

## Higher education digital transformation implementation in Indonesia during the COVID-19 pandemic

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### ABSTRACT

The pandemic is forcing universities to carry out digital transformation simultaneously. However, the pandemic opened Pandora's box revealing the fundamental weaknesses of universities that make them unprepared to adapt to changing times. However, the pandemic can be an opportunity to transform the entire workforce in universities so that their existence remains relevant. The critical factor in this transformation is the leader. Today's leaders must change from traditional to digital. Digital leaders can be a catalyst for change to oversee digital transformation in universities. Therefore, this study intends to explain how the implementation of digital leadership in universities in Indonesia, especially since the world has been hit by a pandemic. The author uses the literature study method and interviews stakeholders in universities. The author finds that three fundamental challenges must be overcome: culture and mindset, human resource competence, and infrastructure. Higher education leaders must resolve these three challenges to ensure that digital transformation runs smoothly. The author argues that universities are still relevant to producing quality human resources and abilities according to the times. To maintain the relevance and role of universities, leaders need to implement changes holistically, starting by creating a holistic grand design, increasing human resource competencies, infrastructure development, developing a new mindset, creating progressive culture, to organizational restructuring.

**Keywords:** Higher education; digital leadership; digital transformation; digital competence; COVID-19

### *Implementasi transformasi digital pendidikan tinggi di Indonesia selama pandemi COVID-19*

### ABSTRAK

**Pandemi** memaksa perguruan tinggi untuk melakukan transformasi digital secara simultan. Namun demikian, pandemi membuka kotak pandora yang mengungkapkan kelemahan fundamental perguruan tinggi yang membuat mereka tidak siap beradaptasi dengan perubahan zaman. Akan tetapi, pandemi dapat menjadi peluang untuk mentransformasi seluruh gugus kerja di perguruan tinggi sehingga keberadaan mereka tetap relevan. Aktor kunci dari transformasi ini adalah pemimpin. Pemimpin saat ini harus berubah dari tradisional menuju digital. Pemimpin digital dapat menjadi katalis perubahan untuk mengawal transformasi digital di perguruan tinggi. Oleh karena itu, penelitian ini bermaksud menjelaskan bagaimana implementasi kepemimpinan digital di perguruan tinggi di Indonesia, terutama semenjak dunia didera pandemi. Penulis menggunakan metode studi literatur dan wawancara dengan para pemangku kepentingan di perguruan tinggi. Penulis menemukan bahwa ada tiga tantangan fundamental yang harus diatasi, yakni budaya dan pola pikir, kompetensi sumber daya manusia, dan infrastruktur. Tiga tantangan ini harus diselesaikan oleh pemimpin perguruan tinggi untuk memastikan transformasi digital berjalan dengan baik. Penulis berargumen bahwa perguruan tinggi masih relevan untuk mencetak sumber daya manusia yang berkualitas dan memiliki kemampuan sesuai zaman. Untuk mempertahankan relevansi dan peran perguruan tinggi, pemimpin perlu menerapkan perubahan secara holistik mulai dari membuat grand design yang holistik, peningkatan kompetensi sumber daya manusia, pembangunan infrastruktur, mengembangkan pola pikir baru, menciptakan kultur yang progresif, hingga restrukturisasi organisasi.

**Kata-Kata Kunci:** Perguruan tinggi; digital leadership; transformasi digital; kompetensi digital; COVID-19

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**Submitted:** January 2022, **Revised:** May 2022, **Accepted:** May 2022, **Published:** June 2022

ISSN: 2303-2006 (print), ISSN: 2477-5606 (online). Website: <http://jurnal.unpad.ac.id/jkk>

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## INTRODUCTION

Technology has developed in such a way at a very significant speed. Many technological innovations have been produced in recent years, ranging from nanotechnology, biotechnology, blockchain, and artificial intelligence. The possibility of new technologies is also very high, along with innovators who continue to develop new technologies with new goals and mindsets. In education, many technology platforms have developed and have even become the choice of many citizens of the world, such as Coursera, Udacity, Future Learn, and Udemy. The platform allows the dissemination of wider knowledge to the global community so that people who want to get quality knowledge can visit their website. These innovations affect all aspects of life, including the higher education sector.

Consequently, technology generates interest from educational institutions and the private sector. An example is the Massive Open Online Course (MOOC) which makes universities and the private sector interested in implementing it. MOOC arises because the internet provides the potential to create a learning environment that is richer and more flexible than traditional methods. In Indonesia itself, there are already several MOOCs such as Skill Academy, IndonesiaX, and Tech in Asia Edu.

