

MANAGING TRANSFORMATIONS IN HIGHER EDUCATION IN UKRAINE: CHALLENGES AND OPPORTUNITIES

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UDC 316.422
JEL: I21; I23; I29; O32; O35

Shapoval O. V. Managing Transformations in Higher Education in Ukraine: Challenges and Opportunities

The aim of the article is to study, identify and analyze the problems that arise in the context of transformation processes in higher education in Ukraine, also identifying the areas of research that remain understudied. The article provides a comprehensive overview of the challenges faced by higher education institutions (HEIs) of Ukraine during the transformation, and their comparison with similar processes in foreign HEIs. To achieve the set aim, the method of thematic analysis was used. This method is usable for systematic identification, classification and analysis of the main problems that arise in Ukrainian HEIs, taking into account the existing research of Ukrainian scholars. In addition, a secondary study was undertaken to collect additional data for further classification and categorization. The article provides information on the main challenges that arise in HEIs of Ukraine within the framework of their transformation processes, and compares them with similar phenomena in foreign HEIs. This creates a basic framework for understanding the main aspects that need attention in the context of the transformation of higher education in Ukraine. In addition, the article highlights specific challenges that have a limited amount of research in the scientific literature of Ukraine, which paves the way for further research in this direction. These results are of practical importance for further research on the challenges associated with transformation processes in Ukrainian HEIs, as well as for filling gaps in scientific research. This involves moving on to the practical aspects of addressing these challenges and developing effective solutions. Potential areas for further research may include the creation of a comprehensive, holistic approach to the management of transformation processes or a separate consideration of each challenge, taking into account the unique context of higher education institutions in Ukraine.

Keywords: higher education, transformation management, Industry 4.0, Education 4.0.

Fig.: 1. **Tabl.:** 2. **Bibl.:** 30.

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УДК 316.422
JEL: I21; I23; I29; O32; O35

Шаповал О. В. Управління трансформаціями у вищій освіті України: виклики та можливості

Метою статті є вивчення, ідентифікація та аналіз проблем, що виникають у контексті трансформаційних процесів у вищій освіті України, а також визначення напрямків досліджень, які залишаються малодослідженими. У статті надається всебічний огляд викликів, з якими стикаються заклади вищої освіти (ЗВО) України під час трансформації, та їх порівняння із аналогічними процесами в закордонних закладах вищої освіти. Для досягнення даної мети було використано метод тематичного аналізу. Цей метод спрямований на систематичне визначення, класифікацію та аналіз основних проблем, які виникають у вишах України, з урахуванням наявних досліджень українських науковців. Крім цього, було проведено вторинне дослідження для збору додаткових даних для подальшої класифікації та категоризації. У статті надано інформацію про основні виклики, які виникають у ЗВО України в рамках їхніх трансформаційних процесів, та порівняно їх із подібними явищами в закордонних вишах. Це створює базовий каркас для розуміння головних аспектів, які потребують уваги в контексті трансформації вищої освіти в Україні. Крім того, у статті виділено конкретні виклики, які мають обмежений обсяг досліджень у науковій літературі України, що відкриває шлях для подальших досліджень у цьому напрямі. Зазначені результати мають практичне значення для подальших досліджень щодо викликів, пов'язаних із трансформаційними процесами в українських ЗВО, а також для усунення прогалів у наукових дослідженнях. Це передбачає перехід до практичних аспектів вирішення цих викликів та розробки ефективних рішень. Потенційні напрямки подальших досліджень можуть включати створення комплексного, цілісного підходу до управління трансформаційними процесами або окреме розглядання кожного виклику з урахуванням унікального контексту закладів вищої освіти в Україні.

Ключові слова: вища освіта, управління трансформаціями, Індустрія 4.0, Освіта 4.0.

Рис.: 1. **Табл.:** 2. **Бібл.:** 30.

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Higher education is among the main driving forces of industrial development, which in turn causes the education landscape to transform, introducing new tools, technologies, and approaches that make

the educational process more efficient, comprehensive, and inclusive. Amid the fourth industrial revolution, this constant mutual influence has driven the transformation of higher education stronger than ever before. Today, all

the latest technological advancements, new insights and know-hows, and managerial practices become available to higher education institutions almost immediately, allowing them to harness all of the power that comes with these innovations. At the same time, this creates new challenges for both instructors and students, who now need to navigate an increasingly complex and constantly changing landscape.

The transformational processes emerging in present-day higher education institutions span across multiple areas, from strictly technological advancements to pedagogical and managerial aspects of operating. These transformational processes have the potential to make the educational process better than ever before. However, in order to fully harness the benefits of these transformational processes, understanding the challenges they entail is essential.

