iryna Simshah (Ukraine)</i>	
Management of Investment Security of Enterprises in the Context of Digitalization and Transformation	43
<i>Viktoriia Gonchar (Ukraine), Oleksandr Kalinin (Ukraine)</i>	
Social Responsibility of Business: Global Trends and Modern Practice in the Conditions of Turbulence in Ukraine	67
<i>Borys Moskvyn (Ukraine)</i>	
Constantly Adjusting B2B Sales Interactions? Lessons from the Global Pandemic Crisis	79
<i>Christine Falkenreck (Germany), Grzegorz Leszczyński (Poland), Marek Zieliński (Poland)</i>	

Chapter 2. Management Transformation in the New Normal

Development of Project Management Towards a Hybrid Approach	98
<i>Liudmyla Batenko (Ukraine), Oleksii Dibrova (Ukraine), Yana Vasilieva (Ukraine)</i>	
Strategic Entrepreneurship Model Development	108
<i>Yeliena Prokhorova (Ukraine)</i>	
Marketing Management Transformation: From Predigital to Postdigital Age	119
<i>Iuliia Kostynets (Ukraine), Valeriia Kostynets (Ukraine)</i>	
Non-tariff Measures in Georgia-EU Trade and Management Challenges for Georgian Entrepreneurs	136
<i>Nino Papachashvili (Georgia), Tamta Mikaberidze (Georgia), Marine Tavartkiladze (Georgia)</i>	
The Impact of Digitalization of Buyer-Supplier Communication on Procurement Performance	146
<i>Aleksandra Abramowicz (Poland), Grzegorz Leszczyński (Poland)</i>	

Developing the Organizational-Innovation Culture of the Company in Crisis Situations	159
<i>Kateryna Kandahura (Ukraine), Iryna Mykolaichuk (Ukraine), Olha Salimon (Ukraine)</i>	

Chapter 3. Sustainable Management and Industries Development

Energy Future: Are Hydrogen Supply Chains a Sustainable Option? ..	172
<i>Sofia De León Almaraz (Hungary), Tetiana Sobolieva (Ukraine), Catherine Azzaro-Pantel (France)</i>	

Opportunities and Challenges for Green Energy Development in Georgia .	184
<i>Irina Gogorishvili (Georgia), Taniel Lomia (Georgia)</i>	

Direct Selling Companies: Ready for Global Challenges	193
<i>Svitlana Oborska (Ukraine)</i>	

Methodology for Assessing the Competitiveness of Health Care Institutions: the Case of Ukraine	202
<i>Oleg Sorochnik (Ukraine), Maryana Gvozdz (Ukraine), Natalia Horbal (Ukraine), Nestor Shpak (Ukraine)</i>	

The Concept of Investment Risk Management by Subjects of the Hotel Business in the Conditions of Martial Law	236
<i>Lyudmyla Bovsh (Ukraine), Alla Rasulova (Ukraine)</i>	

Chapter 4. Development of Managerial Skills in the Digital Age

What Should the Assessment of Digital Skills of a Modern Manager Reflect on?	247
<i>Kristine Uzule (Latvia), Irina Kuzmina-Merlino (Latvia)</i>	

Industry 5.0 and Society 5.0 – the Role of the University	255
<i>Ineza Gagnidze (Georgia)</i>	

Educational Institution's Operations Strategy Transformation in the Digitalization Context	264
<i>Olena Shatilova (Ukraine), Kseniia Korotkova (Ukraine), Tetiana Omelianenko (Ukraine)</i>	

Training Environment for Managers' Cross-Cultural Competence Development	282
<i>Olga Banit (Ukraine)</i>	

Universities' Experience of Innovative and Entrepreneurial Activities in Poland and Ukraine.	296
<i>Dmytro Barabas (Ukraine), Oleksandr Olesnevych (Ukraine)</i>	

