The purpose of the study was to explore the university leaders' role as digital leaders in order to provide an in-depth description. Further, this study aimed at finally coming up with a concept of digital leadership in the higher education framework. Digital leadership is a type of leadership that uses technology to positively shape campus culture and climate. Using this definition, the writer investigated how accredited university leaders manifested digital leadership characteristics based on the International Society for Technology in Education (ISTE) Standards for Education Leaders. This study proposed a working framework for digital leadership in higher education settings in Indonesia.

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Chapter 1
Introduction

Digital – the convergence of social media, mobile and the web – has become a leading player in the knowledge economy at a time of major technology disruption (Minocha & Hirstov, 2017). It is deemed as an essential factor in the fourth industrial revolution (Weforum, 2016) and being such a factor, it has been powerful enough to have implications on current and future leadership practices. In its definition, the word invokes positive associations with abundant information that is available and less costly. Therefore, digitalization is changing the work environment as well as the way organizations work. Clerkin (2015) highlighted that such changes bring forward the need for creative leadership, the need for connecting with others, and the need for social intelligence, soft skills, empathy, passion, open mindedness, creativity, innovation, and critical thinking of leaders and followers.

Clerkin (2015) underlined that education systems reflect the needs and structure of the society. Therefore, the old system during the industrial revolution that put emphasis on math and science, followed by the humanities, and then the arts is no longer effective for success in the digital age. Today's culture does not require students to have fact-based learning. Rather, success today requires moving away from rote knowledge and moving toward developing hands-on, practical skillsets.

The Fourth Industrial Revolution (4IR) represents a fundamental change in the way of life, work, and relation to one another. It creates a world in which virtual and physical systems of manufacturing globally cooperate with each other in a flexible way (Schwab, 2016). This enables the absolute customization of products and the creation of new operating models. These advances are merging the physical, digital, and biological worlds in ways that create both huge promise and potential peril.

4IR has provided new urgency in global education system and, consequently, has gained currency as a buzzword in the Indonesian education system. Triyono (2017) concluded that this revolution will influence the performance of Indonesian education, especially in curriculum development, learning material development, as well as schools' readiness. Schools are expected to transform to help students meet today's demands. However, this transformation prompts new challenges for Indonesian educational institutions to be able to compete in the global society.

Wijaya, Sudjimat, and Nyoto (2016), in their study, concluded that in order for an educational institution to be meaningful in this era, it should focus on developing and preparing students to become the 21st century world citizen. Further, they clarified that the students are expected to have skills and creativity for innovation, competence in life and work, as well as technological and social media skills to survive in today's competition.

To achieve the meaningfulness of Indonesian educational institutions, the Ministry for Research, Technology, and Higher Education in 2015 initiated the national grand design to improve higher education development for 2015-2025 (Ristekdikti, 2017). There are five strategic objectives in this grand design in which higher education institutions are required to align their programs to. The strategic objectives cover improvements on schools' quality, relevance, access, competitiveness, and governance.

The grand design promotes a change of paradigm of school leadership in Indonesia. The educational leaders hold very influential role on the growth and development of education in improving human resources quality. Whatley (2011) mentioned that educational leaders should be able to build constructive initiatives in their schools. Further, it is required that the leaders should be creative and have a considerable degree of flexibility when dealing with problems at the local level.

National Accreditation Board for Higher Education (BAN-PT), an Indonesian agency to ensure the quality of higher education, sets standards to assess the compliance of higher education institutions to the national education grand design. The standards address the institutional capacity and its commitment to educational effectiveness. The accreditation process and result give the universities national acknowledgement that they are qualified in providing educational services.

This study invited three accredited private universities to participate in the effort of gaining an in-depth understanding of the digital leadership practice and meaning for those involved in the universities today. It was expected that this study would provide workable framework for the universities to institutionalize digital leadership paradigm for their leadership development programs.

Purpose of the Study

The purpose of this qualitative multiple-case study was to explore the university leaders' role as digital leaders in order to provide an in-depth description. Further, this study aimed at finally coming up with a concept of digital leadership in higher education framework. Digital leadership was defined as a type of leadership that uses technology to positively shape campus culture and climate. Using this definition, the researcher investigated how the accredited university leaders manifested digital leadership characteristics based on the International Society for Technology in Education (ISTE) Standards for Education Leaders.

Review of Related Literature

This part discusses conceptual definitions used in this study. These concepts are as follow, higher education in the fourth industrial revolution, digital leadership, and qualitative research.

Higher Education in the Fourth Industrial Revolution

The discussions of the fourth industrial revolution or 4IR were initiated at the Hannover Fair in 2011 to describe how "Industry 4.0" will revolutionize the organization of global value chains. Schwab (2016, 12) mentioned that by enabling "smart factories", 4IR creates a world in which virtual and physical systems of manufacturing globally cooperate with each other in a flexible way. This enables the absolute customization of products and the creation of new operating models, which is characterized by Cyber-Physical Systems. These systems are a consequence of the far-reaching integration of production, sustainability, and customer-satisfaction forming the basis of intelligent network systems and processes.

The emergence of this revolution brings about some implications for educational institutions. Buttler-Adam (2018) mentioned that there are two consequences for this disruption in the education system. The first, researchers in relevant disciplines face the challenge of making artificial intelligence (AI) increasingly more sophisticated and useful, not just in manufacturing or planning but also in the direct service of society. The second implication has to do with curricula, teaching and learning. He mentioned that the second implication has further requirements: people must have the skills required to implement, manage and work with the new technology, and with one another. They are also required to be problem solvers, to be adaptable, and to be able to express themselves in both the written and spoken, as well as to make the kinds of ethical and moral decisions that are not ever likely to become successful elements of AI. This challenge is one to which educational institutions will have to rise.

Growing demand among learners for improved accessibility and convenience, lower costs, and direct application of content to work setting is changing the higher education environment further. In this rapidly changing environment, which is increasingly based within the context of a global, knowledge-based economy, universities are expected to adapt purposes, structures, and programs to be relevant with the society's demands.

The role of higher education today as a driver for social and economic development is inevitably more pronounced. With their three missions, i.e., teaching, research, and community engagement, universities are expected to be more active in their role in societies. Brundenius and Goransson (2011) highlighted that the first mission of universities, and still the most important one, is teaching. Although investment in higher education is very costly, there is today a growing awareness, also

in developing countries, of the importance of higher education and its decisive role for sustained economic growth and development. Further, university research has received a lot of attention because it is seen as building bridges with industry and the society at large. Much attention has been drawn to the need of creating science parks close to universities. Such science parks have mushroomed not only in developed countries but also in China, Brazil, South Africa, and Cuba. Finally, a university is defined by its commitment to its third role or mission, to relate to society, be relevant for society, and be part of meeting social needs of society, especially of the poor. This call for increased relevance of the universities is embodied in the catchphrase "third mission" of the universities. The two tasks of the university – teaching and research – have long worked in conjunction to provide the society with certain skills as well as new knowledge and ideas, though not necessarily the skills demanded by the majority of the people.

Today's business environment challenges organizations to innovate themselves under the circumstances of market volatility, industry transformation, global competition, technological advancement, and societal and environmental illness. It is no exception for higher education sector where new body of knowledge and skilled labors are incessantly originated. A university is demanded to transform itself from bureaucracy and corporatism into multidisciplinary team and entrepreneurship to drive innovation for the society.

Xing and Marwala (2017) mentioned that higher education in the fourth industrial revolution is a complex, dialectical, and exciting opportunity which can potentially transform society for the better. 4IR, which is powered by AI, will transform the workplace from tasks-based characteristics to human-centered characteristics. Xing and Marwala further mentioned that because of the convergence of man and machine, it will reduce the distance between humanities and social sciences as well as science and technology. Butler-Adam (2018) added that students studying the basic and applied sciences also need to understand the political and social natures of the world in which they live. For the same reasons, students who study the humanities and social sciences need to understand at least the foundations on which AI is based and operates.

Responding to the aforementioned challenges and impacts of 4IR to higher education, researchers have explored the increased complexity of leadership role in the higher education environment. Drew (2010) mentioned that the most significant challenges centered around the need for strategic leadership, flexibility, creativity, and change-capability; responding to competing tensions and remaining relevant; maintaining academic quality; and managing fiscal and people resources.

Higher education today requires administrators with strategic leadership, flexibility, creativity, and change-capability since these traits become increasingly important in an economic and social environment that is marked by rapid change.

Today's challenges require leaders who can adapt to change as they come, revising their plans to incorporate new innovations, overcome challenges, and still achieve their goals. These leaders are also expected to be able to implement new behaviors into old, existing situations, allowing them to express creativity in their work and find new methods of solving problems.

In responding to competing tensions and remaining relevant, university administrators are expected to set up mechanisms by which to receive feedback from a range of sources. This mechanism may help individual leaders tailor development effort most effectively for continuous improvement. Cooper (2002) mentioned that divergent philosophical differences and relationships between stakeholders such as students, academics, universities, government, and commerce spell complexity for managing in universities.

Maintaining academic quality in 4IR era challenges higher education leaders to be creative and innovative in looking at the trends in technology and honing it to meet the tasks of the university. As Xing and Marwala (2017) mentioned, one of the principal tasks of every university is to educate the youth. Therefore, it is necessary to implement appropriate teaching strategies and to organize work in a way that fosters learning. This has implications on adaptable learning programs, better learning experience, and lifelong learning attitude.

Drew (2010) mentioned that competing for resources, the amount of time taken to gain funds, dealing with paperwork and compliance issues, and concerns at recruiting and retaining quality staff become key challenges for university administrators. Today's universities need to carefully manage their finance and talents in relation to global competition that arises from the development of knowledge-based economy. One of the ways to win over the competition, the university needs to transform into entrepreneurial university. An entrepreneurial university is a research university that embraces liberal arts education, tackles on big problems of the society, and values for both innovation and execution (Thorp & Goldstein, 2010).

Fraser (2012) argued that against the backdrop of a changing global macroeconomic setting that boasts of knowledge societies and knowledge-based strategies for development and growth, the university transforms the knowledge produced within the university into capital. In this model, a university as a service provide to its main client, students who have specific wants marketable skills and competencies certified by academic credentials, should also consider government and industry as customers with specific wants, i.e. capitalization of knowledge (Etzkowitz, 2004). These wants of the government and industry involve research, which gives way to contract-based research funding to satisfy specific knowledge needs. "Universities stand to gain recognition and prestige, increased influence in the community, and

continuing support from government or funding agencies, with opportunities for further expansion and growth" (Claes, 2005, p. 15).

Penprase (2018) mentioned that the societal changes from the 4IR will require higher education to develop greater capacity for ethical and intercultural understanding, placing a premium on liberal arts-type education with modifications to adapt to the particular issues raised by 4IR technologies and their disruptions to society. He argued that a rapid adjustment of on-campus curriculum is needed by expanding its capacity to accommodate the acquisition of new knowledge by students, faculty and alumni, with new modalities of instruction that leverage the digital advances from the previous industrial revolution.

Penprase (2018) further elaborated that any effective 4IR education strategy must also include, in equal measure, a deep consideration of the human condition, the ways in which new technologies and shifting economic power impact people of all socioeconomic levels, and the threats that exist within a world that is increasingly interconnected, in a way that fosters deep intercultural understanding and an abiding respect for freedom and human rights. Such approaches favor an interdisciplinary and global curriculum in a residential context, such as is found in many liberal arts institutions. These approaches maximize the development of intercultural and interpersonal skills, which will be a hallmark of the future 4IR workplace.

Digital Leadership

The convergence of social media, mobile and the web, has become a leading player in the knowledge economy at a time of major technology disruption. The number of users on applications from Facebook to Twitter and Instagram continues to increase in all demographics. These tools are being integrated into day-to-day activities and challenging boundaries, roles, and even possibilities globally. Kemp (2018) mentioned that the global internet user to date has passed four billion people or 53% of the total population. Further, there are also more than three billion people who use social media actively and 2.9 billion people who actively use mobile social media.

With more than 4 billion people using the Internet for an average of 6 hours each per day, digital has become an essential part of everyday life (Kemp, 2018). This phenomenon brings about a different social trend, as Kemp described in his report. The 2018 social trend according to him consists of the evolution of social return of investment (ROI); mobile fuels the growth of social TV; trust declines, while peer influence rises; human meet AI; and the promise (and reality) of social data.

The evolution of social ROI describes that today, more organizations will evolve their metrics as they look to quantify social's contribution to tangible business challenges such as lowering costs, increasing revenue, mitigating risk, and attracting

talent. This happens since Internet users could now find any information easily and organizations are competing to gain the users' demands.

In 2018, social networks encouraged brands to become broadcasters as mobile video and social-TV content take the spotlight. With the development of advanced and sophisticated yet affordable smartphones, people today can broadcast anything in their social media. Today, it is increasingly easy for people to enjoy and broadcast a rich Internet experience wherever they are.

Kemp (2018) underlined that with a shift media culture in 2017, it is clear that people are moving away from trusting traditional institutions and moving towards smaller spheres of influence where customer communities and engaged employees matter more than ever. The impact on educational institutions is huge with this shift of trend. Higher education institutions should work hard to shift their paradigm and activities to attain community's trust.

4IR has enabled machines and AI to rise. With chatbots and AI-generated content, organizations can connect to their customers in a more personal way. This personal connection, which would be costly to conduct without the help of technology, will make all activities between organizations and their stakeholders more personal (Kemp, 2018).

The last trend is the promise (and reality) of social media. In the previous years, organizations tend to underestimate and overlook the power of social media. However, today, organizations need to recalculate the effort and resources needed to turn social data into a true and unified source of customer insights. Today's leaders should be able to perceive the new trends arising from the involvement of digital technologies (Kemp, 2018).

Mobile technology enables the digital economy and this has had a huge impact across many sectors. With the arrival of a thriving digital agenda, digital leadership is expected to be able to overcome the rapid changes in organizations, specifically in this study, educational institutions. Digital leadership involves nurturing a knowledge society and the dissemination of research aimed at influencing global policy and practice (Weforum, 2016).

In 2008, The Knowledge Loom identified nine leadership principles in technology. They are vision, planning, access, integration, assessment and evaluation, support, professional development, community development, and ethical and legal issues. Here, a leader should be involved in every step of technology integration in school. S/he should have a clear vision first on how the technology will be integrated and start planning, implementing, and evaluating such endeavor. These principles encourage leaders to avert fear and misconception of technology use in classrooms.

The first leadership principle in technology integration is vision. Education administrators should articulate a shared vision of how technology will be effectively

used to support teaching, learning, and school management. In higher education setting, many stakeholders will be affected by the integration of technology. Creating and communicating the vision requires leaders to understand how digital technology impacts each audience and why it is important to each (The Knowledge Loom, 2008).

Administrators must play a central role in the cyclical development, assessment, implementation, and revision of school technology plans. A technology plan must be constantly evaluated and revised to meet the changing demands of the community and innovations in technology. The 4IR brings along massive and rapid disruptions in technology innovations. Therefore, an effective leader in this era should also ensure that technology planning is viewed as a dynamic process that is fundamental to daily activities of the educational institution (The Knowledge Loom, 2008).

Educational leaders in 4IR should ensure equitable access to current hardware, software, and connectivity that support instructional goals. To make learning meaningful for students, it is important to provide students and teachers with easy access to the school's technology resources. These first three principles are important to consider since without proper specific digital strategies in reaction to the massive shift towards using new technology, as well as clear vision and capability or commitment to implement them effectively, educational institutions will then invest in information technology systems that cannot deliver the anticipated benefits and outcomes (The Knowledge Loom, 2008).

The fourth principle is integration. School leaders must model the purposeful use of technology and ensure that teachers and students integrate technology into daily classroom practice. The way leaders incorporate technology on a daily basis can set an example for how technology will be used throughout an institution. Technology, today, should be incorporated as an integral element of daily instruction and leaders must reflect the appropriate use of technology in their own daily work. This integration will enable leaders to make better-informed decisions by understanding how technology can improve instruction, management, and personal productivity (The Knowledge Loom, 2008).

During the implementation of digital technology integration, educational administrators should also utilize assessment and evaluation techniques to inform decision-making and ensure continuous improvement in teaching and learning. The assessment and evaluation will enable educational institution to grow and develop. This enables leaders to obtain accurate and meaningful data that could ensure continuous improvement in teaching and learning. This effort will also ensure the relevance of the institution in the community (The Knowledge Loom, 2008).

The sixth principle is support. Leaders should ensure that technical and pedagogical support system exists that will facilitate the use and maintenance of technology in the institution. Seyfarth (2002) assumes that student learning is directly

related to teachers' classroom behavior. That behavior is influenced by, among others, the availability of support services to enhance teachers' and students' efforts (The Knowledge Loom, 2008).

The exponential changes in digital technology in 4IR require educational institutions to provide relevant, meaningful, and ongoing professional development for all staff. Leaders must ensure and promote frequent hands-on training since it is more effective than a one-time introductory session. Institutions that fail to provide adequate training will likely find that the technology is not used consistently or effectively (The Knowledge Loom, 2008).

In relation to stakeholders, leaders should be able to develop strategic community relationships that foster collaboration in planning, implementing, and assessing the use of technology in educational settings. The stakeholders' support is needed to plan, fund, and generate systemic change in education (The Knowledge Loom, 2008).

In 4IR, information is readily available for everybody to use. Therefore, in educational setting, leaders should model and promote an understanding of ethical and legal issues related to the use of technology. The digital technology has changed the way in which information is created, collected, and shared. The leaders should be able to help and support members of the educational institution adapt to changes concerning intellectual property rights, fair use, and acceptable use of digital materials and technology (The Knowledge Loom, 2008).

To support The Knowledge Loom (2008) leadership principles, the International Society for Technology in Education (ISTE, 2018) sets five important characteristics for education leaders to possess. The standards include equity and citizenship advocate, visionary planner, empowering leader, systems designer, and connected learner. The availability of this set of standards could help leaders to adapt the 4IR to support student learning. ISTE (2017) mentioned that the standards provide a framework for learning, teaching, and leading that is amplified by technology. These digital age standards are not "technology standards," but a road map for educators worldwide as they navigate decisions about curriculum, instruction, professional learning, and how to transform pedagogy with technology.

In the first standard, equity and citizenship advocate, leaders are expected to use technology to increase equity, inclusion, and digital citizenship practices. In order to meet this standard, education leaders should be able to ensure that all students have skilled teachers who actively use technology to meet student learning needs. The second important activity for this standard is that leaders ensure the availability of access to the technology and connectivity necessary for all students to participate in authentic and engaging learning opportunities. Leaders should also model digital citizenship by critically evaluating online resources, engaging in civil discourse online,

and using digital tools to contribute to positive social change. Lastly, leaders should cultivate responsible online behavior, including the safe, ethical, and legal use of technology (ISTE, 2018).

The second standard, visionary planner, requires leaders to engage others in establishing a vision, strategic plan, and ongoing evaluation cycle for transforming learning with technology. In order to do so, leaders should engage stakeholders in developing and adopting a shared vision for using technology to improve student success, informed by the learning science. Leaders then could build a shared vision by collaboratively creating a strategic plan that articulates how technology will be used to enhance learning. Effective leaders in digital era should also evaluate progress on the strategic plan, make course corrections, measure impact, and scale effective approaches for using technology to transform learning. The next activity leaders should do is to communicate effectively with stakeholders to gather input on the plan, celebrate success, and engage in a continuous improvement cycle. The last is sharing lessons learned, best practices, challenges, and the impact of learning with technology with other education leaders (ISTE, 2018).

Empowering leader, the third standard, requires digital leaders to create a culture where teachers and learners are empowered to use technology in innovative ways to enrich teaching and learning. The first activity the leaders could do is by empowering educators to exercise professional agency, building teacher leadership skills, and pursuing personalized professional learning. The leaders should also build the confidence and competency of educators to put the ISTE Standards for Students and Educators into practice. The third indicator for this standard is leaders inspire a culture of innovation and collaboration that allows the time and space to explore and experiment with digital tools. The fourth is supporting educators in using technology to advance learning that meets the diverse learning, cultural, and social-emotional needs of individual students. The last is developing learning assessments that provide a personalized actionable view of student progress in real time (ISTE, 2018).

A digital leader as systems designer builds team and systems to implement, sustain, and continually improve the use of technology to support learning. This standard could be achieved by several activities. The first is leading teams to collaboratively establish robust infrastructure and systems needed to implement the strategic plan. Leaders should also ensure that resources for supporting the effective use of technology for learning are sufficient and scalable to meet future demand. The third is protecting privacy and security by ensuring that students and staff observe effective privacy and data management policies. The fourth is establishing partnerships that supports the strategic vision, achieve learning priorities, and improve operations (ISTE, 2018).

The last standard from ISTE for Education Leaders (2018) is leader as a connected learner. In this standard, the leaders model and promote continuous professional learning for themselves and others. Leaders set goals to remain current on emerging technologies for learning, innovations in pedagogy and advancements in the learning sciences. Further, leaders are expected to participate regularly in online professional learning networks to collaboratively learn with and mentor other professionals. The third activity is using technology to regularly engage in reflective practices that support personal and professional growth. The last is developing the skills needed to lead and navigate change, advance systems, and promote a mindset of continuous improvement for how technology can improve learning (ISTE, 2018).

The higher education sector cannot escape the spread of digital leadership and a variety of higher education-based applications of digital leadership. A digital leader according to Sheninger (2014) should ensure relevant learning to students, consider recent changes, maintain sustainable change, trust students and teachers to use real-world tools, make use available resources for improvement, and be grounded in empowerment, support, and embracement as keys to sustainable change. Many challenges might confront principals in becoming digital leaders. Digital leadership is defined as establishing direction, influencing others, and initiating sustainable change through the access of information, and establishing relationships in order to anticipate changes pivotal to school success in the future.

Sheninger (2014) proposed a framework of seven pillars in becoming a digital leader. The first is communication – leaders today can provide stakeholders with relevant information in real time through a variety of devices. The second is public relation. Today's leaders could form the foundation of a positive public relations platform using free social media tools where they control the content. The third pillar in the framework is branding – leaders today can leverage social media tools to create a positive brand presence that emphasizes the positive aspects of school culture, increases community pride, and helps to attract or retain families when looking for a place to send their children to school. In the student engagement or learning pillar, leaders need to understand that schools should reflect real life and allow students to apply what they have learned through the use of the tools they are using outside of school. The fifth pillar is professional growth and development. With the 4IR technology today, leaders can develop their own personal learning network to meet the diverse learning needs, acquire resources, access knowledge, receive feedback, connect with both experts in the field of education as well as practitioners, and discuss proven strategies to improve teaching, learning, and leadership. Once leaders understand the pillars and how to use them to initiate sustainable change, the next step is to begin to transform learning spaces and environments that support essential skill sets and are aligned with the real world. The last pillar is opportunity. Digital leaders leverage

connections made through technology and increase opportunities to make improvements across multiple areas of school culture.