The topic of transformations in higher education institutions has consistently received high level of interest among researchers over the years [1], signaling about a persistent trend that is most likely to maintain its momentum (Fig. 1).

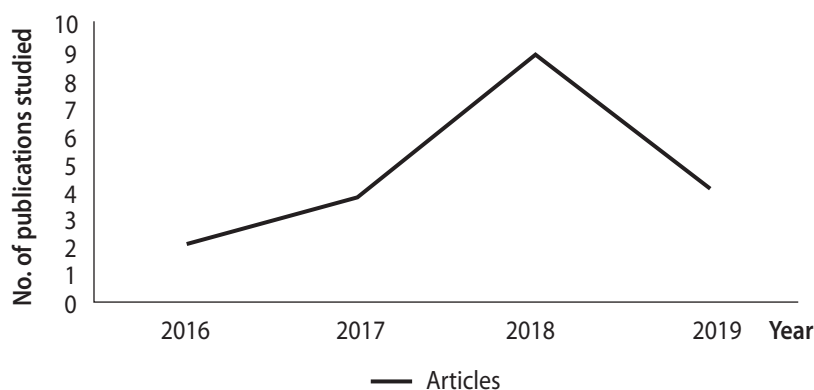


Fig. 1. Distribution of publications on transformation in higher education [1]

While the distribution of publications seemingly decreased in 2019, an analysis of COVID and post-COVID era scholarly articles outlined further in the paper proves that the pandemic has not only become an involuntary driver of transformational processes but also presented a valuable opportunity to observe how higher education institutions operate and respond to rapid, unexpected changes.

Present day research on transformation processes in higher education institutions often employs terminology and approaches from a more classical theory of organizational management. Change management (CM) is one of the core components of transformational processes in higher education institutions. As defined in [2], change management is “a set of ideas, strategies, and skills that can be applied to engage change effectively”. The approaches to managing change and leading trans-

formation processes in higher education institutions have been analyzed based on a number of research papers and case studies.

According to Ichak Adizes, change is naturally associated with novelty, uncertainty, and problems that arise when the change is introduced. Problems, in turn, require solutions that, when implemented, lead to new changes and problems, creating a constant cycle [3]. To make the process of introducing solutions more efficient, it is important to realize this nature and approach it mindfully. As demonstrated in [4], the Adizes organizational life cycle can be successfully applied to educational institutions, in this case to leadership and change model in Christian schools. The school leadership in the life cycle model suggested by the author can serve as the foundation for expanding original approach to change management to consider the peculiarities and needs of the higher education institutions.

When discussing transformations in higher education institutions, it is also important to recognize specific trends in order to more efficiently navigate the new landscape and manage the transformational processes. A report published by the World Economic Forum out-

lines the following trends in higher education transformation [5]:

1. Transition to a hybrid learning model that combines in-campus learning with remote studies. The author coins a term “learn from everywhere”.
2. Transition to practical-focused learning as opposed to a more traditional lecture-oriented learning.
3. Recognizing the shifting demands of the industry and adopting new skills that are relevant in the present economy and will be relevant in the future.
4. Substituting traditional examinations with formative assessment, which presents a more flexible and efficient way to evaluate student performance.

An article presented in the EdTech magazine recognized the following trends of educational technologies [6]:

- ✦ Data analytics.
- ✦ Micro-credentials.
- ✦ Open education resources.
- ✦ Blended and hybrid learning.
- ✦ Online learning.
- ✦ Artificial intelligence.

Education 4.0 is “a response to the needs of IR4.0 where human and technology are aligned to enable new possibilities” (IR4.0 – the fourth industrial revolution) [7]. It is characterized by transforming education through advanced technologies and automation, encouraging non-traditional thinking and novel approaches to teaching. There is a growing body of research demonstrating the practical positive impact of introduction of Education 4.0 in higher education. Researchers in [8] have studied HEIs in Portugal and found that gamification and the so called “serious games” aided by Industry 4.0 technologies such as Virtual Reality, Augmented Reality, and virtual learning environments, have had a positive impact on student involvement, and skill training by providing a more engaging and interactive learning process with focus on applying the knowledge to real world conditions.

