Leading Managing Transformation to Digital University in Indonesian Context

Sigit Anggoro*, Diding Nurdin, Sururi

Doctor of Education Administration, Universitas Pendidikan Indonesia
*Corresponding Author. Email: sigit@upi.edu

Abstract: This research aims to analyze the management of digital transformation in the context of Indonesian universities. The explanatory research was employed, utilizing a survey questionnaire administered to a randomly selected sample of 302 individuals comprising members of the ICT alignment team, change team, staff, and lecturers within the PTS environment in the LLDIKTI IV area, Banten & West Java provinces. The data analysis in this study employed covariance-based structural equation modeling (SEM) procedures. Findings from this research indicate that achieving a radical transformation from traditional campus settings to digitalization, while adopting an incremental approach towards a smart university necessitates effective leadership and cultural support. A leadership coalition capable of institutionalizing new values, which subsequently become norms and guide the organizational culture, empowers members and fosters motivation for change oversight and participation. Ultimately, successful change management towards a smart university relies on leadership and culture, collectively institutionalized as a shared mental program, thereby shaping the meaningful trajectory towards a smart university.

How to Cite: Anggoro, S., Nurdin, D., & Sururi, S. (2023). Leading Managing Transformation to Digital University in Indonesian Context. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran, 9*(3), 729-739. doi:https://doi.org/10.33394/jk.v9i3.8031

Introduction

The digital transformation of higher education has become imperative in response to the advancements in digital technology (Ca , 2015; Khalid et al., 2018). Information technology has catalyzed changes, including the digitalization of education in both governance systems and services. Kurt & Tingöy (2017) highlight the widespread adoption of technology in higher education governance and the educational process. Over the past two years, there has been a significant digital transformation in higher education, and it is anticipated to accelerate even further in the coming years (Brooks & McCormack, 2020). The process of digitalization is driving the shift towards the realization of a smart university. The concept of a smart university (SmU) originates from the Internet of Things (IoT) (Ca , 2015). Tikhomirov (2015) explains that a smart university involves a comprehensive modernization of all educational processes. SmU is the result of thoughtful creative analysis, utilizing a software and hardware approach with systems, technical platforms, smart features, and best practices for the next generation (Heinemann & Uskov, 2018). Digital transformation encompasses more than just service and process innovation (Mergel et al., 2019). It is associated with fundamental changes in organizational procedures and capacities (Durão et al., 2019).

Digitizing higher education poses challenges in implementation, particularly due to the inadequate technological infrastructure, especially in developing nations like Indonesia. The Association of Indonesian Internet Service Providers (APJII) reported in 2022 that the education sector must enhance the utilization of information technology within its service system. Piccione (2019) further noted that the general public is not fully prepared to embrace

digitalization. Jackson (2019) highlighted that a mere 26% of organizations feel adequately prepared to embrace digital technology and its execution.

Various challenges arise in the process of digital transformation in higher education, necessitating attention to the negative impacts of digitalization. Alhumaid (2020) identified several challenges, including: 1) decreased basic skills, 2) dehumanization of education, 3) isolation from social interaction, and 4) social inequality. To ensure successful digitalization towards a smart university, careful preparation and planning are essential to mitigate these negative impacts and avoid failures. Heinemann & Uskov (2018) proposed a comprehensive process for smart universities. Vlachopoulos (2021) highlighted leadership development, strategic planning, and coordination as crucial factors in managing the change process in higher education and addressing the negative impacts of digitalization. Effective leadership roles and functions play a vital role in the digitalization process. Anttila & Jussila (2018) noted that many universities lack well-established managerial practices and a culture that supports the integration of quality into the transformation process towards smart universities. Cultural changes and costs present significant obstacles to digital transformation (Brooks & McCormack, 2020). Alenezi (2021) and Pérez et al. (2021) emphasized the importance of cultural factors in the development of smart universities. Additionally, Vlachopoulos & Makri (2019) highlighted that organizational process changes alone may not be sufficient to achieve cultural transformation. Teixeira et al. (2021) argued that cultural resistance represents the primary challenge in digital transformation.