Qualitative Research

This section describes this study's inclination to qualitative paradigm, ontology, epistemology, and axiology. This study was qualitative since the researcher tried to describe actions within a specific setting and invite rather than try to control the possibility of a rich array of variables (Holliday, 2007).

Creswell (2003, pp. 181-183) proposed some characteristics of a qualitative research; they are (1) it takes place in a natural setting; (2) it uses multiple methods that are interactive and humanistic; (3) it is emergent rather than prefigured; (4) it is fundamentally interpretive; (5) the researcher views social phenomena holistically; (6) s/he systematically reflects on who s/he is in the inquiry and is sensitive to her or his personal biography and how it shapes the study; (7) s/he uses complex reasoning that is multifaceted, iterative, and simultaneous; and (8) s/he adopts and uses one or more strategies of inquiry as a guide for the procedures in the qualitative study.

Flick (2014) further mentioned a number of different ways a researcher could achieve the goal of a qualitative study. The first is by analyzing experiences of individuals or groups. The second strategy is by analyzing interactions and communications in the making. The third is by analyzing documents (texts, images, film or music) or similar traces of experiences or interactions.

This study employed progressive qualitative research framework which suggests that there was a relationship between the researcher, the participants, and the context allowing the researcher to be a part of the research setting. According to Hammersley and Atkinson (as quoted in Holliday, 2002, p. 20), "progressive qualitative researchers portray people as constructing the social world and researchers as themselves constructing the social world through their interpretation of it". Within this paradigm, there are several perspective claims – critical theory, constructivism, postmodernism, and feminism. Further, there are four assumptions that this paradigm holds. The first assumption is that reality and science are socially constructed. The second is that the researchers are part of the research setting. Investigation must be in reflexive, self-critical, creative dialogue is the third assumption. Lastly, this progressive research aims to problematize, reveal hidden realities, and initiate discussions (Holliday, 2007).

The goal of the study was to gain an in-depth understanding of the digital leadership practice and meaning for those involved in accredited universities in Indonesia. This study intended to explore the accredited university leaders' role as digital leaders. Further, this study aimed at finally coming up with a digital leadership in higher education framework. Such objective was in accordance with the researcher's personal paradigm in research, i.e. social constructionism. Bryman (2012) considers

social constructionism as an ontological position where social phenomena and their meanings are continually being changed and revised through social interaction e.g. the researchers' own accounts of the social world where nothing is definitive as the versions evolve with experience. The paradigmatic inclinations with respect to research and knowledge development in this study was that perception of reality varies between individuals, and there are pluralities of reality experienced by different people exposed to the same phenomenon.

The social constructivism perspective was employed as the ontological position in this study since it is a worldview in which individuals seek understanding of the world in which they live and work. They develop subjective meanings of their experiences, i.e. meanings directed toward certain objects or things (Creswell, 2003; 2007). In this perspective, Crotty (as quoted in Creswell, 2003) mentioned several assumptions. The first is meanings are constructed by human beings as they engage with the world they are interpreting. The second assumption relates closely with culture – humans engage with their world and make sense of it based on their historical and social perspective. Further, Crotty mentioned that the basic generation of meaning is always social; it is arising in and out of interaction with a human community.

The epistemology employed in this study was the interpretivist approach. According to Johnson and Duberley (2000), this approach rejects absolute facts and suggests that facts are based on perception rather than objective truth. Further, it is important for the researcher as a social actor to appreciate differences between people. This means that it was important for the researcher to understand the meanings that individuals and groups attach to their activities since the nature of reality that they refer to is contextually bound. In this study, the leaders' context and culture shaped and developed their definition and perception on leadership.

Judge (2001) mentioned that since leadership is a culture-bound phenomenon, there is no universal law or experience as the world is always being developed and re-developed. With the absence of universal meaning, the focus of this study is on meaning and perceived realities rather than facts. Therefore, the researcher was required to get some specialist knowledge in order to understand the meanings, values, and contexts of the subjects. This study was to understand the dynamic of leadership practice in three accredited private universities in Indonesia.

Based on the aforementioned description of the research paradigm, the researcher, therefore, identified qualitative multiple case study as the best method to achieve this study's objective and to answer the research questions. Qualitative multiple case study methodology allows the researcher to study complex phenomena within its context (Baxter & Jack, 2008). This multiple case study is an intensive, holistic description and analysis of a single instance, phenomenon, or social unit (Merriam, 2009). This methodology conforms to constructivist paradigm that assumes

there are as many perceivable and equally valid realities as there are participants and researchers, whose meanings are often co-constructed.

Merriam (2009) mentioned that this methodology can be characterized as being particularistic, descriptive, and heuristic. Particularistic means that this study focuses on a particular situation, event, program, or phenomenon. In this case, the focus was leadership practice in three accredited private universities. Descriptive means that the end product of this case study is a rich, thick description of the phenomenon under study. Thick description of a case study refers to the complete, literal description of the incident or entity being investigated. Meanwhile, heuristic in this study means that it illuminates the reader's understanding of the phenomena under study. This study was to discuss and evaluate alternatives not chosen by the participants as well as evaluate, summarize, and conclude to increase the potential applicability of leadership practice in the accredited private universities.

Further, in Yin's (2014) definition, a case study method has a twofold definition. The first part begins with the scope of a case study. A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident. The second part of the definition arises because phenomenon and context are not always sharply distinguishable in real-world situations. Yin mentioned that a case study inquiry copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical prepositions to guide data collection and analysis.

Synthesis

Multiple studies have been completed on what defines digital leadership and the role of a university in knowledge society and 4IR. Digital leadership is introduced as a response towards the exponential development of digital technology. The technology brings about massive impact on the society today. The society today, further, requires a shift of higher educations' role to become entrepreneurial universities to adapt in this knowledge society.

Many studies confirm that digital leadership is the vital component for educational environments especially in the 4IR. The literatures promote that digital leadership is the vehicle to establish direction, influence others, and initiate sustainable change through the access of information, as well as establish relationships in order to anticipate changes pivotal to school success in the era.

Higher education institutions in this era face more complex challenges, especially from the growth of knowledge society. Researchers have also explored the

increased complexity of leadership role in the higher education environment. Drew (2010) mentioned that the most significant challenges centered around the need for strategic leadership, flexibility, creativity, and change-capability; responding to competing tensions and remaining relevant; maintaining academic quality; and managing fiscal and people resources.

ISTE, a nonprofit international association for educators focused on educational technology, has revised its 2009 Standards for Administrators (ISTE, 2009) and promoted the latest 2018 Standards for Education Leaders (ISTE, 2018). The latest standards include five characteristics needed for education leaders to be able to lead better in 4IR. The characteristics are equity and citizenship advocate, visionary planner, empowering leader, systems designer, and connected learner. This study employed ISTE Standards for Educational Leaders (2018) as its theoretical framework.

Further, since this 2018 framework is still in its infancy, there is still a few studies employing the framework. In Indonesian context, the framework that is still referred to is the 2009 Standards for Administrators (ISTE, 2009). Therefore, this study was intended to fill the gap by using the latest standards as its framework.

Conceptual Framework

This multiple-case study was to develop an in-depth description of the university leaders' digital leadership. It was also to develop a digital leadership framework in Indonesian context. This framework was based on the ISTE Standards for Educational Leaders (ISTE, 2018).

The ISTE standard proposes five observable and measurable characteristics that are essential to successful digital leadership. These standards target the characteristics required for leaders to empower teachers and make student learning possible by integrating technology in educational environment. ISTE Standards for Education Leaders (2018) include the following characteristics:

1. Leaders use technology to increase equity, inclusion, and digital citizenship practices (Equity and Citizenship Advocate).
2. Leaders engage others in establishing a vision, strategic plan, and ongoing evaluation cycle for transforming learning with technology (Visionary Planner).
3. Leaders create a culture where teachers and learners are empowered to use technology in innovative ways to enrich teaching and learning (Empowering Leader).
4. Leaders build teams and systems to implement, sustain and continually improve the use of technology to support learning (Systems Designer).
5. Leaders model and promote continuous professional learning for themselves and others (Connected Learner).

The following Figure 1.1 shows the detailed conceptual framework for this study. This framework shows that by manifesting the characteristics of ISTE Standards for Educational Leaders (2018), leaders will become digital leaders.

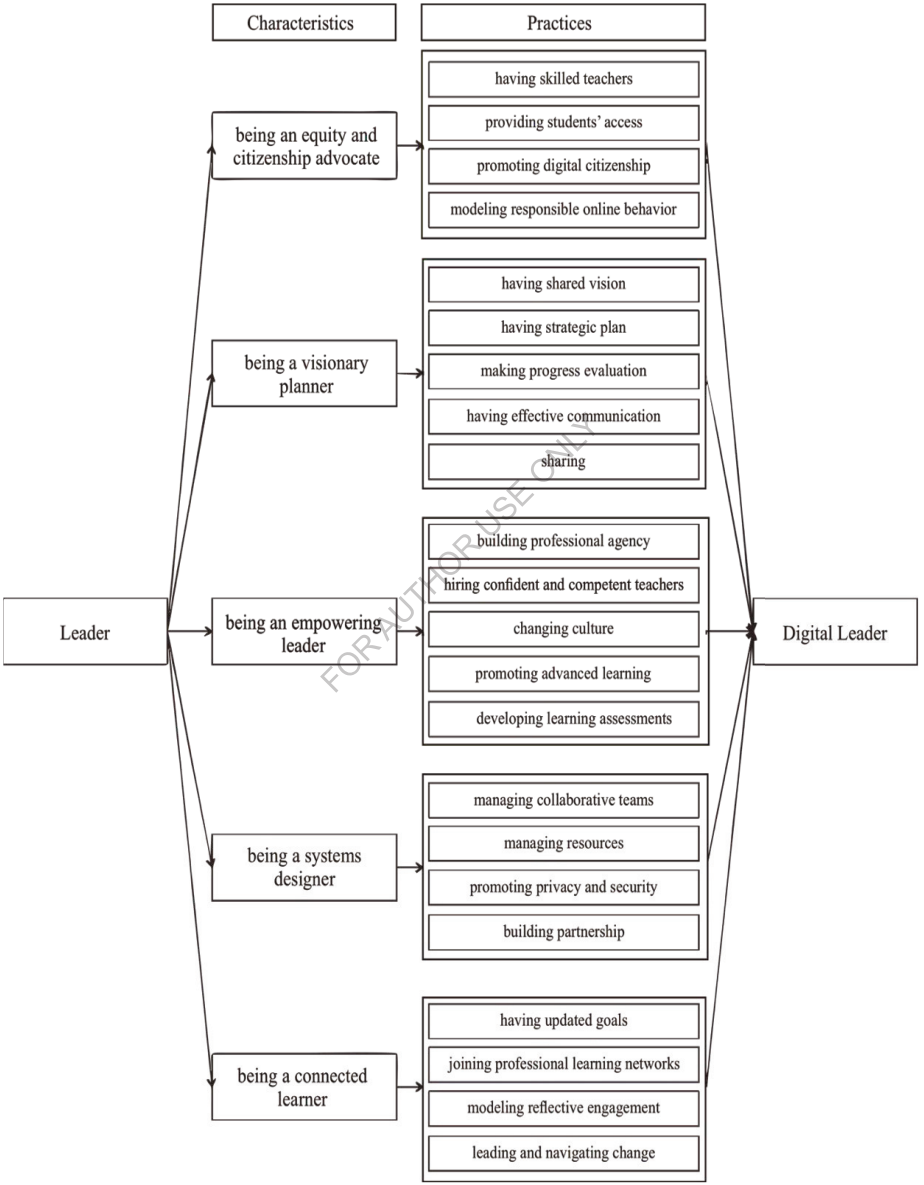

Figure 1.1. Leadership framework by ISTE (2018): A priori conceptual framework towards a Framework of Digital Leadership in Higher Education in Indonesia

This study focused on the leadership characteristics of three accredited private university leaders with at least two years of leadership experience in the position in Yogyakarta, Indonesia.

Research Problem

This study was guided by the following three research questions. The research questions were designed to allow the multiple case study to form an empirical test for theoretical assumptions about digital leadership.

1. How do characteristics of leaders in accredited institutions differ from or similar to the characteristics enshrined in ISTE Standards for Educational Leaders, in terms of being:
    a. equity and citizenship advocate
    b. visionary planner
    c. empowering leader
    d. system designer
    e. connected learner
2. How do digital leadership practices differ among leaders in accredited institutions, in terms of being:
    a. equity and citizenship advocate
    b. visionary planner
    c. empowering leader
    d. system designer
    e. connected learner
3. How does a digital leadership model in higher education in Indonesia look like?

Chapter 2
Methodology

This qualitative multiple case study was designed to investigate and describe the digital leadership of university leaders in three accredited private universities in Indonesia. Further, it aimed at developing a digital leadership in higher education framework.

Research Design

Experts (Yin, 2014; Merriam, 2009) suggest that case study methodology is appropriate for exploring significant problems of practice, as well for broadening the understanding and interpreting observations of educational phenomena. Using ISTE's (2018) Standards for Education Leaders, this study examined the digital leadership characteristics in three accredited private universities in Yogyakarta, Indonesia. This multiple case study explored how digital leadership was defined and implemented. The phenomenon of digital leadership in this study was interpreted through the lens of rectors, vice rectors, and researcher. The researcher conducted this study to discover the digital leadership characteristics of three accredited private universities in Yogyakarta, Indonesia.

Setting

This study was conducted in the Indonesian setting, specifically in Yogyakarta. There are 19 universities operating in this region and 10 of them are accredited A by BAN-PT. BAN-PT as the sole accreditation agency recognized by the government of Republic of Indonesia functions as the quality assessor of higher education for both public and private universities. The accreditation A refers to national acknowledgement that the institutions have met some certain criteria, such as an excellent quality of lecturers, good and suitable infrastructures for learning process, and sustainable improvements on its research development. This study invited three accredited private universities in the region to participate.

Participants

This multiple case study explored the digital leadership characteristics of top management in three accredited private universities. In this study, the researcher set criteria for selecting the cases to be examined. The first criterion was that rector and vice rector should be in the position for at least two years in 2018. Therefore, with at least two years of experience in leading the university, the leaders would be able to illuminate their rich experience in terms of educational leadership. The second criterion referred to the accreditation level of the university. The researcher selected universities

with Accreditation A by BAN-PT to be included in the case selection. The accreditation should be able to indicate the autonomy and excellence of the institution and indicate, as well, the complexity of leadership required from the leaders. The third criterion was the university should be a private university. Being a private university in Indonesia requires the institution to optimally operate with very limited support by the government. In this case, the university should be able to autonomously find and support its resources for learning process.

Purposively, the researcher conducted interviews with the university top managements selected for this study. Within the bounded cases in three accredited private universities, the digital leadership characteristics of rector and vice rector were explored through their lenses.

For this study's triangulation purpose, after the interview with the top management, the researcher also randomly invited two lecturers, IT personnel, and two students to collaborate in this multiple case study. In total, the researcher interviewed 20 participants in the three private universities since in Case 2, the researcher could only have access to one student.

Data Collection

In order to be able to adequately explore the practice of digital leadership in each university, large amount of contextually sensitive data was collected concerning individual perceptions, site observations, and relevant documents. Merriam (2009) and Yin (2014) suggested that case studies provide the opportunity to uncover action through insight, discovery, and interpretation. This study employed three data collection strategies in this multiple case study, i.e. interviews, observations, and document analysis.

Yin (2014) mentioned that the interview is one of the most important sources of case study evidence. In this study, the researcher conducted semi-structured open-ended interviews with university rector and vice rector as the case and key people on staff and student for the study's triangulation purpose. The informants for this multiple case study were the university rector and vice rector. The lecturers, IT personnel, and students within the university setting were interviewed to triangulate the top management's claims on the digital leadership characteristics.

The researcher first explained the purpose of the interview and the process of the interview. Afterwards, the participants were asked to sign the consent form. The interviews were recorded using voice recorder upon the participants' approval. In this interview process, the researcher prepared the questions in advance, however, if needed additional follow-up questions for clarification were asked. The researcher based the interview questions from this study's research questions.

In this study, the researcher also conducted site observation in between the interviews. During the observation activities, the researcher observed people, actions, events, and facilities. The observations provided additional data to confirm the previous data collected and provided additional validity of the participants' account. Further, this observation provided interpretation on the institution's culture and climate through the researcher's lens. The researcher, in this activity, acted as a nonparticipant observer that enabled him to observe activities and take notes without becoming involved in the activity of the participants.

This study also collected and analyzed documents available in public domains that could reflect the digital leadership characteristics shown in the institutions. This document analysis also provided additional data to confirm the collected data and provided additional insight as well as validity on the participants' account.

For the purpose of data triangulation, the researcher invited two lecturers, IT personnel, and two students to collaborate in this study. The interviews, the site observations, and the document analysis results validated and collaborated the top management's claims on digital leadership characteristics.

Data Analysis

Since the researcher was inclined to interpretivist paradigm, this qualitative case study followed Yin's (2014) model of case study. In this model, category construction is data analysis and it is done in conjunction with data collection. Category construction begins with reading the first interview transcript, the first set of field notes, and the first document collected in the study.

In this study, the unit of analysis is the leader of the university. After the first interview with the leaders, the researcher input the transcribed verbatim into NVivo and started the analysis process. The researcher selected NVivo as the qualitative analysis software to aid the analysis process as NVivo software provides an analysis tool for unstructured qualitative research that assisted the researcher in collecting, organizing, and analyzing qualitative data from interviews.

The researcher's choice in using qualitative analysis software in this study was based on some considerations. Bazeley (2007) mentioned that there are five principal ways in which NVivo supports analysis of qualitative data. Using the software assisted the researcher to manage data; manage ideas; query data; graphically model; and report from the data. However, there are some concerns as well on the impact of computerization on qualitative analysis. The issues are the concern that computers can distance researchers from their data; the dominance of code and retrieve methods to the exclusion of other analysis activities; the fear that use of a computer will mechanize analysis, making it more akin to quantitative or positivist approaches; and the misperception that computers support only grounded theory methodology. Considering

the benefits and concerns aforesaid, the researcher decided to use the software to support and aid the data analysis process.

The data collected from the leaders' interview functioned as the foundation for further data collection and analysis. Stake (2006) mentioned that data analysis for a multiple case study includes conducting continuous analysis of each case separately and then conducting a cross analysis of the three universities as a unit. Further, a search for pattern consistency and for consistency within certain conditions while in the field was recorded utilizing NVivo. Here, the researcher looked for any unusual and ordinary happenings for each case to investigate the setting and leadership behaviors (Stake, 2006).

The analysis of 20 in-depth interviews was undertaken using NVivo. The interview data were augmented through observation, resulting in a rich collection of data. The data were coded and initially entered into 'nodes' within the NVivo program. As each interview was read, additional themes were identified and nodes were created for each theme. The nodes were fleshed out as data were extracted from each interview referring to the same theme within each transcript. Once the data had been placed into various nodes, themes were checked through the matrix function within NVivo to ensure that the various themes were distinct from each other and that there was no redundancy.

After this in-depth immersion of the data, the researcher conducted open coding on the data with the predetermined conceptual categories. The leaders' digital leadership elements were analyzed through constant comparison of codes of events, actions, and words within the transcripts or memos. The second step was axial coding which involved grouping the codes into categories. Finally, the key words that appeared multiple times within the analysis were developed into themes. The case study findings in this stage become the foundation for the stage of analytic generalization (Yin, 2014).

After analyzing the three individual cases using the aforementioned procedure, the researcher conducted a cross analysis. This cross analysis enabled the researcher to develop an analytic generalization from this multiple case study. Yin (2014, p. 41) mentions that this generalization may be based on either (a) corroborating, modifying, rejecting, or otherwise advancing theoretical concepts that are referenced or (b) new concepts that arose upon the completion of the multiple case study.

Validity and Reliability

In order to ensure the validity and reliability of this multiple case study, the researcher referred to Yin's (2014) criteria for judging the quality of research designs. Yin mentioned that to ensure the trustworthiness, credibility, confirmability, and data

dependability of a case study, there are four tests when doing case study research. The tests are construct validity, internal validity, external validity, and reliability.

In order to achieve the construct validity in this multiple case study, Yin (2014) mentioned three strategies. The first strategy was using multiple sources of evidence, i.e. interviews and observations. This study employed data source triangulation to ensure its construct validity. The researcher converged the evidence from interviews with the leaders and interviews with the lecturers, the IT personnel, and the student as well as site observation and document analysis results in analyzing the cases.

The second strategy was by maintaining a chain of evidence. The principle is to allow the audience to follow the derivation of any evidence from initial research questions to ultimate case study conclusion. The researcher cited the relevant sources used to arrive at specific findings and these specific findings should contain the actual evidence. In order to overcome the language barrier, the researcher used Bahasa Indonesia for all interviews. These were taped in a digital recorder and transcribed and analyzed in Bahasa Indonesia using NVivo, with emerging themes translated into English. Avoiding translations would have diminished the risk of reduced validity or research results (Birbili, 2000; Ervin & Bower, 1952) and of inferential errors (Reiche & Harzing, 2007). Considering that not all participants had a sufficient command of English to use precise linguistic data, the researcher decided to interview in Bahasa Indonesia.

The last strategy was by having the participants review the verbatim. The researcher shared the data with the leaders to help ensure completeness of the interview transcript. Furthermore, member check validated the researcher's interpretations. Member check helped to manage the researcher bias.

The second validity test, internal validity, dealt with how this multiple case study was analyzed. The first effort of achieving this validity in this study was by employing NVivo to support the data analysis process. This software helped the researcher to search for patterns, insights, and concept more effectively and reliably. The second effort was by developing a case description. The researcher organized this multiple case study according to a descriptive framework in order to help identify an overall pattern of complexity.

The third was related to external validity. This multiple case study used replication logic in order to examine the cases. In this study, each individual case study of university leaders consisted of a whole study, in which convergent evidence was sought regarding the facts and conclusions for the case. Each case's conclusions were then considered to be the information needing replication by other individual cases. Both the individual cases and the multiple-case results became the focus of the summary report. This replication logic was able to come up with the analytic generalization, i.e. a workable framework for digital leadership in private universities

in Yogyakarta, Indonesia. The cases selected in this study provided similar results, which Yin (2014) describes as literal replication.

To achieve the reliability of this study, the researcher employed case study protocol and developed case study database. This reliability was to minimize errors and biases in the study. This study followed the multiple case study protocol (see Appendix 4) to ensure its replicability in studying the three cases. The second effort was by developing case study database. The database was created by employing NVivo. The documentation in the database consisted of the data or evidentiary base and the researcher's report.