The COVID-19 pandemic has had a massive impact on all aspects of world economy and society as a whole, becoming a disrupting force driving changes in work, leisure, and education. Iglesias-Pradas et al. have found that students of university have achieved better academic results after emergency transition to remote teaching. Authors also highlight that instructors’ relevant skills, such as digital skills, as well as organizational readiness play an imperative role in achieving positive effects from switching over remote teaching with a mix of synchronous and asynchronous delivery modes [9]. Similar forced transformational processes have occurred in Ukraine as well, posing challenges for both students and instructors alike. As part of a study presented by Mospan, two rounds of surveys have been conducted following two COVID-19 waves in Ukraine: April-June 2020 and January 2021. According to the study, despite discrepancies in certain aspects of the study process, the results of the second round of survey demonstrate both students’ and instructors’ opinion of the remote education model has notably improved [10].

The body of research studying post-pandemic transformation processes in higher education institutions provides important insights that allow to further understand the nature of changes and suggest possible course of action for navigating them. García-Morales et al. argue that the disruption COVID-19 pandemic has caused has lead to a shift of paradigm in approach to higher education, which will keep its relevance long after the pandemic is over [11].

Despite overall consensus regarding the positive nature of transformational processes in higher education and benefits they introduce, a number of challenges

remain when it comes to managing and directing these processes. The research undertaken by members of the Managing Complex Change (MCC) research group at the Hertfordshire Business School studies that analyzed six “transformational” HEIs in the UK highlights that despite respondents recognizing the need of changes, they “were mixed in the degree to which they thought the changes were beneficial to the sector” [12]. The study demonstrates that while transformation processes are occurring at a rising pace, the exact ways or strategies of combating the challenges associated with them are not always in place.

Teixeira et al. also demonstrate a flip side of the mutual influence general transformational processes and higher education institutions have on each other based on an example of a case study of Public Polytechnic Institutes of Porto in the development of the Metropolitan Area of Porto. The study has concluded that, despite the important role HEIs play in the digital transformation amid Industry 4.0 and their valuable contributions, they encounter a number of challenges, including “cultural and behavioural resistance; lack of change-oriented mindset; lack of understanding of digital trends; low functional collaboration” [13].

Similar challenges are mentioned in other case studies. In [14], the author has identified the following barriers to effective adaptation to change of HEIs in Georgia: lack of adoption of digital platforms, lack of governmental support, and lack of relevant knowledge. Ukrainian researchers have equally recognized the positive influence of digitization in higher education and highlighted the its integral part in the development strategy of Ukraine [15], which only further confirms the importance of addressing this factor when considering transformation of HEIs.

The primary *purpose* of the study is to identify, examine, and analyze the challenges associated with the transformative processes within the higher education system of Ukraine while identifying areas lacking conclusive research results compared to challenges encountered by researchers overseas.

To accomplish the research objective, a thematic analysis employing grounded theory was conducted to systematically identify, categorize, and analyze the prevalent challenges associated with the transformational processes in Ukrainian higher education institutions, as documented by Ukrainian scholars. A secondary research approach was employed to acquire the necessary data for subsequent coding and categorization.

The following recurring challenges that have been identified and coded are presented in *Tbl. 1*.

The challenges higher education institutions encounter are often more complex and span across different areas simultaneously. However, the presented codes cover the main distinct categories of challenges that arise when driving transformation processes in higher education in-

Table 1

Challenges of higher education institutions based on experience and case studies of scholars abroad

High-level description of a challenge	Codes
The institution lacks a defined strategic vision, stakeholders are unable to achieve consensus on how to approach transformation or fail to recognize its benefits altogether	Strategy
Educators need to gain core competencies required for implementing and directing the transformation strategy of the institution, such as digital literacy, requiring additional training in order to apply new technologies and methodologies in the education process	Competencies
Challenges that arise from introducing technology as part of the transformational processes, such as hardware and software maintenance, servicing, distributing updates, personnel training	Technology
Privacy and digital security threats emerging from higher degree of digitization, as well as the need to comply with data protection regulations	Cybersecurity
Providing learners with a flexible environment and learning resources for acquiring knowledge and practicing skills outlined in the study program with a mixed teaching model that combines synchronous and asynchronous delivery. This also includes providing flexible and inclusive space for all students	Flexibility

Source: formed based on materials in [8; 9; 11; 13; 14; 16–20].

stitutions. These codes have been used as a foundation to evaluate works of Ukrainian scholars in order to identify what challenges are addressed and whether there are any unique challenges that overseas counterparts have not addressed yet. The findings are presented in *Tbl. 2*.

Table 2

Challenges of higher education institutions based on experience and case studies of Ukrainian scholars

Codes	Sources
Strategy	[21; 22; 25; 27]
Competencies	[10; 23]
Technology	[10; 15; 26; 27]
Cybersecurity	[28]
Flexibility	[24]

Source: formed based on materials in [10; 15; 21–28].