Distance Learning Opportunities for Academic Writing Course at MBA Program (Case of Ivane Javakhishvili Tbilisi State University) ..	312
<i>Eka Lekashvili (Georgia)</i>	

FOREWORD

In the last three years, the top management of enterprises, institutions and organizations faced new, unprecedented challenges and restrictions, which were mainly due to force majeure. In particular, the challenges associated with the COVID-19 pandemic, which caused the organization of personnel activities and interaction with them in a remote mode, and later, with the full-scale invasion of the territory of Ukraine by the aggressor country, which significantly affected the transformation of approaches to management as state institutions, as well as private business. Aggressive transformation processes taking place in the external environment led to large flows of forcibly displaced persons, caused the relocation of business organizations, state institutions, institutions of higher education, the outflow of highly qualified personnel due to the mobilization and migration of the population from the zones of active hostilities.

All of the above is happening against the background of the daily destruction of critical infrastructure facilities and a reduction in the pace of economic growth and development. At the same time, crisis situations caused a paradigmatic change in management and the formation of new managerial thinking and experience in solving complex challenges. The authors of the monograph "Management: challenges in the global world" paid attention to the study of these relevant issues.

Structurally, the monograph consists of four sections: Global Challenges & Business Responses, Management Transformation in the New Normal, Sustainable Management and Industries Development, Development of Managerial Skills in the Digital Age. The obtained results of scientific research made it possible to raise and investigate theoretical and applied issues, in particular, regarding the development and application of hybrid business strategies, ensuring the stability and social responsibility of organizations in a turbulent environment, the development of organizational and

innovative, entrepreneurial and managerial culture of organizations within the so-called "new normality".

Although the processes of rethinking traditional and new tools and value guidelines of modern management require time and resources, the authors' attempt to conduct an interdisciplinary study of global challenges, sustainable management and development of industries from the perspective of management transformation allows integrating of different scientific problem-solving approaches. Kyiv National Economic University named after Vadym Hetman, and in particular the Management Department, is always ready to build up future scientific cooperation.

A handwritten signature in blue ink, appearing to read 'M. Sahaidak', with a stylized, flowing script.

Mykhailo Sahaidak.

DSc, Professor,
Head of Management Department,
Kyiv National Economic University
named after Vadym Hetman

INDUSTRY 5.0 AND SOCIETY 5.0 – THE ROLE OF THE UNIVERSITY

Ineza Gagnidze

The world is facing immense challenges; finding a sustainable equilibrium between ecological, economic and social concerns, the digital transition and major political developments will be some of the main drivers of change for the new decade. Various well-known international research organizations and institutes, as well as individual researchers, discuss the Fifth Industrial Revolution (IR5.0), Society 5.0 and the digital era issues.

According to the European Commission, in order to remain the engine of prosperity, industry must lead the digital and green transitions. Industry 5.0 provides a vision of industry that aims beyond efficiency and productivity as the sole goals, and reinforces the role and the contribution of industry to society.⁴⁴² European industry is a key driver in the economic and societal transitions. In order to remain the engine of prosperity, industry must lead the digital and green transitions.

Industry 5.0 provides a vision of industry that aims beyond efficiency and productivity as the sole goals, and reinforces the role and the contribution of industry to society. It places the wellbeing of the worker at the centre of the production process and uses new technologies to provide prosperity beyond jobs and growth while respecting the production limits of the planet. Industries can play an active role in providing solutions to challenges for society including the preservation of resources, climate change and social stability. Breque et al., (2021)⁴⁴³ highlight that, skills needs are evolving as fast as technologies. European industries are struggling with skills shortages and educational and training institutions are unable to respond to this demand.

