

Development of a Framework for the Digitalization of Higher Education Based on a Comparative Analysis of Global Experiences across Over 40 Countries

Shirin. Rajabi Bazl¹, Abasalt. Khorasani^{2*}, Hamidreza. Yazdani³, Fornoosh. Alami⁴

¹ PhD Candidate in Higher Education Management, Faculty of Education and Psychology, Shahid Beheshti University, Tehran, Iran

² Associate Professor, Faculty of Education and Psychology, Shahid Beheshti University, Tehran, Iran

³ Associate Professor, Faculty of Public Administration and Organizational Sciences, Tehran University, Tehran, Iran

⁴ Assistant Professor, Faculty of Education and Psychology, Shahid Beheshti University, Tehran, Iran

* Corresponding author email address: a-khorasani@sbu.ac.ir

Article Info

Article type:

Original Research

How to cite this article:

Rajabi Bazl, S., Khorasani, A., Yazdani, H., & Alami, F. (2026). Development of a Framework for the Digitalization of Higher Education Based on a Comparative Analysis of Global Experiences across Over 40 Countries. *Quarterly Journal of Research and Planning in Higher Education*, 32(3), 51-73.



© 2026 the authors. Published by Institute for Research and Planning in Higher Education (IRPHE), Tehran, Iran. This is an open access article under the terms of the Creative Commons Attribution 4.0 International (CC BY 4.0) License.

ABSTRACT

This study aims to provide a theoretical and policy-oriented framework for the digitalization of higher education through a comparative analysis of policies and experiences from 40 countries with varying levels of digital maturity. It highlights the pressing need to identify the overarching dimensions of digital transformation from a holistic perspective—one that integrates dispersed evidence through systematic data aggregation and qualitative synthesis to construct an evidence-based strategic model. Using a qualitative meta-synthesis approach, the study identifies six key dimensions of digital policy-making: infrastructure, digital teaching and learning, capability assessment, stakeholder engagement, macro-level strategies, and cultural mindset shift. The findings offer an evidence-informed guide for formulating actionable and context-specific strategies to accelerate digital transformation in higher education. Moreover, they demonstrate that the concurrent integration of these dimensions can serve as a robust foundation for designing effective national and institutional policies in this critical domain.

Keywords: Higher Education Policymaking, Digital Transformation, Higher Education

Introduction

While many institutions have initiated digital reforms, significant gaps remain in comprehensive public policies that can effectively guide these processes (Khramova, Grinevich, & Vinogradova, 2022).

Recent practices show that digital education can reduce dependency on physical infrastructure, enhance global collaboration, and expand virtual learning and research opportunities (Razavi, 2020; Williamson, 2015). Yet, the absence of coherent strategies continues to create barriers to teaching, research, and administration, threatening the quality and innovation capacity of universities. Developing comprehensive policy frameworks is essential to bridge this gap and align national strategies with international experiences (Nabiyi, Shami Zanjani, & Gerosi Mokhtarzadeh, 2023).

Comparative studies of higher education policies provide valuable insights into diverse approaches and challenges, serving as a foundation for a coherent framework. Drawing on global experiences and anticipating emerging challenges, higher education needs flexible yet structured policies that can address new demands while offering clear directions (Voronkova, Nikitenko & Vasy'l'chuk, 2023).

This study addresses the lack of integrative research by conducting a comparative analysis of over 40 countries. It aims to identify key dimensions, barriers, and enablers of digitalization, offering an evidence-based policy model. In doing so, it contributes both theoretically and practically, presenting a global perspective and a strategic guide for policymakers to accelerate digital transformation in higher education.

Methodology

This study applied a meta-synthesis method, a qualitative approach that systematically reviews and integrates findings from both quantitative and qualitative studies to generate deeper insights and develop a conceptual framework for digital transformation policymaking in higher education (Bair, 1999). The method pursues three main objectives: theory construction, theory explanation, and conceptual development.