After analyzing the subset of scholarly articles of Ukrainian researchers it was found that challenges related to Strategy, Competencies, Technology, and Flexibility receive universally high attention with Technology generally being studied more heavily. Notably, Technology and Competencies are often studied in conjunction as transformation processes related to digitization and introduction of new technologies is often encompassed by the need to introduce educators to the new core competencies associated with a specific technology or group of technologies. Strategy and Flexibility are also actively studied by Ukrainian scholars, although separately. Publications on challenges in the Flexibility category also often focus on providing an inclusive learning environment in accordance with the latest societal shifts.

Cybersecurity is an important category of transformational process challenges that has a potential to be studied more deeply. Risks and threats related to information protection and compliance become more and

more prominent amid rapid digitization with introduction of many new technologies. Despite a considerable merit digital technologies bring, failing to respond to threats appropriately can have drastic consequences for both educators and students, leading to breach of privacy, disruptions in the study process, and compliancy complications. Turning more attention to studying the information security aspect of digital transformation processes is a valuable opportunity that can be seized in order to provide a more solid basis for further stages of studying how transformation processes can be managed more efficiently while ensuring that better results are achieved. The results of these studies can be then used when developing transformation strategies or as part of a single holistic approach to managing transformations in higher education institutions.

One distinct challenge that has not been outlined in the experience of colleagues abroad is leading transformation of higher education institutions amid full-scale military conflict. People of Ukraine have all suffered destructive impact of war, which has caused unimaginable damage and disrupted lives of millions with full consequences are yet to be assessed. This has put even more pressure on higher education institutions and decision makers to consider not only overarching challenges their overseas counterparts face, but also present-moment issues related to safety and well-being of staff and students, as well as the long-term challenges of the post-war period: restoring and rebuilding the infrastructure; ensuring constant progression and improvement of educational process; providing mental health support for staff and students among others [29; 30].

At the same time, focusing solely on immediate challenges and failing to address longer-terms perspectives will potentially have significant negative effects for higher education institutions of Ukraine. This can further

lead to outflow of investment, decreasing attractiveness for foreign students, disruptions of partnerships, lost opportunities among others.

This present combination of challenges for Ukrainian higher education institutions creates a unique landscape, in which a holistic, comprehensive approach is vital to successfully leading transformation processes and ensuring continuous innovation, which, in turn, is crucially important for all of the industry branches that will demand more qualified workers in the post-war period.

CONCLUSIONS

This study presents the main recurring challenges associated with transformational processes of higher education institutions in Ukraine compared to their overseas counterparts. Doing so allows to paint the overall landscape of aspects of transformational processes that require attention as well as to identify specific challenges that have not been properly addressed by Ukrainian scholars yet, presenting a ground for further research to build upon. This, at the same time, is the limitation of this study as it does not aim to fill this gap or to provide any specific solutions to the outlined challenges, focusing merely on bringing attention to their existence.

Ultimately, further research in this direction would entail addressing the gap in research of challenges of transformational processes in Ukrainian HEIs and focusing on the practical aspects of these challenges in order to work out and suggest solutions to these challenges. This may involve developing a comprehensive, holistic approach to managing transformational processes in higher education institutions or targeting each of them individually.

As the present research shows, a significant value can be extracted from collaboration with overseas colleagues, learning from their experience and adapting it to Ukrainian higher education landscape with regard to the unique challenges higher education institutions of Ukraine face, positive experience of overcoming similar challenges, and unique expertise that was gained in the process. ■

BIBLIOGRAPHY

1. Benavides L. et al. Digital Transformation in Higher Education Institutions: A Systematic Literature Review. *Sensors*. 2020. Vol. 20. Iss. 11. Art. 3291. DOI: <https://doi.org/10.3390/s20113291>
2. The Basics of Managing Change / MIT Human Resources. URL: <https://hr.mit.edu/learning-topics/change/articles/basics>
3. Adizes I. K. *Mastering Change: Introduction to Organizational Therapy*. The Adizes Institute Publications, 2016. 296 p.
4. Seibel D. A. *Ichak Adizes's Organizational Theory Applied to the Classical Christian Education Movement: a Multiple Case Study: A Thesis Presented to the Faculty of The Southern Baptist Theological Seminary*. December 2022. URL: https://repository.sbts.edu/bitstream/handle/10392/6961/Seibel_sbts_0207D_10757.pdf?sequence=1&isAllowed=y