The existence of technology has penetrated the world of higher education throughout the world, including in Indonesia. However, the adoption of technology in universities is relatively slow in Indonesia. An example is the application of an e-learning system. The Ministry of Education and Culture in 2019 revealed that only 20 out of 4,741 universities had adopted e-learning. The technology integration process is slow and several factors behind it. Innovation disruption measured from five dimensions reveals the dominant dimension of compatibility in technology adoption, where compatibility is adjusted based on norms, past experiences, and adopter needs. When viewed from this perspective, it means that the cause of the slow integration of technology is that not all feel the need for it. In other words, universities continue to maintain the traditional way (Kusdibyo & Leo, 2018).

However, a pandemic came and took the leaders in college by surprise. Universities

are urged to immediately carry out rapid and adaptive transformations to continue the learning and education process. Based on Higher Education Statistics 2020, there are 4.593 universities and more than 312.890 lecturers who must do digital migration to deliver the curriculum properly (Kemendikbudristek-dikti, 2020). Distance education is the only option available amid limited face-to-face activities, so every leader in higher education must adopt the technology. The transition to distance education can be tricky because Indonesian educational institutions are still accustomed to using the old methods. When adopting the digital way, we need time to get used to various technical and non-technical things about technology so that challenges and obstacles will arise in terms of implementation.

Furthermore, because the pandemic has made the country implement a social distancing policy, which makes all activities conduct in-home, there are many challenges when conducting distance education, which results in non-optimal knowledge dissemination. Several studies have revealed the adverse effects of online learning. For example, 64% of students at IAIN Pekalongan felt sad because they had to study online. There are at least three reasons why they do not like online learning: the lack of face-to-face intensity with lecturers and students, signal and quota problems, and the many assignments from lecturers (Hasanah & Setiawan, 2020). Online learning has weaknesses such as using the internet network that requires adequate infrastructure, requires much money, and communication via the internet has various obstacles/slow (Windhiyana, 2020).

In spite of the negative effect, the pandemic has had a bigger positive effect: it creates the momentum for digital transformation. The pandemic provides a stimulus to encourage all universities to adapt and change their perspective on working and communicating. In the shadow of COVID-19, college leaders have an equally important opportunity to rethink the future of their institutions (Bebbington, 2020). For example, a study from Inside Higher Ed and Hanover Research 2021 found that 82% of US colleges agreed that the pandemic provided an opportunity to make new changes to their institutions. From the results of this research, the pandemic provides a very large opportunity to carry out a large-scale transformation in

universities to streamline work methods and restructure the entire system so that they can run efficiently and optimally.

The transformation in question is changing the higher education system from traditional to digital: how to update learning mechanisms, how organizations work, and effective curriculum against changing times—in other words, changing the culture of the institution, starting from the way of working, studying, to communicating. For example, a study examining the impact of digitization on higher education in Saudi Arabia mentions three conclusions regarding digital transformation: digital learning is different compared to traditional learning, digitalization improves student learning outcomes, and technological work systems increase productivity and develop the work environment (Abdulrahim & Mabrouk, 2020).

To carry out the transformation, the role of the leader becomes very important. For example, leaders influence job satisfaction in Higher Education Institution in Lithuania (Alonderiene & Majauskaite, 2016). Another research at university lectures in Banten shows that transformational leadership has a positive influence on innovative work behavior and university performance (Purwanto, Purba, Sijabat, & Bernarto, 2021).

Therefore, leaders need to have a digital mindset. Therefore, we need to look at how the digital transformation process is from a leader's point of view. Unfortunately, much literature discusses only one aspect, and the majority emphasizes the online learning aspect, especially in Indonesia. In addition, the process of change carried out by leaders is still not widely studied in the context of Indonesia's universities.

Digital transformation involves holistic aspects, both practical and philosophical. Changes in culture, mindset, and policies must be adapted to the times. Technology integration must be carried out considering that universities are a bridge between employment and society with the compatibility of educational skills. Some predicted that there would be critical changes in education, both external and internal. In addition, COVID-19 also provides great change opportunities for universities (Waller, et al., 2019). Therefore, changes in the education sector, especially higher education,

are vital to produce future generations which have outstanding quality and competence. The competence such as critical, innovative, creative, highly competitive, and have high social sensitivity.

