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Impact of Leadership in Cambodian Higher Education through Digitalization

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ABSTRACT

Digitalization has been identified as a key factor for Cambodia to meet its vision 2030/2050. To achieve these visions, higher education is a powerful tool to develop human capital for national/regional competitiveness in the digital era. Very few studies have been conducted on how Cambodian higher education leaders do to prepare for this coming era of digitalization. This study employed a qualitative method using open-ended question. Forty-five key stakeholders in Cambodian higher education sector and policy makers voluntarily participated in the study. They were selected using Purposive and Snowball sampling techniques. Data were collected through the in-depth interviews to explore the participants' perceptions of an impact on leadership related to higher education in the digital era. The study also seeks to understand the digitalization, key challenges, current practices, and strategies to deal with it. Qualitative methods were used for data analysis and interpretation. The results of the study show that there are many factors that higher education leaders need to explore, especially, strategies and prioritized areas. Findings from the study significantly contribute to the positive changes in higher education sector, especially the preparation and leading Cambodian higher education to achieve the policies of the Royal Government of Cambodia, especially the vision 2030/2050.

Keywords: *Digitalization, Digital Education, Digital Era, Digital Impact, Digital Transformation*

INTRODUCTION

The world has entered the Fourth Industrial Revolution (IR), which is defined by the incorporation of numerous types of technology into human life. The idea of IR 4.0, created in Germany, refers to the application of technical advances in manufacturing, strategic technology governance rules, and other supporting policies. Artificial intelligence, robotics, the internet of things, and other technologies are playing an increasingly important part in this industrial revolution (Culot et al. 2020). In reality, IR 4.0 influences schooling (Shahroom and Hussin 2018). Nowadays, education is geared on incorporating technology, both physical and non-physical, into the learning process. With changes in the external environment, it is vital to update education governance in order to adapt and shift from traditional to digital administration (Tangahu 2021). Implementing measures to prepare higher education in Indonesia for Industry 4.0 is a significant challenge. Education is a major factor in the country's industrial growth (Ali, Mardapi, and Koehler 2020). To provide the best possible contribution, higher education organizations must sustain their performance. Higher education's organizational performance may be recognized through both national and international rankings of institutions.

Akour and Alenezi (2022) tell that in today's age of revolutionized knowledge, it is vital and critical to understand the value of technology efforts and their role in the development of business models. Higher education leaders should grasp the crucial role of digital transformation and how it might affect their institutions' success. Today, leaders cannot discuss the transformation of higher education institutions without incorporating new technology into their day-to-day operations. Unavoidably, the future of institutions is built on solid foundations of digitization and digitalization. Furthermore, without the use of digital technology, teaching and learning, research, scholarship, and overall institutional operations will be challenging. Mohamed Hashim, Tlemsani, and Matthews (2022) argue that digital revolution in the global higher education environment decides the future path to a sustainable education management plan. University planning includes the use of digital technologies to impact student access and achievement. They also use learning to enhance research and scholarly projects. Furthermore, Mohamed Hashim, Tlemsani, and Matthews (2022) contend that in order to integrate digital transformation capabilities, universities leverage their delivery capabilities through offshore branches or transnational distance learning; however, students will inevitably rely heavily on digitalization of education, which is primarily driven by information communication technology. The increasing globalization of education has had a significant impact on how universities design their learning and development, delivery, and continuous improvement processes.

However, at than two years into the epidemic, everything has altered and moved online. Online learning, meetings, workshops, and seminars have become

commonplace in both academic and non-academic contexts. Students and instructors have become accustomed to them. Schools and colleges in Cambodia may now deliver online lectures with increased confidence and efficacy. Educational administrators and leaders have got a better knowledge of online and blended learning delivery and are more likely to implement change in their pre-pandemic education provision (Heng and Doeur 2021).

