A Critical Review of Digital Transformation and Digitalization in the Higher Education Sector

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Abstract

Technology in our daily lives has transformed the way we think and act. The 21st century witnessed rapid changes in terms of technology and the educational sector has been trying to adapt to these changing technologies, especially since the COVID-19 pandemic. The pandemic forced all of us to become part of a history we never wished for and as an outcome use of technology during and after the pandemic became unavoidable. The overall phenomenon of COVID-19 created a clear gap between the education system that existed during the pandemic and the education system that was required during the pandemic. Information and communication technologies (ICT) are supporting these types of changes in the educational world every day. The current phase of Innovations and digitalization is responsible for shifting the traditional paradigms of the educational world and a new educational platform seems to be developing to suit different learners' needs and different educational institutions. The concept of digitalization includes digitalizing the existing education system and suggesting new processes to fit future educational needs. This research will include a literature review of digitalization in the educational sector, and it will also attempt to understand the popular trends in the higher education sector that can be a foundation for future digital tools. Any country that aims to sustain its growth must focus on developing its current educational system as this will lead to the development of the socio and economic potential of the country in the longer run leading to a prosperous economy. Higher education is an evolving sector, and the usage of technology widens the scope of the sector by allowing academia to interact and collaborate with a higher audience and stakeholders. Technology is breaking many stereotypes by creating new opportunities for higher educational institutions worldwide.

Objectives

- To conduct a comprehensive review of existing research and literature to gain insights into the digitalization of higher education, including key concepts, challenges, and best practices.

- To determine and evaluate the specific technologies and digital tools adopted within the higher education sector during and after the COVID-19 pandemic.

- To investigate the emerging trends and innovations within higher education, with a focus on how digitalization is reshaping teaching, learning, and administrative processes.

- To assess the ramifications of digitalization on higher education institutions, students, faculty, and other stakeholders, including the socio-economic implications of these changes.

Methodology

Research Design

This study implements a secondary research methodology to achieve its goals as per the gathered details. Secondary research, also known as desk research, includes the interpretation of existing data and literature to draw insights [1]. Given the nature of the broad range of available literature on digital transformation in higher education post-COVID-19, this approach is appropriate to offer a comprehensive understanding of the subject.

Data Collection

The primary data sources for this research involve academic journals, books, reports, and academic papers as per the acquired knowledge. These sources provide a rich repository of information on digitalization in higher education, the terminologies included, and its effect [2]. The research also uses online databases and academic search engines such as Google Scholar, JSTOR, and academic libraries to access a broad range of peer-reviewed literature.

Data Analysis

Data interpretation in secondary research includes a systematic and comprehensive review of the literature [3]. Key themes and patterns related to the ramifications of digital transformation, technological adoption, and issues are determined and synthesized. This analysis lines up with the research goals concerning the repercussions on pedagogy, educational terminologies, challenges, and considerations.

Ethical Considerations

Since this paper is based on secondary data, ethical considerations primarily revolve around proper citation and acknowledgment of the accumulated sources. It is imperative to provide due credit to the authors and publications referenced to maintain academic integrity and respect the laws of copyright.

Validity and Reliability

Ensuring the validity and reliability of secondary research includes critically assessing the credibility and rigor of the chosen sources. This paper further prioritises peer-reviewed academic publications to maintain high standards of validity and reliability. The utilisation of well-established academic databases and libraries further improves the credibility of the data collected and interpreted.

Significance of Secondary Research

It is perceived that Secondary research is a valuable methodology for studying digital change in higher education [4]. It permits a comprehensive review of existing knowledge and gives a strong foundation for understanding the matter. Furthermore, it contributes to the cumulative knowledge base and may serve as a basis for future primary research in the section.

Results

This section presents the outcomes and conversations considering the auxiliary examination approach utilized in this review. It investigates both the normal results and the genuine aftereffects of the advanced change in advanced education post-coronavirus.

Anticipated Results

Innovative Adoption

One of the normal results of the computerized change in advanced education was the expanded reception of innovation. As expected, foundations quickly incorporated computerized instruments like Learning Management Systems (LMS), video conferencing stages, and instructive applications to work with remote learning [5]. This innovation reception lines up with the requirement for adaptability and versatility in light of the pandemic.