In change management, the leadership role plays a crucial and well-defined position. A capable leader can effectively integrate the forces driving change while minimizing obstacles to change. Fernández-Caramés & Fraga-Lamas (2019) emphasize that a smart university is closely tied to a strategic plan aligned with the institution's mission, vision, and core values. Furthermore, Mitrofanova et al. (2019) propose two significant elements for the development of a smart university: 1) technical elements and 2) organizational elements. Both aspects are essential in shaping and advancing the transformation process towards a smart university. There are challenges for leaders to empower in dealing with the change process (Cortellazzo et al. 2019). Teepe et al. (2023) demonstrate that the digitalization process impacts individuals and their personal lives, leading to a decline in mental health quality.

Leaders play a vital role as valuable organizational resources (Bakker et al., 2023; Bakker & de Vries, 2021), and their presence significantly influences the process of change. However, constructing effective leadership for change management is not a one-size-fits-all approach, especially considering diverse contexts and challenges. Furthermore, new and unpredictable contexts introduce novel challenges and demands (Sá & Serpa, 2020). It is important to recognize that leaders may not always be effective in managing change, and leadership effectiveness itself poses a challenge (Drew, 2010). Organizational culture serves as a mechanism for change management. Skopek (2010) highlight the significance of leadership positions in fostering a culture that drives institutional transformation towards sustainable practices. Similarly, Adserias et al. (2017) and Sharma & Jain (2022) emphasize the importance of leadership positions in the transformation process.

Based on the comprehensive literature review, it becomes evident that there exists a gap pertaining to the necessity of leadership that fosters the cultivation of culture during the digital transformation process in higher education. Leaders serve as valuable assets in guaranteeing the adoption of novel approaches, attitudes, and practices while recognizing the significance of change in sustaining accomplishments. However, there is a lack of empirical exploration that explicitly outlines the role of leadership and the significance of culture within

the digital transformation process. A comprehensive depiction of these aspects is essential for comprehending their implications and formulating contextually relevant concepts.

Research makes significant contributions to the development of literature in several aspects. Firstly, it provides an explanation of how the process of digital transformation is grounded in the perspective of leadership's role and its impact on the culture and digitalization of higher education. Secondly, it highlights the crucial importance of formulating the concept of digital culture within the transformation process, drawing upon empirical events as evidence. Thirdly, it enriches the literature on digital transformation management in higher education digitization by incorporating the concepts of leadership and culture. The primary objective of this research is to analyze the management of digital transformation in the context of Indonesian universities.

Research Method

The explanatory research is used to explain the relationships between variables. It utilized a survey approach with a questionnaire administered to the change team and the ICT alignment team at each private university within the LLDIKTI IV area. The participants included staff and lecturers within the private university environment, amounting to a total of 352 individuals. The study focused on higher education institutions that are currently undergoing the process of transforming themselves into smart universities, with notable examples such as Unjani (Universitas Jenderal Achmad Yani) and Telkom University. On average, private tertiary institutions actively promote digital transformation in response to the changing demands and as a result of the restrictions imposed by the COVID-19 pandemic. The sample was selected through a simple random sampling method, ensuring proportional representation from each tertiary institution.

The measurement scale for distributive leadership within a specific context was derived from Thien's (2019) research. Thien's work emphasized teamwork leadership, focusing on two key aspects: 1) the presence of a competent leadership team within the institution, and 2) the team's dedication to performing their roles to the best of their abilities. The e-culture framework employed in this study was adapted from Zhen et al. (2021). The framework comprises four key components: 1) Functionally collaborating teams engaged in innovation and digital transformation, 2) a clear focus on embracing digital technology change, 3) fostering a culture of innovation and digital change, and 4) the organization's commitment to sharing the digital strategy with staff and valuing their input and suggestions.

The concept of establishing a Smart university (SmU) in this study is based on the work of Heinemann & Uskov (2018). The framework outlined by Heinemann and Uskov encompasses the following aspects: 1) Adaptive features, which involve expanding educational capacity through customized and individualized education approaches. 2) Resource enrichment, which entails the development and utilization of digital textbooks and facilitating the accessibility of educational content for public use. 3) Technology integration, which involves the expansion of physical and virtual learning spaces through the use of cloud-based infrastructure, enabling learning at home, on the go, and within global and local communities. Additionally, online classes are emphasized within this dimension. 4) Self-directed learning, which includes the institutionalization of online classes and the use of cloud-based infrastructure to expand flexibility in learning time. 5) Motivation enhancement, which involves the establishment of an online evaluation system and the strengthening of teachers' competencies in delivering effective education methods.