Heng and Doeur (2021) has discovered that digital transformation in higher education may enhance Cambodian higher education by offering at least three advantages to the sector, including expanded options for blended learning, better use of ICT in education, and greater potential for institutional collaboration.

The term "digital transformation" means "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies" (Vial 2019). It entails "major business improvements (such as improving customer experience, streamlining operations, or creating new business models) enabled by the use of new digital technologies (social media, mobile, analytics, or embedded devices)" (Fitzgerald et al. 2014).

According to Velu et al (2019), Digitalization is an excellent strategy for building organizational resilience. The urge to switch to digital media for the sustainability of processes/activities during the pandemic is growing (Hadiono and Santi 2020). In other words, the pandemic may be viewed as the catalyst for the shift of traditional education into digital education. The movement in the use of instructional media and learning materials toward digitalization compels all education stakeholders to adjust and leave their comfort zones. With the pandemic's worldwide effect, increased efficiency, social coordination, and resource allocation as components of digitalization are variables that have a substantial impact on organizational recovery.

Dynamic and strategic leadership talents are essential to assist firms maintain the increasingly unpredictable, complicated, and uncertain business environment. According to Khan (2019) and Lee, Vargo, and Seville (2013), Leaders should consider risk and uncertainty as inherent business factors, and they should proactively and preemptively plan for all conceivable future situations. With a good leader, the organization can overcome additional risks and problems.

Digital leadership, as well as other characteristics such as digital literacy, plays a vital role in improving academic success. Digital literacy is defined as the capacity to use technological and digital equipment to search, assess, use, communicate, and generate digital information using cognitive and technical abilities. (Neumann et al., 2017). Furthermore, Abas et al. (2019) has discovered that organizational accomplishment and performance improve when people are highly adept in digital media and technology.

Problem Statement

Vuyisile Msila (2022) has proved that without a vision and collective decision-making, few organizations would prosper in today's information and communication technologies (ICTs). Furthermore, the study found that digital leaders with diverse technological and emotional intelligence will be able to support their teams while improving the performance of their organizations. Effective digital leaders rely on a clear vision and fostering an environment of collaboration and support.

Research shows that digital leaders in institutions may struggle with digital technologies due to constraints that restrict their adoption (Cristina Mercader 2020). University professors require advantages and methods to combat opposition to change. Leaders must guide their people out of crises while ensuring that the company can deal with change. Dongare SudeshNasiket (2023) argues that leaders must understand how change occurs: the end of something, a transition time, and a new beginning. When there is a lack of vision, institutions fail to incorporate technology. These visionary leaders use modern tools to achieve their common aims Abdul Quddus (2020). Furthermore, Quddus believes that digital leaders must cultivate an e-culture that will lead to improved university performance.

Research Questions

1. To what extend digital education will be in the future in Cambodian higher education?
2. What are the digitalized challenges faced by Cambodian higher education?
3. What are the current practices of leadership in Cambodian higher education with regard to digitalization?
4. How do Cambodian higher education leaders prepare for the digital era?

Research Objectives

1. To explore the concept of digital education in the future in Cambodian higher education.
2. To explore digital challenges faced by Cambodian higher education.
3. To identify the current practices of leadership in Cambodian higher education with regard to digitalization.
4. To formulate appropriate strategies for Cambodian higher education leaders to well prepare for the digital era.

LITERATUR REVIEW

In Ghana, Boateng et al (2016) has experimentally explored students' determinants of e-learning materials using SEM and discovered perceived usefulness and attitude as major predictors. The ease of access to technology infrastructure supports the characteristics of students and training (Alhabeeb and Rowley 2018).

Yakubu and Dasuki (2019) have discovered that performance expectation and effort expectancy play important roles in determining behavioral intention for digital transformation. Likewise, Kayali and Alaaraj (2020) has identified four ideas for E-Learning in poor countries: relative benefit, simplicity of use, social influence, and user happiness. Price value, performance expectancy, and enabling conditions are all indicators of technological preparedness (Chen et al. 2021).