5. El-Azar D. 4 trends that will shape the future of higher education / World Economic Forum. 07.02.2022. URL: <https://www.weforum.org/agenda/2022/02/four-trends-that-will-shape-the-future-of-higher-education/>
6. What Does the Future of Ed Tech Look Like? Technology Solutions That Drive Education. URL: <https://edtechmagazine.com/higher/article/2021/07/what-does-future-ed-tech-look>
7. Hussin A. Education 4.0 Made Simple: Ideas for Teaching. *International Journal of Education and Literacy Studies*. 2018. Vol. 6. No. 3. DOI: <https://doi.org/10.7575/aiac.ijels.v6n.3p.92>
8. Almeida F., Simoes J. The Role of Serious Games, Gamification and Industry 4.0 Tools in the Education 4.0 Paradigm. *Contemporary Educational Technology*. 2019. Vol. 10. Iss. 2. P. 120–136. DOI: <https://doi.org/10.30935/cet.554469>
9. Iglesias-Pradas S., Hernández-García A., Chaparro-Peláez J., Prieto J. L. Emergency Remote Teaching and Students' Academic Performance in Higher Education During the COVID-19 Pandemic: A Case Study. *Computers in Human Behavior*. 2021. Vol. 119. Art. 106713. DOI: <https://doi.org/10.1016/j.chb.2021.106713>
10. Мосьпан Н. Трансформація національної вищої освіти під час пандемії COVID-19 очима студентів та викладачів. *Освітологічний дискурс*. 2021. Т. 35. № 4. С. 141–153. DOI: <https://doi.org/10.28925/2312-5829.2021.49>
11. García-Morales V. J., Garrido-Moreno A., Martín-Rojas R. The Transformation of Higher Education After the COVID Disruption: Emerging Challenges in an Online Learning Scenario. *Frontiers in Psychology*. 2021. Vol. 12. DOI: <https://doi.org/10.3389/fpsyg.2021.616059>
12. Mowles C. et al. Transformational Change in the Higher Education Sector. Report / Advance HE. 2018. 42 p. URL: <https://www.advance-he.ac.uk/knowledge-hub/transformational-change-higher-education-sector>
13. Teixeira A. F., Gonçalves M. J. A., Taylor M. L. M. How Higher Education Institutions are Driving to Digital Transformation: A Case Study. *Education Sciences*. 2021. Vol. 11. No. 10. Art. 636. DOI: <https://doi.org/10.3390/educsci11100636>
14. Gogebashvili N. Change Management Challenges in Georgian Higher Education Institutions and the Necessary Tools for Handling Them. 2021. URL: <https://openscience.ge/bitstream/1/2657/1/Natia%20Gogebashvili%20Statia.pdf>
15. Сипченко О. Цифровізація вищої освіти як важлива вимога часу. // Розвиток освітніх систем в умовах євроінтеграційних трансформацій : матеріали Міжнародної науково-практичної конференції (м. Чернівці, 26–27 травня 2021 р.). Чернівці, 2021. С. 276–281. URL: <http://dspace.ddpu.edu.ua/ddpu/bitstream/123456789/671/1/Сипченко%20О.М.%20Цифровізація%20вищої%20освіти%20як%20важлива%20вимога%20часу%20202021%20р..pdf>
16. Giesenbauer B., Müller-Christ G. University 4.0: Promoting the Transformation of Higher Education Institutions Toward Sustainable Development. *Sustainability*. 2020. Vol. 12. Iss. 8. Art. 3371. DOI: <https://doi.org/10.3390/su12083371>