The instrument utilized in this study employed a Semantic Differential Scale, where respondents provided answers on a scale of 1 to 5, indicating gradations from very low to

very high. The data collection procedures involved the following steps: 1) Submission of data collection requests to the target private tertiary institution, 2) Communication of research objectives both verbally, through personal connections, and in writing, by obtaining a permit to collect data, 3) Coordination of research assistants for data collection at each private university, and 4) Offline and online data collection methods were employed. Out of the 500 questionnaires distributed, 473 were returned and examined. However, after considering the completeness of the answers and identifying and removing outliers, a total of 352 complete questionnaires were used for further analysis. The data analysis in this study employed covariance-based structural equation modeling (SEM) procedures. The analysis began with the construction of the model based on the underlying theory. Subsequently, the goodness of fit of the model was assessed by comparing it to predetermined criteria established as a reference for testing.

Results and Discussion

The findings indicate that each variable examined falls within the sufficient category for distributive leadership and smart university, as follows.

Table 1. Description of Research Variables

No	Variable	Mean	Standard deviation	Category
1	Distributive leadership	3.88	0.62	Moderate
2	E-Culture	3.30	0.66	Less
3	Smart University	3.71	0.67	Moderate

Based on Table 1, the e-culture variable falls within the less category. This suggests that during the digital transformation process, distributive leadership is characterized by a collaborative leadership approach that extends to the team level. Each team member understands their role and possesses decision-making autonomy aligned with the objective of establishing a smart university. However, the formation of a comprehensive e-culture is yet to be achieved. Variations within technology cohorts contribute to differences in individuals' perceptions and habits regarding information technology usage. Patterns and norms of interaction with technology also vary. In general, the outcomes of the digital transformation process are discernible, as evidenced by the expansion of education services' capacity, tailored to specific geographic locations and individual needs, albeit to a limited extent. The process also involves institutionalizing online-based learning to enhance lecturers' competencies in leveraging advanced technologies across diverse teaching opportunities. The full model of the research results is as follows:
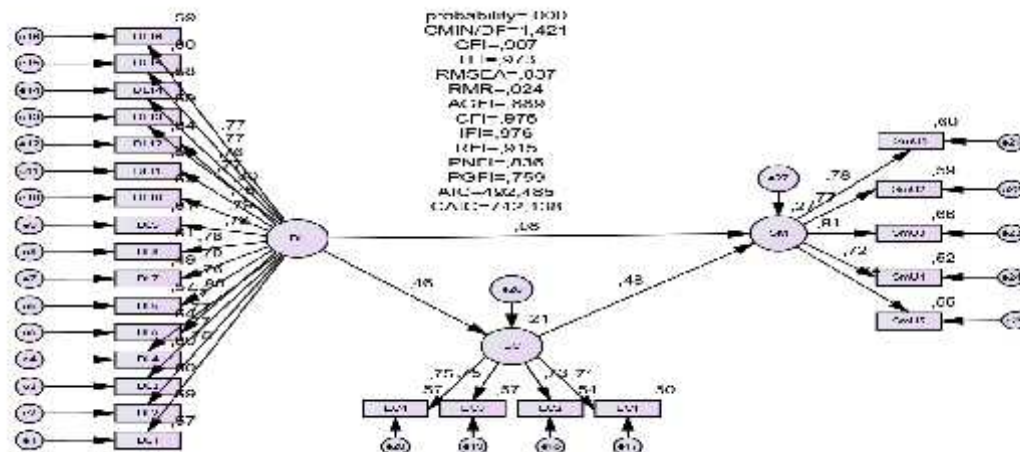

Figure 2. Full model first-order confirmatory analysis standardized regression weight

Confirmatory Factor Analysis test results (Convergent Validity, average variance extracted /AVE, Composite reliability are as follows.