Elvir Akhmetshin (2020) identified barriers to the long-term growth of online education, one of which is a shortage of new instructors capable of working in a digital setting. It also provides an analysis of the findings of a comprehensive study to assess higher education's readiness to the parameters of the digital economy, revealing that most universities are in the early stages of informatization and automation processes, demonstrating the relevance of the materials presented.

Regardless of the digital transformation plan used, higher education institutions may confront several problems. One of the most difficult tasks is defining a strategic vision for digital transformation. HEIs require a strategic vision that enables the entire institution to collaborate in the execution of digital projects. This requires strong leadership and a specialized staff that can confidently communicate and execute their goals. A clear vision will increase the team's involvement and investment in the digital transformation process (Luis Silva Rodrigues 2017).

All stakeholders in higher education must be digitally literate in order to successfully execute digital strategies. With a growing age range and various audiences, higher education institutions must effectively adapt to evolving technology. Meeting student expectations and needs is critical to enhancing the student experience. Financial and technological limits may provide obstacles, as developing technologies can be costly and need access to certain technology. To achieve successful implementation, higher education institutions must have the appropriate resources. Furthermore, the growing use of digital technology and connectivity presents new security, compliance, and data protection problems. Automation and digitalization can improve agility, but they also raise cybersecurity risks (Luis Silva Rodrigues 2017).

To fully benefit from digital transformation, humans must possess a diverse set of cognitive talents, as well as digital capabilities that represent creativity, problem-solving, and socio-emotional skills. Because a significant amount of our

lives are spent in educational settings developing skills and preparing for a professional path, societal changes, skill development, and learning are becoming more intertwined (Bogdan Fleaca, Elena Fleaca, Sanda Maiduc 2022).

The digital education action plan also addresses the need to encourage and expand the meaningful use of digital and creative instructional techniques for digital transformation. (EUROPEAN COMMISSION 2022). It acknowledges the need to enhance teaching and learning by capitalizing on digital possibilities and scaling up new practices, concepts, techniques, processes, tools, systemic thinking, and design thinking to deliver the appropriate balance of transversal/soft skills and robust digital abilities. Three tangible acts were proposed as viable answers to the issues of education in the context of digital revolution such as:

1. Refined teaching and learning with the aid of the use of digital technology;
2. Digital competencies and skills for the digital transformation;
3. Education betterment based on improved data analysis and foresight.

However, a thoroughly comprehending of digital competence needs to be connected to the holistic perspective provided by LifeComp (2020) which supports individuals' interdependence in their quest of managing the difficulties provided by digital transformation and quickly changing societies. The framing reference deciphers the complex interrelations among key dimensions:

1. Personal growth, this involves the capacity to deal with uncertainty, stress, and complexity, as well as the ability to work independently and manage a professional career.
2. Social competence relates to learning norms of behavior and communication conventions in our environments, as well as the capacity to engage constructively, cooperate, negotiate, understand diverse points of view, build confidence, and develop empathy.
3. Learning to learn competence that relates to critical curiosity, cognitive intelligence, creativity, and resilience; it also has to do with the capacity to learn and keep trying; it also has to do with efficient time management and group and individual information processing.

The framework of digital skills and life competencies as below:

1. Information and data literacy: Utilize and oversee digital data, information, and content; assess the relevance of the source and its contents
2. Communication and collaboration: Utilizing digital technology to engage, cooperate, and communicate; maintaining one's online identity and reputation
3. Digital content creation: enhancement, as well as information and content integration into the corpus of existing knowledge; producing

and modifying digital material in compliance with licensing agreements and copyright laws.

4. Safety: safeguarding digital tools, content, and personal information; understanding how digital technology affects social inclusion, wellbeing, and the environment.
5. Problem-solving: addressing concerns and difficulties in digital environments while staying current with technological advancements (EUROPEAN COMMISSION 2022).