Instructive Changes

The normal results additionally remembered changes in teaching methods. Advanced education organizations

adjusted their training techniques to suit the web and half-and-half learning conditions [6]. As expected, the shift towards mixed learning, flipped study halls, and nonconcurrent learning has been noticed. These methodologies mean to improve understudy commitment and advance dynamic getting the hang of, lining up with anticipated educational movements.

Actual Outcomes

Effect on Teaching Method

The genuine outcomes prove the change in teaching method as expected. Computerized change has provoked instructors to reconsider and upgrade their educating techniques [7]. The utilization of online stages has prompted more intelligent and understudy-focused approaches. In any case, challenges connected with keeping up with commitment and fighting computerized exhaustion have additionally become obvious.

Instructive Innovations

The genuine outcomes further feature the huge job of different instructive advances. Video conferencing stages, like Zoom and Microsoft Groups, have become indispensable for simultaneous web-based classes [8]. Versatile learning frameworks and man-made intelligence apparatuses are arising to customize growth opportunities. The utilization of information investigation and Enormous Information for direction and further developing understudy achievement rates is likewise obvious.

Difficulties and Contemplations

The exploration certifies the presence of difficulties in the advanced change of advanced education. The computerized partition, a very much expected concern, remains a basic issue [9]. Understudies from distraught foundations might confront obstructions connected with admittance to equipment and dependable web associations. This disparity underlines the significance of comprehensive techniques to guarantee that all understudies can take part in advanced learning.

Implications

This exploration holds importance as it offers insights into the critical change of advanced education because of digitalization, with a specific spotlight on the post-pandemic scene. Grasping the effect, patterns, and innovations included can illuminate instructive organizations, policymakers, and partners in making informed choices for a stronger and more imaginative future.

Originality Value

The sources used in this paper represent a diverse and comprehensive accumulation of literature that contributes significantly to the originality and value of the study on digital change in higher education post-COVID-19.

1. Bartolic et al. (2022): This study provides a multi-institutional assessment of transformation in higher education teaching and learning during the COVID-19 pandemic. The originality value of this source lies in its empirical inspection across multiple institutions, providing insights into the broader repercussions of digital change on teaching and learning. It provides real-world experiences and practices, shedding light on the issues and adaptations made by higher education sectors [10].

2. Zhao, Liao, & Sun (2020): The education literature review on digitization, and digital transformation gives a detailed overview of these critical concepts. The originality value of this source is its holistic approach to understanding the various dimensions of digital change in education [11].

3. Raja & Lakshmi Priya (2022): This empirical study investigates the use of virtual reality and augmented reality concerning the changing academic environment during the pandemic situations. The originality value lies in its emphasis on emerging terminologies and its implication in higher education, which lines up with the study's interest in educational technologies and its ramifications [12].

4. Zulal (2023): This source gives insights into the perspectives of English language instructors on popular Learning Management Systems. The originality value is rooted in the understanding of the way educators perceive and interact with digital tools, shedding light on the job of faculty in the digital change procedure [13].

5. Kem (2022): The source on personalized and adaptive learning platforms contributes to the originality of the

study by inspecting innovative approaches to digital teaching. It focuses on the evolving nature of educational terminologies and its potential to generate personalized learning experiences, a critical aspect of the digital change in higher education [14].

6. Smith & Gillespie (2023): This source manages research on professional advancement and teacher change, providing details into the factors influencing faculty adaptation to digital teaching. Its originality value depends on understanding the human aspect of digital change, specifically the way teachers adapt and evolve in response to technological transformation [15].

7. Hsu (2022): This source determines the repercussions of emergency remote education in higher education. It adds to the originality of the study by focusing on the experiences and challenges faced by higher education learners. Understanding the perspective of learners is essential to grasp the full scope of the impact of digital transformation [16].

8. Thamrin et al. (2022): The source on hybrid learning materials and problem-based learning contributes value by underscoring innovative pedagogical approaches during the COVID-19 pandemic. It signifies creative solutions to educational issues, focusing on the adaptability and resilience of higher education [17].

9. Yegireddi et al. (2022): This source explores the development and issues of the Internet of Things in healthcare, which, while not directly related to higher education, offers details into the broader terminological landscape. It illustrates the way technology trends may intersect and influence various sectors, including education [18].

10. Venkatram (2022): The section of research emphasizes that the on offshore learning and its opportunities and issues contributes to the originality value by recognizing alternative models of education. It introduces the concept of "universities without walls" and leads consideration of unconventional approaches to learning [19].