The question is, how does this digital transformation process take place in universities? What are the challenges faced by leaders in universities in carrying out digital transformation? Therefore, the author examines how leaders carry out the implementation of digital transformation in universities. Some literature associates it with the concept of transformational leadership, which is a promising approach to guarding transformation (Ehlers, 2021). There is a positive correlation between transformational leadership and digital change (Antonopoulou, et al., 2021). Therefore, leaders in the digital era are transformative leaders because they change the working mechanism and what is needed. Nevertheless, this understanding of transformational leadership needs to be expanded to touch on aspects of cultural change and mindsets and competencies that must be possessed in this era.

Theory of Change (ToC) can be used to examine the dynamic of change. ToC is a decision support tool that illustrates the causal links and sequences of events needed for an activity or intervention to lead to a desired outcome or impact and articulates the assumptions underlying each step in the chain (Biggs, et al., 2016). Change theory or change knowledge can be very powerful in informing education reform strategies and in turn getting results, but only in the hands (and minds, and hearts) of people who have a deep knowledge of the dynamics of how the factors in question operate to get particular results (Fullan, 2007).

In the context of a university, many phenomena require them to change. The COVID-19 phenomenon has prevented universities from using traditional ways of working: face-to-face learning, taking care of administration directly on campus, et cetera. Digital technology, including its omnipresent connectedness and its powerful artificial intelligence, is the most recent long wave of humanity's socioeconomic evolution (Hilbert, 2020). In essence, COVID-19 is pushing universities to make massive improvements or transformations.

Digital transformation is not simply the

adoption of technology but rather a process that aims to improve an institution by triggering significant changes in its fundamental component through a combination of information technology, computing, communication, and connectivity (Vial, 2019). Digital transformation is also a series of profound and coordinated cultural, workforce, and technological changes that enable new educational and operating models and transform business models, strategic directions, and institutional value propositions (Brown, et al., 2020). Digital transformation is a continuous holistic change effort starting from culture to policy. In addition, the focus of digital transformation is a user-oriented culture to new forms of service (Mergel, et al., 2019). Thus, digital transformation involves a complete change to the entire work system of the organization.

Regarding the goal of digital transformation, it can be described in three dimensions: social, organizational, and technological. From a social perspective, digital transformation aims to positively impact society, increase the credibility of universities, and increase the capabilities of the actors involved. In addition, from a social aspect, technology allows learning to be more inclusive because everyone can access knowledge anywhere with minimal costs.

On the organizational aspect, digital transformation can change organizational work procedures and business models. Technology will cut the complex hierarchy to make the work system more efficient and effective. From a technological perspective, digital transformation can support the performance of human resources, teaching, innovation, administration, and research (Benavides, et al., 2020).

The pandemic has forced universities to change themselves and innovate. Therefore, the role of the leader becomes essential. The leader's mindset needs to change from being a manager to being a change driver. A leader needs to transform from a traditional to a digital leader. Digital leaders drive digital collaboration, but collaboration directly impacts it when it comes to capacity building (Saputra & Nugroho, 2021). Because of their role as catalysts, digital leaders must do the right thing for the strategic success of digitalization for companies and their business ecosystems (El Sawy, et al., 2016)

In the context of higher education, this

understanding implies that higher education leaders will do the things that are appropriate and needed to survive the shock of the pandemic. Doing the right thing means changing how things work, including increasing human resource capacity. Doing the right thing also means having the courage to innovate and leave the old culture that is no longer relevant to the times. In addition, doing the right thing also means that leaders need to improve their competencies to navigate change more precisely and take higher education to a higher level. Therefore, digital leaders must demonstrate their leadership qualities in the offline and online worlds (Narbona, 2016).

Because all activities are transferred to the cyber or digital world, communication needs to be updated, including important things such as curriculum responsibilities and educational programs for students. Leaders need to formulate new ways to communicate with all employees and students and diversify the communication channel. Lecturers with online classes, Lecturers cannot establish social relationships of the same quality as when learning is still face-to-face. Lecturers need to be creative so that the enthusiasm of their students is maintained to gain knowledge.

Today's leaders in all sectors, including in the higher education sector, must recognize to change, change their ways, and enhance their digital capabilities. This capability will be very important to make universities remain relevant. Furthermore, considering the current conditions where technological developments are rapidly evolving, navigating in a dynamic and VUCA (Volatility, Uncertainty, Complexity, Ambiguity) environment requires technological leadership that combines leadership capabilities and optimizing digital technology as part of the opportunities to increase the top line and reduce threats (Mihardjo et al., 2019).