Areas of life competence & key factors, such following below:

1. Personal development: self-regulation, flexibility, well-being.
2. Social competence: empathy, communication, collaboration.
3. Learning to learn competencies: growth mindset, critical thinking, managing & learning.

The wide range of conceptual and substantive contributions made to the issue of digital leadership in higher education shows how incomplete and unclear the area of "digital leadership" is at this point. Teachers in a leadership role: Teaching educators how to become "Digitals Scholars" is the goal. Balwant (2016) has brought up the topic of course offerings: in this area, the primary goal is to incorporate "digital content" into the HEI's current course portfolio, for example, by providing degree programs in data science or doing big data research. Lastly, and perhaps most crucially, just a small number of articles address how HEI leadership ought to develop in the digital age. Among them are suggestions for structuring management tasks in participatory, networked organizations (the status of "e-leadership" research at the moment) by Arnold and Sangrà (2018).

RESEARCH METHODOLOGY

The study used as an action research and thematic analysis approach (Mohajan, Haradhan 2018). This design was qualitative, allowing for locating, recognizing, and interpreting themes and patterns in qualitative data. Convenience sampling of respondents and interview tool were utilized to guarantee that participants found at their jobs were included in the study (Ugwu, Chinyere. N. and Eze Val, H. U. 2023). The semi-structured questionnaires included Under Secretary of State, Director general, Deputy Director General, Secretary General, Director of Department of ministry, Deputy Director Department of ministry, President, Vice President, Board Director (vice) Head, University (vice) dean, University professor/ lecturer, Head Office (ministry)/ University head department, Post graduate/Executive Director, and School principle/school mentor.

The researcher has interviewed 45 participants who are involved in digitalized learning and teaching in higher education. The researcher has done 5 main steps to ensure that valid questionnaires are understood and answerable like determine clearly interview questions, questions reviewed by experts, select the participants who are involved in digitalized studying and teaching, piloting the interviews, and make some modification modes (Mohd Aliff Abdul Majid 2017).

RESULT AND DISCUSSION

There were 45 participants of whom three were females and four were expatriate professors engaged in the study. Their ages varied from 30 to over 60 years old. All participants hold at least master's degrees to Ph.D. In terms of working positions, eight of them have the title as Excellencies in the organization/ministry/university as shown in Table 1:

Table 1. Demographic Profile of Respondents

No.	Position held in the organization/ ministry	No.
1	Under Secretary of State	1
2	Director general	2
3	Deputy Director General	1
4	Secretary General	2
5	Director of Department of ministry	4
6	Deputy Director Department of ministry	5
7	President	2
8	Vice President	3
9	Board Director (vice) Head	3
10	University (vice) dean	3
11	University professor/ lecturer	10
12	Head Office (ministry)/ University head department	5
13	Post graduate/ Executive Director	2
14	School principle/ school mentor	2
		45

Source: Processed Data by Researcher

Digital education: (i) impacts on all sectors, (ii) leads to digital economic and social development, (iii) makes education system stronger, (iv) closes gaps between urban, rural and remote, (v) uses technology-enhanced education

including the use of computers, smartphones, data analysis, electronic library and other means for quality education, (vi) transforms learning from the classroom to technology education, (vii) uses different types of applications such as Learning Management System (LMS), Black board, Weblink, Zoom, Cloud and other apps, (viii) requires HEIs to be strongly integrated with digital, (vi) promotes learning, teaching, management, leadership by individual, team, unit and ministries.