Ethical Considerations

This multiple case study invited the participation of human subjects. Therefore, the researcher considered with utmost importance the confidentiality measures and ethical considerations. During this study, the researcher carefully protected the human subjects by:

1. Inviting voluntary participation from the participants. The researcher did not force them to participate if it was against their will. This voluntary participation was indicated by signing the consent form provided by the researcher.
2. Clearly discussing the important information related to the study, including but not limited to its purpose, the aims, and the methodology. This was to ensure that the participants understood the importance of the study as well as their participation in it.
3. Ensuring and protecting the privacy of the participants. This study did not include any information that will reveal the identity of the participants. It became a topmost priority that the participants and their respective institutions remained anonymous to the readers.
4. Dealing with utmost confidentiality the information shared by the participants. The information was only used for the purposes of this particular paper. All audio recordings and written notes were only for the use of the researcher and this particular study.
5. Outlining and asking the questions in such a way that it was sensitive to the feelings of the participants. The researcher avoided offensive, discriminatory, or other unacceptable language in the formulation of questions. The participants had the utmost right to refuse answering and withdraw from the study when the researcher was deemed disrespectful.
6. Adhering to the schedule provided by the participant in respect of his or her time. Further, the researcher ensured that the data gathering procedures did not disturb and cause inconvenience to anyone.

7. Analyzing the result of the data gathered with objectivity in interpretation. This was to ensure that the study provided the actual interpretation of the participants.
8. Citing all authors whose parts of works were included in this study.

Chapter 3
Results and Discussion

This chapter presents the description of each case and the results of the analyses of data collected during the 20 individual interviews in which the participants expressed their perspectives on digital leadership. Information obtained from the individual interviewees, researcher's observation, and documents review, on digital leadership in three private accredited universities in Yogyakarta, provided the basis for taxonomic analysis, thematic analysis, and concept models.

Case 1

Case 1 is one of the private universities in Yogyakarta, Indonesia that has been granted an Accreditation A by BAN-PT (2993/SK/BAN-PT/Akred/PT/XII/2016). Case 1 was initially established in 1955 as a teacher training college to meet the demand of good quality teachers. In 1993, the institution transformed itself into a university. To date, Case 1 manages eight departments with 23 undergraduate programs, four graduate programs, two professional programs, and a number of certified course programs. The national higher education database reported in Case 1 showed that there were 12,744 students enrolled in AY2018-2019 and 267 lecturers for a ratio of 1:34.7 (https://forlap.ristekdikti.go.id/perguruantinggi/search).

The interviewees of this study comprised of the university rector (C1R) and vice rector for academic affairs (C1VR). The rector of Case 1 was in his second term leading the university. Prior to his position as a rector, he held many positions in Case 1, i.e. head of administration and information system design, head of center for information technology study, dean of faculty of science, and vice rector for academic affairs. The vice rector for academic affairs of Case 1 was in his first term at the top leadership of Case 1. Prior to this post, he was the dean of faculty of teacher education.

Digital Leadership Identified by Case 1 Leaders

This study invited the participation of Case 1 top leadership in one-on-one interviews. The researcher explained the purpose of the study and data acquisition process to each interviewee. Each interviewee was requested to read and sign the consent form presented. The discussions were recorded upon the participants' approval.

After the interviews with Case 1 leaders, five themes emerged as the important elements of digital leadership in higher education. The themes were institutional management, school culture, people centered, networking, and lifelong learning.

Institutional management.

Based on the analysis of Case 1 leaders' perception, the emergent five constructs under instructional management were (1) commitment, (2) policies, (3) support, and (4) assessment and evaluation.

Commitment. The analysis of Case 1 leaders' interviews revealed three constructs under institutional commitment that covered (1) commitment to provide updated infrastructure, (2) commitment to parents, and (3) commitment to model responsible online behavior.

C1R believed that the institution is responsible for providing updated infrastructure for the students by "*providing learning space outside classrooms"*. He defined the space as "*cybernetic space*". C1VR confirmed that the institution "*developed its own LMS and integrated various supporting facilities into it*." The leaders confirmed that the facilities to support education was to enable students to grow holistically.

Besides the information system for teaching and learning, according to C1R, the institution also "*developed information system for the university management*." The university's leadership made its decisions based on the management system owned by the institution. C1R retold that the university had its "*own computer-assisted decision making since 1996, it was for student enrollment*."

With the development of technology, Case 1 leaders were "*committed to provide updated infrastructure*." Furthermore, with the concept of cybernetic space, "*a space in which the authentic physical relation that exists is supported by the versatility of virtual relations*", proposed by Case 1 leaders, they were committed to "*provide comfortable spaces for students where they can charge their gadgets and connect to fast WIFI*" (C1R). C1VR mentioned that they "*always make sure that the facilities that will enable students to grow get the utmost attention*."

The university's commitment to parents was expressed by Case 1 leaders that it was their responsibility to provide the students with proper updated education to enable them to grow holistically. C1R specifically underlined that it became the institution's "*responsibility to guide the students to succeed in this era*", considering that parents entrusted the institution with their children.

Case 1 leaders were also committed in providing an optimal workspace for the staff to provide the best service for the students, and this included limiting the access to social media during work hour. This effort was to limit online distraction to encourage the effective use of technology in their work. C1VR mentioned that all elements of the institution had "*shared responsibility to provide behavior model*", especially for the students. C1R mentioned that "*technology integration demands responsible attitude*" from users, therefore all lecturers were expected to develop

students' digital literacy to enable them to achieve the 21st century skills needed for them to grow holistically.

Policy. In order to sustain the commitment of the institution, Case 1 leaders made policies for: (1) learning content and content delivery, (2) learning development, and (3) stimulating three pillars.

Case 1 leaders ensured that all the policies made would sustain the implementation of all the institutional commitments. C1R guaranteed that "*all activities and programs should be at the end for students*" and all that would not benefit students would be rejected. This commitment was then reflected on policies for digital learning content and content delivery. C1VR mentioned that "*lecturers should upload syllabus, all learning materials, and assessment rubrics in LMS*." The policy is to encourage lecturers to develop digital learning contents for their classes. Further, the institution also encouraged "*the lecturers to use LMS and other technologies that will support student learning*" (C1VR). The policy, further, enabled the institution to guarantee that all students would have access to lecturers who use technology.

Case 1 commitment to provide proper updated education for the students was reflected on policies for sustainability and improvement of digital learning experience. C1R mentioned that the institution has "*initiated a unit to oversee the system development*" since 1994. This unit was responsible in designing and implementing digital learning development and innovation roadmap. Further, this unit was also in charge in maintenance and updating technology facilities in the university, including its digital security.

Case 1 leaders believed that the implementation of the three pillars of higher education would provide richer and more meaningful experience to students. Therefore, C1VR mentioned that not only classroom activities that were integrated with technology, yet community service, as one of the three pillars, should also became integrative community service. C1R, further, underlined that "*technology would help bringing communities inside classroom and classroom outside into communities easily*."

Support. Case 1 leaders made sure that along with the upgrade and update of technology facilities the university had, lecturers and staff would have revitalization trainings necessary for them to work effectively and efficiently. C1VR mentioned that the institution "*supported lecturers further with trainings*", especially when there was an update with LMS and also provided lecturers with "*grants for digital learning activities*" development.

"*Because leadership should not only grow in the contexts of leaders, but it should be in individual lecturers*" (C1VR), the institution supported lecturer and staff leadership development programs. C1R believed that the most suitable leadership style

in the institution is shared leadership, therefore all academic members should have leadership skills.

Assessment and evaluation. Case 1 leaders perceived that the institution should conduct assessment and evaluation on all ongoing programs and activities to understand the milestone achievements. The milestones were important since the institution "*could make any adjustments when necessary*" (C1R). Further, the institution also "*made use of technology and information system to evaluate the performance of any unit*", therefore, Case 1 leaders could make decision promptly to improve the performance of the unit under evaluation. Therefore, the assessment and evaluation results, according to C1VR, could be used by Case 1 leaders "*for the institutional strategic plan improvement*."

The aforementioned story of the leaders provided the necessity of institutional management in digital leadership in higher education. Table 3.1 showcases the emergence of the theme, institutional management, in Case 1.

Table 3.1

Emergent concepts and categories of the theme, Institutional management, in Case 1

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
… providing learning space outside classroom… (C1R)	Virtual space for learning	Commitment to provide updated infrastructure	Commitment	Institutional management
… developed its own LMS and integrated various supporting facilities into it… (C1VR)	LMS with supporting facilities			
… developed information system for the university management… (C1R)	Information system for administration			
… own computer-assisted decision making since 1996, it was for student enrolment. (C1R)	Information system for decision making			
… committed to provide updated infrastructure. (C1R)	Providing updated facilities			
… provide comfortable spaces for students where they can charge their gadgets and connect to fast WIFI. (C1R)	Providing comfortable spaces			
… always make sure that the facilities that will enable students to grow get the utmost attention. (C1VR)	Facilities to enable students' growth			
… parents entrusted us with their children to be educated… (C1R)	Parents entrusted their children	Commitment to parents		
… it is our responsibility to guide the students to succeed in this era. (C1R)	Responsibility to guide students			
Some limitations are implemented for certain social media using the campus' network … (C1VR)	Limitations for social media	Commitment to model responsible online behavior		
… to limit online distraction to encourage effective use of technology in their work… (C1VR)	Limit online distraction for effective work			
… shared responsibility to provide behavior model… (C1VR)	Behavior model			

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
… technology integration demands responsible attitude… (C1R)	Responsible attitude			
… lecturers should upload syllabus, all learning materials, and assessment rubrics in LMS… (C1VR)	Lecturers use LMS	Policy for learning content and content delivery	Policy	
… the lecturers to use LMS and other technologies that will support student learning. (C1VR)	Lecturers use LMS and other technologies			
… initiated a unit to oversee the system development… (C1R)	Formation of a unit	Policy for learning development		
… community service should be integrated with technology… (C1VR)	Integrative community service	Policy for stimulating three pillars	Policy	Institutional management
… technology would help bringing communities inside classroom and classroom outside into communities easily… (C1R)	Bringing communities inside and classroom outside			
… lecturers and staff have revitalization trainings periodically… (C1R)	Trainings for lecturers and staff	Supports for lecturers and staff	Supports	
… providing lecturers trainings about LMS (C1VR)	Trainings for lecturers			
We have leadership development programs for lecturers and staff… (C1VR)	Leadership development program			
… providing grants for digital learning activities development… (C1VR)	Grants for lecturers	Supports for lecturers		
… evaluation for ongoing programs, so we could make any adjustments when necessary (C1R)	Evaluation to make adjustments	Evaluation on ongoing program	Assessment and evaluation	
… make use of technology and information system to evaluate the performance of any unit. (C1R)	Technology to evaluate unit's performance	Evaluation on any unit		
The assessment and evaluation results could be used for the institutional strategic plan improvement. (C1VR)	Evaluation results for improvement	Evaluation on strategic plan		

School Culture

Analyzing the interviews with Case 1 leaders, the researcher identified four concepts emerging in this theme. The concepts were (1) educational paradigm, (2) type of organization culture, (3) type of leadership, and (4) cultural consideration.

Educational paradigm. The leaders of Case 1 identified that the institution is densely influenced by the founder congregation's philosophy on education. C1R explained that education in this institution should cover context, experience, reflection, evaluation, and action cycle. Therefore, the leaders emphasized that all learning activities should be authentic, cover all humanistic aspects, provide meaningful experience, and allow students to reflect. Further, C1R mentioned that "*the thing we want to guarantee in our learning pedagogy is how students learn and not how lecturers teach*." Therefore, technology integration according to C1VR "*provided students more experience in learning*."

Type of organization. C1R explained that the characteristic of the institution was like a big family where "*everyone knows everybody*" in the beginning of the interview with him when the researcher commented on how friendly everybody was. Further, he mentioned that this could become the institution's either strength or weakness. In anticipating and solving problems, Case 1 leaders ensured that at the end of semester, students would meet lecturers in a forum to have a dialog about the (1) challenges the students had and (2) solutions and anticipations for the following semester. C1VR further mentioned that this institution was like "*jazz music group*" where leadership was shared among all members.

Cultural consideration. Case 1 leaders strongly upheld the organization's culture by ensuring that all learning materials in this institution should depict the institutional context and learning paradigm. C1R mentioned that "*all learning activities should be based on the institution learning paradigm*." Further, he elaborated that even digital learning content should also have cultural understanding by considering the diversity of students.

The leaders' perception above showed Case 1 consideration on school culture. Table 3.2 provides the tabular summary of emergent concepts and categories of the theme, school culture, in Case 1.

Table 3.2

Emergent concepts and categories of the theme, School culture, in Case 1

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
… influenced by the founder congregation's philosophy on education… (C1VR)	Philosophy influence	Institutional paradigm on education	Educational paradigm	School culture
… education in this institution should cover context, experience, reflection, evaluation, and action cycle. (C1R)	Education coverage	Institutional paradigm on education	Educational paradigm	School culture
… all learning activities should be authentic, cover all humanistic aspects, provide meaningful experience, and allow students to reflect. (C1R)	Learning activities requirements			
… the think we want to guarantee in our learning pedagogy is how students learn and not how lecturers teach. (C1R)	Learning pedagogy			
Technology integration provides students more experience in learning. (C1VR)	Experience in technology			
… all learning activities should be based on the institution learning paradigm. (C1R)	Learning activities based on paradigm			
The institution is like a big family. (C1R)	The institution is a family	Institutional type orientation	Type of organization	
At every end of the semester, students would meet lectures to have dialogs. (C1R)	Dialogs between students and lecturers	Dialogic community		
… like jazz music group where leadership is shared among all members. (C1VR)	Like jazz music group	Shared leadership	Type of leadership	
… digital learning content should also have cultural understanding considering the diversity of students. (C1R)	Culture in learning content	Manifestation of culture	Cultural consideration	

People Centered

In the analysis of the interview sessions with Case 1 leaders, the emergent two constructs under people centered were: (1) focus on students and (2) mindset building.

Focus on students. The cultural consideration of Case 1 in providing meaningful learning experience was based on the institution's commitment to put the students as the reason for all activities and programs. C1R mentioned that "*in this institution, the students come first*." He further guaranteed that all activities and programs in the institution should be for the students benefit, in order to make sure that students would have holistic education. Besides the updated holistic education, students would receive updated infrastructure as well. However, Case 1 leaders mentioned that the institution would not burden the students with high cost of education.

The institutional commitment in developing a cybernetic space in the university conformed Case 1 leaders to focus on enabling equal experience in physical and virtual encounters. C1R mentioned that in order to ensure this equal encounter, "*the institution built outdoor learning spaces and indoor sport center*." Case 1 leaders intended to balance out the physical and virtual activities for the students in this institution, "*not to look great for having good facilities but it was the response towards the virtual bombardment to the students*" (C1R). Further, he explained that in the fourth industrial revolution, "*physicality was more important than ever in anticipating cognitive factor that became more dominant*."

Building mindset. C1R believed that technology "*would not hinder yet it will improve academician's scientific performance*." Therefore, Case 1 leaders encourage all members of the institution to enrich their imagination about future demands and requirements in order to grow, not based on the direction of the leaders but on their own needs. C1VR mentioned that this mindset "*was needed to improve the activities and programs on the institution's three pillars*."

Further, Case 1 leaders believed that technology would provide students more meaningful learning. Since the primary concern of the institution is students' experience, C1R mentioned that "*technology will add flavor on the learning paradigm*." Therefore, the leaders encourage the use of technology to provide authentic and meaningful experience for students to learn.

Case 1 leaders' confirmation aforementioned showed the leaders' belief that leadership should be centered on people. Table 3.3 shows the emergent concepts and categories of people centered theme in Case 1.

Table 3.3

Emergent concepts and categories of the theme, People centered, in Case 1

Significant statements	*Initial code*	*Emerging subcategory*	*Emerging category*	*Emerging theme*
In this institution, the students come first (C1R)	Students first	Students' importance	Focus on students	People centered
… all activities and programs here should be for students benefit… (C1R)	For students benefit			
… we would not burden students with high cost of education. (C1VR)	Would not burden students			
The institution built outdoor learning spaces and indoor sport center. (C1R)	Facilities for students			
… physicality is more important than ever in anticipating cognitive factor that becomes more dominant. (C1R)	Physical improvement			
… technology would not hinder yet it will improve academician's scientific performance. (C1R)	Academician's scientific performance	Productive academician	Building mindset	
… the mindset is needed to improve the activities and programs on the three pillars. (C1VR)	Improving three pillars activities			
Technology will add flavor on our learning paradigm. (C1R)	Technology on learning paradigm	Meaningful technology		
… use the technology to provide authentic and meaningful experience for students to learn. (C1R)	Technology for students learning			

Networking

Analyzing the interviews with Case 1 leaders, four kinds of collaborations emerged: (1) collaboration with the government, (2) collaboration with other universities, (3) networking with external organizations, and (4) working with communities.

Collaboration with the government. As a private university, Case 1 is absent of financial support from the government. However, the government provides allocations through grants in competitions. Case 1 leaders mentioned that the institution had secured many grants from the government, either in regional or national level. In 2006, for example, Case 1 had secured a grant to design and build inter-university network. The rationale of this grant was to enable student access in digital learning courses from other university for free. Recently, Case 1 leaders recounted that Case 1 was selected together with 35 other universities nation-wide to collaborate in designing and building hybrid learning program for the country.

Collaboration with other universities. Case 1 leaders intensively developed networks with other universities to collaborate in many projects. C1R mentioned that the institution worked with 35 other universities in Indonesia to design and develop hybrid learning program. This collaboration was assigned by the government to selected universities only. Further, C1VR mentioned that the institution also worked with other universities nationally and internationally to develop digital learning contents. Some projects were initiated by lecturers and then was taken over by the university for bigger impact to the institution. C1R also elaborated that collaborations with other universities were conducted to strengthen three pillars programs, especially on research.

Networking with external organizations. Besides becoming a member of university associations, Case 1 leaders elaborated that they had collaborations with several non-government organizations to build distant learning program in Papua to improve the quality of education in the region. This program was in line with Case 1 commitment to ensure access for the marginalized community. The latest collaboration, according to C1R, was the institution involvement in Tuning Asia-South East project, which was co-funded by the Erasmus+ Programme of the European Union. This project was intended to promote regional and international cooperation between SEA and EU universities.

Working with communities. Case 1 leaders were determined in conducting community services as part of the institutional curriculum. The activity was conducted every semester and was mandatory for all students to participate in. With the presence of technology, C1R ascertained that the community service programs conducted by the institution would be integrative with the other pillars, i.e. research and teaching, as well as with technology.

The leaders' story confirmed the openness of the institution to collaborate to improve its students learning. Table 3.4 showcases the development of emergent concepts to the theme, networking, in Case 1.

Table 3.4

Emergent concepts and categories of the theme, Networking, in Case 1

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
We received huge grant from the government in 2006. (C1VR)	Grant	National level	Collaboration with government	Networking
We are working with 35 other universities nation-wide to design and build hybrid learning program for the country. (C1R)	Work with other university for the country			
We also build networks with universities, nationally and internationally, to develop digital learning content. (C1VR)	Networks for digital learning content	Building academic network	Collaboration with other universities	
We collaborate with other universities to strengthen our research. (C1R)	Collaboration for research			
… the institution is also member of many associations… (C1VR)	Associations member	Joining associations	Networking with external organizations	
We also join TASE project. (C1R)	Work with association			
… program with NGOs to build distant learning programs in Papua. (C1R)	Collaboration with NGOs	Mutual agreement		
… the community service that is organized every semester… (C1VR)	Community service	Programs for community	Working with communities	

Lifelong Learning

This theme consisted of three constructs as analyzed from the interview sessions with Case 1 leaders: (1) awareness, (2) knowledge, and (3) skills.

Awareness. Case 1 leaders identified that technology integration plays a big part in everything they do in the institution since it was considered as an important part. C1R elaborated that the idea of building an information system for institutional management began in 1988, initiated by the previous rector at that time. "*It was when the Internet has just entered Indonesia*" (C1R). In that year, as a young lecturer, he joined a team to develop the information system to support administrative management of the university. In 1994-2000, he became the head of the university's information technology center and conducted massive overhaul of the system to accommodate decision-making based on the information system. Even before the booming of the Internet in Indonesia in 1995, the university had started to develop its own computer-assisted learning system. C1VR clarified that "*the institutional awareness on technology became the backbone of our activities*" in the university, "*both that will support the administration as well as management and development of teaching and learning process*."

Case 1 leaders were aware that the institution should also have its adaptability toward the rapid change of technology. With its commitment to keep providing updated infrastructure to its academician, the institution was also mindful to adjust its pedagogical paradigm to meet today's educational demands. Though the philosophy would be the same, the method of student accompaniment might be different.

Knowledge. C1R was a knowledgeable person in technology as he "*studied in computer science*." Further, he was also responsible in many technology-related units in the institution prior to his position as a rector. However, he mentioned that he "*needed to always learn to keep updated with the current technology*." Further, being updated with the most recent learning sciences was mentioned by all Case 1 leaders in order to understand the development of new paradigms in education.

Skills. Case 1 leaders mentioned that leadership skills were needed to be able to successfully lead the institution. With the characteristics of the institution, the leaders believed that all academicians should possess the leadership skills. Therefore, in the institution, the leaders periodically conducted programs to hone academicians' skills in leadership. C1VR mentioned that "*everybody in this institution could become leader*" and the institution prepared everybody for it.

Further, to be able to lead effectively, C1R mentioned that leaders "*should possess good communication skills*." He underlined that communicating ideas effectively was crucial to let others understand the direction he was leading. He showed several of his articles published in national newspapers and magazines. C1VR

confirmed that "*sharing ideas and small success stories would result in more solid learning community*."

Case 1 leaders' perception confirmed the necessity of personal lifelong learning element in leading an institution. Table 3.5 provides tabular presentation of the concepts and categories of lifelong learning theme in Case 1.

Table 3.5

Emergent concepts and categories of the theme, Lifelong learning, in Case 1

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
… technology plays important part in all our activities. (C1VR)	Role of technology	Technology importance	Awareness	Lifelong learning
… in 1988, the previous rector proposed an idea of developing an information system for institutional management. (C1R)	The idea has been around for a long time	Technology history		
… the institutional awareness on technology became the backbone of our activities… (C1VR)	Institutional awareness	Aware of technology		
… success today requires our adaptability with technology. (C1R)	Adaptability	Aware of changes		
… in 90s I took Master in Computer Science… (C1R)	Knowledgeable	Knowledge about technology	Knowledge	
… I need to always learn to keep updated with the current technology. (C1R)	Learn and relearn	Knowledge about learning sciences	Knowledge	Lifelong learning
… everybody in this institution could become leader. (C1VR)	Equal opportunity	Leadership skills	Skills	
… every leader should also possess good communication skills… (C1R)	Basic requirement	Communication skills		

Triangulation Process of Case 1 Digital Leadership Identified by Academicians

For the purposes of triangulating the data for Case 1 top leadership interviews, five individuals from the institution participated in one-on-one interviews after the interview sessions with Case 1 leaders. The participants included two lecturers (C1L1 and C1L2), one IT staff (C1ST), and two students (C1S1 and C1S2). Further, the researcher's observation (C1OB) and document reviews (C1DR) were included for the triangulation purpose. The researcher described the purpose of the study and the data

collection process. Interviewees were then asked questions in the study protocol in Appendix 5. This section presents the summary of the participants response.