Therefore, the way of working must change where digital leaders need to apply a fast, cross-hierarchical, team-oriented, and collaborative approach focusing on innovation. In addition, they also explained that digital leaders must have the ability to apply new work methods and instruments such as design thinking (Oberer & Erkollar, 2018). Digital leaders must also have a life-long learning mindset (Hensellek, 2020) because there will be new technologies that make leaders must understand how to use them



for the benefit of the institution. Therefore, competence must develop, and enthusiasm for learning must be improved and maintained. Above all, digital leadership is about all of us, the people who work in organizations and want to make change happen (Martins, 2019). This study intends to explain how the implementation of digital leadership in universities in Indonesia, especially since the world has been hit by a pandemic.

## RESEARCH METHOD

The author emphasizes a qualitative approach. Most qualitative research involves the language of cases and contexts, using bricolage, examining social processes and cases in their social context, and studying interpretations or meanings in particular socio-cultural settings (Neumann, 2014).

The author uses two methods of data collection. First, the authors conduct an interview with relevant stakeholders. The author conducted interviews with eleven informants. The informants interviewed by the authors consist of three universities Rector, one Dean of the Faculty, two Head of Program Studies, two Head of University Research Centre, one faculty member, one University Director, and one policy maker. All of the informants were directly involved in the formulation of higher education digital transformation policies. The author wants to investigate the stakeholders' perspectives according to their experiences while overseeing a digital transformation in the universities they lead.

Second, the authors enrich the interview data with literature studies related to the implementation of digital leadership in universities. A literature review is the best way to show evidence at the meta-level and reveal areas where more research is needed, forming an important framework for building conceptual models (Snyder, 2019). The author uses data triangulation to analyze the data, to then be analyzed and developed into a comprehensive analysis.

## RESULTS AND DISCUSSION

When an organization seeks to transform

from a manual process to a comprehensive digital platform, this requires a successful leadership strategy that can be influential and impactful in advancing this type of change over the long term (Sow & Aborbie, 2018). It takes a visionary leader who can utilize technology, integrate technology into organizational systems, and be adaptive in its implementation. Vision for the future is an essential factor in digital transformation, and we are not talking about one or two years but the next 10-20 years (Kane, 2019).

Before the pandemic, the university was already at a disadvantage. Research from KPMG in 2020 declared that the golden era of higher education was over. There are several factors behind this, but the big picture is that what is expected does not match reality. Global research from IPSOS 2020 reveals that 61% of respondents view degrees as less valuable than ten years ago. In addition, 57% of respondents think universities are not equipping students with skills relevant to their career success and providing higher salaries (IPSOS, 2020). The increasing school fees are not accompanied by an increase in performance quality, for example, administrative inefficiency (KPMG, 2020).

The university, as an institution that creates human resources and produces novelty science, needs to maintain its relevance. The university must be at the forefront of the Indonesian generation in the future (Kusumawardhana, 2021). Digital technology is not limited to the world of social media, but also to education (Maramis, 2021). Unfortunately, with the arrival of the industrial revolution 4.0. does not necessarily make universities change their work procedures. For example, in Indonesia, there are only 15-20 universities that implement e-learning from thousands of universities (Larasati, 2019).

Digital technology has many benefits, especially in terms of costs, to ensure accessibility to a large audience (Mikheev, Serkina, & Vasyaev, 2021). Technology can make colleges less expensive because many parties are trapped in financial problems, both private and public universities. A survey from the University of Indonesia's BEM revealed that 72 percent of 3.321 students have difficulty paying tuition fees (Narda, 2020). 849 out of 1,117 students stated it clearly (JPNN, 2021). Head of Region 10 Higher Education Service

Institution, Ministry of Education and Culture, only 25 percent of private campuses are strong enough to withstand the impact of the pandemic (Permadi, 2020). The financial difficulties experienced by private universities impact the quality of learning that students get.

The university must be able to answer these challenges. However, they cannot immediately carry out the transformation without thinking about the proper grand design. Organizations wishing to apply digital technology to gain a more significant competitive advantage must also ensure their respective business models are aligned (Loonam, et al., 2018). Furthermore, all parties cannot deny that higher education is an industry. As an industry, universities must align their grand designs according to the dynamics of the times.

Head of the Postgraduate Program at the UGM Political and Government Department, Bayu Dardias Kurniadi, said that one of the challenges in digital transformation is someone who does not understand technology; they only computerize, not change the work culture (Kurniadi, 2021). Leaders in the digital age must take on the additional role of digital change agents and enablers, implying that they must recognize the opportunities offered by new technologies and encourage their implementation.