The discussion about Industrial Revolution 5.0 has recently started and has already become an active debate. According to Faruqi (2019)⁴⁴⁴ Society 5.0 is an idea that explains the revolution in people's

⁴⁴² European Commission <https://research-and-innovation.ec.europa.eu>

⁴⁴³ Breque, M., De Nul, L. and Petridis, A. (2021) Industry 5.0. Towards a sustainable, human-centric and resilient European industry. European Commission. R&I paper series. Policy brief. <https://op.europa.eu>

⁴⁴⁴ Faruqi, U. A.I. (2019). "Future Service in Industry 5.0", *Jurnal Sistem Cerdas*, Vol. 2 No. 1, pp. 67-79, <https://doi.org/10.37396/jsc.v2i1>

lives with the development of the fourth industrial revolution. The concept that wants to be presented is how there is a revolution in society that both utilizing technology and also considering humanities aspects. Konno and Schillaci (2021)⁴⁴⁵ review the development of knowledge creation theory in the last quarter-century and how it has contributed to innovation management and looks into social and human aspects of innovation in the era of “Society 5.0”. Cillo *et al.*, (2021)⁴⁴⁶ argue that, during Industry 5.0 transition companies engaged in DIV policies, INC practices and PEMP through education have higher profitability and are more valued by capital markets’ investors. Xu *et al.*, (2021)⁴⁴⁷ think that Industry 4.0 is considered to be technology-driven, whereas Industry 5.0 is value-driven. The co-existence of two Industrial Revolutions invites questions and hence demands discussions and clarifications. Longo *et al.*, (2020)⁴⁴⁸ based on real cases discuss how a design-for-values approach aids in the investigation and mitigation of ethical issues emerging from the implementation of technological solutions and, hence, support the migration to a symbiotic Factory of the Future. Potočan *et al.*, (2021)⁴⁴⁹ suggest incorporation of technology in models of CSR, a regionally grounded solving of individuals’ social problems and changing of CSR’s environmental, social and economic dimensions according to circumstances of Society 5.0. Muller (2020)⁴⁵⁰ argues, that the vision of an innovative, resilient, socio-centred and competitive industry, which respects planetary boundaries and minimises its negative environmental impact, has been labelled

⁴⁴⁵ Konno, N. and Schillaci, C.E. (2021), “Intellectual capital in Society 5.0 by the lens of the knowledge creation theory”, *Journal of Intellectual Capital*, Vol. 22 No. 3, pp. 478-505. <https://doi.org/10.1108/JIC-02-2020-0060>

⁴⁴⁶ Cillo, V., Gregori, G.L., Daniele, L.M., Caputo, F. and Bitbol-Saba, N. (2021), “Rethinking companies’ culture through knowledge management lens during Industry 5.0 transition”, *Journal of Knowledge Management*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JKM-09-2021-0718>

⁴⁴⁷ Xu, X., Lu, Y., Vogel-Heuser, B. and Wang, L. (2021), “Industry 4.0 and Industry 5.0 — Inception, conception and perception”, *Journal of Manufacturing Systems*, Vol. 61, pp. 530-535. <https://doi.org/10.1016/j.jmsv.2021.10.006>

⁴⁴⁸ Longo, F., Padovano, A. and Umbrello, S. (2020), “Value-Oriented and Ethical Technology Engineering in Industry 5.0: A Human-Centric Perspective for the Design of the Factory of the Future”, *Applied Sciences*, Vol. 10 No.12, 4182, pp. 2-25, <https://doi.org/10.3390/app10124182>.

⁴⁴⁹ Potočan, V., Mulei, M. and Nedelko, Z. (2021), “Society 5.0: balancing of Industry 4.0, economic advancement and social problems”, *Kybernetes*, Vol. 50 No. 3, pp. 794-811. <https://doi.org/10.1108/K-12-2019-0858>

⁴⁵⁰ Muller, J. (2020), “Enabling Technologies for Industry 5.0. Results of a workshop with Europe’s technology leaders. Independent Expert Report”, European Commission Directorate-General for Research and Innovation, available at: <https://doi.org/10.2777/082634https://op.europa.eu/en/publication-detail/-/publication/8e5de100-2a1c-11eb-9d7e-01aa75ed71a1/language-en>