The research began by defining the main question: identifying dimensions, components, and policy models of higher education digitalization. A systematic search across Scopus, Web of Science, ERIC, and Google Scholar, along with international reports and university plans, yielded over 350 studies, of which 200 high-quality sources were selected. Articles were coded, categorized, and thematically synthesized, with reliability ensured through clear criteria, multiple reviews, and expert validation. Comparative analysis covered at least three studies per country, spanning 40 countries across six continents, highlighting similarities and differences in digitalization policies over the past two decades, with emphasis on post-COVID initiatives.

Findings

The analysis identified six overarching dimensions (general themes) and thirty specific components (organizing themes) as the most influential factors in higher education digital transformation:

1. Infrastructure and Resources: funding, technical infrastructure, human resources, and the expansion of digital changes across university sectors.
2. Digital Teaching and Learning: digital course design, educational innovation, empowerment, adoption of emerging technologies, and extension of digitalization into research.
3. Evaluation, Feedback, and Capacity Building: continuous improvement, standardization, rapid skill enhancement, consideration of structural factors, and alignment with global trends.
4. Stakeholder Engagement and Collaboration: international and domestic collaboration, interaction with industry and society, participation in global consortia, and stakeholder involvement.
5. Macro-Political Strategies: high-level policymaking, localized versus imitative approaches, centralized and decentralized decision-making, institutional support, governmental constraints, and control and security measures.
6. Managerial Perspectives and Cultural/Social Change: managerial transparency and attitude shifts, cultural and social transformation, reduction of disparities, management of global crises, and early adoption and initiation of digital transformation.

These dimensions and components highlight the most influential and data-rich areas of higher education digital transformation globally, forming the basis for a comprehensive, evidence-based policy framework.

Conclusion

The study shows that digital transformation in universities impacts economic, political, social, scientific, and cultural dimensions, profoundly reshaping education and daily life. Six key dimensions and thirty components, derived from global experiences, outline the core structure and interrelations of this transformation:

Infrastructure and Resources: Leading countries use strong infrastructure and early adoption for global projects, while others focus on funding, capacity building, and ICT development. Resource-limited institutions face challenges due to unstable economies and limited human capital (Adamu, 2024; Rahimian, 2023; Hoseini Moghaddam, 2023; Hanafizadeh et al., 2009).

Digital Teaching and Learning: Digital transformation emphasizes education and learning processes. Countries like Australia, Finland, and Sweden lead in content enrichment, platforms, AI, robotics, IoT, smart campuses, and integrating digitalization into research. Key success factors include data-driven decision-making, digital literacy, lifelong learning, and hybrid models (Hoseini Moghaddam, 2023; Jafari, Taqvai, & Safarian, 2021; Rahimian, 2023).

Evaluation, Feedback, and Capacity Building: Continuous assessment, feedback, and capability enhancement ensure sustainability and quality. Focus areas include technology integration, standardized evaluation, process acceleration, and digital maturity assessment (Zarei, Gaen, & Ahmadifard, 2024; Hoseini Moghaddam, 2023; Rahimian, 2023).

Stakeholder Engagement and Collaboration: Collaboration with industry, society, government, and international networks, along with inclusive policymaking, enhances stakeholder involvement and co-creation of value (Hoseini Moghaddam, 2023).

Macro-Political Interventions and Strategies: Governments design national strategies and policies tailored to local needs, covering governance, ICT management, investment, and equitable access. Decision-making may be centralized, decentralized, or hybrid, with governments providing funding, policy support, and cybersecurity oversight (Rahimian, 2023; Hoseini Moghaddam, 2023; Hanafizadeh et al., 2009; UNESCO, 2021).

Managerial Perspectives and Cultural/Social Change: Managerial attitude shifts, cultural change, transparency, stakeholder collaboration, data-centric approaches, and alignment with labor market needs facilitate digital transformation and reshape educational paradigms (Johnston, MacNeill, & Smytz, 2019). These six dimensions and their associated components provide a comprehensive framework for policymakers and higher education leaders to navigate digital transformation effectively.