The challenges facing by higher education in Cambodia are: (i) the technological capacity of the users (teachers, students, staff), (ii) the low qualification of human resource if compared to the other countries, (iii) the inappropriate use of existing human resources (teaching different subject specialization), (iv) the living standard of students and learners, (v) shortage of technology resources, facilities and supports, (vi) internet access, (vii) the low students enrolment at HEIs, (viii) lack of supports by ICT experts, (ix) limited investment on digital infrastructure and human capital, (x) key stakeholders' perception on digitalization including conservative ideas (satisfy with the status quo and do not want to change), (xi) education quality assurance of some HEIs matters, (xii) digital security, (xiii) weak alignment between HEIs' curricula with the lower level and labor market, (xiv) communication difficulties, (xv) brain-drain of qualified workforce, (xvi) no significant income different between university and the non-university holders.

Current practices of leadership in higher education related to digitalization are: (i) building human resource in digital by recruiting young qualify staff and capable leaders in the HEIs, (ii) providing necessary digital tools/means to key staff, (iii) providing free internet access to students and staff, (iv) compliance with the Royal Government of Cambodia/Ministry of Education, Youth and SPort - RGC/MoEYS policies and strategies on digitalization, (v) inviting experts to support or sending staff overseas to be trained by experts, (vi) initiating the development of cyber universities, (vii) encouraging and promoting the use of apps and software, (viii) seeking financial support from International Financial Institutions (IFI), (ix) applying digital management and implementation system (payment, learning, management), (ix) promoting excellence to be able to compete locally and globally, (xi) mobilizing more investment in HEIs that has potential and excellence including Memorandum of Understanding (MoU) with other partners, (xii) ensure quality by follow guideline set by Accreditation Committee of Cambodia (ACC) requirements, (xiii) take advantage of digital to serve and improve the quality of higher education.

Strategies for HEI leaders to prepare for the digital era are: (i) workforce building to upskill staff including select/recruit staff and teachers according to digital needs, (ii) attracting new qualified graduates and reducing the brain-drain movement, (iii) raising awareness and build confidence of key stakeholders (students, staff, parents) in digitalization, (iv) establish digitalized management

system to manage staff, data (cloud), study documents and tracking(v) organizing digital friendly for people to use (richer and easier), (vi) professional development content on digital content should be the main focus, (vii) conducting more research on the demand and outcomes of digital context, (viii) attracting more investment from private sectors, development partners and developed countries on digitalization at HEIs, (ix) HEI leaders must play a role model and be ambitious in ensuring quality of digital education to meet own vision- society provides for a smart country, a smart city or a smart ministry, starting with every smart person, (x) ensuring equity and quality of digitalization, (xi) design curricula to meet the vision: digital citizenship/ society/ business.

The figure has shown the enhancing higher education institutions (HEIs) in Cambodia. It describes a four-step procedure to reach the best possible outcome in the digital age. Analyzing and scanning the surroundings is the initial step. This entails examining data, academic publications, and policies to detect gaps in HEIs' present practices. The creation of a model or paradigm and the recommendation of tactics are the main objectives of the second phase. This entails taking into account the responsibilities of HEIs, Industry Revolution 4.0 (IR 4.0), and Vision 2030/2050. Testing and validating the tools is the third step. This involves gathering information and creating suggestions for policy. The last stage is all about execution. This covers the functions of HEIs as well as inputs, procedures, outputs, results, and impacts.