In general, digitization opens new possibilities such as virtual teams and intelligent work, introduces new communication tools, increases speed and access to information, influences power structures, and increases efficiency and standardization (Cortellazo, et al., 2019). For teachers, lecturers, and students, digital transformation benefits from a variety of teaching and learning methods and opportunities to interact with the global education and science community and engage in global “open science” initiatives (Mikheev, Serkina, & Vasyaev, 2021). The London School of Public Relations Rector even said that digital transformation is necessary for education to keep up with technological developments. (Ikhsano, 2021).

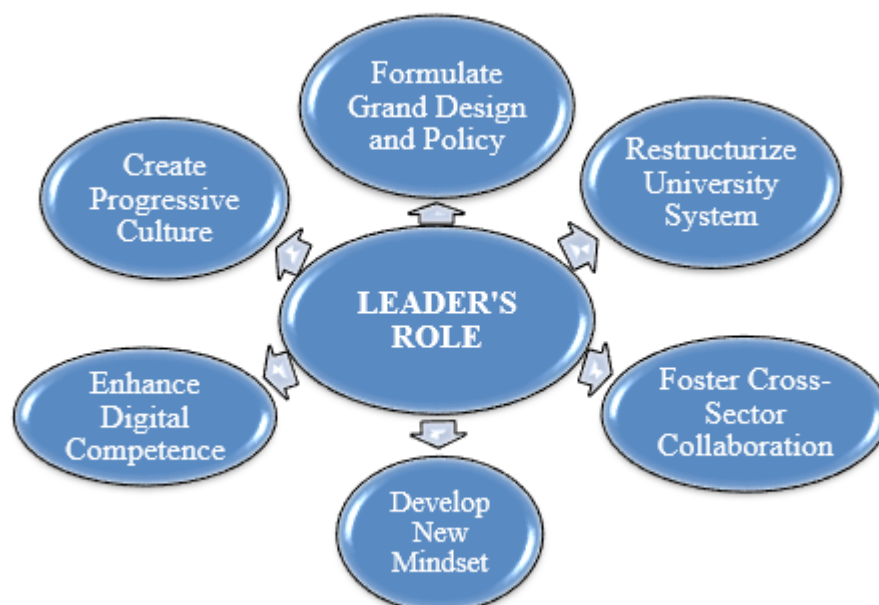
To accelerate digital transformation, digital leaders must erase five false basic assumptions from the minds of their members: digital transformation has no impact on us, transformation must be fast, digitalization is only a technical issue, students are ready but

not with teachers, and digitalization is beyond our budget (Kopp, et al., 2019). They must be able to change themselves as well. To carry out their role optimally, digital leaders need to be surrounded by competent staff but not within the leadership structure to produce ideas out of the box (Hardjito, 2021).

Overall, it can be said that digital transformation is a holistic process that involves many elements. Due to many elements involved the digital transformation process is inherently uncertain: changes need to be temporary and then adapted; decisions need to be made quickly, and groups from across the organization need to be involved (Tabrizi, et al., 2019). In other words, the leader must be ready to change the policy: they need to be adaptive and flexible. The question is: how should faculty approach maintaining rigor and delivering quality education and support their students’ ongoing ability to engage in meaningful, interactive educational activities in the context of a crisis such as this pandemic? (Neuwirth, et al., 2020).

There are six roles leaders can fulfill in order to transform higher education. **First, leaders must create a holistic grand design for transformation.** The pandemic has accelerated the demands for digital transformation in universities. Digital transformation is currently associated with the cumulative amount of information and communication technology (Batko, et al., 2018). The social and technological components merge and produce a complex socio-technological ecosystem. In higher education, learning, teaching, administration, and scientific meetings have been integrated into one socio-technical ecosystem. Pandemic has created momentum for universities to develop technical and innovation models for the Internet of Things (IoT) and build future IoT leaders (Aldowah, et al., 2017). It is a necessity that digital leaders must carry out digital transformation to improve technical capabilities and changes culture and mindset. The fundamental thing that leaders need is to create a holistic grand design by considering the situation and conditions. This grand design aims to create a digital ecosystem that keeps the university relevant as a printer of superior human resources.

A study says that working from home makes people more productive by 5% because of the savings in travel time (Curran, 2021).