References

- Abang, N. (2024). Transformation of higher education in Cameroon through decentralization frameworks. *International Journal of Research in Social Science and Humanities*. <https://doi.org/10.47505/IJRSS.2024.3.7>
- Adamu, A. Y. (2024). Digitalization of higher education in Ethiopia. *Journal of Comparative & International Higher Education*, 16(2), 13-24. <https://doi.org/10.32674/jcihe.v16i2.5719>
- Albarrak, M. S., & Alokley, S. A. (2021). FinTech: Ecosystem, opportunities and challenges in Saudi Arabia. *Journal of Risk and Financial Management*, 14(10), 460. <https://doi.org/10.3390/jrfm14100460>
- Allen, I. E., Seaman, J., & Garrett, R. (2007). *Blending in: The extent and promise of blended education in the United States*. <https://eric.ed.gov/?id=ED529930>
- Bair, C. R. (1999). Meta-synthesis. Annual Meeting of the Association for the Study of Higher Education,
- Bates, T. (2024). Progress and challenges in digital teaching and learning in the Canadian HE system. *Journal of Comparative & International Higher Education*, 16(2). <https://doi.org/10.32674/jcihe.v16i2.5721>
- Begicevic Redjep, N., Fiasco, M. R., Kralj, L., & Lappenküper, D. (2023). *Strategical approach to digitalisation in education: Institutional concepts, best practices, blueprint, and case studies*.
- Cairney, P. (2013). Standing on the shoulders of giants: How do we combine the insights of multiple theories in public policy studies? *Policy Studies Journal*, 41(1), 1-21. <https://doi.org/10.1111/psj.12000>
- Chand, M. B., Subin, K. C., & Maharjan, M. (2024). Unveiling disparities: A case of digital divide in Nepal. *The Journal of Economic Concerns*, 15(1), 130-142. <https://doi.org/10.3126/tjec.v15i1.70246>
- Danaei Fard, H. (2016). *New discourses in public policy making*. Imam Sadeq University Press.
- Díaz, V., Montero-Navarro, A., Rodríguez-Sánchez, J. L., & Gallego-Losada, R. (2022). Digitalization and digital transformation in higher education: A bibliometric analysis. *Frontiers in Psychology*, 13, 1081595. <https://doi.org/10.3389/fpsyg.2022.1081595>
- European Commission. (2021). *Digital education action plan (2021-2027): Accessible, innovative and high-quality infrastructure for digital education*.
- Gkrimpizi, T., Peristeras, V., & Magnisalis, I. (2023). Classification of barriers to digital transformation in higher education institutions: Systematic literature review. *Education Sciences*, 13(7), 746. <https://doi.org/10.3390/educsci13070746>