Institutional management

In the analysis process, the lecturers (C1L1 and C1L2) and the IT staff (C1ST), during the one-on-one interview sessions, mentioned constructs belonging to the emerging subcategories under institutional management theme. Meanwhile, C1S1 mentioned constructs about the institution's: (1) commitment to provide updated infrastructure, (2) commitment to parents, (3) supports for lecturers, (4) evaluation of ongoing program, and (5) evaluation on any unit. C1S2 illuminated constructs about (1) commitment to provide updated infrastructure, (2) commitment to model responsible online behavior, (3) supports for lecturers, and (4) evaluation on any unit. Further, the researcher's observation and document review could only illuminate the institutional commitment to provide updated infrastructure.

School Culture

All the academicians, C1L1, C1L2, C1ST, C1S1, and C1S2, mentioned ideas related to (1) institutional paradigm on education, (2) Institutional type organization, (3) dialogic community, (4) shared leadership, and (5) manifestation of culture in the interview sessions. Meanwhile, during the site visit and interview sessions, the researcher could observe the institutional type orientation of Case 1.

People Centered

C1L1 and C1L2 elaborated constructs belonging to all the emerging subcategories under the people-centered theme. Meanwhile, C1ST, C1S1 and C1S2 provided only one construct: students' importance. The researcher further confirmed the aforementioned construct during his site visits.

Networking

The analysis of the interviews showed that C1L1 and C1L2 supported constructs of collaboration provided by Case 1 leaders. However, C1ST did not mention anything related to the institutional programs for communities yet provided information on the other five constructs. According to C1S1, the institution was active in: (1) building academic network, (2) joining associations, and (3) programs for communities. Meanwhile, C1S2 only mentioned about Case 1 mutual agreement and programs for communities. Further, Case 1 website showed evidences of (1) building academic network and (2) joining associations.

Lifelong Learning

During the interviews, all lecturers (C1L1 and C1L2) and IT staff (C1ST) provided information that the leaders possessed all elements of lifelong learning. Meanwhile, the students (C1S1 and C1S2) could not provide any information on the issue. However, the researcher during the interviews with Case 1 leaders could observe that the leaders possessed all the characteristics they perceived.

Table 3.6 provides the tabular summary from the triangulation process.

Table 3.6

Case 1 digital leadership identified by the academicians

Emerging Theme	Emerging Subcategory	C1L1	C1L2	C1ST	C1S1	C1S2	C1OB	C1DR
Institutional Management	Commitment to provide updated infrastructure	√	√	√	√	√	√	√
	Commitment to parents	√	√	√	√			
	Commitment to model responsible online behavior	√	√	√		√		
	Policy for learning content and content delivery	√	√	√				
	Policy for learning development	√	√	√				
	Policy for stimulating three pillars of higher education	√	√	√				
	Supports for lecturers and staff	√	√	√				
	Supports for lecturers	√	√	√	√	√		
	Evaluation on ongoing programs	√	√	√	√			
	Evaluation on any unit	√	√	√	√	√		
	Evaluation on strategic plan	√	√	√				
School Culture	Institutional paradigm on education	√	√	√	√	√		
	Institutional type orientation	√	√	√	√	√	√	
	Dialogic community	√	√	√	√	√		
	Shared leadership	√	√	√	√	√		
	Manifestation of culture	√	√	√	√	√		
People Centered	Students' importance	√	√	√	√	√	√	
	Productive academicians	√	√					
	Meaningful technology	√	√					
Networking	National level	√	√	√				

Emerging Theme	Emerging Subcategory	C1L1	C1L2	C1ST	C1S1	C1S2	C1OB	C1DR
	Building academic network	√	√	√	√			√
	Joining associations	√	√	√	√			√
	Mutual agreement	√	√	√		√		
	Programs for communities	√	√		√	√		
Lifelong Learning	Technology importance	√	√	√			√	
	Technology history	√	√	√			√	
	Aware of technology	√	√	√			√	
	Aware of changes	√	√	√			√	
	Knowledge about technology	√	√	√			√	
	Knowledge about learning sciences	√	√	√			√	
	Leadership skills	√	√	√			√	
	Communication skills	√	√	√			√	

Alignment of Case 1 Digital Leadership with ISTE Standards for Education Leaders

This section tries to answer the first research question of the study: How do characteristics of leaders in accredited institutions differ from or similar to the characteristics enshrined in ISTE Standards for Educational Leaders, in terms of being: (1) equity and citizenship advocate, (2) visionary planner, (3) empowering leader, (4) system designer, and (5) connected learner. Therefore, a tabular representation of characteristic subcategories from the data was compared and contrasted with the ISTE Standards for Education Leaders. Constructs with no alignment were marked as not available (N/A).

In the equity and citizenship advocate standard, ISTE identified four characteristics. The first characteristic is ensuring that all students have skilled teachers who actively use technology to meet student learning needs. In Case 1, the leaders identified that the institution had their policies to ensure that lecturers were skilled and used LMS and other technologies for students learning. The second characteristic in the standard mirrored in the case's commitment and policy that would ensure the university to provide access to the technology and connectivity. In the third characteristic of the standard, Case 1 manifested the necessity to model digital citizenship in its commitment to model responsible online behavior. In the fourth characteristic of the standard, Case 1 cultivated responsible online behavior by expressing its commitment and policy.

The second ISTE standard, visionary planner, is elaborated into five characteristics. The first characteristic, engaging education stakeholders, was translated by Case 1 into its policy for stimulating three pillars. Further, the same

subcategory of policy was aligned with the second characteristic of the standard, i.e. build on the shared vision by collaboratively creating a strategic plan that articulates how technology will be used to enhance learning. The third characteristic of the standard was aligned to Case 1 assessment and evaluation category under institutional management theme. The fourth and fifth characteristics of ISTE standard were represented by Case 1 communication skills subcategory.

In the third standard, there are five elements. The first element was aligned to Case 1 supports category of institutional management theme. Meanwhile, there was no alignment for the second element in the standard of ISTE. The missing alignment was because the university did not specifically use ISTE sets of standards for its teaching and learning activities. The third element of the standard was aligned to Case 1 policy for stimulating three pillars and supports for lecturers and staff. The fourth element, according to Case 1, was present in its policy and supports categories. Further, for developing learning assessment, Case 1 translated it into its commitment and policy.

In the visionary planner standard, ISTE identified four elements. For the first element, Case 1 aligned its policy for learning development and leadership skills category into the standard. The second element of the standard existed in Case 1 commitment to provide updated infrastructure. Further, for the third element, Case 1 showed its commitment to model responsible online behavior category. Case 1 networking category was aligned to the fourth element of the visionary planner standard.

ISTE elaborated four elements in the fifth standard, connected learner. Case 1 showed its commitment, awareness, and knowledge categories to be aligned with the first element. In the second element of the standard, Case 1 provided evidence of it in networking and lifelong learning themes. For the third element, Case 1 showed its awareness and knowledge categories to be aligned with the standard. The last element of the standard was also apparent in Case 1 leadership and communication skills categories.

However, the data from the study indicated that there were two themes that were not present in the ISTE standards, i.e. school culture and people-centered themes. Case 1 identified five elements in school culture theme and five elements in people-centered theme. The school culture theme included (1) institutional paradigm on education, (2) institutional type orientation, (3) dialogic community, (4) shared leadership, and (5) cultural consideration. Further, for people-centered theme, Case 1 identified (1) students' importance, (2) physical and virtual encounters, (3) physical encounters, (4) productive academicians, and (5) meaningful technology.

The findings from the study indicated that there were similarities and differences between the characteristics and practices of Case 1 leaders and those enshrined in the ISTE standards. The similarities appeared to be due to the leaders consideration that

leadership should be able to adapt and be flexible with the situation in both local and international levels. However, since the leaders did not merely focus on a certain standard for leadership, the leaders considered additional elements that made Case 1 unique, i.e. school culture and people-centered.

Table 3.7

Alignment of Case 1 Digital Leadership Subcategory with ISTE Standards for Education Leaders

ISTE Standards for Education Leaders	Case 1 Digital Leadership Subcategory
Equity and Citizenship Advocate	
a. Ensure all students have skilled teachers who actively use technology to meet student learning needs	• Policy for learning content and content delivery
b. Ensure all students have access to the technology and connectivity necessary to participate in authentic and engaging learning opportunities	• Commitment to provide updated infrastructure • Policy for learning content and content delivery
c. Model digital citizenship by critically evaluating online resources, engaging in civil discourse online and using digital tools to contribute to positive social change	• Commitment to model responsible online behavior
d. Cultivate responsible online behavior, including the safe, ethical and legal use of technology	• Commitment to model responsible online behavior • Policy for learning development
Visionary Planner	
a. Engage education stakeholders in developing and adopting a shared vision for using technology to improve student success, informed by learning sciences	• Policy for stimulating three pillars
b. Build on the shared vision by collaboratively creating a strategic plan that articulates how technology will be used to enhance learning	• Policy for stimulating three pillars
c. Evaluate progress on the strategic plan, make course corrections, measure impact and scale effective approaches for using technology to transform learning	• Evaluation on ongoing programs • Evaluation on any unit • Evaluation on strategic plan
d. Communicate effectively with stakeholders to gather input on the plan, celebrate successes and engage in continuous improvement cycle	• Communication skills
e. Share lessons learned, best practices, challenges and the impact of learning with technology with other education leaders who want to learn from this work	• Communication skills
Empowering Leader	
a. Empower educators to exercise professional agency, build teacher leadership skills and pursue personalized professional learning	• Supports for lecturers and staff • Supports for lecturers
b. Build the confidence and competency of educators to put the ISTE Standards for Students and Educators into practice	• N/A

ISTE Standards for Education Leaders	Case 1 Digital Leadership Subcategory
c. Inspire a culture of innovation and collaboration that allows the time and space to explore and experiment with digital tools	• Policy for stimulating three pillars • Supports for lecturers and staff • Supports for lecturers
d. Support educators in using technology to advance learning that meets the diverse learning, cultural, and social-emotional needs of individual students	• Policy for learning content and content delivery • Supports for lecturers and staff • Supports for lecturers
e. Develop learning assessment that provide a personalized, actionable view of student progress in real time	• Commitment to provide updated infrastructure • Policy for learning content and content delivery
System Designer	
a. Lead teams to collaboratively establish robust infrastructure and systems needed to implement the strategic plan	• Policy for learning development • Leadership skills
b. Ensure that resources for supporting the effective use of technology for learning are sufficient and scalable to meet future demand	• Commitment to provide updated infrastructure
c. Protect privacy and security by ensuring that students and staff observe effective privacy and data management policies	• Commitment to model responsible online behavior
d. Establish partnership that support the strategic vision, achieve learning priorities and improve operations	• National level • Building academic network • Joining associations • Mutual agreement • Programs for communities
Connected Learner	
a. Set goal to remain current on emerging technology for learning, innovations in pedagogy and advancements in the learning sciences	• Commitment to provide updated infrastructure • Aware of technology • Knowledge about technology
b. Participate regularly in online professional learning networks to collaboratively learn with and mentor other professionals	• Building academic network • International collaboration • Knowledge about learning sciences
c. Use technology to regularly engage in reflective practices that support personal and professional growth	• Aware of changes • Knowledge about learning sciences
d. Develop the skills needed to lead and navigate change, advance systems and promote a mindset of continuous improvement for how technology can improve learning	• Leadership skills • Communication skills
	School Culture
N/A	• Institutional paradigm on education
N/A	• Institutional type orientation
N/A	• Dialogic community
N/A	• Shared leadership

ISTE Standards for Education Leaders	Case 1 Digital Leadership Subcategory
N/A	• Manifestation of culture
	People-Centered
N/A	• Students' importance
N/A	• Productive academician
N/A	• Meaningful technology

Emergent framework of Digital Leadership in Higher Education of Case 1

The data gathered from one-on-one interviews with Case 1 leaders, supported by the triangulation process that was participated by the academicians, as well as the researcher's observation and document reviews, showed that according to Case 1 leaders, digital leadership consisted of five conceptual themes. The themes were (1) institutional management (commitment, policy, supports, and assessment and evaluation), (2) school culture (educational paradigm, type of organization, type of leadership, and cultural consideration), (3) people centered (focus on students and building mindset), (4) networking (with government, with other universities, with external organizations, and with communities), and (5) lifelong learning (awareness, knowledge, and skills). Figure 3.1 shows the emergent framework of digital leadership of Case 1.

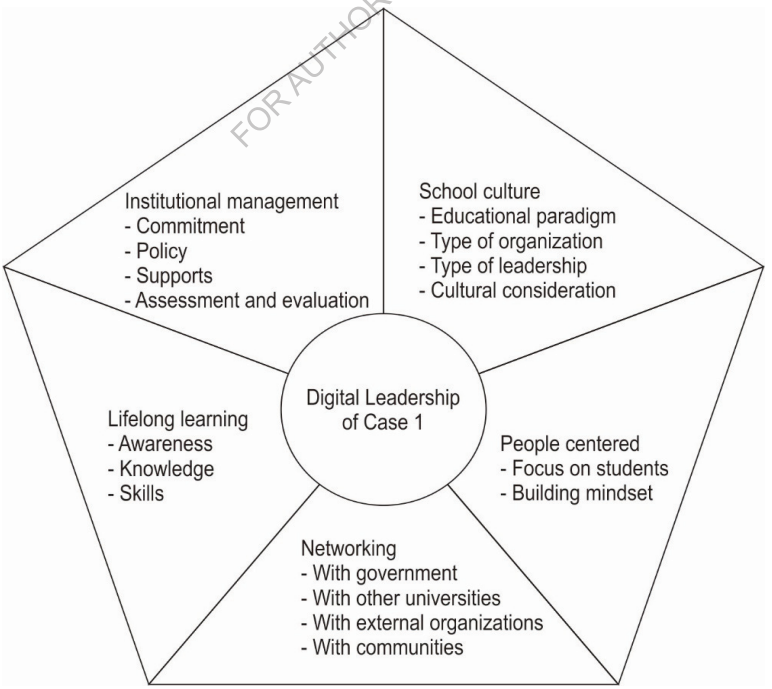

Figure 3.1. Case 1 Emergent Framework of Digital Leadership in Higher Education

Figure 3.1 illustrates the digital leadership in higher education in Indonesia according to Case 1. Case 1 accounted that there are five essential elements a digital leader should possess in leading a higher education institution, i.e. institutional management, school culture, people centered, networking, and lifelong learning. Considering that these are leadership characteristics, there is no consecutive order in the themes.

Case 1 confirmed the value of institutional management by having commitment, policy, supports, and assessment and evaluation. Digital leaders should possess commitment to make sure the integration of technology in the institution is in line with the university's vision and goals. Further, the leaders should translate the commitment into institutional policies and supports. The policies will set rules of conduct for the academicians to perform in the institution. Meanwhile, the supports will provide enrichment for the lecturers and staff in relation to the professional skills needed for technology integration. Further, the assessment and evaluation will be needed to evaluate the milestone achievements. The results of the assessment and evaluation will provide leaders guideline on what to improve.

A digital leader, further, needs to observe the school culture by considering the educational paradigm, type of organization, type of leadership, and cultural consideration of the institution. The institution's educational paradigm will become the backbone of any technology integration and provide guidance for any leadership decision-making. Understanding the type of organization and type of leadership will also provide digital leaders ease in leading and managing the institution. Meanwhile, the cultural consideration will provide leaders guideline on being digital leaders in the institution's cultural contexts.

Case 1 believed that digital leadership should be centered on people. The focus of leadership is on students and building mindset. A digital leader should consider that people – their skills and mindset – are an organization's strategic differentiator to be able to succeed in this era. Focusing on students provide leaders an opportunity to offer better and updated education for the main customer, i.e. students. Further, the education that integrates technology will enable students to have equal experiences in their physical and virtual encounters. Digital leadership is also expected to lead in mindset building of all academicians on the importance of technology in educations.

Supported by the flexibility of technology in communication, a digital leader is expected to build networks with the government, other universities, external organizations, and communities. Networks and collaborations will strengthen the institutional position in the effort of providing good education for the students. The networks and collaborations will also provide better experience for all academicians in relation to technology integration in higher education institutions.

Case 1 also believed that a digital leader is required to be a lifelong learner to keep building own awareness, knowledge, and skills. The personal awareness on the importance of technology in education, knowledge about technology in education, and skills in leadership and communication will provide a leader better grasp on how to lead in this digital era and enable her/him to lead the institution better.

Case 2

Case 2 is a Christian private university in Yogyakarta with Accreditation A by BAN-PT (3290/SK/BAN-PT/Akred/PT/IX/2017). Initially, Case 2 was established in 1962 as a theological seminary as a response to churches' hope of improving the quality of the education for church ministers to better serve their church synods. With the development of the institution, in 1985, the seminary expanded into a university. Currently, the university hosts seven faculties with 17 departments serving bachelor to doctoral students. The national higher education database reported in Case 2 showed that there were 5,835 students enrolled in AY2018-2019 and 170 lecturers for a ration of 1:34.3 (https://forlap.ristekdikti.go.id/perguruantinggi/search).

This study invited the participation of Case 2 leadership, i.e. vice rector for academic affairs (C2V1) and vice rector for students affairs, alumni, and information (C2V2). During the data gathering for this study, the rector was not able to participate due to his tight schedule. Therefore, he requested both the vice rectors to participate in this study. C2V1 was at the end of her first term in the position of vice rector for academic affairs during the study. She took her doctoral degree at Gadjah Mada University, Indonesia. Meanwhile, C2V2 held the position for three years during the study. His educational expertise in Computer Science ensured this study to gain rich information.

Digital Leadership Identified by Case 2 Leaders

After the interviews with Case 2 leaders, five emerging themes were identified as important elements of digital leadership in higher education. The themes were institutional management, school culture, people-centered, networking, and lifelong learning.

Institutional management

There were four emergent constructs identified in the interview results with Case 2 leaders: (1) commitment, (2) policies, (3) supports, and (4) assessment and evaluation.

Commitment. The interviews with Case 2 leaders showed five emergent subcategories under institutional commitment category: (1) commitment to provide updated infrastructure, (2) commitment for lecturers, (3) commitment to improve

human resource capability, (4) commitment to model responsible online behavior, and (5) commitment to provide safe and secure virtual environment.

Case 2 leaders stated that the institution was prepared in facing the disruptive era of 4IR. The institution had been developing and building its software and hardware to achieve fully digital system management. C2V1 mentioned that "*the university has invested a lot for improving its technology facilities to face challenges in 4IR*." She further underlined the institutional commitment to provide students better updated facilities to make them more ready after graduating. Case 2 leaders mentioned that the institution had developed an LMS on their own to maintain the uniqueness of the university. "*This e-class is used in all classes by all lecturers*", C2V2 mentioned. Case 2 leaders developed the LMS for the students' learning media.

Further, Case 2 leaders confirmed that the LMS they had developed was linked to information system for administrative purposes. C2V2 clarified that the institution made a system that guarantees that all lecturers use the LMS in their teaching learning process. To overcome connection problems, the leaders made sure that the institution maintain and update the facilities periodically. "*In this university, all 100% of lecturers use e-class everyday*" (C2V1). Further, she mentioned that all activities were recorded in the system so all decisions were based on the information system.

Case 2 leaders identified that the institution still had some challenges regarding its human resources capability. However, the institution had created programs to train and retrain all human resources to improve their capability in working with technology. C2V1 mentioned that in the beginning it was not an easy task to encourage the older generation of lecturer and staff. However, by providing transparency to all academician the resistance of change decreased exponentially. C2V2 illustrated that by employing reward system, the university currently could achieve 100% of digital management.

With 100% coverage of fast Internet in their campus, Case 2 leaders were committed to encourage all academicians to be wise and responsible in a virtual environment in order to make a safe and convenient environment. Students of Case 2 "*could rely on their LMS to access learning material as well as assessment through Student's Self Access Terminal*" (C2V1). C2V1 also mentioned that the leadership provided a model on how to be good digital citizens by relentlessly promoting digital citizenship to all academicians. Further, to ensure the safety and security of the network and connection, the institution collaborated with an external digital security organization.

Policies. In the effort of strengthening the institutional commitments, Case 2 leaders issued institutional policies. During the interviews, some policies were elaborated. The first policy was for educational standards. Case 1 leaders made sure that all lecturers met the standards set by the Indonesian ministry of research and higher education. The standards included learning methods that the students should

experience, which in this case is related to technology. Further, to monitor the implementation of teaching learning activities, all lecturers in the beginning of the semester should create a learning contract with the students which would be monitored all throughout of the semester. At the end of the semester, the students would then be able to evaluate the alignment of the learning contract with their learning experience. This evaluation, together with lecturers' compliance in using technology, would be evaluated for rewards computation.

Case 2 provided rewards to all lecturers who used the LMS in their classes and some deduction for those who did not. C2V2 illustrated that when a lecturer used LMS in her/his classes, s/he would have performance bonus at the end of the semester. However, if s/he did not use LMS, it would influence her/his performance score and therefore would have 10% financial deduction as the consequence.

In terms of the three pillars activities, Case 2 was so adamant in promoting research and community service. Case 2 leaders believed that the three pillars activities were one of the ways for the institution to have its promotion. The leaders assigned a unit to plan, develop, and maintain a hybrid platform for lecturers to pool activities related to the three pillars in order to effectively monitor and evaluate Case 2 three pillars roadmap.

Support. Besides commitment to provide updated technology facilities, Case 2 leaders guaranteed that lectures and staff receive regular trainings to strengthen their capabilities. "*The trainings were intended for a more effective and efficient workflow in the institution*" (C2V2). With the rigorous update the university had, it was almost certain that there were new technologies implemented in the institution. Therefore, Case 2 leaders also guaranteed that whenever new technology was implemented, human resources would receive trainings.

Case 2 provided more supports for professional development especially for lecturers. The leaders mentioned that they have allocated operational funds for lecturers who want to pursue their personal development. Not limited to personal development, Case 2 also provided grants for lecturers to develop digital learning materials, to conduct research, and to facilitate community services. The commitment of Case 2 for its three pillars activities was apparent from its supports to its academicians.

Assessment and evaluation. During the interviews, Case 2 leaders elaborated that there were three assessment and evaluation: (1) on human resources, (2) on ongoing programs, and (3) on strategic plan. C2V2 mentioned that Case 2 had developed a system to evaluate and monitor human resources performance. One of the functions of this system was to determine the performance bonus. In the system for lecturers, Case 2 leaders created "*rapport of performance every semester based on lecturers' use of*

LMS, students' evaluation, learning contracts, attendance, and assessments of students' work" (C2V1).