Table 2. Convergent Validity, AVE and Composite Reliability Test Results

Construct	Item	Loading Factor	AVE	CR
Distributive leadership	DL1	0,754	0.542	0,872
	DL2	0,769		
	DL3	0,774		
	DL4	0,774		
	DL5	0,798		
	DL6	0,756		
	DL7	0,702		
	DL8	0,782		
	DL9	0,778		
	DL10	0,787		
	DL11	0,758		
	DL12	0,798		
	DL13	0,767		
	DL14	0,761		
	DL15	0,772		
	DL16	0,768		
E-Culture	EC1	0,708	0.57	0.92
	EC2	0,732		
	EC3	0,755		
	EC4	0,752		
Smart University	SmU1	0,776	0.62	0.87
	SmU2	0,769		
	SmU3	0,812		
	SmU4	0,721		
	SmU5	0,742		

Description: AVE = average Variance Extracted, CR= Composite reliability

The results of the analysis indicated that each observed variable's factor weight value was deemed acceptable, as it exceeded the threshold of 0.7 (Hair et al., 2014). Additionally, the average variance extracted (AVE) value for the latent variable of distributive leadership was 0.542, suggesting that there is still room for further exploration and understanding of distributive leadership in different contexts. The indicator for E Culture explained 57% of its variability, while Smart university explained 62% of its variability. The results of the discriminant validity test are as follows:

Table 3. The Discriminant Validity Test

Variabel	DL	EC	SmU
DL	1		
EC	0.463	1	
SmU	0.301	0.519	1
DL1	0.754	0.349	0.227
DL2	0.769	0.356	0.231
DL3	0.774	0.359	0.233
DL4	0.774	0.359	0.233

Jurnal Kependidikan:
Jurnal Hasil Penelitian dan Kajian Kepustakaan
di Bidang Pendidikan, Pengajaran dan Pembelajaran
https://e-journal.undikma.ac.id/index.php/jurnalkependidikan/index

Vol. 9, No. 3 : September 2023
E-ISSN: 2442-7667
pp. 729-739
Email: jklppm@undikma.ac.id

DL5	0.798	0.370	0.240
DL6	0.756	0.350	0.227
DL7	0.702	0.325	0.211
DL8	0.782	0.362	0.235
DL9	0.778	0.360	0.234
DL10	0.787	0.365	0.237
DL11	0.758	0.351	0.228
DL12	0.798	0.370	0.240
DL13	0.767	0.355	0.231
DL14	0.761	0.353	0.229
DL15	0.772	0.358	0.232
DL16	0.768	0.356	0.231
EC1	0.328	**0.708**	0.368
EC2	0.339	**0.732**	0.380
EC3	0.350	**0.755**	0.392
EC4	0.348	**0.752**	0.391
SmU1	0.233	0.403	**0.776**
SmU2	0.231	0.400	**0.769**
SmU3	0.244	0.422	**0.812**
SmU4	0.217	0.374	**0.721**
SmU5	0.223	0.385	**0.742**

Based on the test results displayed in the table above, it is evident that the indicators DL1-DL16 exhibit the highest correlation with the distributive leadership (DL) variable (X1). Similarly, the indicators EC1-EC4 demonstrate the highest correlation with the EC variable (X2), while the indicators SMu1.1-SMu5 exhibit the highest correlation with the Smart University variable (Y). Therefore, it can be concluded that there is discriminant validity within the variables. Each indicator surpasses the threshold of 0.5, indicating a stronger relationship with its respective latent variable compared to other latent variables. The results of testing the relationship between latent variables show a significant relationship between latent variables. The results of the fit model test are as follows:

Table 4. Model Test Results

Absolut Fit Measure	Stage 1 results	Improvement	Conclusion
p-value (Sig.)	0.00	0.041	Moderate Fit
CMIN	1.421	1.158	Fit
GFI(Goodness of Fit)	0.907	0.927	Fit
RMSEA(Root Mean square Error of Approximation)	0.037	0.023	Fit
RMR(Root Mean Square Residual)	0.024	0.021	Fit
Incremental Fit Measure			
AGFI(Adjusted Goodness of Fit Index)	0.889	0.908	Fit
CFI (Comparative Fit Index)	0.976	0.991	Fit
Incremental Fit Index (IFI)	0.976	0.991	Fit
Relative Fit Index (RFI)	0.915	0.930	Fit
Parsimonious Fit Measure			
PNFI (Parsimonious Normed Fit Index)	0.836	0.811	Fit
PGFI (Parsimonious Goodness Of Fit Index)	0.759	0.759	Moderate Fit