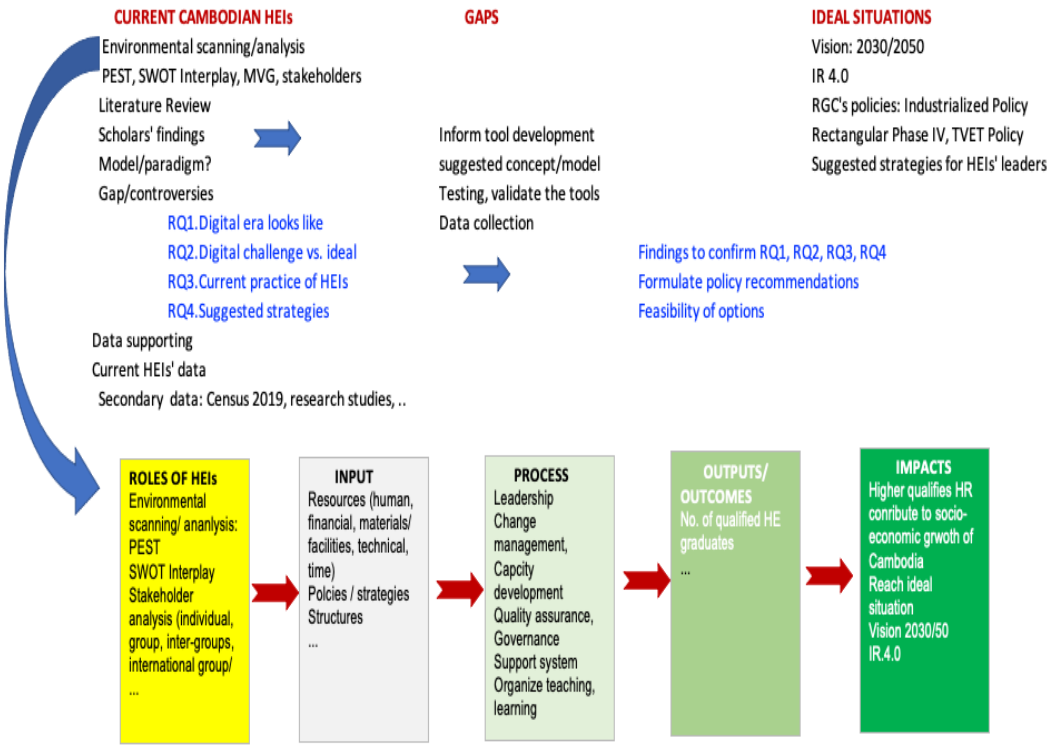

Figure 1. Proposing Model of HEI Functions
Source: Processed Data by Researcher

CONCLUSION AND SUGGESTION

Conclusion

Gap between urban, rural, and remote areas. However, challenges include inadequate human resource capacity, limited investment in digital infrastructure, negative perceptions of digitalization, and weak alignment of curricula with the labor market. Current practices in higher education leadership include building human resources, offering digital tools, complying with policies, using external experts, initiating programs, and mobilizing investment. Strategies for HEI leaders to prepare for the digital era include workforce building, attracting new graduates, raising awareness, establishing digital systems, conducting research, attracting investments, using role models, ensuring digital quality, and designing curricula for labor markets.

Suggestion

The text suggests strategies for HEIs to develop digital infrastructures, ensure digital trust, and introduce digitalized institutionalizing. Short-term strategies include raising awareness, ensuring digital trust, and balancing supply and market in HEIs post-Covid-19. Medium-term strategies involve developing a national database on demand and supply of digital skills, promoting digital talent, and implementing national programs and initiatives. Long-term strategies involve linking HEIs to regional/global value chains, creating jobs, skills, investment, improving social welfare, and closing digital gaps.

The creation of a new generation of digital education requires considering factors such as impact on learning, training, management, cost, devices, technology comparisons, software, and methodologies for assessing learning. Future research should use quantitative methods, cover provincial levels, and survey respondents to understand HEI leaders' responses and perceptions. HEIs play a crucial role in building workforces for digital education, transformation, and the digital economy.

REFERENCES

Akhmetshin, Elvir, Karine Barmuta, Vladimir Vasilev, Hilary Okagbue, and Ogochukwu Ijezie. 2020. "Principal Directions of Digital Transformation of Higher Education System in Sustainable Education." Edited by W. Strielkowski, E. Animitsa, and E. Dvoryadkina. *E3S Web of Conferences* 208:09042. https://doi.org/10.1051/e3sconf/202020809042.

Akour, Mohammad, and Mamdouh Alenezi. 2022. "Higher Education Future in the Era of Digital Transformation." *Education Sciences* 12 (11): 784. https://doi.org/10.3390/educsci12110784.