Case 2 leaders also assess and evaluate any ongoing programs to monitor the progress. "*When a program could not meet the progress indicator, we would evaluate and make necessary adjustments*" (C2V2). Meanwhile, for the institution's strategic plan, Case 2 leaders conducted annual evaluation to measure the milestone achievements of the plan. The leaders also confirmed that they would make adjustments when necessary. Further, they also mentioned that the evaluation results would become one of the considerations in developing the following strategic plan.

The leaders' perception above showed Case 2 consideration on institutional management. Table 3.8 provides the tabular summary of emergent concepts and categories under the theme, institutional management, in Case 2.

Table 3.8

Emergent concepts and categories of the theme, Institutional management, in Case 2

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
… the university has invested a lot for improving its technology facilities to face challenges in 4IR (C2V1)	Investment on technology facilities	Commitment to provide updated infrastructure	Commitment	Institutional management
… the LMS is linked with our information system for administration… (C2V2)	Integrated system			
… we have a unit to maintain and update the facilities periodically. (C2V2)	Maintain and update facilities			
This e-class is used in all classes by all lecturers (C2V2)	All lecturers use e-class	Commitment for lecturers		
This university has created a system that guarantee all lecturers use the LMS (C2V2)	System to guarantee LMS use	Commitment for lecturers		
… the university created training programs for all human resources to improve their capability… (C2V2)	Trainings for human resource	Commitment to improve human resource capability		
… provide transparency to all and the resistance decreased drastically (C2V1)	Managing resistance			
… we employ reward system, and now all use our digital management. (C2V2)	Reward system			
… we expect that all academes in this university to be wise and responsible in virtual environment (C2V1)	Wise and responsible	Commitment to model responsible online behavior		
The students could rely on their LMS to access learning material as well as assessment through Student's Self Access Terminal (C2V1)	Reliable access	Commitment to provide safe and secure virtual environment		
… we work together with external digital security organization (C2V2)	Virtual security			
We make sure that all lecturers meet and follow the standards from the ministry (C2V1)	Meeting and following standards	Policy for educational standards	Policy	Institutional management

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
Our lecturers also make learning contract with students (C2V1)	Learning contract			
… give bonus for lecturers who use e-class (C2V2)	Rewards	Policy for learning content and content delivery		
… a unit to plan and organize the university three pillars activities (C2V1)	Unit for three pillars activities	Policy for stimulating three pillars		
The trainings are intended for a more effective and efficient workflow in the institution (C2V2)	Trainings for effective and efficient work	Supports for lecturers and staff	Supports	
… whenever we have technology update, the relevant unit will have training (C2V2)	Trainings on technology update			
… we have funding for lecturers who want to continue their study or join in courses (C2V2)	Fund for lecturers	Supports for lecturers		
We also have grants for lecturers to develop learning materials, research and community service (C2V1)	Grants			
The institution has system to evaluate and monitor human resource performance (C2V2)	Evaluation and monitoring system	Evaluation on human resource	Assessment and evaluation	
… rapport of performance in every semester based on the use of LMS, evaluation from student, learning contracts, attendance, and students' grade (C2V1)	Performance rapport			
When a program cannot meet the progress indicator, we will evaluate and make necessary adjustments (C2V2)	Meeting progress indicators	Evaluation on ongoing programs	Assessment and evaluation	
… annual evaluation to see the milestones of the strategic plan (C2V1)	Annual evaluation for strategic plan	Evaluation on strategic plan		

School Culture

The interview analysis of Case 2 leaders associated three emerging categories with school culture theme: (1) educational paradigm, (2) type of organizational culture, and (3) carrot and stick culture.

Educational paradigm. There are four core values Case 2 was adhering to: (1) obedience to God, (2) walking in integrity, (3) striving for excellence, and (4) service to the world. Case 2 leaders mentioned that the institution's core values manifested in many aspects. The most prevalent was in learning content. Case 2 required all learning contents in the institution to include the core values. C2V1 mentioned that "*all learning materials should contain the four core values*." The purpose was that the core values would be internalized by the students. It was the obligation of the lecturer to embody the core values into their learning contents.

Not only the students who should internalize the core values, Case 2 leaders also mentioned that all human resources should exhibit the core values in their service to the students and stakeholders. C2V2 clarified that "*in every semester, lecturers and staff would have spirituality development to internalize the core values*." Case 2 leaders expected that lecturers and staff would provide better service to the students in accordance with the core values.

Learning contract in Case 2 was the manifestation of the institutional core values. C2V1 mentioned that "*it is a contract between lecturer and students on what they are going to learn in the semester*." The lecturers should develop the contract based on the institutional spirituality, to promote integrity of academicians, and to reflect professionalism. Case 2 leaders confirmed that the learning contract was one of the efforts to provide transparency to the institution's stakeholders. It also functioned as a monitoring tool for Case 2 leaders to evaluate the performance of the lecturers.

Case 2 leaders also led a team to develop a customized information system for the institution. "*The information system in the institution also should reflect the core values of the institution*", according to C2V1. Case 2 leaders believed that the information system would be the representation of the institution and the core values became its uniqueness.

Type of organization. Case 2 leaders valued efficiency, consistency, and uniformity in their institution. C2V2 mentioned "*that the organizational structure was formal and to be effective, the leaders became coordinator who monitors the performance of the subordinates*." Leaders in Case 2 were considered as the "*chosen ones*". Therefore, with obedience value, the subordinate would be more effective and efficient under a solid planning of the leadership. The information system in Case 2 also enabled error detection, milestone measurement, process control, systematic problem solving, as well as functioned as a quality tool.

Carrot and stick culture. Case 2 leaders believed that the morale and motivation of the institution's human resources could be improved by providing performance bonus. Further, to prevent disobedience, Case 2 leaders also implemented bonus deduction for those who did not perform as expected. For lecturers, C2V2 elaborated that "*they could get active performance bonus when they met the required indicators*", such as lecturer attendance, teaching quality, course passing rate, grade submission, and e-class use.

The above confirmation from Case 2 leaders showed that the leaders believe on school culture theme in Case 2. Table 3.9 provides the summary of the emergent concepts and categories on the emergent theme, school culture, in Case 2.

Table 3.9

Emergent concepts and categories of the theme, School culture, in Case 2

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
The core values of this institution are manifested in many aspects (C2V1)	Core values in many aspects	Institutional paradigm on education	Educational paradigm	School culture
… all learning materials should contain the four core values. (C2V1)	Core values in learning material			
… in every semester, lecturers and staff would have spirituality development to internalize the core values. (C2V2)	Spirituality development			
Learning contract is one of the forms of core values translations (C2V1)	Learning contract			
The information system also should reflect the core values of the institution (C2V1)	Core values in information system	Institutional paradigm on education	Educational paradigm	School culture
… that the organizational structure is formal and to be effective, the leaders become coordinators who monitor the performance of the subordinates (C2V2)	Formal structure	System driven organization	Type of organization	
… with the obedience value, the subordinate will be more effective and efficient… (C2V2)	Obedience value	Effective organization		
… the morale and motivation of the human resource could be improved with performance bonus (C2V2)	Performance bonus	Rewards	Carrot and stick culture	
… there are also bonus deduction… (C2V2)	Bonus deduction	Punishment		
They could get active performance bonus when they meet the required indicators (C2V2)	Active performance bonus	Rewards		

People Centered

Case 2 leaders' beliefs were identified into three emergent categories in this theme: (1) view on personal approach, (2) view on new system, and (3) building mindset.

View on personal approach. Case 2 leaders mentioned that besides upholding the policies and rules as well as advocating changes, the leaders also conducted a personal approach to stakeholders. To function effectively, all individuals in the system should perform optimally. Therefore, C2V2 mentioned that "*all human resources should be monitored and evaluated regularly*". However, when someone did not perform as required in the system, Case 2 leaders opted to have a personal approach to persuade the individual to follow the system and let the system to accompany the individual to go back performing effectively.

View on new system. Case 2 leaders believed that the implementation of a new system required new habit formation. C2V1 illustrated that when the institution implemented fingerprint system to record attendance, both in classes and offices, there were some who forgot to check-in or check-out. Another illustration given during the interviews was the implementation of the lecturer's performance index evaluation. At the beginning there were some lecturers who were reluctant to use the LMS in their classes. C2V2 then mentioned that "*it was a matter of habit formation*."

Case 2 leaders' effort to prevent the resistance towards implementation of new systems among others, was to use rewards system. Those who followed the new policy and performed in accordance with the system would receive performance bonus. However, those who did not follow would not get the said bonus. C2V2 claimed that this approach was successful since the difference from the bonus was big. The impression of the lecturers who received the bonus would influence those who did not perform effectively in the system.

Building mindset. Case 2 leaders believed that the information system would benefit academicians to be more productive in their three pillars activities. Case 2 had developed an integrative information system that would help academicians in making a portfolio to be reported to the government. C2V1 believed that "*with the integrative system the institution has built, lecturers only need to input once and they could use it for any reporting purposes*." Case 2 leaders mentioned that with less administrative requirements, academicians would have more time and they were required to produce more research to improve their international impact factor. Further, with Case 2 value of service to the world, the leaders also support academicians to have more community service programs which were based on technology.

The aforementioned perception of Case 2 leaders provided confirmation on the beliefs on people centeredness in the institution. Table 3.10 provides the tabular

summary of the emergent concepts and categories of the theme, people centered, in Case 2.

Table 3.10

Emergent concepts and categories of the theme, People centered, in Case 2

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
... all human resources should be monitored and evaluated regularly (C2V2)	Performance monitoring and evaluation	Individuals in the system	View on personal approach	People centered
When someone does not perform well, we have personal approach… (C2V1)	Personal approach			
… any implementation of new system will require new habit formation (C2V1)	New habit formation	Habits in institution	View on new system	
Rewards is our way for creating new habit (C2V2)	Rewards for new habit			
… information system will benefit academicians to be more productive in their three pillars activities (C2V1)	Academician to be more productive	Productive academicians	Building mindset	
We develop an integrative system to help academicians report their portfolio (C2V1)	System to help academicians			
… with service to the world, we encourage lecturers to have more community service based on technology (C2V1)	Community service based on technology			

Networking

Case 2 leaders differentiated four kinds of collaboration during the interviews, i.e. (1) with the government, (2) with other universities, (3) with external organizations, and (4) with communities.

Collaboration with the government. Case 2 leaders recounted that they had many collaborations with external organizations to date. One of the organizations was the government, both regional and national government. With its community service, Case 2 had collaboration with regional governments to develop their potentials. C2V2 illustrated "*regional governments often contact the institution to collaborate developing and improving the information system in their work area*." Further, while working on the information system, Case 2 also worked with local communities to develop their potentials.

Case 2 leaders also mentioned that the institution had collaboration with the Indonesian ministry to plan and develop distant learning platform. This platform would connect all higher education institutions selected by the government to manage the

distant learning program in the country. The collaborations with the government, according to C2V1, "*solidified the position of the institution nationally*."

Collaboration with other universities. Case 2 leaders continuously tried to build network and collaboration with other universities. C2V1 believed that "*the institution needs to collaborate with others to able to bring more impact to the society*." With other universities, nationally and internationally, Case 2 tried to build academic networks in which they open possibilities for credit transfer and double degree programs with other universities. At the moment this study was conducted, there were some visiting scholars collaborating with Case 2 academicians. Aside from the said programs, Case 2 also collaborated with other universities to develop digital learning contents.

Networking with external organizations. Case 2 leaders actively build networks with external organizations. To support its entrepreneurial curriculum, Case 2 leaders made collaboration with industries which would accommodate the students to have practical works. Case 2 kept exploring new opportunities of collaboration to provide more options for the students. Aside from industries, Case 2 also had collaborations with associations, both national and international. The collaborations with associations, according to C2V1, "*provided opportunities for the institution to collaborate with the members more intensively*." Further, Case 2 leaders also opened cooperation and collaboration with vendors and service providers to update and improve the technology facilities.

Working with communities. Community service for Case 2 was indeed the manifestation of one of its core values, i.e. service to the world. Case 2 leaders mentioned that there were many activities and programs that were intended for communities. The most recent ones, according to C2V2, were "*building information system customized for small businesses and also providing trainings on information system for districts' officers*." The collaborations with communities were mostly initiated by individual lecturers and were then handled by the institution to guarantee the sustainability and wider impacts.

Table 3.11 provides the summary of the concepts and categories under the emergent theme, networking, in Case 2.

Table 3.11

Emergent concepts and categories of the theme, Networking, in Case 2

Significant statements	Initial code	Emerging subcategory	Emerging category	Theme
… regional governments often contact us to collaborate developing and improving the information system in their work area (C2V2)	Develop and improve information system	Regional level	Collaboration with government	Networking
… with the ministry, we collaborate to plan and develop distant learning platform (C2V1)	Plan and develop distant learning platform	National level		
… build academic networks to open possibilities of credit transfer and double degree programs… (C2V1)	Credit transfer and double degree program	Building academic networks	Collaboration with other universities	
… also collaborate to make digital learning contents. (C2V1)	Making digital learning content			
… we need companies and industries for our students to have practical work (C2V1)	Industries for practical work	Mutual agreement	Networking with external organizations	
The massive update we had required us to collaborate with vendors and service providers… (C2V2)	Updating facilities			
We join associations to give us opportunities to collaborate with the other members more intensively (C2V1)	Provide opportunities to collaborate	Joining associations		
… our lecturers have a lot of activities and programs intended for communities. (C2V1)	Academicians programs	Programs for communities	Working with communities	
… building information system customized for small business… (C2V2)	Information system for small business	Programs for communities	Working with communities	Networking
… providing trainings on information system for districts' officers… (C2V2)	Trainings for districts' officers			

Lifelong Learning

The interviews with Case 2 leaders described three emergent categories in this element: (1) awareness, (2) knowledge, and (3) skills.

Awareness. Case 2 leaders were aware of the importance of technology in education. Case 2 had invested a lot of resources to enable the institution to function effectively using technology. From the information system to support administration works to LMS to support teaching learning process. With all its commitments and policies, Case 2 could readily make decisions based on its support systems. The leaders' awareness on the importance of technology had also enabled them to monitor and evaluate the performance of Case 2 human resources with ease.

C2V1 mentioned that "*in this era, the institution should have flexibility to adapt to rapid changes in the society*." Further, she mentioned that the leaders as "*the tip of spear*" should be able to provide direction on where the institution would proceed. This required Case 2 leaders to be adaptable to changes. C2V2 mentioned that "*the considerations would be based on learning sciences; the institution would not go empty handed*."

Knowledge. Being "*a leader in Case 2 required a person to be knowledgeable about technology and learning sciences*", underlined by C2V2. Case 2 leaders, further, believed that all decisions in the institution should be based on the most updated learning sciences. C2V1 mentioned that "*if necessary, we would conduct the study ourselves*." Knowledge of the updated learning sciences became the foundation for Case 2 leaders to improve the necessary components in the institution. The leaders mentioned that when they made decision based on science, they could make sure that the decision would be valid and reliable.

Skills. Case 2 leaders confirmed that to be able to lead effectively, they should possess leadership skills and communication skills. The leaders mentioned that they led the institution by providing examples to all the academicians. They believed that when they walked the talk, the subordinates would participate more readily in the cause. Further, to be able to deliver the idea and thought of institutional improvements, the leaders should also have good communication skills. "*Otherwise, the idea would never be delivered to the subordinates*" (C2V2).

The above perception of Case 2 leaders developed the emergent categories that built the theme, lifelong learning, in Case 2. Table 3.12 provides the summary of the theme emergence.

Table 3.12

Emergent concepts and categories of the theme, Lifelong learning, in Case 2

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
… we have invested a lot of resources to enable us to function more effective (C2V1)	Investment to be effective	Aware of technology	Awareness	Lifelong learning
… we also need the technology to monitor and evaluate the performance of lecturers and staff (C2V2)	Technology for performance monitoring and evaluation			
… in this era, the institution should have flexibility to adapt to rapid changes in the society. (C2V1)	Flexibility to adapt	Aware of changes		
… being a leader in this institution requires a person to be knowledgeable about technology and learning sciences (C2V2)	A leader requirement	Knowledge about technology	Knowledge	
All decisions in the institution should be based on the most updated learning sciences (C2V1)	Decisions based on learning science	Knowledge about learning sciences		
Knowledge about updated pedagogy enables us to improve the necessary elements (C2V1)	Know what to improve			
… we should lead the institution by providing examples. (C2V1)	Lead by example	Leadership skills	Skills	
We also need to deliver our idea and vision for institutional improvements (C2V2)	Deliver idea and vision	Communication skills		

Triangulation Process of Case 2 Digital Leadership Identified by Academicians

The participants of this triangulation process consisted of two lecturers (C2L1 and C2L2), one IT staff (C2ST), and one student (C2S1). The researcher's observation (C2OB) and document review (C2DR) were also included in the triangulation purpose.

Institutional management

From the four respondents for the triangulation process, three participants, i.e. C2L1, C2L2, and C2ST, all mentioned ideas belonging to the emergent categories under the institutional management theme. C2S1 provided information that could be put into seven categories of the theme. The categories were (1) commitment to provide updated infrastructure, (2) commitment to improve human resource capability, (3)

commitment to model responsible online behavior, (4) commitment to provide safe and secure virtual environment, (5) policy for educational standards, (6) policy for learning content and content delivery, and (7) evaluation on ongoing programs. Meanwhile, during the site visits and document check, the researcher observed elements related to commitment to provide the updated infrastructure.

School Culture

Based on the interview analysis, all academicians, i.e. C2L1, C2L2, C2ST, and C2S1, provided information that could be categorized into: (1) institutional paradigm on education, (2) system driven organization, (3) effective organization, (4) rewards, and (5) punishment. However, the researcher could only confirm through observation the system-driven organization and effective organization claims during the site visits and one-on-one interviews.

People Centered

The two lecturers (C2L1 and C2L2) and the IT staff (C2ST) provided information related to (1) the view on personal approach, (2) the view on new system, and (3) the productive academician. However, the student (C2S1) could only provide information about the view on new system. Further, the researcher also could not observe and find evidence in the documents related to the view.

Networking

During the interview analysis, all participants (C2L1, C2L2, C2ST, and C2S1) provided information related to all the networking activities the institution had: (1) regional level, (2) national level, (3) building academic networks, (4) joining associations, (5) mutual agreement, and (6) programs for communities. From the documents review, the researcher could find the institution's (1) building academic networks and (2) joining associations.

Lifelong Learning

C2L1, C2L1, and C2ST mentioned ideas belonging to the emergent categories: (1) aware of technology, (2) aware of changes, (3) knowledge about technology, (4) knowledge about learning sciences, (5) leadership skills, and (6) communication skills. However, C2S1 mentioned that the leaders had knowledge about learning sciences and communication skills. During the interviews and site visits, the researcher could observe the elements of lifelong learning in Case 2 leaders.

Table 3.13 shows the tabular summary from the triangulation process.

Table 3.13

Case 2 digital leadership identified by the academicians

Emerging Theme	Emerging Subcategory	C2L1	C2L2	C2ST	C2S1	C2OB	C2DR
Institutional management	Commitment to provide updated infrastructure	√	√	√	√	√	√
	Commitment for lecturers	√	√	√			
	Commitment to improve human resource capability	√	√	√	√		
	Commitment to model responsible online behavior	√	√	√	√		
	Commitment to provide safe and secure virtual environment	√	√	√	√		
	Policy for educational standards	√	√	√	√		
	Policy for learning content and content delivery	√	√	√	√		
	Policy for stimulating three pillars of higher education	√	√	√			
	Supports for lecturers and staff	√	√	√			
	Supports for lecturers	√	√	√			
	Evaluation on human resources	√	√	√			
	Evaluation on ongoing programs	√	√	√	√		
	Evaluation on strategic plan	√	√	√			
School Culture	Institutional paradigm on education	√	√	√	√		
	System driven organization	√	√	√	√	√	
	Effective organization	√	√	√	√	√	
	Rewards	√	√	√	√		
	Punishment	√	√	√	√		
People Centered	Individuals in the system	√	√	√			
	Habits in institution	√	√	√	√		
	Productive academicians	√	√	√			
Networking	Regional level	√	√	√	√		
	National level	√	√	√	√		
	Building academic networks	√	√	√	√		√
	Mutual agreement	√	√	√	√		
	Joining associations	√	√	√	√		√
	Programs for communities	√	√	√	√		
	Aware of technology	√	√	√		√	

Emerging Theme	Emerging Subcategory	C2L1	C2L2	C2ST	C2S1	C2OB	C2DR
Lifelong Learning	Aware of changes	√	√	√		√	
	Knowledge about technology	√	√	√		√	
	Knowledge about learning sciences	√	√	√	√	√	
	Leadership skills	√	√	√		√	
	Communication skills	√	√	√	√	√	

Alignment of Case 2 Digital Leadership with ISTE Standards for Education Leaders

This section tries to provide answers to the study's first research question by presenting tabular representation of the characteristic subcategories from the data being compared and contrasted with ISTE Standards for Education Leaders. Constructs with no alignment were marked as not available (N/A).

The first standard of ISTE identified four activities digital leaders should perform. Case 2 provided evidences of aligning itself to the first activity in the standard by showing its commitment and policy categories. For the second element of the standard, Case 2 presented its commitment and policy categories as well. In the third activity of the standard, Case 2 showed its commitment to model responsible online behavior. Meanwhile, for the last activity of the first standard, Case 2 presented its commitment category.

The second standard, visionary planner, comprised of five elements. The first element was translated by Case 2 into its commitment and policy categories. For the second element, case 2 presented evidences in its policy category. Further, for the third element, Case 2 provided evidences on its assessment and evaluation category. Meanwhile, for the fourth and fifth elements of the standard, Case 2 identified its communication skills subcategory as aligned with the aforesaid elements.

In the third standard, ISTE identified five essential elements to be possessed by the digital leaders. In the first element, Case 2 showed its commitment to improve human resource capability, supports for lecturers and staff, and supports for professional development as the representation to the element. The second element, build the confidence and competency of educators to put the ISTE Standards for Students and Educators into practice, was not present in Case 2 considering that the standard is not obligatory in the country. For the third element, Case 2 showed its policy and supports categories to meet the third activity in the standard. Policy and supports categories also represented Case 2 activities that were in line with the fourth element of the third standard. Further, for the fifth element, Case 2 provided commitment and policy categories as parallel with the standard.

The fourth standard identifies four elements. The first element of the standard was aligned with Case 2 leadership skills subcategory. The second, further, was aligned with Case 2 commitment to provide updated infrastructure. The third element was present in Case 2 commitment to model responsible online behavior and commitment to provide safe and secure virtual environment. Meanwhile, Case 2 identified its networking theme as aligned with the fourth element of the standard.