Source: Author Primary Data, 2021

**Figure 1 Leader's Role in Higher Education Digital Transformation**

There will be adjustments to working after the pandemic where all parties will implement hybrid work. This trend shows how the mix of offline and online work will be implemented in the future. Given that the effects of the pandemic are gradually subsiding, their preferences for work and study are changing. There will be a hybrid or mixed culture between online and offline learning or working. In the context of higher education, it can be seen how this trend began to emerge—research from the University of Indonesia regarding the preferred learning method preferences. Of the total UI student respondents, as many as 18,923 people chose the blended-learning option 9,083 (48%), fully online learning as many as 5,298 (28%), and those who chose complete face-to-face learning only 4,542 (24%). (Hamdi, 2021) Lecturers at UI universities also have the same tendencies as students. Of the 1,610 respondents, 982 respondents (61%) chose blended learning, then complete online learning was 483 respondents (30%), while the complete face-to-face learning was only chosen by the rest (9%) (Yandwiputra, 2021).

The two trends above will affect how the university system will work. Therefore, higher education leaders need consistency and commitment to implement the grand design that

has been formulated (Suhatri, 2021). In making a grand design, leaders need to create a digital ecosystem, formulate a new business model that can make universities operate optimally, and carry out this grand design with the principles of collaboration and adaptation to technological developments and innovations from various work units personally and institutionally.

**Second, equip human resources with adequate competencies.** The main challenge is the difficulty of making a grand design of a complete digital transformation because not many are competent and at the same time understand the culture. Work in institutions (Hardjito, 2021). Human resources are crucial in the digital transformation process, especially when humanity is entering the Industrial Revolution 4.0. Without human resources, a university will not run optimally. The role of universities in preparing the nation's competitiveness in the era of global competition is very urgent (Fitriana, 2020).

Is the competence of human resources in higher education good enough? The answer will differ from one university to another due to various factors. However, the research entitled IMD World Digital Competitiveness Index 2021 reveals intriguing facts related to the description of the competence and talents

of the Indonesian state. This index assesses a country's digital capabilities in three aspects: knowledge, technology, and future-readiness. Of the 64 countries measured by the index, Indonesia ranks 53 with the following details: knowledge (60), technology (49), and future-readiness (48). In terms of knowledge. One of the indicators assessed in digital/technology capability which Indonesia ranks 47 out of 64 countries (IMD, 2021).

From this data, it can be said that Indonesia's digital competence is low and lack soft skills and technical skills. There is no doubt that Indonesia needs 600.000 digital talents every year (Burhan, 2021). In addition, research about the management of human resources, especially lecturers in two private universities found that lecturers experience difficulties and shortcomings in terms of using technology and from a non-technical side, which lies in the character or personality of the lecturers themselves (Hendrarso, 2020).

In the digital era, one of the most demanding skills is technological savvy. According to LSPR Rector, technological savvy became one of the main skills. "Technological Savvy is the main competency expected so that there is no difference in the work process between offline and online work. A strong and independent work ethic (without a supervisor monitor) is the dream of leaders amid a pandemic situation like this." (Ikhsano, 2021)

Digital and technical skills also have great importance. According to the author, all elements of higher education must master skills related to the digital world. There are four skills a digital leader should have, namely social media, web development, mobile applications, and big data (Antonopolou, et al., 2021). Filtering information must also be an obligation for all elements in higher education because access to information is currently very accessible, so its validity also varies (Purnama, 2021).

The last is a **soft skill**. Competencies related to non-technical aspects need to be considered, such as communication, coordination, and autonomy (Karacay, 2018). Not only these three, but there are also other skills that are needed in the future: analytical thinking, empathy, active learning, active listening, complex problem-solving, and

creativity. Leaders and members must integrate their social skills into daily communication (Cortellazo, et al., 2019). Moreover, the hybrid system implemented makes all parties must master various communication channels that are appropriate and according to their needs. Leaders need to ensure an increase in the skills of lecturers, employees, and all education staff. Leaders can hold periodic training to improve the ability of education staff so that universities can carry out all their transformations with competent human resources.

**Third, a university must develop a new mindset if they still want to retain its role as the producer of human resources.** The Dean of the Faculty of Communication Sciences at Padjajaran University, Dadang Hidayat, said that the use of technology is still only on non-functional aspects, specifically lifestyle:

"The digital transformation process is a real challenge; it is not easy to do even though the development of digital technology is already in the campus institutional environment. To carry out a transformation that can optimize the technology is constrained by several things, including more non-functional use, which tends to follow the trend, not even lagging. Institutional lifestyle rather than the function of digital technology. Of course, for this, it is necessary to strengthen knowledge and skills in using digital technology."

Educators need to understand the potential of digital tools in education and identify more pedagogical values in the context of their teaching and learning with digital tools (Amhag, et al., 2019). Leaders need to stimulate the improvement of digital capabilities and familiarization with digital ways of working so that each actor can play his role without being constrained by technical reasons.