Alhabeeb, Abdullah, and Jennifer Rowley. 2018. "E-Learning Critical Success Factors: Comparing Perspectives from Academic Staff and Students." *Computers & Education* 127 (December):1–12. https://doi.org/10.1016/j.compedu.2018.08.007.

Ali, Muhamad, Djemari Mardapi, and Thomas Koehler. 2020. "Identification Key Factor in Link and Match Between Technical and Vocational Education and Training with Industry Needs in Indonesia." In *Proceedings of the International Conference on Online and Blended Learning 2019 (ICOBL 2019)*. Yogyakarta, Indonesia: Atlantis Press. https://doi.org/10.2991/assehr.k.200521.053.

Arnold, Deborah, and Albert Sangrà. 2018. "Dawn or Dusk of the 5th Age of Research in Educational Technology? A Literature Review on (e-) Leadership for Technology-Enhanced Learning in Higher Education (2013-2017)." *International Journal of Educational Technology in Higher Education* 15 (1): 24. https://doi.org/10.1186/s41239-018-0104-3.

Balwant, Paul T. 2016. "Transformational Instructor-Leadership in Higher Education Teaching: A Meta-Analytic Review and Research Agenda." *Journal of Leadership Studies* 9 (4): 20–42. https://doi.org/10.1002/jls.21423.

Boateng, Richard, Alfred Sekyere Mbrokoh, Lovia Boateng, Prince Kwame Senyo, and Eric Ansong. 2016. "Determinants of E-Learning Adoption among Students of Developing Countries." *The International Journal of Information and Learning Technology* 33 (4): 248–62. https://doi.org/10.1108/IJILT-02-2016-0008.

Brussels. 2022. *Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions*.

Chen, Shih-Chih, Shing-Han Li, Shih-Chi Liu, David C. Yen, and Athapol Ruangkanjanases. 2021. "Assessing Determinants of Continuance Intention towards Personal Cloud Services: Extending UTAUT2 with Technology Readiness." *Symmetry* 13 (3): 467. https://doi.org/10.3390/sym13030467.

Culot, Giovanna, Guido Nassimbeni, Guido Orzes, and Marco Sartor. 2020. "Behind the Definition of Industry 4.0: Analysis and Open Questions." *International Journal of Production Economics* 226 (August):107617. https://doi.org/10.1016/j.ijpe.2020.107617.

Fitzgerald, Michael, Nina Kruschwitz, Didier Bonnet, and Michael Welch. 2014. "Embracing Digital Technology." http://sloanreview.mit.edu/faq/.

Fleaca, Bogdan, Elena Fleaca, and Sanda Maiduc. 2022. "Digital Transformation and Current Challenges of Higher Education." *TEM Journal*, August, 1235–41. https://doi.org/10.18421/TEM113-32.

Hadiono, Kristophorus, and Rina Candra Noor Santi. 2020. "Menyongsong Transformasi Digital."

Heng, Kimkong, and Bunhorn Doeur. 2021. "COVID-19 and Cambodian Higher Education: Challenges and Opportunities." https://cefcambodia.com/books/.

Kayali, Mohammad, and Saad Alaaraj. 2020. "Adoption of Cloud Based E-Learning in Developing Countries: A Combination of DOI, TAM and UTAUT" 1 (1).

Khan. 2019. "Organizational Resilience: A Dynamic Capability of Complex Systems."

Lee, Amy V., John Vargo, and Erica Seville. 2013. "Developing a Tool to Measure and Compare Organizations' Resilience." *Natural Hazards Review* 14 (1): 29–41. https://doi.org/10.1061/(ASCE)NH.1527-6996.0000075.

Majid, Mohd Aliff Abdul, Mohhidin Othman, Siti Fatimah Mohamad, Sarina Abdul Halim Lim, and Aziz Yusof. 2017. "Piloting for Interviews in Qualitative Research: Operationalization and Lessons Learnt." *International Journal of Academic Research in Business and Social Sciences* 7 (4): Pages 1073-1080. https://doi.org/10.6007/IJARBSS/v7-i4/2916.