- Hai, N. S. (2024). Digital transformation policies in education: Practical experiences in Vietnam. *VNU Journal of Science: Education Research*, 40(3), 1-11. <https://doi.org/10.25073/2588-1159/vnuer.4869>
- Hanafizadeh, P., Hanafizadeh, M. R., & Hodaiepour, P. (2009). Designing an e-readiness assessment model for Iranian universities and higher education institutes. *Quarterly Journal of Research and Planning in Higher Education*, 14(2), 103-137. https://journal.irphe.ac.ir/article_702622_323fcb78ecad89fdb7e1ab5a52975aa.pdf?lang=en
- Hazelkorn, E., Coates, H., & McCormick, A. C. (2018). *Research handbook on quality, performance, and accountability in higher education*. Edward Elgar Publishing. <https://doi.org/10.4337/9781785369759>
- Hosseini Moghaddam, M. (2023). Artificial intelligence and the future of university education in Iran. *Quarterly Journal of Research and Planning in Higher Education*, 29(1), 1-25. <https://doi.org/10.61838/irphe.29.1.1>
- Iosad, A. (2020). *Digital at the core: A 2030 strategy framework for university leaders*. <https://repository.jisc.ac.uk/8133/1/2030-strategy-framework-for-university-leaders>
- Ivenicki, A. (2024). Digital learning and higher education in Brazil: A multicultural analysis. *Journal of Comparative & International Higher Education*, 16(2). <https://doi.org/10.32674/jcihe.v16i2.5846>
- Jafari, E., Taqva, M., & Safarian, S. (2021). An overview of the approach of the digital university in the corona pandemic and post-corona. *Clinical Excellence*, 11(22), 125-137. <https://civilica.com/doc/1438812/>
- Jain, A., & Mittal, A. (2020). Digitalization of higher education in India: Constructive aspects and challenges. In *Virtual teaching in India during lockdown* (pp. 27-42). Research Foundation of India (RFI).
- Jha, H. (2012). Why nations fail: The origins of power, prosperity and poverty (Review). *Journal of Southeast Asian Economies*, 29(2). <https://doi.org/10.1355/ae29-2j>
- Johnston, B., MacNeill, S., & Smyth, K. (2019). *Conceptualising the digital university: The intersection of policy, pedagogy and practice*. Springer. <https://doi.org/10.1007/978-3-319-99160-3>
- Khanal, S., Zhang, H., & Taeiagh, A. (2024). Building an AI ecosystem in a small nation: Lessons from Singapore's journey to the forefront of AI. *Humanities and Social Sciences Communications*, 11, 866. <https://doi.org/10.1057/s41599-024-03289-7>
- Khranova, I., Grinevich, J., & Vinogradova, A. (2021). Digital transformation of higher education in developed countries. *AIP Conference Proceedings* Proceedings of the II International Scientific Conference on Advances in Science, Engineering and Digital Education (ASEDU-II 2021),
- Lawrence, M., Molefi, S., Matsieli, S., & Mutula, M. (2024). COVID-19 and digital transformation in higher education institutions: Towards inclusive and equitable access to quality education. *Education Sciences*. <https://doi.org/10.3390/educsci14080819>
- Lee, H., & Lee, R. (2024). Transformation of Korean higher education in the digital era: Achievements and challenges. *Journal of Comparative & International Higher Education*, 16(2), 47-55. <https://doi.org/10.32674/jcihe.v16i2.5847>
- Liu, X. (2023). New digital infrastructure, financial resource allocation, and high-quality economic development in the internet era. *Applied Mathematics and Nonlinear Sciences*. <https://doi.org/10.2478/amns.2023.2.00343>
- Marginson, S. (2016). *Higher education and the common good*. Melbourne University Publishing. <https://www.scrip.org/reference/referencespapers?referenceid=3491933>
- Marsh, J. A., & Dhillon, J. (2024). The impact of digital transformation on higher education in the UK. *Journal of Higher Education Policy and Management*. <https://doi.org/10.1080/1360080X.2024.2035517>
- Matsieli, M., & Mutula, S. (2024). COVID-19 and digital transformation in higher education institutions: Towards inclusive and equitable access to quality education. *Education Sciences*, 14(8), 819. <https://doi.org/10.3390/educsci14080819>
- Muellmann, S. (2024). Scientific session: Digital health divide in access, use, and effectiveness: Examples from three countries. *European Journal of Public Health*, 34(Supplement 3). <https://doi.org/10.1093/eurpub/ckae144.423>
- Nabiyi, F., Shami Zanjani, M., & Gerosi Mokhtarzadeh, N. (2023). Explanation and development of the content dimensions of digital transformation strategy. *Strategic Management Studies*. <https://doi.org/10.22034/smsj.2023.396167.1847>
- Naz, N., & Singh, I. (2024). Digital education and the national education policy 2020: Catalysts for educational advancement. *International Journal of Humanities and Education Research*, 6(1). <https://doi.org/10.33545/26649799.2024.v6.i1a.62>
- Qamar, K. (2022). Faculty development initiatives. *Pakistan Armed Forces Medical Journal*, 72(6), 1852. <https://doi.org/10.51253/pafmj.v72i6.9748>
- Rahmani, A. (2023). Designing digital university conceptual framework: Grounded theory approach. *Quarterly Journal of Research and Planning in Higher Education*, 29(2), 69-86. <https://doi.org/10.61838/irphe.29.2.4>
- Razavi, S. M. (2020). Digital transformation in Iranian higher education: Challenges and opportunities. *Sustainable Development Review*, 8(2), 134-150.
- Saragih, S., Tjakraatmadja, J. H., & Pratama, A. P. (2023). Urgency of managing digitalization in higher education. *International Journal of Management, Entrepreneurship, Social Science and Humanities*, 6(1). <https://doi.org/10.31098/ijmesh.v6i1.1339>
- Schuetze, H. G. (2024). Digitalization of German higher education and the role of Europe. *Journal of Comparative & International Higher Education*, 16, 6066. <https://doi.org/10.32674/jcihe.v16ix.6066>
- Selwyn, N. (2016). *Is technology good for education?* Polity Press.
- Selwyn, N. (2021). *Education and technology: Key issues and debates*. Bloomsbury Publishing. <https://www.bloomsbury.com/uk/education-and-technology-9781350145566/>
- Sylvester, S., David, A. D., & Abubakar, M. F. (2024). Evaluating the effects of centralization and decentralization on strategic implementation at Federal University Wukari. *International Journal of Multidisciplinary Research and Studies*, 4(5), 801-807. <https://doi.org/10.62225/2583049X.2024.4.5.3327>
- Taufiqulloh, P., Yoga, R., Rosdiana, I. M., & Agustia, N. M. (2022). Digital transformation in Indonesian higher education: Challenges and opportunities. The 14th Hatyai National and International Conference,
- Tooka, T., Uchida, N., Takenaga, K., Maruyama, K., & Kato, M. (2024). Digitalization of higher education in Japan: Challenges and reflections for education reform. *Journal of Comparative & International Higher Education*, 16(2). <https://doi.org/10.32674/jcihe.v16i2.5252>