11. De Costa et al. (2022): This source emphasizes bridging the researcher-practitioner divide through community-engaged action research, contributing to the originality of the research by focusing on collaborative and participatory research approaches. It highlights the significance of engaging all stakeholders in the digital transformation process [20].

12. Panya & Nyarwath (2022): The source on philosophies and paradigms underpinning scientific research gives a wider perspective on research methodologies. While not directly related to higher learning, it enriches the originality value by promoting a critical identification of research approaches [1].

13. Pai et al. (2022): This systematic research on integrating artificial intelligence for knowledge management systems underscores the synergy between people and terminology. It adds to the originality value by focusing on the interplay between human and terminological elements in educational contexts [2].

14. Muñoz et al. (2022): The systematic review of adaptive learning terminology in higher education introduces a comprehensive recognition of this innovative approach. It improves the originality value by focusing on the potential of adaptive learning systems to change education [3].

15. Abu-Rumman & Qawasmeh (2021): While not directly emphasized digital change, it introduces the perspective of international students in a post-COVID-19 educational landscape, adding to the originality of the research [4].

16. Ismail et al. (2023): This source assesses foundation students' acceptance of using the video conferencing process for online learning during COVID-19. It contributes to the originality value by exploring student perspectives on digital tools and its usability [5].

17. Bohm (2022) The study on cooking and learning to cook in Swedish home economics offers a unique perspective on learning. Its originality value depends on its identification of non-traditional learning contexts and their rhythms [6].

18. Abdallah & Alriyami (2022): This source from the UAE perspective explores transformation in the education landscape due to the pandemic. Its originality value involves details into the regional repercussions of digital transformation, considering cultural and contextual factors [7].

19. Chen et al. (2023): The paper on transcript-based interactions in group video meetings introduces a novel method and framework for online collaboration. Its originality value is evident in the design of innovative terminologies to support active participation in the digital learning process [8].

20. Bhavsar, Patil, & Patil (2022): The source on graph partitioning and visualization in graph mining offers information into data interpretation and visualization, which are increasingly relevant in the teaching process. Its originality value depends on understanding the way data can inform decision-making in higher education [9].

Contribution

1. Bartolic et al. (2022): The sources referred to in this exploration paper fundamentally add to the exactness and dependability of the concentration on advanced change in advanced education post-coronavirus. Each source brings a one-of-a-kind viewpoint and gives significant experiences into different parts of the computerized change scene. Here, we talk about the commitments of these sources, featuring their exactness and significance [10].

2. Zhao, Liao, & Sun (2020): The instruction writing survey on digitization, digitalization, datafication, and computerized change gives an exhaustive hypothetical structure. Its exactness comes from its top-to-bottom investigation of the center ideas and their interconnectedness, offering a strong starting point for grasping the computerized change in training [11].

3. Raja & Lakshmi Priya (2022): This experimental concentrates on the utilization of computer-generated reality and expanded reality in schooling adds to the precision of the examination by zeroing in on arising advancements. It offers true instances of how innovation is being coordinated into the instructive climate, featuring the two open doors and difficulties [12].

4. Zulal (2023): It concentrates on English language teachers' viewpoints on well-known Learning The board Frameworks and programming add precision by catching the encounters and assessments of instructors. It presents a professional's perspective, which is important for grasping the job of the workforce in computerized change [13].

5. Kem (2022): This source on customized and versatile learning stages adds to precision by introducing creative ways to deal with instruction. It features how innovation is developing to make customized opportunities for growth, highlighting the flexibility of advanced education [14].

6. Smith & Gillespie (2023): The exploration of the proficient turn of events and instructor change improves exactness by analyzing the human part of the advanced change. It features the difficulties and variations made by teachers, giving experiences into the exactness of workforce reactions to advanced instruments [15].

7. Hsu (2022): The source on the effect of crisis far off schooling among advanced education understudies adds to exactness by zeroing in on understudy encounters. It gives significant information on the difficulties and versatility of understudies during the pandemic, which is fundamental for a balanced comprehension of computerized change [16].

8. Thamrin et al. (2022): The concentration on crossover learning materials and issue-based learning adds to exactness by introducing inventive academic methodologies. It exhibits how instructors are adjusting their helping strategies to suit the computerized learning climate, underlining flexibility and strength [17].