Mercader, Cristina, and Joaquín Gairín. 2020. "University Teachers' Perception of Barriers to the Use of Digital Technologies: The Importance of the Academic Discipline." *International Journal of Educational Technology in Higher Education* 17 (1): 4. https://doi.org/10.1186/s41239-020-0182-x.

Mohajan, Haradhan Kumar. 2018. "Qualitative Research Methodology in Social Sciences and Related Subjects." *Journal of Economic Development, Environment and People* 7 (1): 23. https://doi.org/10.26458/jedep.v7i1.571.

Mohamed Hashim, Mohamed Ashmel, Issam Tlemsani, and Robin Matthews. 2022. "Higher Education Strategy in Digital Transformation." *Education and Information Technologies* 27 (3): 3171–95. https://doi.org/10.1007/s10639-021-10739-1.

Mohd Khalid Mohd Abas, Ros Aizan Yahaya, Mohd She Fee Din. 2019. "Digital Literacy and Its Relationship with Employee Performance in the 4IR" 4 (December).

Neumann, Michelle M., Glenn Finger, and David L. Neumann. 2017. "A Conceptual Framework for Emergent Digital Literacy." *Early Childhood Education Journal* 45 (4): 471–79. https://doi.org/10.1007/s10643-016-0792-z.

Quddus, Abdul, Budi Sulistiyo Nugroho, Lukman Hakim, M Sidi Ritaudin, Een Nurhasanah, Abin Suarsa, Umum Budi, et al. 2020. "Effect of Ecological, Servant Dan Digital Leadership Style Influence University Performance? Evidence from Indonesian Universities." *Systematic Reviews in Pharmacy* 11 (10).

Rodrigues, Luis Silva. 2017. "Challenges of Digital Transformation in Higher Education Institutions: A Brief Discussion," November. https://www.researchgate.net/publication/330601808.

Sala, Arianna, Yves Punie, Vladimir Garkov, and Marcelino Cabrera. 2020. *LifeComp: The European Framework for Personal, Social and Learning to Learn Key Competence*.

Shahroom, Aida Aryani, and Norhayati Hussin. 2018. "Industrial Revolution 4.0 and Education." *International Journal of Academic Research in Business and Social Sciences* 8 (9): Pages 314-319. https://doi.org/10.6007/IJARBSS/v8-i9/4593.

SudeshNasiket, Dr Dongare. 2023. "Change Management in Higher Education an Overview" 10 (9).

Tangahu, Werti. 2021. "Modern Education in Revolution 4.0" 8 (1). https://doi.org/ijiert.org.

Ugwu, Chinyere. N. and Eze Val, H. U. 2023. "Qualitative Research," January. https://doi.org/www.idosr.org.

Velu, Shubashini Rathina, Abdullah Al Mamun, Thavamaran Kanesan, Naeem Hayat, and Sharmini Gopinathan. 2019. "Effect of Information System Artifacts on Organizational Resilience: A Study among Malaysian SMEs." *Sustainability* 11 (11): 3177. https://doi.org/10.3390/su11113177.

Vial, Gregory. 2019. "Understanding Digital Transformation: A Review and a Research Agenda." *The Journal of Strategic Information Systems* 28 (2): 118–44. https://doi.org/10.1016/j.jsis.2019.01.003.

Vuyisile Msila. 2022. "Higher Education Leadership in a Time of Digital Technologies: A South African Case Study," June.

Yakubu, M Nasiru, and Salihu Ibrahim Dasuki. 2019. "Factors Affecting the Adoption of E-Learning Technologies among Higher Education Students in Nigeria: A Structural Equation Modelling Approach." *Information Development* 35 (3): 492–502. https://doi.org/10.1177/0266666918765907.