The fifth standard is represented by the four elements according to ISTE. The first element was aligned with Case 2 commitment and awareness subcategory. The second element was present in Case 2 collaboration with other universities and with external organizations. Further, the third element was mirrored in Case 2 awareness and knowledge categories. Meanwhile, the last element in the standard was translated into leadership and communication skills by Case 2.

There were two emergent themes that were not present in the ISTE standards, i.e. school culture and people-centered. According to Case 2, the school culture comprised of (1) manifestation of institutional core values, (2) system-driven organization, (3) effective organization, (4) rewards, and (5) punishment. Meanwhile, for people-centered theme, Case 2 identified (1) individuals in the system, (2) habits in the institution, and (3) productive academicians.

Case 2 leaders exhibited similarities with ISTE standards due to the leaders' understanding on the importance of digital leadership in higher education in this era. The leaders explicitly mentioned that they combined various standards that work best in the university. However, considering the uniqueness of the university, there were some differences found in the study. The differences emerged considering that the leaders put into consideration the school culture and people centeredness.

Table 3.14

Alignment of Case 2 Digital Leadership Subcategory with ISTE Standards for Education Leaders

ISTE Standards for Education Leaders	Case 2 Digital Leadership Subcategory
Equity and Citizenship Advocate	
a. Ensure all students have skilled teachers who actively use technology to meet student learning needs	• Commitment for lecturers • Commitment to improve human resource capability • Policy for educational standards • Policy for technology integration
b. Ensure all students have access to the technology and connectivity necessary to participate in authentic and engaging learning opportunities	• Commitment to provide updated infrastructure • Commitment for lecturers • Policy for educational standards • Policy for technology integration
c. Model digital citizenship by critically evaluating online resources, engaging in civil discourse online and using digital tools to contribute to positive social change	• Commitment to model responsible online behavior
d. Cultivate responsible online behavior, including the safe, ethical and legal use of technology	• Commitment to model responsible online behavior • Commitment to provide safe and secure virtual environment
Visionary Planner	
a. Engage education stakeholders in developing and adopting a shared vision for using technology to improve student success, informed by learning sciences	• Commitment to improve human resource capability • Policy for educational standards • Policy for technology integration • Policy for stimulating three pillars of higher education
b. Build on the shared vision by collaboratively creating a strategic plan that articulates how technology will be used to enhance learning	• Policy for educational standards • Policy for technology integration • Policy for stimulating three pillars of higher education
c. Evaluate progress on the strategic plan, make course corrections, measure impact and scale effective approaches for using technology to transform learning	• Evaluation on human resource • Evaluation on ongoing programs • Evaluation on strategic plan
d. Communicate effectively with stakeholders to gather input on the plan, celebrate successes and engage in continuous improvement cycle	• Communication skills
e. Share lessons learned, best practices, challenges and the impact of learning with technology with other education leaders who want to learn from this work	• Communication skills
Empowering Leader	
a. Empower educators to exercise professional agency, build teacher leadership skills and pursue personalized professional learning	• Commitment to improve human resource capability

ISTE Standards for Education Leaders	Case 2 Digital Leadership Subcategory
	• Supports for lecturers and staff • Supports for lecturers
b. Build the confidence and competency of educators to put the ISTE Standards for Students and Educators into practice	• N/A
c. Inspire a culture of innovation and collaboration that allows the time and space to explore and experiment with digital tools	• Policy for stimulating three pillars of higher education • Supports for lecturers and staff • Supports for lecturers
d. Support educators in using technology to advance learning that meets the diverse learning, cultural, and social-emotional needs of individual students	• Policy for educational standards • Policy for technology integration • Policy for stimulating three pillars of higher education • Supports for lecturers and staff • Supports for lecturers
e. Develop learning assessment that provide a personalized, actionable view of student progress in real time	• Commitment to provide updated infrastructure • Commitment for lecturers • Commitment to provide safe and secure virtual environment • Policy for educational standards • Policy for technology integration
System Designer	
a. Lead teams to collaboratively establish robust infrastructure and systems needed to implement the strategic plan	• Leadership skills
b. Ensure that resources for supporting the effective use of technology for learning are sufficient and scalable to meet future demand	• Commitment to provide updated infrastructure
c. Protect privacy and security by ensuring that students and staff observe effective privacy and data management policies	• Commitment to model responsible online behavior • Commitment to provide safe and secure virtual environment
d. Establish partnership that support the strategic vision, achieve learning priorities and improve operations	• Regional level • National level • Building academic networks • Mutual agreement • Joining associations • Programs for communities
Connected Learner	
a. Set goal to remain current on emerging technology for learning, innovations in pedagogy and advancements in the learning sciences	• Commitment to provide updated infrastructure • Aware of technology • Aware of changes
b. Participate regularly in online professional learning networks to collaboratively learn with and mentor other professionals	• Building academic networks • Joining associations

ISTE Standards for Education Leaders	Case 2 Digital Leadership Subcategory
c. Use technology to regularly engage in reflective practices that support personal and professional growth	• Aware of technology • Knowledge about technology • Knowledge about learning sciences
d. Develop the skills needed to lead and navigate change, advance systems and promote a mindset of continuous improvement for how technology can improve learning	• Leadership skills • Communication skills
	School culture
N/A	• Institutional paradigm on education
N/A	• System driven organization
N/A	• Effective organization
N/A	• Rewards
N/A	• Punishment
	People centered
N/A	• Individuals in the system
N/A	• Habits in institution
N/A	• Productive academicians

Emergent framework for Digital Leadership in Higher Education of Case 2

The data gathered in this study showed that according to Case 2, digital leadership in higher education constituted of five conceptual themes. The themes were (1) institutional management (commitment, policy, supports, and assessment and evaluation), (2) school culture (educational paradigm, type of organization, and carrot and stick culture), (3) people-centered (view on personal approach, view on new system, and building mindset), (4) networking (with government, with other universities, with external organizations, and with communities), and (5) lifelong learning (awareness, knowledge, and skills). Figure 3.2 provides a depiction of the emergent framework of digital leadership of Case 2.

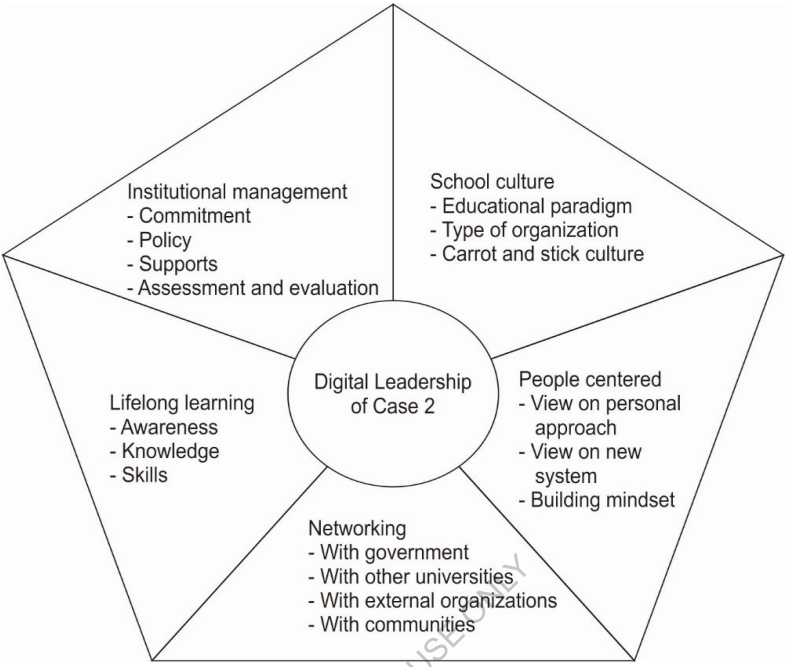

Figure 3.2. Case 2 Emergent Framework of Digital Leadership in Higher Education

Figure 3.2 showed the digital leadership in higher education framework according to Case 2. Case 2 leaders perceived that there are five essential elements for a digital leader, i.e., institutional management, school culture, people-centered, networking, and lifelong learning.

Case 2 affirmed that institutional management consists of commitment, policy, supports, and assessment, and evaluation elements. The commitment is the manifestation of the institutional goal and vision. This commitment is required to ensure that the technology integration would bring benefit to students' learning. Further, the policy is the translation of the institutional commitment to provide guidelines on how the technology would be integrated in the institution. Digital leaders should also provide supports for its human resources to be able to work effectively in the organizational system. To monitor and evaluate the performance of its academicians, digital leaders should employ assessments and evaluations to achieve the aspired goal of the institution.

Further, consideration of the school culture could be observed from understanding the institutional educational paradigm, type of organization, and its carrot and stick culture. The institutional core values are manifested in all activities and programs of the institution. To be able to effectively lead and manage the university,

digital leaders should be able to identify and internalize its type of organization. Its carrot and stick culture provide a uniqueness of the resistance management in the institution. Therefore, understanding the school culture, according to Case 2, would provide digital leaders guideline of how to lead and manage the university in this disruptive era.

People centeredness, according to Case 2, would enable digital leaders to lead more effectively in this institution, considering that the leaders share the institutional view on personal approach, view on new system, and mindset building. The view on personal approach would provide leaders pictures on the human resources capability in terms of technology integration in the education setting. Further, the view on new system would allow leaders to form the required habit in the technology utilization of the university. The efforts of creating more effective organization would be possible and smooth by considering the mindset building on how the technology would be effectively and efficiently used in the institution.

Case 2 confirmed that networking is crucial in ensuring the smooth operation of the institution, besides it would also provide more solid footing in the competition of higher education in the country. The networking comprises of collaboration with the government, with other universities, with external organizations, and with communities.

Case 2 believed that digital leaders should become lifelong learners to be able to effectively lead and manage the organization. The leaders are expected to develop their personal awareness, knowledge, and skills.

Case 3

Case 3 is a private Catholic non-sectarian university in Yogyakarta, Indonesia. In 2018, this university has been granted an Accreditation A by BAN-PT (54/SK/BAN-PT/Akred/PT/III/2018). Case 3 was founded in 1965 to participate actively in improving the country through education with a global orientation. In 1973, the branch in Yogyakarta separated itself and now it became an autonomous university. Case 3 currently hosts six faculties with eleven undergraduate programs and five graduate programs. Database of the national higher education reported in Case 3, there were 12,173 students enrolled in AY2018/2019 and 297 lecturers teaching for a ratio of 1:41 (https://forlap.ristekdikti.go.id/perguruantinggi/search).

In this study, Case 3 top leadership agreed to participate in the interviews. The interviewees for this study comprised of Case 3 rector (C3R) and vice-rector for academic affairs (C3VR). During the study, the rector was in the position for 3.5 years. During his leadership, he directed the university to be more adaptive and flexible to changes due to technological changes. His vision of flexibility resulted in a massive improvement in the technology used in the university. C3VR was in the first term of

leadership during this study. Together with C3R, they established a roadmap for the university development and improvement.

Digital Leadership Identified by Case 3 Leaders

This study invited the participation of Case 3 top leadership for one on one interviews. The researcher first explained the purpose of the study and the data acquisition process for each interview. Each interviewee was requested to read and sign the consent form of the study and the discussions were recorded on the participant's approval.

After the interviews with Case 3 leaders, five themes emerged as the important elements of digital leadership in higher education. The themes were institutional management, school culture, people-centered, networking, and lifelong learning.

Institutional management

In the analysis of transcripts of interview sessions with Case 3 leaders, the five emergent categories under institutional management were: (1) commitment, (2) policies, (3) support, (4) assessment and evaluation, and (5) adaptability.

Commitment. Case 3 leaders acknowledged that being a private university brought challenges in funding. However, institutionally Case 3 committed to provide the best for the students. C3R mentioned that "*the most basic way to provide the best for students is by providing good infrastructure*." Case 3 leaders have anticipated the emergence of 4IR by massively building technology facilities in the previous years. They believed that with strong facilities, all software and learning platform would effectively function. C3VR mentioned that "*the institution had developed its own LMS that was based on the institution's core values*." Further, he also mentioned that the institution was committed to provide students with digital textbooks every semester for every course. In the LMS, C3VR mentioned that "*the lecturer could post all the learning content and also assessment for students to access*." Case 3 leaders guaranteed that the students would get fast connection WIFI at the campus, so they would have no problem accessing the learning platform.

Besides the institutional LMS, Case 3 also built an information system for administrative purposes. This information system, according to Case 3 leaders, enabled the leadership to make decisions based on data. The integration of the administrative information system started when the students first enroll up to graduation. Further, this information system also accommodated lecturers' administrative purposes for reporting their performance to the government.

Case 3 leaders mentioned that they have allotted the institutional funding for making sure that the technology facilities were updated. The updated facility would enable students to get full access to learning content and content delivery at the campus.

C3R mentioned that "*the institution was committed to update all the facilities when necessary*." C3VR also mentioned that currently they "*were negotiating with different publishers to provide more digital books for the students*." During the interviews, it was noted that the students had access to more than 12,000 digital books for them to use in their courses. Further, to guarantee the smooth operation of the technical facilities, Case 3 leaders assigned one IT staff at every study program who would coordinate under one central unit.

This huge commitment, according to Case 3 leaders, was a form of institutional responsibility because parents have entrusted their children to be educated in the university. The university's commitment to parents was to prepare the graduates who are up-to-date with technology and who are ready with the challenges of disruptive era. To guarantee the achievement of the vision, Case 3 distributed an iPad to every new student. The device would be used in their learning activities in the institution.

Case 3 leaders believed that without proper guidance, the students would get distracted with all the virtual world activities. Therefore, the leaders were committed to creating a safe and secure virtual environment by modeling to be a good digital citizen and restricting access to distracting social media during office hours.

Policies. Case 3 leaders perceived that rules and policies should be established to ensure that the institutional commitments were achieved. During the interviews, the leaders referred to policies for learning content and content delivery as important in the institution. Considering that all students were equipped with iPad since their first enrollment to the institution, lecturers were required to develop digital materials and to upload them to the LMS. Therefore, the students would have access to learning content and assignments online and they could also access the assessment from the platform. Case 3 leaders also encouraged lecturers to collaborate to innovate a new method of delivery that was more engaging. Further, C3VR mentioned that "*the rectorate encouraged lecturers to migrate to digital textbooks the institution has procured*."

The huge investment Case 3 caused the leaders to institute policies for technology facilities optimization. According to C3R, all academicians "*should optimally use the technical facilities in the institution*." Therefore, he consistently promoted digital learning on every occasion he had in the institution. Case 3 leaders also perceived that the technology was indeed supporting the management, in a way that they could make decisions faster and more accurately based on the data from their information system.

Further, the information system the institution built also functioned as a portfolio pool for lecturers to store their works. The system, according to C3R, "*helped lecturers not to be overwhelmed with administrative works*." Therefore, lecturers could be empowered and improve the three pillars of activities. C3VR expected that "*lecturers*

would have more time to collaborate with communities as part of the social service they had to do."

Support. During the interviews with Case 3 leaders, they described the supports the institutional provided. C3R mentioned that "*with the everchanging demands of technology development, the institution provided regular training for staff and lecturers so that they were always updated*." The trainings were organized by a unit that was responsible for planning, designing, maintaining, and upgrading technology facilities as well as providing training related to computer software. Annually the unit organized a training for all human resources. Although the training was optional for existing employees, it was mandatory for new employees.

Besides regular trainings for all human resources, Case 3 leaders organized trainings and workshops for lecturers in terms of digital learning development. Further, Case 3 also provided grants for lecturers to develop digital learning content and to improve digital content delivery. The grants, according to C3VR, "*was provided every semester*."

Leaders in Case 3 were chosen by-election. Therefore, Case 3 leaders in every semester also organized recollection in every unit. The purpose of the recollection was to evaluate the performance of the unit every semester and also to develop the leadership skills of each academician. Case 3 leaders believed that everybody could be a leader.

C3R underlined that "*the institution was open to any network or collaboration from any institution*." He further mentioned that most collaborations were originated from lecturer who made contact with other institutions. Further, the collaborations were taken over by the institution to be supported for wider impact and bigger scope.

C3VR understood that providing digital textbooks for all students with different study majors required a huge amount of funding. However, Case 3 leaders managed to negotiate with three big publishers to provide more than 12,000 eBooks for the students. As a consequence, the institution should also provide a stable and fast connection of the internet for the students to access the books. Therefore, Case 3 leaders supported the connectivity by collaborating with internet service providers to update and maintain a stable connection.

Assessment and evaluation. Case 3 leaders confirmed that the institutional quality control unit evaluated all lecturer's performance each semester. The components of evaluation were from students' evaluation, supervisor evaluation, and LMS use. The purpose of the evaluation, according to C3VR, "*was to map the lecturers' performance to provide the necessary training for improvement*." Case 3 leaders made sure that all evaluations were for improvement purposes.

Besides evaluating lecturers, Case 3 leaders were also evaluating ongoing programs. They mentioned that the evaluation was to anticipate problems that might

occur during the implementation of the programs. Since the administrative information system has accommodated progress reporting, the leaders could directly monitor the milestones the programs had and take any action necessary to increase the success rate of the programs.

These assessments and evaluations were also implemented on the institution's strategic plan. Annually, Case 3 leaders together with the leadership of units gathered to assess and evaluate the achievements of the ongoing strategic plan. The board evaluated trends and milestones of the strategic plan to predict and improve the following plan.

Adaptability. Considering the rapid change of the society in 4IR, Case 3 leaders mentioned that the institution should be flexible and adaptable in responding to graduate demands. C3VR mentioned that "*if necessary, Case 3 would open new study programs to cater to the demands*." Further, he confirmed that this was in line with the institution's objective that was preparing up-to-date graduates. This adaptability put Case 3 leaders to always observe and analyze trends from the updated learning sciences.

Table 3.15 provides the tabular summary of the emergent concepts and categories under the institutional management theme in Case 3.

Table 3.15

Emergent concepts and categories of the theme, Institutional management, in Case 3

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
… the most basic way to provide the best for students is by providing good infrastructure (C3R)	Provide good infrastructure	Commitment to provide updated infrastructure	Commitment	Institutional management
In the previous years, we have massively built our technology facilities… (C3VR)	Building technology facilities			
… we have developed our own LMS that is based on our core values. (C3VR)	LMS based on core values			
We provide digital textbooks for all students for every course (C3R)	Digital textbooks			
In our LMS, lecturers could post all learning content and also assessment for students to access (C3VR)	Information system for learning			
Our WIFI provides fast connection, so students will have no problem accessing the learning platform (C3R)	Fast internet connection			
We are perfecting our system for administration as well so all our decisions are based on reliable data (C3R)	Administrative system			
… the system also accommodates lectures' portfolio for reporting to the ministry (C3VR)	Accommodating lecturers			
We are committed to update all the facilities when necessary, we have allotted funds for it (C3R)	Fund allocation			
The rectorate is negotiating with other publisher to provide more digital books for the students (C3VR)	Digital textbooks variation			
… we assign one IT staff to be in charge at every study program who will be coordinated under one central unit (C3R)	IT staff support			

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
It is our commitment to parents to prepare graduates who are up-to-date and ready for challenges (C3R)	Updated graduates	Commitment to parents		
We also provide iPad for students to be used in their learning activities (C3R)	iPad for students			
As leaders, we have to create a safe virtual environment by showing examples of how to behave responsibly online (C3R)	Safe virtual environment	Commitment to model responsible online behavior		
… it is required that all lecturers to develop digital materials and upload them in the LMS (C3VR)	Develop digital material	Policy for learning content and content delivery	Policy	Institutional management
… it is so that all students will have access to learning content and assignments online and access the assessment from the platform (C3VR)	Students access			
Besides collaboration and innovation for new method, the rectorate encourages lecturers to migrate to digital textbooks (C3VR)	Migration to digital textbooks			
… everybody should optimally use the technology facilities in the institution (C3R)	Optimal use of technology	Policy for technology optimization		
… lecturers will have more time to collaborate with communities as part of the social service they have to do (C3VR)	Lecturers will have more time	Policy for stimulating three pillars		
… with the everchanging demands of technology development, we provide regular trainings for staff and lecturers so that they are always updated (C3R)	Regular trainings for staff and lecturers	Supports for lecturers and staff	Supports	
… every semester we have recollection for unit evaluation and development of individual leadership skills (C3R)	Regular recollection			

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
We provide trainings and workshops of lecturers about digital learning development (C3VR)	Workshop for lecturers	Supports for lecturers		
We provide grants every semester for lecturers to be innovative in digital learning development (C3R)	Grants			
… the institution supports new networks and collaborations built by lecturers (C3R)	Network and collaboration from lecturers	Supports for network and facilities		
… our agenda this year is to support digital textbooks and connectivity and we are still open for any new development… (C3R)	Digital textbooks and connectivity			
Every semester we evaluate lecturers to map their performance to provide necessary trainings for improvement (C3VR)	Regular evaluation for lecturers	Evaluation on human resource	Assessment and evaluation	
… see from the system to evaluate progress and we can anticipate problems (C3R)	Evaluation and anticipation	Evaluation on ongoing programs		
… for strategic plan, we evaluate trends and current milestones to predict for challenges and improve the following plan (C3VR)	Evaluate trends and milestones	Evaluation on strategic plan		
Institutionally, we have to be flexible and if necessary, we will open new study program to cater the demands (C3VR)	Opening new programs	Flexibility and adaptability	Adaptability	Institutional management

School Culture

In this element, the interview analysis identified three emergent categories: (1) educational paradigm, (2) type of organization, and (3) identity.

Educational paradigm. Case 3 leaders mentioned that the institution had four core values i.e. excellence, inclusive, humanist, and integrity. C3R mentioned that Case 3 "*included the core values in the curriculum and also in material for students' soft skills development*." Further, he also mentioned that the core values should be apparent in the leaders' behavior. Case 3 leaders confirmed that all decisions in the institution should be based on the core values.

Type of organization. The leaders explained that institutionally, Case 3 was a dialogic community and was indeed very tolerant. C3R illustrated that when some senior lecturers refused to use computers and LMS in their classes, the leaders would make dialogs with them and persuade them to at least use PowerPoint for teaching. C3R admitted that "*this kind of problem drained the energy to move forward, yet since it was the cultural approach so it needed to be done*." C3VR mentioned that "*this problem happened due to a big gap between senior lecturers and newer generation of lecturers*."

Identity. The identity attached to this university was a private Catholic non-sectarian university. This identity made Case 3 leaders feel compelled to uphold the strengths of the institution higher and find more opportunities to grow better. The leaders then focused their attention on providing better service to communities. C3R mentioned that "*the hidden value of the institution was to serve others*." Therefore, he repeatedly told the staff and lecturers to serve the students optimally. Otherwise, the prospective students would not even consider Case 3 as a destination to study.