Therefore, the university must be adaptive and flexible in responding to any changes in the environment. The dynamics of the digital world are not long-term but short-term. There are three challenges in work culture: utilizing the digital *platform*, using technology as a media learning, and transitioning from analog to digital culture.

Social media can be used as an example. They can be used as a tool for coordination and communication, as well as how to provide important information to all education



personnel, and references for learning. Wisnu Sakti Dewobroto from Podomoro University said that the problem in digital transformation is raising the level of change in the form of adjustment and having a significant and sustainable impact (Dewobroto, 2021). The university must also be able to see technology as a necessity, so lecturers must create new standards in their teaching and have indicators to measure the adoption of the knowledge being taught (Maramis, 2021). Professor Arif Satria, Rector of the Bogor Agricultural University, also expressed the same thing where the challenge is to change the analog culture to digital: *“The main challenge faced is a cultural change from old habits that are full paper to paperless, from manual culture to digital culture.”* (Satria, 2021) The change from analog to digital is important because it will make performance more efficient and effective.

These circumstances apply not only to education staff and lecturers, but students also must adapt their learning styles to digital developments. However, some students still find it challenging to learn digitally. For example, during the learning process during COVID-19 at STKIP Hindu Religion Amlapura, as many as 61.5% of students stated that they had never used online lecture media before the COVID-19 pandemic (Astini, 2020). This illustration shows that many parties are still unfamiliar with how digital works, which leaders in higher education must face.

**Fourth, leaders also must encourage their members to welcome the presence of technology and commit to forming a progressive culture in higher education.** Leaders are planning to lead digital transformation collaboratively and adaptively to technological developments and innovations from various work units personally and institutionally (Hidayat, 2021). However, the challenge is to change the culture of all stakeholders in higher education (Suhatri, 2021). Thus, irrelevant cultures must change. There are four cultures and mindsets that all stakeholder's must have, which is adaptive, lifelong learning, collaboration, and functionality.

**Adaptive**, this mindset is needed by all universities, especially how they adopt various technologies that are still common. This is not difficult if the perceptions of all these members are united that technology brings significant

benefits in the implementation of work. In addition, the technology produces innovations that can streamline administration and produce new ways of learning and teaching.

**Life-long learning.** Because technology also develops at an exponential rate, not linearly, there will undoubtedly be many innovations shortly. The possibility of adopting this new technology is also great because the needs are increasingly diverse. Therefore, leaders and members must have the attitude to be ready to continue learning.

**Functionality.** There are two things to consider when adopting the technology: adaptation to real learning needs and staff interests, goals, and specific institutional contexts within different universities (Zhu, 2015). In line with Zhu, the Dean of Communication at UNPAD also said that the culture that must be built is a functionally effective and efficient digital practice that culturally requires seriousness and a good attitude (Hidayat, 2021). In other words, both leaders and members must select what kind of technology is helpful for higher education in the future.

**Collaboration** is something that must exist in higher education culture. Collaboration does not only occur between universities or industries but across divisions. Education personnel who take care of attendance cannot operate if they do not know how to use SIAKAD. It needs to be guided by the technology division. The practice is simple but demonstrates that collaboration between divisions is necessary. In addition, it is clear that universities also need to collaborate with other universities. Universities in Indonesia have collaborated with universities abroad, for example, in an international program. Collaboration opens networks and enriches perspectives on best practices in higher education operations.

**Fifth, higher education institution leaders need to restructure the system.** Universities can learn from Bogor Agricultural University. They tried to transform while maintaining the quality of education. Professor Satria, when interviewed, told a little about the IPB transformation process. The process at IPB started several years ago with the Directorate of Information Systems and Digital Transformation (STID Directorate) at the beginning of his leadership. His task is to facilitate all work units using the information

system built by this directorate (Satria, 2021).

One must be aware that not all universities in Indonesia are like IPB. The challenge of digital transformation in Indonesia is to create a digital ecosystem by integrating hardware, software, connectivity, and a capable learning management system (LMS) (Ikhsano, 2021). Therefore, several things need to be changed in order to smoothen the transformation.

Budgeting is one of the vital parts of a restructuring university system. Concerning digital transformation, aspects that need more attention are administration and digital learning platforms. The allocated budget can be used to build a learning management system (LMS), create various other supporting applications for student apps, faculty apps, and lecturer apps, and invest in subscriptions to webinar applications, learning studios, podcasts, counseling, and conducting online student selection.