Industry 5.0. It opens up many new challenges related to technology, socio-economy, regulation and governance. Very interesting opinions have Chen *et al.*, (2022)⁴⁵¹, Demir *et al.*, (2019)⁴⁵² Grabowska *et al.*, (2022)⁴⁵³; Natsvlishvili *et al.*, (2020)⁴⁵⁴, *etc.*

Sustainability is the most significant global challenge. The UN Sustainable Development Goals provide a holistic agenda addressing this challenge by balancing economic, social and environmental needs. Sustainable development will be the main framework for driving impact through university missions, as universities proactively reflect upon, find and promote solutions in dialogue with society. As EUA argued in its recent report, “more than 70% of respondents regard the creation of interdisciplinary institutes as either very important or important for innovation in the sustainable transition, while more than 90% consider interdisciplinarity to be either very important or important as an enabler of digital innovation” (EUA, 2022, p. 2)⁴⁵⁵.

Researchers predict that focusing on the university will determine success in the Industry 5.0. According to Garaianis and Morawska-Jancelewicz (2022)⁴⁵⁶ this ground-breaking perspective has common points with the objectives of the United Nations Sustainable Development Goals. It also has major implication for universities transformations. Universities are called upon producing knowledge for new technologies and social innovation. In many different parts of the world, policy-makers and industry have grasped the power of universities to accelerate prosperity, prepare a well-trained labour force with advanced-level skills, address wicked social and environmental challenges and to support soft power agendas. Grant

⁴⁵¹ Chen, X., Eder, M. A. and Shihavuddin A.S. (2020). “A concept for human-cyber-physical systems of future wind turbines towards Industry 5.0”, *TechRxiv*, Preprint, <https://doi.org/10.36227/techrxiv.13106108.v1>

⁴⁵² Demir, K.A., Doven, G. and Sezen, B. (2019), “Industry 5.0 and human-robot co-working”, *Procedia Computer Science*, Vol. 158, pp. 688–695, <https://doi.org/10.1016/J.PROCS.2019.09.104>

⁴⁵³ Grabowska, S., Saniuk, S. and Gajdzik, B. (2022). “Industry 5.0: improving humanization and sustainability of Industry 4.0”, *Scientometrics*, Vol. 127, pp. 3117–3144, <https://doi.org/10.1007/s11192-022-04370-1>

⁴⁵⁴ Natsvlishvili, I., Kharaishvili, E. and Lazariashvili, T. (2020). “[Impact of agro tourism on economic development of related sectors in the context of sustainable well-being \(case of Georgia\)](#)”. *International Journal of Markets and Business Systems*, Vol.4 No.2, pp.120 — 139. DOI: [10.1504/IJMABS.2020.113122](https://doi.org/10.1504/IJMABS.2020.113122)

⁴⁵⁵ POSITION EUA response to the European Commission’s New European Innovation Agenda,

July 2022 <https://eua.eu/downloads/publications/eu%20innovation%20agenda.pdf>

⁴⁵⁶ Caravannis, E.G. and Morawska-Jancelewicz, J. (2021), “The Futures of Europe: Society 5.0 and Industry 5.0 as Driving Forces of Future Universities”, *Journal of the Knowledge Economy*, <https://doi.org/10.1007/s13132-021-00854-2>

and Kokkoris (2021)⁴⁵⁷ argue, that universities play a major role in economic, cultural and societal development in various ways. The same challenges are discussed by Gogorishvili (2018)⁴⁵⁸, Kharadze et al., (2021)⁴⁵⁹, Sobolieva et al., (2021)⁴⁶⁰, Seturidze and Topuria (2021)⁴⁶¹, Papachashvili et al., (2021)⁴⁶², Sepashvili (2020)⁴⁶³, etc. So, we can outline that universities are accountable to stakeholders and society. Accountability will be ensured through appropriate governance and continuous exchange with policy makers, civil society, citizens, business and industry and other societal groups, through various university activities.