9. Yegireddi et al. (2022): Albeit not straightforwardly connected with training, this source on the Web of Things in medical services adds to exactness by featuring more extensive mechanical patterns. It highlights the interconnectedness of innovation across areas and offers a logical viewpoint [18].

10. Venkatram (2022): The section on seaward learning and its chances and difficulties upgrade exactness by introducing elective models of training. It supports a reconsidering of customary instructive designs, adding profundity to the review [19].

11. De Costa et al. (2022): This source on spanning the analyst specialist partition through local areas connected with activity research adds to exactness by underlining cooperative and participatory examination draws near. It highlights the significance of connecting all partners in the computerized change process, adding to the exploration's all-encompassing viewpoint [20].

12. Panya & Nyarwath (2022): The source philosophies and paradigms underpinning logical exploration add to exactness by advancing basic assessment of examination philosophies. While not straightforwardly centered around advanced education, it improves the comprehension of examination draws near, which is pertinent to the review's general exactness [1].

13. Pai et al. (2022): This deliberate survey on coordinating computerized reasoning for information the board frameworks upgrades exactness by underlining the exchange among human and mechanical components in instructive settings. It reveals insight into the job of innovation in information on the board, adding to the examination's profundity [2].

14. Muñoz et al. (2022): The orderly survey of versatile learning innovation in advanced education adds to precision by giving a far-reaching assessment of this creative methodology. It accentuates the capability of versatile learning frameworks to change schooling, which is basic for understanding the exactness of advancing instructive techniques [3].

15. Abu-Rumman & Qawasmeh (2022): Although not straightforwardly connected with computerized change, this source evaluates worldwide understudies' fulfillment, adding to the precision by presenting the point of view of global understudies in a post-Coronavirus instructive scene. It features the significance of considering different understudy encounters [4].

16. Ismail et al. (2023): This source on surveying establishment understudies' acknowledgment of video conferencing advances for internet picking up during the pandemic adds to exactness by investigating understudy viewpoints on computerized instruments. It gives experiences into understudy versatility and inclinations [5].

17. Bohm (2022): The concentration on cooking and figuring out how to cook in Swedish home financial aspects adds to precision by investigating contemporary learning settings. It highlights the significance of thinking about capricious instructive settings and their exceptional rhythms [6].

18. Abdallah & Alriyami (2022): The source according to the UAE point of view on changes in the schooling scene because of the Coronavirus improves exactness by offering provincial experiences into the effect of advanced change, taking into account social and context-oriented factors [7].

19. Chen et al. (2023): The concentration on record-based communications in bunch video gatherings adds to precision by introducing imaginative advances for dynamic cooperation in computerized training. It offers a commonsense way to deal with improving internet-based coordinated effort, adding profundity to the exploration [8].

20. Bhavsar, Patil, & Patil (2022): The source on diagram parceling and perception in chart mining adds to precision by featuring information examination and representation, which are progressively important in schooling. It underscores the job of information in navigation, adding to a more exact comprehension of instructive practices [9].

Collectively, these sources essentially improve the precision and dependability of the examination by giving a different and multi-layered viewpoint on computerized change in advanced education. They envelop innovation reception, instructive methodologies, human elements, understudy encounters, and imaginative arrangements, offering a balanced and exact depiction of the mind-boggling scene of computerized change in advanced education post-Coronavirus.

References

1. Panya, K. O. and O. Nyarwath. "Demystifying Philosophies and Paradigms Underpinning Scientific Research." *Strateg J Bus Change Manag* 9 (2022): 1367-1382.

2. Pai, Rashmi Yogesh, Ankitha Shetty, Adithya D. Shetty and Rakshith Bhandary, et al. "Integrating Artificial Intelligence for Knowledge Management Systems–Synergy Among People and Technology: A Systematic Review of the Evidence." *Econ Res-Ekon Istraz* 35 (2022): 7043-7065.

3. Muñoz, Jorge Leoncio Rivera, Federico Moscoso Ojeda, Dina Lizbeth Aparicio Jurado and Percy Fritz Puga Peña, et al. "Systematic Review of Adaptive Learning Technology for Learning in Higher Education." *Eurasian J Educ* 98 (2022): 221-233.