Jurnal Kependidikan:
Jurnal Hasil Penelitian dan Kajian Kepustakaan
di Bidang Pendidikan, Pengajaran dan Pembelajaran
https://e-journal.undikma.ac.id/index.php/jurnalkependidikan/index

Vol. 9, No. 3 : September 2023
E-ISSN: 2442-7667
pp. 729-739
Email: jklppm@undikma.ac.id

Absolut Fit Measure	Stage 1 results	Improvement	Conclusion
AIC (Akaike Information Criterion)	492	492	Moderate Fit
CAIC (Consistent Akaike Information Criterion)	742	742	Fit

Based on the results of the goodness-of-fit test, each criterion, including the absolute fit index, incremental fit index, and parsimony fit index, demonstrates an acceptable fit. The test results indicate that the model is accepted. There is a congruence between the field data obtained through the survey and the constructed model in the study.

The results of the causality test show a significant positive relationship between variables including the results of testing the mediating variable as seen in the following table:

Table 5. Hypothesis Test Results

Hypothesis	Direct	Indirect through PSM	Total
Distributive leadership has a positive influence on the establishment of a Smart university.	0.077	0.224	0.301
Culture has an influence on the establishment of a Smart university.	0.463		0.463
E-culture mediates the influence of distributive leadership on Smart University.	0.224		0.224

The test results revealed that distributive leadership had a positive influence on the formation of Smart University, as indicated by a beta coefficient of 0.077 and a significance value of 0.245. Culture also exhibited an influence on the formation of Smart University, with a beta coefficient of 0.463 and a significance value of 0.000. Furthermore, E-culture was found to mediate the relationship between distributive leadership and the formation of Smart University, thereby indicating a positive impact.

Discussion

The findings of this study underscore the significance of distributive leadership in driving the digital transformation process. Previous studies by Spillane (2006) and Vlachopoulos & Makri (2019) have emphasized the pivotal role of leadership in facilitating successful transformations. However, in the context of digital transformation within developing countries, effective leadership necessitates a framework that prioritizes the establishment of a digital culture. The study results further demonstrate that digital culture, as a dynamic organizational process, plays a crucial role in realizing the digitalization process and influencing the success of transformation efforts. These findings align with the perspectives of Khan et al. (2020), Proksch et al. (2021), Rutten (2018), Sharabi (2013), Westenberg & Rutten (2017), and Zhen et al. (2021), who emphasize the significance of digital culture in creating a digital-oriented environment. Sharabi (2013) also highlights the utmost importance of digital culture in driving digital transformation.

The results of the study further strengthen the position of leadership as a primary driver in fostering a digital culture during the transformation process towards a smart university. Leadership ensures that efforts are made to create a higher education institution capable of adapting to environmental changes, fostering self-directed learning, anticipating future needs, and optimizing individual potentials to expand educational access, resources, and minimize risks. These ideas are supported by established norms and effective leadership practices.

Consistent with Mabey et al. (2017) and Mowat (2019), widespread leadership at all levels of the system can ensure a successful digital transformation process. The interaction between leaders, developed through collaboration, drives changes in the governance system

of higher education institutions. Distributive leadership fosters dynamic characteristics among variables within the organization, and its impact is evident through the changing outcomes resulting from the interactions between these variables. In efforts to organize themselves internally and establish relationships with external stakeholders, leaders manage the process of value and digital environment change, while continuously driving organizational learning throughout the transformation. The leadership function at every level of the organization is crucial in shaping the culture and ultimately facilitating a more effective process. This aligns with the perspectives of Guerra-López & El Dallal (2021) as well as Robbins (2019), emphasizing that leadership ensures the achievement of goals.