The situations and profiles of universities across Europe vary and are very much shaped by their specific local, regional and national contexts. Based on more than 100 experts from membership of the European University Association (EUA), the EUA Board, the 33 national rectors' conferences that are members of EUA, and a wide range of external and non-university stakeholders' suggestions the EAU forms some overall external trends:

- The climate crisis in particular and sustainability more broadly are urgent issues;

⁴⁵⁷ Grant, C. and Kokkoris, I. (2021). "University 4.0. University and Research Leadership Forum Drivers of Resilience, Prosperity, and Recovery." Discussion paper. 10th anniversary GFCC. Queen Mary University of London. p.1. <https://www.thegfcc.org/universities-innovation>

⁴⁵⁸ 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>

⁴⁵⁹ Kharadze, N., Giorgobiani, M., Melkoshvili, T., Dzebisauri, L. and Pirtskhalaishvili, D. (2021). "Effective strategies to manage teacher intellectual work productivity in distance learning", *Journal of Eastern European and Central Asian Research (JEECAR)*, Vol. 8 No. 4, pp. 653-665, <https://doi.org/10.15549/jeeecar.v8i4.840>

⁴⁶⁰ Sobolieva, T.O., Holionko, N.G., Batenko, L.P. and Reshetniak, T.I. (2021), "Global technology trends through patent data analysis", in Markopoulos, P., Koranaki, I.P., Slatineanu, L., Cretu, G., Dodun, O. & Mihalache, A.M. (Ed.s), *IOP Conference Series: Materials Science and Engineering* 1037, 012059. doi:10.1088/1757-899x/1037/1/012059.

⁴⁶¹ Seturidze, R. and Topuria, N. (2021), "A way of developing collaboration between universities and businesses in a time of COVID-19", *Kybernetes*, Vol. 50 No. 5, pp. 1661-1678, <https://doi.org/10.1108/K-08-2020-0518>

⁴⁶² Papachashvili, N., Mikaberidze, T., Tavartkiladze M. and Roblek, V. (2021), "Industry 4.0 and the Challenges of Higher Education Programs in the Field of Business Administration", Nata, R. V. (Ed.), *Progress in Education*. Vol. 68 Chapter 7. Nova Science Publishers, Inc., New York, NY, pp. 171-202. DOI: <https://doi.org/10.52305/WPPN2619>.

⁴⁶³ Sepashvili, E. (2020), "Supporting digitalization: Key goal for national competitiveness in digital global economy". *Economia Aziendale Online*, Vol. 11 No. 2, pp. 191-198, DOI: <http://dx.doi.org/10.13132/2038-5498/11.2.191-198>

- Technological developments are changing lives and disrupting labour markets;
- Democracy and political systems are under pressure in all European countries to different degrees
- There is an erosion of the public debate through misinformation;
- The world order is changing and research, innovation and education are an increasingly important factor in geopolitics;
- Persisting social disparities and demographic changes in many European countries put social systems under pressure;
- Many universities face a continuous underfunding challenge;
- The Covid-19 pandemic has accelerated change (EAU, 2021 p 5)⁴⁶⁴.

For the Society 5.0 it is necessary to prepare workforce for the future changes. Furthermore, developing an effective response to upskilling and reskilling is a challenge for universities. To this end, it is necessary to provide students and trainees with the skills necessary for employment. The World Manufacturing Forum has identified a top-10 of skills that will be needed in future manufacturing, namely: “1) digital literacy; 2) AI and data analytics; 3) Creative problem solving; 4) Entrepreneurial mindset; 5) Ability to work physically and psychologically safely and effectively with new technologies; 6) Inter-cultural and -disciplinary, inclusive, and diversity-oriented mindset; 7) Cybersecurity, privacy, and data/information mindfulness; 8) Ability to handle increasing complexity; 9) Communication skills 10) Open-mindedness towards constant change” (WMR, 2019, p. 32-34)⁴⁶⁵.