- Unesco. (2021). *Reimagining our futures together: A new social contract for education*. <https://unesdoc.unesco.org/ark:/48223/pf0000379707>
- Van der Vlies, R. (2020). *Digital strategies in education across OECD countries: Exploring education policies on digital technologies*. <https://search.proquest.com/openview/e0a555e60c7bd27fbf409c465d41896a/1?pq-origsite=gscholar&cbl=54479>
- Voronkova, V., Nikitenko, V., & Vasy'l'chuk, G. (2023). Foreign experience in implementing digital education in the context of digital economy transformation. *Baltic Journal of Economic Studies*, 9(3), 56-65. <https://doi.org/10.30525/2256-0742/2023-9-3-56-65>
- Walker, R., Jenkins, M., & Voce, J. (2016). The rhetoric and reality of technology-enhanced learning developments in UK higher education: Reflections on recent UCISA research findings (2012-2016). *Interactive Learning Environments*, 26, 858-868. <https://doi.org/10.1080/10494820.2017.1419497>
- Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading digital: Turning technology into business transformation*. Harvard Business Review Press. [https://books.google.com/books?hl=en&lr=&id=Fh9eBAAQBAJ&oi=fnd&pg=PR4&dq=Westerman,+G.,+et+al.+\(2014\).+Leading+digital:+Turning+technology+into+business+transformation,+Harvard+Business+Review+Press.+%09&ots=oaTqEY1nu8&sig=KjWnMJkXF-uQ3sUw478-rHqV_iE](https://books.google.com/books?hl=en&lr=&id=Fh9eBAAQBAJ&oi=fnd&pg=PR4&dq=Westerman,+G.,+et+al.+(2014).+Leading+digital:+Turning+technology+into+business+transformation,+Harvard+Business+Review+Press.+%09&ots=oaTqEY1nu8&sig=KjWnMJkXF-uQ3sUw478-rHqV_iE)
- Wopereis, I. G. J. H., Kirschner, P. A., Paas, F., Stoyanov, S., & Hendriks, M. (2005). The effect of epistemological beliefs on students' performance and interaction in an asynchronous computer-supported collaborative learning environment. *Interactive Learning Environments*, 13(3), 263-280. <https://doi.org/10.1080/10494820500221516>
- Zarei, S., Gaeeni, A., & Ahmadifard, A. (2024). Presenting the digital university model in Payam Noor Universities. *Quarterly Journal of Research and Planning in Higher Education*, 31(1), 115-134. <https://doi.org/10.61838/KMAN.IRPHE.31.1.6>