Immense organizational structures are no longer relevant in the digital world. The large structure affects the dynamics of the organization, especially in the bureaucratic aspect. Leaders need to evaluate the performance of all education employees. From this evaluation, the leader can determine efficiency, reskilling, and upskilling steps based on the data that has been collected. The top-down monitoring and evaluation process is the key to digital transformation success in higher education (Dellyana, 2021).

**Sixth, a university must foster cross-sector collaboration to build infrastructure.** Another problem that needs to be highlighted is the lack of infrastructure. Some of the critical but not yet available infrastructure are as follows: e-learning platform will make study material accessible and can save internet quota; data center optimization is also important because when the campus needs data, the university does not need to hold a survey again to do tracking, and Campus academic system (SIKAD) which has not been used properly by lecturers, education staff, and students.

College readiness is measured by how ready facilities and infrastructure are in the campus environment (Purnama, 2021). Thus, without these infrastructures, universities will not carry out digital transformation properly. However, each university has different financing capabilities, which affect the availability of supporting infrastructure. Also, the biggest

challenge was a vital infrastructure and limited space for the practice of knowledge obtained by students (Maramis, 2021). Limited budget and access to technology constrain every university from accelerating digital transformation (Kusumawardhana, 2021).

Collaboration with the private sector can answer those problems. State mandates, declining institutional enrolment or revenue, opportunities to share costs, grant funding initiatives, community needs, limited instructional capacity in certain subject matter, and new facilities are just some examples that may stimulate the need for partnering (Amey, Eddy, & Ozaki, 2007). According to Purba Purnama, a food business technology researcher and faculty member at Prasetya Mulya University, universities must also be open to companies (Purnama, 2021).

Many companies have expertise in providing digital platforms. A few months ago, Edufecta and Educampus, two digital companies, collaborated to provide an e-learning platform for private universities (Media Indonesia, 2021). The existence of partnerships can improve the performance of universities in conducting high-quality learning. Universities must be open to collaborating with the private sector (Purnama, 2021) to produce more efficient innovations. Collaboration is not only a matter of wanting or not but needs to be balanced with the willingness to collaborate (Kurniadi, 2021).

## CONCLUSION

Carrying out digital transformation is needed to maintain university relevance amid global complexity. In addition, what will survive in the age of technology are not leading universities but educational institutions that can adapt to the times and are agile in adopting technology. This means that technology opens up opportunities for more dynamic competition between universities because the determinant is how institutions adapt to overcome existing challenges and optimize the technology.

However, the digital transformation process in universities has several challenges in its implementation, such as still not understanding the use of technology, lack of infrastructure, and inadequate human resources competencies.

These three things hinder digital transformation in universities, whereas their role is essential because they need to prepare graduates with a creative and life-long learning mindset. The challenges above are fundamental and have the potential to complicate digital transformation. Moreover, Indonesia is experiencing a shortage of digital talent, both technical and non-technical.

These challenges can be solved if a leader succeeds in changing the culture and mindset of its members and adapting to this era's developments. Therefore, the role of leaders is very important in bringing about important changes in the higher education sector.

Thus, education staff, lecturers, and high-ranking officials must strengthen their competence. The competencies in question are soft skills such as critical thinking skills, life-long learning mindsets, and complex problem-solving. Meanwhile, hard skills are related to technical abilities in the digital world, such as social media, operating technology tools, and digital literacy.

Increasing competence will make it easier for universities to carry out learning that has world-class quality. In addition, leaders and their management must rethink work systems at all levels to ensure that the learning climate experienced by learners is resilient, open, and inclusive. This culture will create empowered, creative, and meaningful human resources so that they are ready to contribute to the Indonesian nation with their capacities and competencies.

Above all, higher educational institution leaders are the key to ensuring optimal digital transformation. Thus, leaders must be consistent and committed to carrying out this transformation process so that universities remain relevant and able to carry out their dignity as producers of future human resources.

Furthermore, technology will also create a new era in education: many people will take online-based classes. Learning models such as Coursera and UdeMy will be the most promising choices. Especially with the flexibility and quality provided. Universities also have to adapt to trends like these.

The core point is the need for us to restructure all existing work mechanisms, change our mindset, improve human resource competence, and build vital digital infrastructure. These four things are vital for universities to build.

Collaboration with the private sector can be one option that can be taken to strengthen the human resources sector and digital infrastructure.

This research has theoretical and practical benefits. The theoretical benefit is that it can be a reference and description of the implementation of digital leadership in universities, especially since the pandemic. This research can be a source of reference to find out the dynamics of the transformation of higher education institutions in Indonesia. The practical benefit is that it can be a reference regarding what culture and competencies need to be built to smooth the digital transformation process in universities.

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