Considering all the above Garaianis and Morawska-Jancelewicz (2021) developed Socially and digitally engaged model of university in Society 5.0 (see Figure 1). The formation of an effective model is the only clear way for higher education institutions to meet such issues.

According to the authors Level 1 (on the Figure 1) is the Social and sustainable priorities incorporated into university strategy and missions; Level 2 – University leadership focused on protecting academic freedom and autonomy and on future oriented challenges related to digital, green and social transformation; Level 3 – Green and digital culture and literacy of students, academics and administration promoted and integrated with optimal digital tools and

⁴⁶⁴ Universities without walls A vision for 2030. European University Association. February 2021 <https://eua.eu/resources/projects/784-europe%E2%80%99s-universities-2030.html>

⁴⁶⁵ WMF (2019) The WMF's Top Ten Skills for the Future of Manufacturing. <https://worldmanufacturing.org/wp-content/uploads/WorldManufacturingFoundation2019-Report.pdf>

infrastructure. The authors gave 3 key missions as well: 1 key mission: Education (intelligent, Flexible, inclusive, accessible and adaptive learning systems for all generations); 2 key mission: Research (trans and inter-disciplinary); 3 key mission: Third/Fourth missions or public engagement (cross sectoral and multi-actor) 4 Building Power Capital/Super Smart Society for Industry 5.0 and Society 5.0 through co-creation with stakeholders and communities for sustainability and Digital (Social) Innovation.

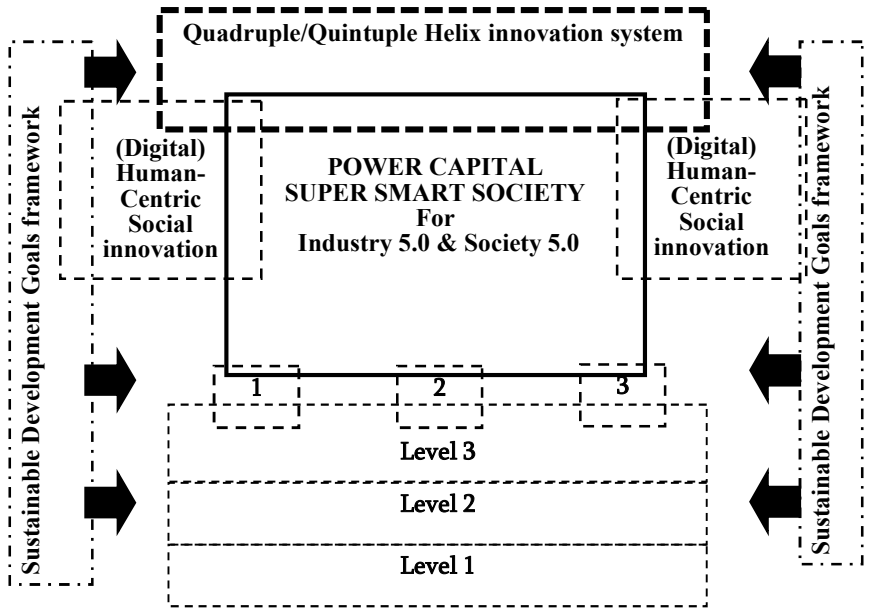


Figure 1. Socially and digitally engaged model of university in Society 5.0

Source: Garaianis and Morawska-Jancelewicz, 2021

The Results of the EUA survey on universities and innovation clearly demonstrate that innovation is already a key priority for universities. However, they also reveal a gap between universities’ strategic attention to innovation and their innovation capacity. The authors find that: University innovation is strongly embedded in far-reaching institutional goals; Resources, in particular funding, staff and space for co-creation, play a key role in meeting university ambitions in the area of innovation; Collaboration in the innovation ecosystems

is seen as very important but partnering with some types of stakeholders remains limited; There is room for further improvement in the development of student entrepreneurial mindsets (Kozirog et al., 2022, p. 15)⁴⁶⁶.