17. Rodrigues L. S. Challenges of Digital Transformation in Higher Education Institutions: A Brief Discussion. In: Conference 32th IBIMA. Madrid, 2017. URL: <https://recipp.ipp.pt/bitstream/10400.22/15234/1/CONF%202017%20IBIMA%20Rodrigues%20%28Challenges%20of%20Digital%20Transformation%20in%20Higher%20Education%20Institutions%29.pdf>
18. Kopp M., Gröbinger O., Adams S. Five common assumptions that prevent digital transformation at higher education institutions. In: *13th International Technology, Education and Development Conference*. 11–13 March, 2019. Valencia, Spain. P. 1449–1452. DOI: 10.21125/inted.2019.0445
19. Rapanta C. et al. Balancing Technology, Pedagogy and the New Normal: Post-pandemic Challenges for Higher Education. *Postdigital Science and Education*. 2021. Vol. 3. P. 715–742. DOI: <https://doi.org/10.1007/s42438-021-00249-1>
20. Fleaca B., Fleaca E., Maiduc S. Digital Transformation and Current Challenges of Higher Education. *TEM Journal*. 2022. Vol. 11. Iss. 3. P. 1235–1241. DOI: <https://doi.org/10.18421/tem113-32>
21. Тоцька О. Л. Концептуальні засади управління розвитком вищої освіти в Україні: трансформація напрямів державної політики. *Проблеми інноваційно-інвестиційного розвитку*. 2020. № 22. С. 64–70. DOI: <https://doi.org/10.33813/2224-1213.22.2020.7>
22. Базелюк О. Особливості цифровізації вищої освіти в сучасних умовах. *Педагогічні інновації: ідеї, реалії, перспективи. Серія «Педагогічні науки»*. 2021. № 2. С. 37–43. URL: https://pi.iod.gov.ua/images/pdf/2021_2/5.pdf
23. Внукова Н., Сотська Г. Трансформація освіти для досягнення цілей сталого розвитку – 2030: нова педагогічна парадигма. *Вісник кафедри ЮНЕСКО «Неперервна Професійна освіта XXI століття»*. 2023. Т. 1. Вип. 7. С. 7–21. DOI: [https://doi.org/10.35387/ucj.1\(7\).2023.7-21](https://doi.org/10.35387/ucj.1(7).2023.7-21)
24. Балинська О., Барабаш О. Реалізація інклюзивної освіти у закладах вищої освіти в Україні в умовах цифрової трансформації. *Право України*. 2023. № 5. С. 165–188.
25. Подденежний О. Г. Управління цифровою трансформацією освіти: сучасний науковий дискурс. *Наукові записки НаУКМА. Серія «Економічні науки»*. 2021. Т. 6. Вип. 1. С. 105–110. DOI: <https://doi.org/10.18523/2519-4739.2021.6.1.105-110>
26. Новицька Т. Л., Новицький С. В. Сучасні тенденції цифрової трансформації освіти // Сучасні інформаційні технології та інноваційні методики навчання: досвід, тенденції, перспективи : матеріали VII Міжнар. наук.-практ. інтернет-конф. (м. Тернопіль, 8 квітня 2021 р.), Тернопіль, 2021. С. 152–154. URL: <https://lib.iitta.gov.ua/724801/1/Сучасні%20тенденції%20цифрової%20трансформації%20освіти.pdf>
27. Тулашвілі Ю. В. Підготовка фахівців у закладах вищої освіти в реаліях цифрової трансформації // Сучасні інформаційні технології та інноваційні методики навчання у підготовці фахівців: методологія, теорія, досвід, проблеми. 2022. Вип. 60. С. 116–127. DOI: <https://doi.org/10.31652/2412-1142-2021-60-116-127> (date of access: 07.10.2023).
28. Шопіна І. М. Інформаційна безпека цифрової трансформації. *Науковий вісник Львівського державного університету внутрішніх справ. Серія юридична*. 2023. № 1. С. 28–35. DOI: <https://doi.org/10.32782/2311-8040/2023-1-4>
29. Хромова О. І., Міщенко О. В., Школенко К. В. Перспективи трансформації української вищої освіти у післявоєнний період. *Освітній дискурс*. 2022. Вип. 41(7–9). С. 47–56. DOI: [https://doi.org/10.33930/ed.2019.5007.41\(7-9\)-5](https://doi.org/10.33930/ed.2019.5007.41(7-9)-5)
30. Ткаченко О. В., Козловська Л. С., Лісняк Н. І. Виклики і можливості трансформації економіки освіти в моделі повоєнного відновлення України. *Стратегія економічного розвитку України*. 2023. Вип. 52. С. 145–157. DOI: <https://doi.org/10.33111/sedu.2023.52.145.157>