During the transformative process, it is common for imbalances and stress to emerge (Teepe et al. 2023). Distributive leadership plays a crucial role by empowering leaders at all levels to motivate individuals, shape values, and instill confidence among subordinates in navigating change. The distribution of roles and tasks in the digital transformation process is crucial (Cortellazzo et al., 2019). Distributive leaders' transition from centralizing power to teams that guide, structure, or facilitate group actions at different times. By adopting a distributive leadership approach, organizations can enhance their ability to manage change effectively, fostering employee motivation to seek new equilibrium and promoting the necessary engagement to drive meaningful transformations. Once the existing status quo is dissolved, the implemented changes can be put into action.

Distribution leaders employ a methodology known as field force analysis for change, which aids in controlling and influencing the transition period towards the envisioned future state of the organization. By ensuring that the process of organizational change encompasses not only visible changes but also the more challenging cultural changes, leaders shape the values, beliefs, and thoughts of organizational members. In the digital era, cultural changes are essential, as they define the norms and values that guide the behavior of individuals within the organization. Distributive leadership plays a vital role in effectively managing the implementation of organizational initiatives, encompassing activities such as communicating change, mobilizing support from others, and monitoring the implementation process. By integrating technology and information into the higher education governance system, distributive leadership facilitates the development of a Smart university. This approach ensures that digital transformation processes, services, applications, events, facilities, human resources, governance, educational programs, and innovations are designed in alignment with institutional goals and managed based on values that promote a combination of high technology and personalized interactions.

Conclusion

The success of change management towards a smart university depends on leadership and culture that are institutionalized as a shared mental program and meaningfulness in the formation towards a smart university. The process of digital transformation in higher education necessitates the presence of a robust conceptual framework capable of guiding and elucidating a meaningful value system for all members within the organization. E-culture, as the embodiment of underlying norms and values, serves as the driving force behind the transformative changes, resulting in a distinct process compared to the past. The notion of a Smart university, rooted in the concept of being "Smart," not only demonstrates awareness of environmental shifts and digital rearrangements but also recognizes the foundational role of e-culture. This culture is cultivated in alignment with the institution's identity, emphasizing the importance of distributive leadership orientation that promotes collaborative group

Jurnal Kependidikan:
Jurnal Hasil Penelitian dan Kajian Kepustakaan
di Bidang Pendidikan, Pengajaran dan Pembelajaran
https://e-journal.undikma.ac.id/index.php/jurnalkependidikan/index

Vol. 9, No. 3 : September 2023
E-ISSN: 2442-7667
pp. 729-739
Email: jklppm@undikma.ac.id

practices. This approach proves instrumental in navigating the complex landscape and transforming higher education institutions faced with challenging situations.

Recommendation

For policy makers, it is crucial to establish clear strategic plans for digital transformation in higher education and develop policies that support universities in expanding distributive leadership practices at the organizational level. Policy makers should also create recognition and reward mechanisms within tertiary institutions that acknowledge the contributions of leaders and team members in practicing distributive leadership. As for higher education leaders, their focus should be on developing training programs that specifically target the enhancement of collaborative leadership skills, both within and outside of the workplace. Additionally, leaders should implement mentoring programs that involve senior or experienced leaders who can provide guidance and serve as role models for distributive leadership practices at all levels, including study programs, rectors, and other supporting organizational structures. It is essential for leaders to establish leadership performance indicators that take into account their ability to facilitate the development of distributive leadership practices. Leaders should strive to expand award and recognition systems and foster internal networks that promote and fully support distributive leadership within the institution. By doing so, leaders can ensure that distributive leadership becomes an integral part of the organizational structure, culture, and is embraced by all members of the institution.

References

Adserias, R. P., Charleston, L. V. J., & Jackson, J. F. L. (2017). What style of leadership is best suited to direct organizational change to fuel institutional diversity in higher education? *Race Ethnicity and Education*, *20*(3). https://doi.org/10.1080/13613324.2016.1260233

Alenezi, M. (2021). Deep dive into digital transformation in higher education institutions. *Education Sciences*, *11*(12). https://doi.org/10.3390/educsci11120770

Alhumaid, K. F. (2020). Qualitative evaluation: Effectiveness of utilizing digital and social media in education. *Utopia y Praxis Latinoamericana*, *25*(Extra 6). https://doi.org/10.5281/zenodo.3987663

Anttila, J., & Jussila, K. (2018). Universities and smart cities: the challenges to high quality. *Total Quality Management and Business Excellence*, *29*(9–10). https://doi.org/10.1080/14783363.2018.1486552