It is obvious that innovation play critical role for the Industry 5.0 and the Society 5.0. In the EUA study regarding the role of universities in regional innovation ecosystems the author finds that the roles and mutual expectations of the actors have transformed in recent years, and that these transformations result in seven profound changes (perhaps even paradigm shifts), in the conception and organisation of innovation:

1. From linear to reiterative innovation;
2. From closed to open innovation;
3. From technological to systemic challenge-driven innovation;
4. From individual to collaborative and interdisciplinary innovation;
5. From spontaneous to systematic innovation;
6. From exchange-based innovation to co-creation in innovation spaces;
7. From innovation projects to common innovation cultures (Reichert, 2019, pp. 7-9)⁴⁶⁷.

According to Giones et al., (2021)⁴⁶⁸ universities strive to disseminate scientific knowledge and engage in technology transfer activities. To provide further knowledge and technology transfer to society, universities are exploring new collaborative models. These new models are regarded as promising alternatives to the patent-centric linear model. However, their implementation requires revising the roles of the actors in the technology transfer process and their relationships.

We'd like to mention The EUA position, which outlines the preliminary findings of a major study on innovation at European universities. Based on data from 166 institutions in 28 countries, the position offers a Europe-wide picture and offers key recommendations for universities, namely:

⁴⁶⁶ Kozirog, K., Lucaci, S. and Berghmans, S. (2022) Universities as key drivers of sustainable innovation ecosystems. Results of the EUA survey on universities and innovation. <https://eua.eu/downloads/publications/innovation%20report.pdf>

⁴⁶⁷ Reichert, S. (2019) EUA Study The Role of Universities in Regional Innovation Ecosystems, Much. <https://eua.eu/downloads/publications/eua%20innovation%20ecosystem%20report.pdf>

⁴⁶⁸ Giones, F., Kleine, K. and Tegtmeier, S. (2021) "Students as scientists' co-pilots at the onset of technology transfer: a two-way learning process". *J Technol Transf.* <https://doi.org/10.1007/s10961-021-09880-3>

- “Strengthen strategic attention to innovation across all departments, faculties and services;
- Provide incentives, rewards and support mechanisms for academic staff innovation activities;
- Engage with other stakeholders of the European innovation ecosystem and global network;
- Increase integration of entrepreneurship training into all study programmes;
- Deepen commitment to interdisciplinarity as a driver of research, education and innovation for the sustainable transition;
- Streamline internal processes to deliver on the institution’s environmental commitments” (EAU, 2021, p. 6)⁴⁶⁹.

The formation of the above-described model of the university is connected with many difficulties. Special importance should equally be placed on the education system, particularly on higher education and the formation of entrepreneurial universities, as such universities notably introduce scientific research to the market at minimal cost and high-quality (Gagnidze, 2022)⁴⁷⁰. Debates on the future of higher education highlight the need for a transition to an entrepreneurial university. Why the entrepreneurial one? They can create an “entrepreneurial environment, entrepreneurial staff as well as entrepreneurial teaching and learning; a strong entrepreneurial vision and the presence of leaders; the need for an environment of awareness to support spin-off creation; identifying factors that determine continuous organisational success” (Dominici and Gagnidze, 2021, p.24)⁴⁷¹.