REFERENCES

- Adizes, I. K. *Mastering Change: Introduction to Organizational Therapy*. The Adizes Institute Publications, 2016.
- Almeida, F., and Simoes, J. "The Role of Serious Games, Gamification and Industry 4.0 Tools in the Education 4.0 Paradigm". *Contemporary Educational Technology*, vol. 10, no. 2 (2019): 120-136. DOI: <https://doi.org/10.30935/cet.554469>
- Balynska, O., and Barabash, O. "Realizatsiia inkluzyvnoi osvity u zakladakh vyshchoi osvity v Ukraini v umovakh tsyfrovoy transformatsii" [Implementation of Inclusive Education in Higher Education Institutions in Ukraine in Conditions of Digital Transformation]. *Pravo Ukrainy*, no. 5 (2023): 165-188.
- Bazeliuk, O. "Osoblyvosti tsyfrovizatsii vyshchoi osvity v suchasnykh umovakh" [Features of Higher Education Digitalisation in the Current Context]. *Pedahohichni innovatsii: idei, realii, perspektyvy. Seriiia «Pedahohichni nauky»*, no. 2 (2021): 37-43. https://pi.iod.gov.ua/images/pdf/2021_2/5.pdf
- Benavides, L. et al. "Digital Transformation in Higher Education Institutions: A Systematic Literature Review". *Sensors*, art. 3291, vol. 20, no. 11 (2020). DOI: <https://doi.org/10.3390/s20113291>
- El-Azar, D. "4 trends that will shape the future of higher education". *World Economic Forum*. February 07, 2022. <https://www.weforum.org/agenda/2022/02/four-trends-that-will-shape-the-future-of-higher-education/>
- Fleaca, B., Fleaca, E., and Maiduc, S. "Digital Transformation and Current Challenges of Higher Education". *TEM Journal*, vol. 11, no. 3 (2022): 1235-1241. DOI: <https://doi.org/10.18421/tem113-32>
- Garcia-Morales, V. J., Garrido-Moreno, A., and Martin-Rojas, R. "The Transformation of Higher Education After the COVID Disruption: Emerging Challenges in an Online Learning Scenario". *Frontiers in Psychology*, vol. 12 (2021). DOI: <https://doi.org/10.3389/fpsyg.2021.616059>
- Giesenbauer, B., and Muller-Christ, G. "University 4.0: Promoting the Transformation of Higher Education Institutions Toward Sustainable Development". *Sustainability*, art. 3371, vol. 12, no. 8 (2020). DOI: <https://doi.org/10.3390/su12083371>