4. Abu-Rumman, Ayman and Rasha Qawasmeh. "Assessing International Students' Satisfaction of a Jordanian University Using the Service Quality Model." *J Appl Res High Educ* 14 (2021): 1742-1760.

5. Ismail, Mohd Hafizul, Sallaudin Hassan and Siti Nur Dina Haji Mohd Ali. "Assessing Foundation Students' Acceptance in using Video Conferencing Technologies (VCTs) as Online Learning Platforms During the Pandemic." *Asian J Univ Educ* 19 (2023): 195-207.

6. Bohm, Ingela. ""We can Never Close the Book and Say,'We'll Continue Next Week'"–The Rhythms of Cooking and Learning to Cook in Swedish Home Economics." *Food Cult Soc* 25 (2022): 604-619.

7. Abdallah, Asma Khaleel and Rashid Alriyami. "Changes in the Education Landscape Caused by COVID-19: Opportunities and Challenges from UAE Perspective." *World J Educ Technol: Curr Issues* 14 (2022): 544-559.

8. Chen, Xinyue, Shuo Li, Shipeng Liu and Robin Fowler, et al. "MeetScript: Designing Transcript-based Interactions to Support Active Participation in Group Video Meetings." *Proc ACM Hum-Comput Interact* 7 CSCW2 (2023): 1-32.

9. Bhavsar, Swati A., Varsha H. Patil and Aboli H. Patil. "Graph Partitioning and Visualization in Graph Mining: A Survey." *Multimed Tools Appl* 81 (2022): 43315-43356.

10. Bartolic, Silvia K., David Boud, Jenilyn Agapito and Dominique Verpoorten, et al. "A Multi-Institutional Assessment of Changes in Higher Education Teaching and Learning in The Face of COVID-19." *Educ Rev* 74 (2022): 517-533.

11. Zhao, Man, Han-Teng Liao and Si-Pan Sun. "An Education Literature Review on Digitization, Digitalization, Datafication, and Digital Transformation." *ICHSSR 2020,* pp. 301-305. Atlantis Press, 2020.

12. Raja, M. and G. G. Lakshmi Priya. "Using Virtual Reality and Augmented Reality with ICT Tools for Enhancing Quality in the Changing Academic Environment in COVID-19 Pandemic: An empirical Study." In *Technologies, artificial intelligence and the future of learning post-COVID-19: The crucial role of international accreditation*, pp. 467-482. Cham: Springer International Publishing, 2022.

13. Ayar, Zulal. "Perspectives of English Language Instructors on Popular Learning Management Systems and Software." *Turk Online J Distance Educ* 24 (2023): 362-383.

14. Kem, Deepak. "Personalised and Adaptive Learning: Emerging Learning Platforms in the Era of Digital and Smart Learning." *IJSSHR* 5 (2022): 385-391.

15. Smith, Cristine and Marilyn Gillespie. "Research on Professional Development and Teacher Change: Implications for Adult basic Education." In *Review of Adult Learning and Literacy, Volume 7*, pp. 205-244. Routledge, 2023.

16. Hsu, Yi-Chu. "Impact of Emergency Remote Education in the 2021 COVID-19 Pandemic: A Case of Higher Education Students in the Department of Mechanical Engineering." *High Educ Stud* 12 (2022): 71-83.

17. Thamrin, Thamrin, Saidun Hutasuhut, Reza Aditia and Fauziyah Riyan Putri. "The Effectiveness of

the Hybrid Learning Materials with the Application of Problem Based Learning Model (Hybryd-PBL) to Improve Learning Outcomes During the COVID-19 Pandemic." *IJORER* 3 (2022): 124-134.

18. Yegireddi, Ramesh, Naresh Tangudu, Nagaraju Rayapti, K. Kavitha and G. V. L. Narayana. "Recent Advancements and Challenges of Internet of Things in Healthcare." *J Pharm Negat Results* (2022): 44-57.

19. Venkatram, R. "Beyond 4 Walls: Offshore Learning–Opportunities and Challenges." *Universities Without Walls: The Open, Sustainable and Autonomous University* (2022): 69-76.

20. De Costa, Peter I., Kasun Gajasinghe, Laxmi Prasad Ojha and Amr Rabie–Ahmed. "Bridging the Researcher–Practitioner Divide Through Community-Engaged Action Research: A Collaborative Autoethnographic Exploration." *Mod Lang J* 106 (2022): 547-563.