The experience of 40 countries in the process of forming entrepreneurial universities has been studied and eight main challenges have been identified by Vesperi and Gagnidze (2021)⁴⁷². These challenges are:

1. The degree of autonomy of universities, the challenges of new legislation and the need to change academic culture for improving University-industry partnerships;

⁴⁶⁹ Innovation ecosystems for a sustainable Europe: How to enhance the contribution of universities Based on the results of the EUA survey on universities and innovation. Position. November. https://eua.eu/downloads/publications/innovation%20survey_position.pdf

⁴⁷⁰ Gagnidze, I. (2022) “The Numerous Challenges of the Post-COVID Economy”. 6th FEB International Scientific Conference “Challenges in Economics and Business in the Post-COVID Times”. Proceedings. pp. 11-19. <https://doi.org/10.18690/um.epf.5.2022.2>

⁴⁷¹ Dominici, G. and Gagnidze, I. (2021), “Effectiveness of Entrepreneurial Universities: Experiences and Challenges in Digital Era (A Systemic Approach)”. *Interdisciplinary Description of Complex Systems*, Vol. 19 No. 1, pp. 13-30, DOI [10.7906/indecs.19.1.2](https://doi.org/10.7906/indecs.19.1.2)

⁴⁷² Vesperi, W. and Gagnidze, I. (in press) “From the University Ecosystem to the Entrepreneurial Ecosystem — The Way for Developing of the Local Economy”. *International Journal of Economics and Business Research*. <https://doi.org/10.1504/ijebr.2022.10041232>

2. The role of entrepreneurial education in universities;
3. University TTOs and patent activity;
4. Knowledge Triangle formation challenges;
5. Triple Helix Model formation challenges;
6. Problems of creating university spin-offs
7. The role of student initiatives and motivation;
8. The challenges related to human capital, financing, etc.

Many universities have shifted to entrepreneurial models recently. This is substantiated by a large number of publications on this issue in the scientific field. Some of them provide analysis of the experience of the universities in several countries and management of innovation processes in these universities (Lekashvili and Bitsadze (2021)⁴⁷³, Charekishvili (2018)⁴⁷⁴, Natsvlishvili (2018)⁴⁷⁵, Sepashvili (2020)⁴⁷⁶, Vesperi and Gagnidze (2021)⁴⁷⁷) and other issues. Due to the above-mentioned we can conclude that, in digital era (Industry 4.0 and Industry 5.0) universities need to quickly respond to both current and future challenges. The formation of an effective models is the only clear way for higher education institutions to meet future challenges of formation Society 5.0.

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⁴⁷³ Lekashvili, E. and Bitsadze, M. (2021), "The Role of University Spin-Offs in the Success of Research Programs", Nata, R. V. (Ed.), *Progress in Education*, Vol. 68 Chapter 4, Nova Science Publishers, Inc., New York, NY, pp. 73-102, DOI: <https://doi.org/10.52305/WPPN2619>

⁴⁷⁴ Charekishvili, L. (2018). "Lifelong Education and ICT in Georgia". IV International scientific and practical conference "Strategic Imperatives of Modern Management" (SIMM-2018), KNEY, Kyiv, 2018 pp.273-278. <https://core.ac.uk/download/pdf/197267023.pdf>

⁴⁷⁵ Natsvlishvili, I. (2018). Youth's Entrepreneurial Attitudes in the Contexts of Higher Education Management in Georgia. <https://core.ac.uk/download/pdf/197267038.pdf>

⁴⁷⁶ Sepashvili, E. (2020) Digital Chain of Contemporary Global Economy: E-Commerce through E-Banking and E-Signature. *Economia Aziendale Online*-, Vol. 11 No. 3, pp.239-249. <http://dx.doi.org/10.13132/2038-5498/11.3.239-249>

⁴⁷⁷ Vesperi, W. and Gagnidze, I (2021). "The Impact of the 4th Industrial Revolution on the Higher Education System: Rethinking the Role of Universities". *Progress in Education*. Vol 68. Chapter 6. Ed: Nata,R. V., Nova Science Publishers, Inc. ISSN: 1535-4806 ISBN: 978-1-68507-230-8; pp.143-169. DOI: <https://doi.org/10.52305/WPPN2619>