- Gogebashvili, N. "Change Management Challenges in Georgian Higher Education Institutions and the Necessary Tools for Handling Them". 2021. <https://open-science.ge/bitstream/1/2657/1/Natia%20Gogebashvili%20Statia.pdf>
- Hussin, A. "Education 4.0 Made Simple: Ideas for Teaching". *International Journal of Education and Literacy Studies*, vol. 6, no. 3 (2018). DOI: <https://doi.org/10.7575/aiac.ijels.v.6n.3p.92>
- Iglesias-Pradas, S. et al. "Emergency Remote Teaching and Students' Academic Performance in Higher Education During the COVID-19 Pandemic: A Case Study". *Computers in Human Behavior*, art. 106713, vol. 119 (2021). DOI: <https://doi.org/10.1016/j.chb.2021.106713>
- Khromova, O. I., Mishchenko, O. V., and Shkolenko, K. V. "Perspektyvy transformatsii ukrainskoi vyshchoi osvity u pislivoiennyi period" [Prospects of the Transformation of Ukrainian Higher Education in the Post-War Period]. *Osvitnii dyskurs*, no. 41(7-9) (2022): 47-56. DOI: [https://doi.org/10.33930/ed.2019.5007.41\(7-9\)-5](https://doi.org/10.33930/ed.2019.5007.41(7-9)-5)
- Kopp, M., Groblinger, O., and Adams, S. "Five common assumptions that prevent digital transformation at higher education institutions". *13th International Technology, Education and Development Conference*. Valencia, Spain, 2019. 1449-1452. DOI: 10.21125/inted.2019.0445
- Mospan, N. "Transformatsiia natsionalnoi vyshchoi osvity pid chas pandemii COVID-19 ochyma studentiv ta vykladachiv" [National Higher Education Transformation During the COVID-19 Pandemic in Perceptions of Students and Teachers]. *Osvitohichnyi dyskurs*, vol. 35, no. 4 (2021): 141-153. DOI: <https://doi.org/10.28925/2312-5829.2021.49>
- Mowles, C. et al. "Transformational Change in the Higher Education Sector. Report". *Advance HE*. 2018. <https://www.advance-he.ac.uk/knowledge-hub/transformational-change-higher-education-sector>
- Novytska, T. L., and Novytskyi, S. V. "Suchasni tendentsii tsyvrovoi transformatsii osvity" [Current Trends in the Digital Transformation of Education]. *Suchasni informatsiini tekhnologii ta innovatsiini metodyky navchannia: dosvid, tendentsii, perspektyvy*. 2021. <https://lib.iitta.gov.ua/724801/1/Сучасні%20тенденції%20цифрової%20трансформації%20освіти.pdf>
- Poddenezhnyi, O. H. "Upravlinnia tsyvrovoi transformatsiieiu osvity: suchasnyi naukovyi dyskurs" [Management of Digital Transformation in Education: Modern Scientific Discourse]. *Naukovi zapysky NaUKMA. Seriya «Ekonomichni nauky»*, vol. 6, no. 1 (2021): 105-110. DOI: <https://doi.org/10.18523/2519-4739.2021.6.1.105-110>
- Rapanta, C. et al. "Balancing Technology, Pedagogy and the New Normal: Post-pandemic Challenges for Higher Education". *Postdigital Science and Education*, vol. 3 (2021): 715-742. DOI: <https://doi.org/10.1007/s42438-021-00249-1>
- Rodrigues, L. S. "Challenges of Digital Transformation in Higher Education Institutions: A Brief Discussion". *Conference 32th IBIMAA*. Madrid, 2017. <https://recipp.ipp.pt/bitstream/10400.22/15234/1/CONF%202017%20IBIMA%20Rodrigues%20%28Challenges%20of%20Digital%20Transformation%20in%20Higher%20Education%20Institutions%29.pdf>
- Seibel, D. A. "Ichak Adizes's Organizational Theory Applied to the Classical Christian Education Movement: a Multiple Case Study : A Thesis Presented to the Faculty of The Southern Baptist Theological Seminary". December 2022. https://repository.sbts.edu/bitstream/handle/10392/6961/Seibel_sbts_0207D_10757.pdf?sequence=1&isAllowed=y
- Shopina, I. M. "Informatsiina bezpeka tsyvrovoi transformatsii" [Information Security of Digital Transformation]. *Naukovyi visnyk Lvivskoho derzhavnogo universytetu vnutrishnikh sprav. Seriya iurydychna*, no. 1 (2023): 28-35. DOI: <https://doi.org/10.32782/2311-8040/2023-1-4>
- Sypchenko, O. "Tsyvrovizatsiia vyshchoi osvity yak vazhlyva vymoha chasu" [Digitalization of Higher Education as an Important Time Requirement]. *Rozvytok osvitnikh system v umovakh yevrointehratsiinykh transformatsii*. 2021. <http://dspace.ddpu.edu.ua/ddpu/bitstream/123456789/671/1/Сипченко%20О.М.%20Цифровізація%20вищої%20освіти%20як%20важлива%20вимога%20часу%2С%202021%20р..pdf>
- "The Basics of Managing Change". *MIT Human Resources*. <https://hr.mit.edu/learning-topics/change/articles/basics>
- Teixeira, A. F., Goncalves, M. J. A., and Taylor, M. L. M. "How Higher Education Institutions are Driving to Digital Transformation: A Case Study". *Education Sciences*, art. 636, vol. 11, no. 10 (2021). DOI: <https://doi.org/10.3390/educsci11100636>
- Tkachenko, O. V., Kozlovska, L. S., and Lisniak, N. I. "Vykylyky i mozhlyvosti transformatsii ekonomiky osvity v modeli povoiennoho vidnovlennia Ukrainy" [Challenges and Opportunities of the Transformation of the Economy of Education in the Model of Post-War Reconstruction of Ukraine]. *Stratehiia ekonomichnoho rozvytku Ukrainy*, no. 52 (2023): 145-157. DOI: <https://doi.org/10.33111/sedu.2023.52.145.157>
- Totska, O. L. "Kontseptualni zasady upravlinnia rozvytkom vyshchoi osvity v Ukraini: transformatsiia napriamiv derzhavnoi polityky" [Conceptual Foundations of Higher Education Development Management in Ukraine: Transformation of Public Policy Areas]. *Problemy innovatsiino-investytsiynoho rozvytku*, no. 22 (2020): 64-70. DOI: <https://doi.org/10.33813/2224-1213.22.2020.7>
- Tulashvili, Yu. V. "Pidhotovka fakhivtsiv u zakladakh vyshchoi osvity v realiiakh tsyvrovoi transformatsii" [Training of Specialists in Higher Education Institutions in the Realities of Digital Transformation]. *Suchasni informatsiini tekhnologii ta innovatsiini metodyky navchannia u pidhotovtsi fakhivtsiv: metodolohiia, teoriia, dosvid, problemy*, no. 60 (2022): 116-127. DOI: <https://doi.org/10.31652/2412-1142-2021-60-116-127>
- Vnukova, N., and Sotska, H. "Transformatsiia osvity dlia dosiahnennia tsilei staloho rozvytku - 2030: nova pedahohichna paradyhma" [Transformation of Education to Achieve Sustainable Development Goals 2030: A New Pedagogical Paradigm]. *Visnyk kafedry YuNESKO «Neperervna Profesiina osvita XXI stolittia»*, vol. 1, no. 7 (2023): 7-21. DOI: [https://doi.org/10.35387/ucj.1\(7\).2023.7-21](https://doi.org/10.35387/ucj.1(7).2023.7-21)
- "What Does the Future of Ed Tech Look Like? Technology Solutions That Drive Education". <https://edtechmagazine.com/higher/article/2021/07/what-does-future-ed-tech-look>