Bakker, A. B., & de Vries, J. D. (2021). Job Demands–Resources theory and self-regulation: new explanations and remedies for job burnout. *Anxiety, Stress and Coping*, *34*(1). https://doi.org/10.1080/10615806.2020.1797695

Bakker, A. B., Xanthopoulou, D., & Demerouti, E. (2023). How does chronic burnout affect dealing with weekly job demands? A test of central propositions in JD-R and COR-theories. *Applied Psychology*, *72*(1). https://doi.org/10.1111/apps.12382

Brooks, C., & McCormack, M. (2020). Driving Digital Transformation in Higher Education, ECAR research report. *EDUCAUSE*.

Ca , M. (2015). Smart university, a new concept in the Internet of Things. *2015 14th RoEduNet International Conference - Networking in Education and Research, RoEduNet NER 2015 - Proceedings*. https://doi.org/10.1109/RoEduNet.2015.7311993

Cortellazzo, L., Bruni, E., & Zampieri, R. (2019). The role of leadership in a digitalized world: A review. Frontiers in psychology, 10, 1938

Drew, G. (2010). Issues and challenges in higher education leadership: Engaging for change. *Australian Educational Researcher*, *37*(3). https://doi.org/10.1007/BF03216930

Durão, N., Ferreira, M. J., Pereira, C. S., & Moreira, F. (2019). Current and future state of Portuguese organizations towards digital transformation. *Procedia Computer Science*, *164*. https://doi.org/10.1016/j.procs.2019.12.150

Fernández-Caramés, T. M., & Fraga-Lamas, P. (2019). Towards next generation teaching, learning, and context-aware applications for higher education: A review on blockchain, IoT, Fog and edge computing enabled smart campuses and universities. In *Applied Sciences (Switzerland)* (Vol. 9, Issue 21). https://doi.org/10.3390/app9214479

Guerra-López, I., & El Dallal, S. (2021). A content analysis of change management strategies used in technological transitions in higher education institutions from the lens of a strategic alignment framework. *Online Learning Journal*, *25*(3). https://doi.org/10.24059/olj.v25i3.2395

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). *Multivariate data analysis* (7. Baskı). Pearson. Hallahan, TA, Faff, RW, McKenzie, MD (2004). An empirical investigation of personal financial risk tolerance. Financial Services Review-Greenwıch, 13(1), 57-78.

Heinemann, C., & Uskov, V. L. (2018). Smart university: Literature review and creative analysis. In *Smart Innovation, Systems and Technologies* (Vol. 70). https://doi.org/10.1007/978-3-319-59454-5_2

Jackson, N. C. (2019). Managing for competency with innovation change in higher education: Examining the pitfalls and pivots of digital transformation. *Business Horizons*, *62*(6). https://doi.org/10.1016/j.bushor.2019.08.002

Khalid, J., Ram, B. R., Soliman, M., Ali, A. J., Khaleel, M., & Islam, M. S. (2018). Promising digital university: A pivotal need for higher education transformation. *International Journal of Management in Education*, *12*(3).

Khan, Z. R., Hemnani, P., Raheja, S., & Joshy, J. (2020). Raising Awareness on Contract Cheating –Lessons Learned from Running Campus-Wide Campaigns. *Journal of Academic Ethics*, *18*(1). https://doi.org/10.1007/s10805-019-09353-1

Kurt, Ö. E., & Tingöy, Ö. (2017). The acceptance and use of a virtual learning environment in higher education: an empirical study in Turkey, and the UK. *International Journal of Educational Technology in Higher Education*, *14*(1). https://doi.org/10.1186/s41239-017-0064-z

Mabey, C., Conroy, M., Blakeley, K., & de Marco, S. (2017). Having Burned the Straw Man of Christian Spiritual Leadership, what can We Learn from Jesus About Leading Ethically? *Journal of Business Ethics*, *145*(4). https://doi.org/10.1007/s10551-016-3054-5

Mergel, I., Edelmann, N., & Haug, N. (2019). Defining digital transformation: Results from expert interviews. *Government Information Quarterly*, *36*(4).