The above statements confirm Case 3 beliefs on school culture. Table 3.16 provides the tabular summary of the emergent concepts and categories under the school culture theme in Case 3.

Table 3.16

Emergent concepts and categories of the theme, School culture, in Case 3

Significant statements	Initial code	Emerging subcategory	Emerging category	Emerging theme
… included the core values in the curriculum and also in material for students' soft skills development (C3R)	Core values in curriculum	Institutional paradigm on education	Educational paradigm	School culture
As leaders, the core values should be apparent in us (C3R)	Core values representation			
… decisions, as well, should be based on the institutional core values (C3R)	Core values in decisions			
This institution is dialogic and very tolerant (C3R)	Problem solving	Dialogic community	Type of organization	
… this problem happened due to a big gap between senior lecturers and newer generation of lecturers (C3VR)	Generation gap			
Our identity, as a Catholic university, forces us to uphold our strengths higher and find more opportunities to grow better (C3R)	Identity as Catholic university	Institutional identity	Identity	
… the hidden value of the institution is to serve others (C3R)	Hidden value	To serve others		

People Centered

Two categories emerged under people-centered theme from the data: (1) focus on students and (2) building mindset.

Focus on students. Case 3 leaders stated that it was the institutional responsibility to provide the best experiences to students based on the parents' expectation. The institution has committed to produce graduates who were up-to-date with technology, therefore during their learning process, the students would have experiences related to technology. To kickstart the experience, Case 3 distributed iPads to all new students and made sure that lecturers would utilize the gadget in their classes.

Further, Case 3 leaders elaborated that it was not only using technology that was highlighted in the institution. It was how to process the online experience that was more important. C3R mentioned that "*all academicians of the institution should provide examples of how to be wise and responsible online*." Further he mentioned also that in the institution, besides completing the curriculum, the students were also encouraged to improve their soft skills through various kinds of activities and programs.

Building mindset. C3R believed that Case 3 "*provided the best service and facilities to its stakeholders*." There were many parents expected the best service Case

3 could provide. The mindset of providing the best service was the one C3R repeatedly pointed out in many occasions to all academicians. He repeatedly mentioned that Case 3 "*focused on providing service, therefore all academicians should provide the best service*" to all stakeholders.

Table 3.17

Emergent concepts and categories of the theme, People centered, in Case 3

Significant statements	Initial code	Emerging subcategory	Emerging category	Theme
It is the institution's responsibility to provide educational experience to students based on the parents' expectation (C3R)	Institutional responsibility	Students' importance	Focus on students	People centered
We distribute iPads to all new students and require lecturers to utilize the gadget in their classes (C3R)	Gadget for students			
… all academicians of the institution should provide examples of how to be wise and responsible online (C3R)	Provide examples online			
Curriculum wise, the institution requires the students to develop their soft skills through various activities (C3VR)	Developing students' soft skills	Students' importance	Focus on students	People centered
… the institution focuses on providing the service; therefore, all academicians should provide the best service to all (C3R)	The best service	Service management	Building mindset	

Networking

Based on the interviews, four kinds of collaborations emerged from the data: (1) with the government, (2) with other universities, (3) with external organizations, and (4) with communities.

Collaboration with the government. C3R mentioned that Case 3 "*collaborated with the ministry of research and higher education to plan and develop distant learning programs*." The result of this collaboration was students from other universities could access digital materials from Case 3 in the ministry's learning platform. Together with other universities, Case 3 shared vision on distant learning and collaborate to build the platform.

Collaboration with other universities. C3R mentioned that "*many collaborations with other universities originated from individual lecturer, then the institution took over to ensure the sustainability and wider impact*." Although the university took over the management, the individual lecturer would be the coordinator of collaboration. The

collaborations with other universities were mostly on digital learning development. C3VR also believed that "*the collaboration with other university enabled resource sharing that at the end would improve our three pillars activities*." Case 3 leaders encouraged their lecturers to strengthen their research and community service to improve their impact factor.

Networking with external organizations. Case 3 leaders were determined to build collaboration with universities associations, nationally and internationally. C3R believed that "*the associations would only bring benefit to Case 3 since it would open the doors for other networking*." Case 3 also joined many consortiums worldwide. C3VR mentioned that "*the collaborations solidified the position of Case 3 as a reliable partner*."

As one of the methods Case 3 implemented to continue upgrading its facilities, C3VR mentioned that Case 3 "*collaborated with vendors and service providers*". He further illustrated that with internet service providers, Case 3 leaders made an agreement that the institution would use the internet product only when the service provider provided the upgrade to the equipment. This method of negotiation benefited Case 3 that the institution could allocate the maintenance fund for other things necessary.

Working with communities. Case 3 commitment to strengthen its three pillars activities was observable from its collaboration with communities. Case 3 leaders ascertained that community service became one of the pillars the institution focusing on. As C3R mentioned that the institution was not only developing students' cognitive, Case 3 also focused on students' soft skills development. Community service was one of the method Case 3 guaranteed that would improve students' soft skills. C3VR mentioned that a student would not be able to graduate if s/he had not joined community service. The collaboration with communities also strengthened Case 3 position in society.

Table 3.18 illustrates the emergent concepts and categories of networking theme in Case 3.

Table 3.18

Emergent concepts and categories of the theme, Networking, in Case 3

Significant statements	Initial code	Emerging subcategory	Emerging category	Theme
… collaborated with the ministry of research and higher education to plan and develop distant learning program (C3R)	Plan and develop distant learning program for the ministry	National level	Collaboration with government	Networking
… many collaborations with other universities originated from individual lecturer, then the institution takes over to ensure the sustainability and wider impact (C3R)	Collaborations from lecturers	Lecturer collaboration	Collaboration with other universities	
Our collaborations with other universities are mostly on digital learning development… (C3VR)	Digital learning development	Building academic network		
The collaboration with other universities enables resource sharing that at the end will improve our three pillars activities (C3VR)	Resource sharing	Building academic network	Collaboration with other universities	
… the associations will only bring benefit to the university since it would open the doors for other networking (C3R)	Benefit from associations	Joining associations	Networking with external organizations	
The collaborations solidified the position of the university as a reliable partner (C3R)	Strong position	Reliable partner		
We make agreement that we will use the internet product only when the service provider provides the upgrade to the existing equipment (C3VR)	Agreement with service provider	Mutual agreement		
We aren't only developing students' cognitive; we also focus on their soft skills – community service is one of our ways (C3R)	Developing soft skills	Programs for communities	Working with communities	

Lifelong Learning

In this theme, the categories emerged were: (1) awareness, (2) knowledge, and (3) skills.

Awareness. Awareness of the importance of technology in education and adaptability importance in improving the institution's success emerged from all Case 3 leaders' interviews. C3R mentioned that "*in terms of institutional management, information system provided abundant support for leaders, not only for educational purposes*." He shared that when he uploaded all learning material to the LMS, students became more ready for discussion in the following meeting since they have read the material beforehand. Further, C3VR underlined the flexibility and adaptability not only the institution but also the lecturers should possess. "*When an institution or a lecturer was flexible and adaptable, the disruptive era would not become a threat*", according to C3VR.

Knowledge. C3VR was a knowledgeable person in computer technology as he studied computer science. He mentioned that "*being a leader, one should always update the knowledge from learning sciences to enable her/him to lead effectively*." Together with C3R, the vice-rector regularly participated in discussions and learning networks to gain insights from others and share best practices Case 3 had. With the exposure to learning communities, Case 3 leaders had knowledge of what parts of the institution the leaders should improve.

Skills. Case 3 leaders believed that being a leader required both leadership and communication skills. C3R mentioned that "*being a leader was not only a title in the institution, but it was also a title the surrounding community would address*." Therefore, he believed in leading with examples. "*When someone was appointed to lead, it meant that the subordinates put trust in her/him so s/he needed to provide an example on the expected behavior*", according to C3R.

In order to share the idea or plan, a leader should possess good communication skills that seemed to be mentioned by all Case 3 leaders. C3VR mentioned that "*the skills would be beneficial to share vision, to coordinate on the implementation of the vision, and to empower others to share the same vision*." Both leadership and communication skills were the basic skills a leader should have, according to Case 3 leaders.

The statements above provide Case 3 leaders' confirmation on lifelong learning element. Table 3.19 provides the summary of emergent concepts and categories under lifelong learning in Case 3.

Table 3.19

Emergent concepts and categories of the theme, Lifelong learning, in Case 3

Significant statements	Initial code	Emerging subcategory	Emerging category	Theme
… in terms of institutional management, information system provides abundant supports for leaders, not only for education purpose (C3R)	Supports from information system	Aware of technology	Awareness	Lifelong learning
When an institution or a lecturer is flexible and adaptable, the disruptive era will not become a threat (C3VR)	Flexibility and adaptability	Aware of changes		
… being a leader, one should always update the knowledge from learning sciences to enable her/him to lead effectively (C3VR)	Update knowledge from learning sciences	Knowledge about learning sciences	Knowledge	
… we regularly participate in discussions and learning networks to gain insights from others and share our best practices (C3VR)	Participate in professional learning network	Knowledge about learning networks		
When someone is appointed to lead, it means that the subordinates put trust on her/him so s/he needs to provide examples… (C3R)	Providing examples	Leadership skills	Skills	
… the skills will be beneficial to share vision, to coordinate on the implementation of the vision, and to empower others to share the same vision (C3VR)	Share, coordinate, and empower	Communication skills		

Triangulation Process of Case 3 Digital Leadership Identified by Academicians

In this triangulation process, five academicians participated in one on one interviews. The participants consisted of two lecturers (C3L1 and C3L2), one academic staff (C3ST), and two students (C3S1 and C3S2). The participants were asked the same questions being asked to Case 3 leaders and the interviews were compared and contrasted. In this process, the researcher's observation (C3OB) and document reviews (C3DR) were also included.

Institutional management

Out of five interviewees in the triangulation process in Case 3, only C3L1 who provided ideas belonging to all the emergent subcategories under the theme. The data analysis showed that C3L2 and C3ST perceived that the institution had twelve emerging subcategories but not on flexibility and adaptability. Both students (C3S1 and C3S2) mentioned that Case 3 had (1) commitment to provide updated infrastructure, (2) commitment to parents, (3) commitment to model responsible online behavior, (4) policy for learning content and content delivery, (5) policy for technology optimization, (6) evaluation on human resources, and (7) evaluation on ongoing programs. Further, the researcher's observation (C3OB) could show the institution's (1) commitment to provide updated infrastructure and (2) supports for network and facilities. Meanwhile, the document reviews could only show the institutional commitment to provide updated infrastructure.

School Culture

The analysis of the interviews showed that all five participants shared ideas belonging to the emergent categories: (1) institutional paradigm on education, (2) dialogic institution, (3) institutional identity, and (4) to serve others. Meanwhile, the researcher's observation could only provide information on the second subcategory, i.e. dialogic institution.

People-Centered

After the interviews with the academicians, it was revealed that two lecturers (C3L1 and C3L2), one administrative staff (C3ST), and one student (C3S2) had similar constructs with Case 3 leaders in two emergent categories: students' importance and service management. However, the interview of the other student (C3S1) and the researcher's observation (C3OB) provided information on the service management category.

Networking

From the data analysis, two lecturers (C3L1 and C3L2) and the administrative staff (C3ST) identified all the emergent categories under the theme. C3S1 mentioned ideas belonging to (1) building academic network, (2) joining associations, (3) reliable partner, (4) mutual agreement, and (5) programs for communities. C3S2 statements, however, were categorized into (1) joining associations, (2) reliable partner, (3) mutual agreement, and (4) programs for communities. Meanwhile, the researcher's document reviews could find evidence of collaborations with government at the national level, building academic networks, joining associations, and mutual agreement.

Lifelong Learning

The data from the interviews showed that all lecturers (C3L1 and C3L2), staff (C3ST), and the researcher's observation (C3OB) identified elements of the emerged categories under this theme. However, the students (C3S1 and C3S2) only identified the leaders' communication skills in the interview data.

Table 3.20 presents the summary of data from the triangulation process.

Table 3.20

Case 3 digital leadership identified by the academicians

Emerging Theme	Emerging Subcategory	C3L1	C3L2	C3ST	C3S1	C3S2	C2OB	C2DR
Institutional management	Commitment to provide updated infrastructure	√	√	√	√	√	√	√
	Commitment to parents	√	√	√	√	√		
	Commitment to model responsible online behavior	√	√	√	√	√		
	Policy for learning content and content delivery	√	√	√	√	√		
	Policy for technology optimization	√	√	√	√	√		
	Policy for stimulating three pillars of higher education	√	√	√				
	Supports for lecturers and staff	√	√	√				
Institutional management	Supports for lecturers	√	√	√				
	Supports for network and facilities	√	√	√			√	
	Evaluation on human resource	√	√	√	√	√		
	Evaluation on ongoing programs	√	√	√	√	√		
	Evaluation on strategic plan	√	√	√				
	Flexibility and adaptability	√						
School Culture	Institutional paradigm on education	√	√	√	√	√		
	Dialogic community	√	√	√	√	√	√	
	Institutional identity	√	√	√	√	√		
	To serve others	√	√	√	√	√		
People Centered	Students' importance	√	√	√		√		
	Service management	√	√	√	√	√	√	
Networking	National level	√	√	√				√

Emerging Theme	Emerging Subcategory	C3L1	C3L2	C3ST	C3S1	C3S2	C2OB	C2DR
	Lecturer collaboration	√	√	√				
	Building academic network	√	√	√	√			√
	Joining associations	√	√	√	√	√		√
	Reliable partner	√	√	√	√	√		
	Mutual agreement	√	√	√	√	√		√
	Programs for communities	√	√	√	√	√		
Lifelong Learning	Aware of technology	√	√	√			√	
	Aware of changes	√	√	√			√	
	Knowledge about learning sciences	√	√	√			√	
	Knowledge about learning networks	√	√	√			√	
	Leadership skills	√	√	√			√	
	Communication skills	√	√	√	√	√	√	

Alignment of Case 3 Digital Leadership with ISTE Standards for Education Leaders

To answer the first question of this study, this section provides a tabular description of characteristics subcategories being compared and contrasted with ISTE Standards for Education Leaders. Constructs with no alignments were identified as not available (N/A).

The first standard, equity and citizenship advocate, described four constructs. Case 3 confirmed that its commitment and policy categories were in line with the first element in the standard. Additionally, these commitment and policy categories were also in line with the second element of the standard. For the third and fourth elements, Case 3 indicated that its commitment to model responsible online behavior and policy for technology optimization were in line with the elements.

In the second standard, ISTE identified five elements. The first element of the standard was in line Case 3 policy for learning content and content delivery, policy for technology optimization, and flexibility and adaptability. Meanwhile, the second element was aligned with Case 3 policy category and the third element to the assessment and evaluation category. Additionally, the fourth and fifth constructs in the standard were represented by Case 3 communication skills subcategory.

Case 3 provided evidence of aligning itself to the first construct of ISTE's third standard by providing supports for lecturers and staff and supports for professional development. However, since there is no obligation from the government on which standard to be used in higher education, Case 3 could not present any evidence of aligning itself to ISTE Standards for Students and Educators. Meanwhile, for the third construct, Case 3 presented its policy and supports categories. For the fourth construct

of the standard, Case 3 had its commitment, policy, and supports categories aligned with the standard. The fifth construct was aligned with commitment and policy categories.

As for the fourth standard, system designer, ISTE identified four elements. Case 3 aligned its leadership skills subcategory with the first element of the standard. For the second element, Case 3 showed its commitment and supports categories. For the third element, it showed its commitment and policy categories. Meanwhile, for the fourth element, Case 3 provided its networking theme as aligned with the standard.

The fifth standard comprised of four elements. In the first element, Case 3 aligned itself with its commitment and awareness categories. For the second element, knowledge about the learning networks subcategory was presented. Additionally, Case 3 awareness and knowledge categories were aligned with the third element of the standard. Finally, for the fourth element, Case 3 presented its leadership and communication skills.

The data from the study showed that there were two emergent themes in Case 3, i.e. school culture and people-centered, that were not present in ISTE standards. The school culture according to Case 3 consisted of (1) institutional paradigm on education, (2) dialogic institution, (3) institutional identity, and (4) to serve others. Further, a people-centered theme comprised of (1) students' importance and (2) service management.

Case 3 leaders exhibited similar characteristics with ISTE Standards for Education Leaders. These similarities happened due to Case 3 leaders kept updating themselves with the most current issues and development in learning sciences. Their adaptability and flexibility were shown in Case 3 leaders' ability to respond quickly to the new demands of technological changes. However, since the university did not solely use ISTE standards, there were some differences shown in the study. The differences appeared considering that the leaders also include the historical culture of the university and the local value of people centeredness.

Table 3.21

Alignment of Case 3 Digital Leadership Subcategory with ISTE Standards for Education Leaders

ISTE Standards for Education Leaders	Case 3 Digital Leadership Subcategory
Equity and Citizenship Advocate	
a. Ensure all students have skilled teachers who actively use technology to meet student learning needs	• Commitment to provide updated infrastructure • Policy for learning content and content delivery
b. Ensure all students have access to the technology and connectivity necessary to participate in authentic and engaging learning opportunities	• Commitment to provide updated infrastructure • Commitment to parents • Policy for learning content and content delivery
c. Model digital citizenship by critically evaluating online resources, engaging in civil discourse online and using digital tools to contribute to positive social change	• Commitment to model responsible online behavior • Policy for technology optimization
d. Cultivate responsible online behavior, including the safe, ethical and legal use of technology	• Commitment to model responsible online behavior • Policy for technology optimization
Visionary Planner	
a. Engage education stakeholders in developing and adopting a shared vision for using technology to improve student success, informed by learning sciences	• Policy for learning content and content delivery • Policy for technology optimization • Flexibility and adaptability
b. Build on the shared vision by collaboratively creating a strategic plan that articulates how technology will be used to enhance learning	• Policy for learning content and content delivery • Policy for technology optimization
c. Evaluate progress on the strategic plan, make course corrections, measure impact and scale effective approaches for using technology to transform learning	• Evaluation on human resources • Evaluation on ongoing programs • Evaluation on strategic plan
d. Communicate effectively with stakeholders to gather input on the plan, celebrate successes and engage in continuous improvement cycle	• Communication skills
e. Share lessons learned, best practices, challenges and the impact of learning with technology with other education leaders who want to learn from this work	• Communication skills
Empowering Leader	
a. Empower educators to exercise professional agency, build teacher leadership skills and pursue personalized professional learning	• Supports for lecturers and staff • Supports for lecturers
b. Build the confidence and competency of educators to put the ISTE Standards for Students and Educators into practice	• N/A

ISTE Standards for Education Leaders	Case 3 Digital Leadership Subcategory
c. Inspire a culture of innovation and collaboration that allows the time and space to explore and experiment with digital tools	• Policy for learning content and content delivery • Supports for lecturers and staff • Supports for lecturers
d. Support educators in using technology to advance learning that meets the diverse learning, cultural, and social-emotional needs of individual students	• Commitment to parents • Policy for learning content and content delivery • Policy for technology facilities optimization • Supports for lecturers and staff • Supports for lecturers
e. Develop learning assessment that provide a personalized, actionable view of student progress in real time	• Commitment to provide updated infrastructure • Policy for learning content and content delivery • Policy for technology optimization
System Designer	
a. Lead teams to collaboratively establish robust infrastructure and systems needed to implement the strategic plan	• Leadership skills
b. Ensure that resources for supporting the effective use of technology for learning are sufficient and scalable to meet future demand	• Commitment to provide updated infrastructure • Supports for network and facilities
c. Protect privacy and security by ensuring that students and staff observe effective privacy and data management policies	• Commitment to model responsible online behavior • Policy for technology facilities optimization
d. Establish partnership that support the strategic vision, achieve learning priorities and improve operations	• National level • Lecturer collaboration • Building academic network • Joining associations • Reliable partner • Mutual agreement • Stimulating three pillars
Connected Learner	
a. Set goal to remain current on emerging technology for learning, innovations in pedagogy and advancements in the learning sciences	• Commitment to provide updated infrastructure • Aware of technology
b. Participate regularly in online professional learning networks to collaboratively learn with and mentor other professionals	• Knowledge about learning networks
c. Use technology to regularly engage in reflective practices that support personal and professional growth	• Aware of technology • Knowledge about learning networks
d. Develop the skills needed to lead and navigate change, advance systems and promote a mindset of continuous improvement for how technology can improve learning	• Leadership skills • Communication skills

ISTE Standards for Education Leaders	Case 3 Digital Leadership Subcategory
	School culture
N/A	• Institutional paradigm on education
N/A	• Dialogic community
N/A	• Institutional identity
N/A	• To serve others
	People centered
N/A	• Students' importance
N/A	• Service management

Emergent framework of Digital Leadership in Higher Education of Case 3

The data from one on one interviews with Case 3 academicians, supported by the researcher's observations and document reviews, showed that according to Case 3 leaders, digital leadership in higher education consisted of five conceptual themes. The themes were (1) institutional management (commitment, policy, supports, and assessment and evaluation), (2) school culture (educational paradigm, type of organization, institutional identity, and to serve others), (3) people-centered (focus on students and building mindset), (4) networking (collaboration with government, collaboration with other universities, networking with external organizations, and working with communities), and (5) lifelong learning (awareness, knowledge, and skills). Figure 3.3 provides a depiction of the emergent framework of digital leadership of Case 3.

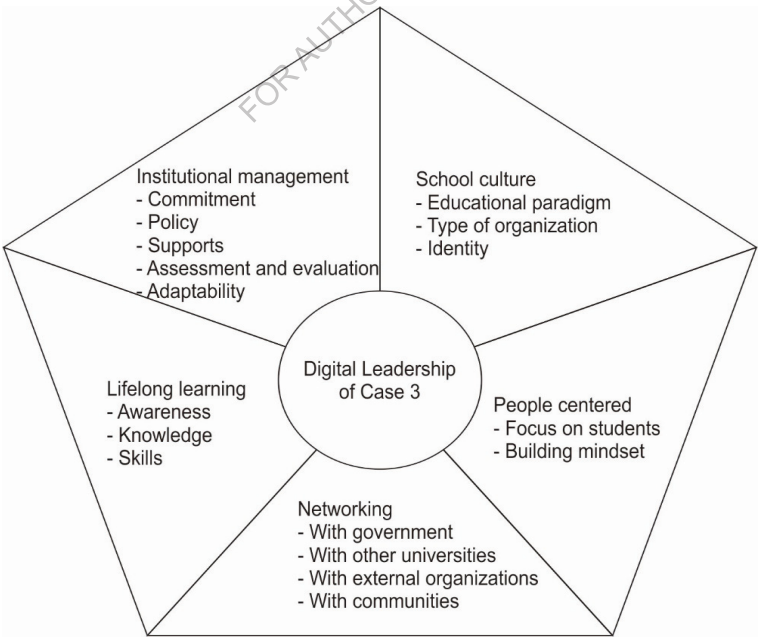

Figure 3.3. Case 3 Emergent Framework of Digital Leadership in Higher Education

Case 3 confirmed that the institutional commitment to provide technology facilities to students stems from the responsibility to provide the best service. The commitment of the university, further, becomes the backbone of its policies for student learning. Case 3 believed that the graduates of the institutions should be updated with technology and ready to face challenges in this disruptive era. Therefore, to prepare its human resources, the university provides supports that would ensure the students receiving educational experiences required. Meanwhile, to ensure the achievement of its goals, the institution revised its assessment and evaluation activities. Digital leaders should also encourage institutional adaptability and flexibility in meeting the demands of society.