Mitrofanova, Y. S., Sherstobitova, A. A., & Filippova, O. A. (2019). Modeling the assessment of definition of a smart university infrastructure development level. *Smart Innovation, Systems and Technologies*, *144*. https://doi.org/10.1007/978-981-13-8260-4_50

Mowat, J. G. (2019). 'Closing the gap': systems leadership is no leadership at all without a moral compass–a Scottish perspective. *School Leadership and Management*, *39*(1). https://doi.org/10.1080/13632434.2018.1447457

Pérez, F. M., Martínez, J. V. B., & Fonseca, I. L. (2021). Modelling and implementing smart universities: An it conceptual framework. *Sustainability (Switzerland)*, *13*(6).

https://doi.org/10.3390/su13063397

Piccione, P. M. (2019). Realistic interplays between data science and chemical engineering in the first quarter of the 21st century: Facts and a vision. *Chemical Engineering Research and Design*, *147*. https://doi.org/10.1016/j.cherd.2019.05.046

Proksch, D., Rosin, A. F., Stubner, S., & Pinkwart, A. (2021). The influence of a digital strategy on the digitalization of new ventures: The mediating effect of digital capabilities and a digital culture. *Journal of Small Business Management*. https://doi.org/10.1080/00472778.2021.1883036

Robbins, S. P. (2019). Essential of Organizational Behaviour (Terjemahan). *Edisi Kelima. Jakarta : Penerbit Erlangga.*, *2008*.

Rutten, K. (2018). Participation, Art and Digital Culture. In *Critical Arts* (Vol. 32, Issue 3). https://doi.org/10.1080/02560046.2018.1493055

Sá, M. J., & Serpa, S. (2020). The covid-19 pandemic as an opportunity to foster the sustainable development of teaching in higher education. *Sustainability (Switzerland)*, *12*(20). https://doi.org/10.3390/su12208525

Sharabi, M. (2013). Managing and improving service quality in higher education. *International Journal of Quality and Service Sciences*, *5*(3).

Sharma, P., & Jain, V. (2022). Role of Culture in Developing Transformative Leadership for Higher Education in Emerging Economies. In *Re-imagining Educational Futures in Developing Countries*. https://doi.org/10.1007/978-3-030-88234-1_13

Skopek, J. (2010). Sustainable and smart University Campuses; Strategic approach to sustainability and building intelligence for University Campuses. *Proceedings: CESB 2010 Prague - Central Europe towards Sustainable Building "From Theory to Practice."*

Spillane, J. P. (2006). *Distributed leadership*. San Francisco: CA Jossey-Bass Publishers.

Teepe, G. W., Glase, E. M., & Reips, U. D. (2023). Increasing digitalization is associated with anxiety and depression: A Google Ngram analysis. Plos one, 18(4), e0284091.

Teixeira, A. F., Gonçalves, M. J. A., & Taylor, M. de L. M. (2021). How higher education institutions are driving to digital transformation: A case study. *Education Sciences*, *11*(10). https://doi.org/10.3390/educsci11100636

Thien, L. M. (2019). Distributive Leadership Functions, Readiness for Change, and Teachers' Affective Commitment to Change: A Partial Least Squares Analysis. *SAGE Open*, *9*(2). https://doi.org/10.1177/2158244019846209

Tikhomirov, V. (2015). Development of strategy for smart University. *Open Education Global International Conference*.

Vlachopoulos, D. (2021). Organizational change management in higher education through the lens of executive coaches. *Education Sciences*, *11*(6). https://doi.org/10.3390/educsci11060269

Vlachopoulos, D., & Makri, A. (2019). Online communication and interaction in distance higher education: A framework study of good practice. *International Review of Education*, *65*(4). https://doi.org/10.1007/s11159-019-09792-3

Westenberg, P., & Rutten, K. (2017). "Do You Speak My Neighbourhood?" Language, Technology, and Proximity. *Critical Arts*, *31*(2). https://doi.org/10.1080/02560046.2017.1355399

Zhen, Z., Yousaf, Z., Radulescu, M., & Yasir, M. (2021). Nexus of digital organizational culture, capabilities, organizational readiness, and innovation: Investigation of smes operating in the digital economy. *Sustainability (Switzerland)*, *13*(2). https://doi.org/10.3390/su13020720