Digital leaders, according to Case 3, should consider the institution's core values, type of organization, and identity. The understanding of the school culture would provide contexts for digital leaders to lead and manage the institution. Further, it will also guide leadership decision making. Orienting the decisions to the institutional core values would provide a uniqueness that would fit to the existing context and culture. Meanwhile, understanding the type of organization and institutional identity would further make all decision making specific to the organization. The effort would provide a bigger opportunity for the decisions to be implemented smoothly in the organization.

Digital leaders are expected to be people-centered advocates. The focus of leadership should be on students' experiences and mindset building. Understanding that people are the institution's strategic differentiator would provide leaders stronger footing in leading and managing the educational institution. Digital leaders are also expected to build the mindset of the subordinates on the importance of providing the best service to the stakeholders considering that higher education provides educational service.

To be able to build networks with government, with other universities, with external organizations, and with communities is expected on digital leaders. The availability of technology should not hinder digital leaders to build academic networks with other organizations in the community. The technology would provide better and easier opportunities for leaders to connect and collaborate.

Personally, digital leaders are expected to be lifelong learners. They are expected to enhance their awareness, knowledge, and skills to be able to lead and manage the institution in this disruptive era. The rapid change of technology requires digital leaders to be always updated with both the technology and the learning sciences. This requirement would ensure that the leaders could provide the best solutions to the expected experience the students should have.

Cross-Case Analysis

Yin (2014) mentioned that a cross-case analysis explores whether different cases appear to share similarities and/or differences. This section tries to answer the second research question by presenting a discussion of the leadership themes and their respective categories and a cross-case analysis between each case's categories and standards of (1) equity and citizenship advocate, (2) visionary planner, (3) empowering leader, (4) system designer, and (5) connected learner. Then, the researcher proposes a new framework of digital leadership in higher education in Indonesia.

Five leadership themes emerged from the interviews with university leaders on what digital leadership in higher education is. The themes are institutional management, school culture, people-centered, networking, and lifelong learning.

Institutional Management

The analysis of interview results in this study illuminated that the university leaders identified four common emergent categories and one unique category. The common categories were commitment, policy, supports, and assessment and evaluation. Meanwhile, case 3 added adaptability in this category.

Commitment. According to Case 1, digital leaders should possess a commitment to make sure that the integration of technology in the institution was in line with the university's vision and goals. Further, Case 2 conformed the idea by identifying that institutional commitment was the manifestation of the institutional vision and goals. Further, Case 2 affirmed that the commitment was required to ensure that the technology integration would bring benefits to students learning. Case 3 confirmed that the institutional commitment was derived from the institutional responsibility to support student learning.

Policy. All the three cases believed that policy was the translation of the institutional commitment that would provide the guideline for the institutions to integrate the technology for student learning. The leaders in the cases set the institutional policies following the universities' paradigms.

Supports. The cases under study provided supports for lecturers and staff in general and lecturers specifically. The supports provided by the institutions were the manifestation of their commitment and policies. Further, the supports were also needed to ensure the sustainability of technology integration as well as the required experience for students to succeed in this 4IR. Case 3 promoted support for network and facilities as a unique feature of the institution.

Assessment and evaluation. The assessment and evaluation according to the leaders in this study were needed to evaluate the milestone achievements. Further, the results of assessment and evaluation would provide leaders guidelines on what to improve. Case 2 underlined further by identifying that digital leaders should employ assessment and evaluation to achieve the aspired goal of institution. The data analysis,

further, showed that the cases under study were in agreement with the need for evaluation on ongoing programs, evaluation of the strategic plan, and evaluation of human resources. Additionally, Case 1 identified that the institution also conducted a unit evaluation for monitoring purposes.

Adaptability. This emerged category was unique to Case 3. According to Case 3, digital leaders should encourage the institution to be flexible and adaptable in responding to the demands of society. The adaptability of the leaders required them to be updated with trends of learning science and demands.

School Culture

The data analysis showcased that there were two common emergent categories under the school culture theme present in all three cases under study. The common categories were educational paradigms and type of organization. Additionally, there were three unique emergent categories present in three cases under study. The unique cases were cultural consideration for Case 1, carrot and stick culture for Case 2, and identity in Case 3.

Educational paradigm. Understanding the institutional education paradigm, according to the cases, would become the backbone of any technology integration as well as provide guidance and context for any leadership decision making. Further, the cases also underlined the necessity of manifesting the paradigm into all activities and programs of the institution.

Type of organization. Despite differences in organizational cultural orientation, all three cases considered understanding the type of organization important to enable digital leaders to lead and manage the institution successfully. Case 1 and 3 shared similar organizational culture types, i.e. clan. Meanwhile, Case 2 was strong in its hierarchy type of culture.

Cultural consideration. This emergent category was specific to Case 1. According to Case 1 leaders, the cultural consideration would provide leaders guidelines on being digital leaders in the institution's cultural context. Therefore, the leaders would be able to integrate technology following the institutional cultural requirements for the students better learning experience.

Carrot and stick culture. Case 2 specifically described that the institution used rewards and punishment systems to ensure the effectiveness of technology integration in the university. When a lecturer used the LMS and other digital technology, s/he would receive active performance rewards. However, absence using the tools would result in financial deduction by the system.

Identity. Case 3 underlined the need to understand the institutional identity as a Catholic university. The identity provided leaders the opportunity to encourage service

management in the institution considering that the leaders consider the hidden value is serving others.

People-Centered

Under the emergent theme, people-centered, the analysis showed two common emergent categories according to the cases. The common categories focused on students and building mindset. Meanwhile, the interviews in Case 2 revealed unique emergent categories: view on personal approach and view on new system.

Focus on students. The data showed that Case 1 and 3 emphasized the students' importance. Both cases perceived that universities should provide the best service and facilities for the students to ensure that they receive the most meaningful experience in their education. Further, both cases considered that focusing on students would provide leaders opportunities to provide better and updated education for the universities' main customers, i.e. students.

Building a mindset. After the interviews with the leaders and academicians of the three cases, this construct emerged as one of the common categories in the analysis. All three cases perceived that digital leaders should be able to lead and manage the changes in the academic community's mindset related to technology integration. Additionally, all the leaders also encouraged the academicians to use technologies to support the three pillars' activities of the institutions.

View on personal approach. This emergent category was unique in Case 2 leaders. Despite the systemic orientation of the institution, the leaders still considered a personal approach to the person who did not perform well. This personal approach enabled the leaders to ensure that all personnel perform optimally for the system to be effective. Further, this approach enabled leaders to get pictures on the human resource capability in terms of technology integration in the education setting.

View on a new system. This emergent category was specific to Case 2. According to the leaders, any new system implemented in Case 2 was about new habit formation. The rewards system becomes the institution's reinforcement and conditioning features that are highlighted by Case 2.

Networking

Under the emergent theme, networking, the analysis of data showed that all three cases categorized the collaborations into four groups of categories. The emergent categories were a collaboration with the government, collaboration with other universities, networking with external organizations, and working with communities.

Collaboration with the government. The data showed that the operation of private universities in Indonesia was absent from the government's regular financial supports. The government provided grants for universities to compete and assigned

projects following the universities' capability. All the three cases managed to have collaborations with either regional or national level government. The collaboration with the government solidified the position of each university in the society.

Collaboration with other universities. Collaborations with other universities were translated as building academic networks in this study. Such collaboration opened many opportunities for the institutions to participate in. Case 1, 2, and 3 focused their collaborations with other universities to strengthen their three pillars activities, i.e. teaching, research, and community service.

Networking with external organizations. From the definitions of the leaders, organizations could refer to associations and industries. Case 3, for example, mentioned that the associations provided the institution opportunities to build new networks and collaborations with the member universities. Further, Case 3 also mentioned that it agreed with companies to build and improve the institution's infrastructure.

Working with communities. The data showed that all the three cases built networks with communities to make programs for the society. The main purpose of this collaboration was to strengthen the institution's three pillars activities, community service in particular.

Lifelong Learning

The data analysis showed that there were three emergent categories under the theme, lifelong learning, that were perceived by all three cases leaders. The categories were awareness, knowledge, and skills.

Awareness. The common emergent subcategories found under the category were awareness of technology and awareness of changes. Meanwhile, the data from Case 1 showed that it had specific subcategories, i.e. technology importance and technology history. The common emergent subcategories showed that leaders of the three cases understood the necessity of technology in education and the challenges resulted from changes in society. Case 1 leaders, additionally, showcased the institutional awareness on technology use in higher education.

Knowledge. The data showed that this emergent category was present in all three cases' discussions. The common emergent subcategories in this study were knowledge about technology and knowledge about learning sciences. Meanwhile, the interviews with Case 2 leaders specifically found the knowledge learning networks subcategory. The knowledge about technology provided leaders understanding of what technologies could be used in their institution. Further, the knowledge about learning sciences, according to the leaders, provided updates on the most recent learning paradigm in society. These knowledges were considered important to the leaders under study as

they would prepare the leaders to respond and solve complex problems related to technology integration in the universities.

Skills. The comparison of the interview data showed that there were two common emergent subcategories according to leaders of the three cases, i.e. leadership skills and communication skills. Considering the leaders selection in the cases was based on selection and everybody in the institution could become leaders, all leaders under study considered that improving leadership skills was important. Further, they ensured that all human resources in the institution also could improve leadership skills by organizing leadership programs regularly. Besides leadership skills, communication skills were deemed important by all leaders in the three cases. The communication skills were needed to convey the vision and idea to the subordinates, as well as to communicate with the stakeholders.

Table 3.22 provides the tabular summary of the commonalities and differences of the emergent themes in the study.

Table 3.22

Cross analysis of emerged themes as to their commonalities and differences based on the perception of university leaders on what digital leadership is

Theme	Category	Case 1	Case 2	Case 3		Common	Unique
Institutional management	Commitment	√	√	√		All	
	Policy	√	√	√		All	
	Supports	√	√	√		All	
	Assessment and evaluation	√	√	√		All	
	Adaptability			√			3
School culture	Educational paradigm	√	√	√		All	
	Type or organization	√	√	√		All	
	Cultural consideration	√					1
School culture	Carrot and stick culture		√				2
	Identity			√			3
People centered	Focus on students	√		√		1 and 3	
	Building mindset	√	√	√		All	
	View on personal approach		√				2
	View on new system		√				2
Networking	Collaboration with government	√	√	√		All	
	Collaboration with other universities	√	√	√		All	
	Networking with external organizations	√	√	√		All	
	Working with communities	√	√	√		All	
Lifelong learning	Awareness	√	√	√		All	
	Knowledge	√	√	√		All	
	skills	√	√	√		All	

Cross-Case Analysis Among Cases with ISTE Standards for Education Leaders

In this multiple-case study, three private accredited universities leadership served as cases. As suggested by Yin (2014) a cross-case analysis among cases could be developed utilizing tables to display data from individual cases rendering a uniform framework. Further, ISTE Standards for Education Leader (2018) was applied to this study as described in Chapter 1.

This section describes comparisons and contrasts characteristic category among cases with reference to ISTE Standards for Education Leaders (2018).

Equity and Citizenship Advocate

The first category of this standard was education leaders ensure all students have skilled teachers who actively use technology to meet student learning needs. This study confirmed that the category was commonly agreed by the leadership boards in three cases under study. All cases were in agreement that ensuring all students have skilled teachers who actively use technology to meet student learning needs existed in their institutional policy. Case 2 and 3 further included the institutional commitment in this category. The leaders shared the notion that lecturers were important in the integration of technology, therefore they provided training to make sure that they were skilled in using technology in their classes.

The second category was education leaders ensure all students have access to the technology and connectivity necessary to participate in authentic and engaging learning opportunities. All the leader boards in the study concurred with this category that they solidified their institutional commitment as well as made policies about students' access to technology and connectivity.

The third category in this standard was education leaders model digital citizenship by critically evaluating online resources, engaging in civil discourse online and using digital tools to contribute to positive social change. The constructs in this category were present in the institutional commitment of the three cases under study. Additionally, Case 3 manifested these constructs into its institutional policies.

The fourth category was cultivating responsible online behavior, including the safe, ethical and legal use of technology. The leadership boards in three universities were in agreement with the constructs of this category. The cases manifested the construct into their respective institutional commitment. Further, Case 1 and Case 3 went further by including the construct into their institutional policies.

Visionary Planner

The first category in this standard was engaging education stakeholders in developing and adopting a shared vision for using technology to improve student success, informed by the learning sciences. For this category, all the three cases put the

engagement into their institutional policies. Further, Case 2 and Case 3 added institutional commitment as well. Additionally, for Case 3, the institution also included the construct into its flexibility and adaptability category.

The second category, building on the shared vision by collaboratively creating a strategic plan that articulates how technology will be used to enhance learning, was present in all the cases institutional policies.

The third category was evaluating progress on the strategic plan, make course corrections, measure impact and scale effective approaches for using technology to transform learning. All leadership boards of the three cases were in agreement with this construct and included it into their institutional assessment and evaluation category.

Communicating effectively with stakeholders to gather input on the plan, celebrate successes and engage in continuous improvement cycle was the fourth category in this standard. The leaders of the three cases included this communication construct into their skills category that should be possessed by leaders.

The fifth category was sharing lessons learned, best practices, challenges and the impact of learning with technology with other education leaders who want to learn from this work. The leaders, for this construct, included in their skills category. They were in agreement with this standard.

Empowering Leader

The first category for this standard was education leaders empower educators to exercise professional agency, build teacher leadership skills and pursue personalized professional learning. The leaders of the three cases shared the same opinion to include this construct into their institutional supports respectively.

The second category was building the confidence and competency of educators to put the ISTE Standards for Students and Educators into practice. The leaders being studied, unfortunately, did not mention specifically about ISTE standards. They did not include the construct into their categories.

The third category in the standard was inspiring a culture of innovation and collaboration that allows the time and space to explore and experiment with digital tools. All cases shared agreement with this construct and the leaders put it into their institutional policies and support respectively.

The fourth was supporting educators in using technology to advance learning that meets the diverse learning, cultural, and social-emotional needs of individual students. Indeed, all the leadership boards were in agreement with this construct as they included in their institutional policies and supports. Additionally, Case 3 also included the construct into its institutional commitment.

The fifth category was developing learning assessments that provide a personalized, actionable view of student progress in real-time. With the support of their

own LMS, the leadership boards were in agreement with this construct. They included it in their institutional commitments and policies.

System Designer

There were four categories in this standard and the first one was leading teams to collaboratively establish robust infrastructure and systems needed to implement the strategic plan. The leadership boards of the universities agreed with this construct and included it as their skills required for leaders. Additionally, Case 1 also included this construct into its institutional policies category.

The second category was ensuring that resources for supporting the effective use of technology for learning are sufficient and scalable to meet future demand. The participants of this study were in agreement that the construct was part of their institutional commitment. Further, Case 3 included this construct also into its institutional supports category.

The third was protecting privacy and security by ensuring that students and staff observe effective privacy and data management policies. All the three leadership boards included this construct into their institutional commitments. Further, Case 3 also included this construct into its policies category.

The fourth category was establishing partnerships that support the strategic vision, achieve learning priorities and improve operations. Collaborations with partners were supported by the three leadership boards as they have included the construct into their networking emergent theme.

Connected Learner

In this standard, the first category was setting goals to remain current on emerging technologies for learning, innovations in pedagogy and advancements in the learning sciences. The leaders of the three cases shared the same agreement to include the construct into their institutional commitments. Further, Case 2 and Case 3 also included the construct into their awareness category.

The second category was participating regularly in an online professional learning network to collaboratively learn with and mentor other professionals. This construct was included in the leadership boards' networking theme. They view the professional learning network as a collaboration with others.

The third category in the standard was using technology to regularly engage in reflective practices that support personal and professional growth. The leadership boards were in agreement to include this construct into their awareness and knowledge categories.

The fourth category of the standard was developing the skills needed to lead and navigate change, advance systems and promote a mindset of continuous improvement

for how technology can improve learning. In this construct, the three cases shared common agreement as they included it into their skills category.

Table 3.23

ISTE Standards for Education Leaders associated with accredited institution leadership characteristics from the perspective of leaders

ISTE Standards for Education Leaders	Case 1	Case 2	Case 3
Equity and Citizenship Advocate			
a. Ensure all students have skilled teachers who actively use technology to meet student learning needs	Policy	Commitment Policy	Commitment Policy
b. Ensure all students have access to the technology and connectivity necessary to participate in authentic and engaging learning opportunities	Commitment Policy	Commitment Policy	Commitment Policy
c. Model digital citizenship by critically evaluating online resources, engaging in civil discourse online and using digital tools to contribute to positive social change	Commitment	Commitment	Commitment Policy
d. Cultivate responsible online behavior, including the safe, ethical and legal use of technology	Commitment Policy	Commitment	Commitment Policy
Visionary Planner			
a. Engage education stakeholders in developing and adopting a shared vision for using technology to improve student success, informed by learning sciences	Policy	Commitment Policy	Policy Adaptability
b. Build on the shared vision by collaboratively creating a strategic plan that articulates how technology will be used to enhance learning	Policy	Policy	Policy
c. Evaluate progress on the strategic plan, make course corrections, measure impact and scale effective approaches for using technology to transform learning	Assessment and evaluation	Assessment and evaluation	Assessment and evaluation
d. Communicate effectively with stakeholders to gather input on the plan, celebrate successes and engage in continuous improvement cycle	Skills	Skills	Skills
e. Share lessons learned, best practices, challenges and the impact of learning with technology with other education leaders who want to learn from this work	Skills	Skills	Skills

ISTE Standards for Education Leaders	Case 1	Case 2	Case 3
Empowering Leader			
a. Empower educators to exercise professional agency, build teacher leadership skills and pursue personalized professional learning	Supports	Commitment Supports	Supports
b. Build the confidence and competency of educators to put the ISTE Standards for Students and Educators into practice	N/A	N/A	N/A
c. Inspire a culture of innovation and collaboration that allows the time and space to explore and experiment with digital tools	Policy Supports	Policy Supports	Policy Supports
d. Support educators in using technology to advance learning that meets the diverse learning, cultural, and social-emotional needs of individual students	Policy Supports	Policy Supports	Commitment Policy Supports
e. Develop learning assessment that provide a personalized, actionable view of student progress in real time	Commitment Policy	Commitment Policy	Commitment Policy
System Designer			
a. Lead teams to collaboratively establish robust infrastructure and systems needed to implement the strategic plan	Policy Skills	Skills	Skills
b. Ensure that resources for supporting the effective use of technology for learning are sufficient and scalable to meet future demand	Commitment	Commitment	Commitment Supports
c. Protect privacy and security by ensuring that students and staff observe effective privacy and data management policies	Commitment	Commitment	Commitment Policy
d. Establish partnership that support the strategic vision, achieve learning priorities and improve operations	Networking (theme)	Networking (theme)	Networking (theme)
Connected Learner			
a. Set goal to remain current on emerging technology for learning, innovations in pedagogy and advancements in the learning sciences	Commitment Awareness Knowledge	Commitment Awareness	Commitment Awareness
b. Participate regularly in online professional learning networks to collaboratively learn with and mentor other professionals	Networking (theme) Knowledge	Networking (theme)	Knowledge
c. Use technology to regularly engage in reflective practices that support personal and professional growth	Awareness Knowledge	Awareness Knowledge	Awareness Knowledge
d. Develop the skills needed to lead and navigate change, advance systems and promote a mindset of continuous improvement for how technology can improve learning	Skills	Skills	Skills

Proposition Evolved from Digital Leadership in Higher Education

There is no single standard for digital leadership in higher education for leaders to follow, but rather a confluence of experts who present visions of educational evolution that requires a new approach of leadership style (Garland & Tadeja, 2013; Law, Yuen, & Fox, 2011; Sheninger, 2019). Accordingly, the International Society for Technology in Education (ISTE) released a set of Standards for Education Leaders in 2018. However, when the international standard could not meet the local exposure, a study generating local outcome data could be developed to address the myriad of challenges and insights local leaders face and subsequently inform local institutional planning and improvement. Therefore, the importance of developing a local digital leadership characteristic model is that policy, practice, and initiatives intended to improve educational management success will be driven by data that are current, provided by participants, and from a local situation. In turn, local data could facilitate local improvements in policy and practice of educational management, especially in higher education.

The result of this study offers a specific model that explains the digital leadership characteristics in higher education and can be used as a tool for improving the higher education leadership in this digital era in Indonesia (Figure 3.4.).

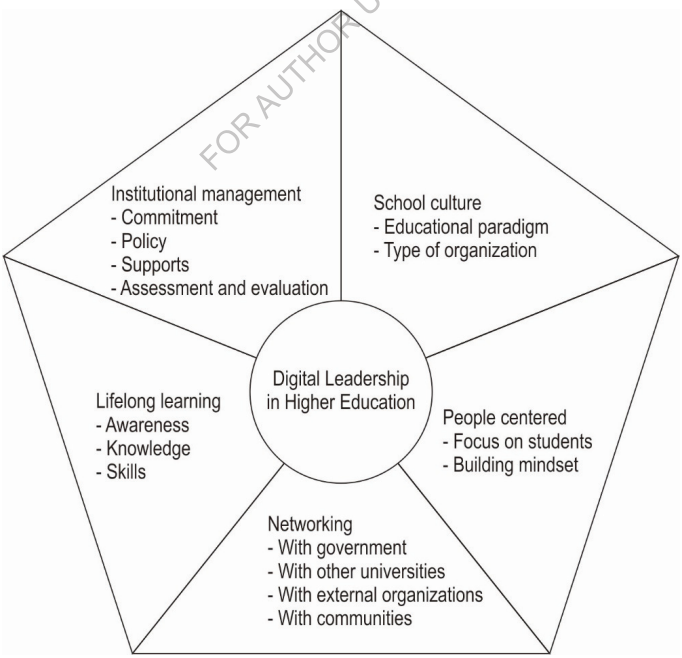

Figure 3.4. Emergent Framework of Digital Leadership in Higher Education in Indonesia

The framework describes that being a digital leader in higher education in Indonesia requires the leader to focus on five essential elements, i.e. institutional management, school culture, people-centered, networking, and lifelong learning.

The institutional management requires leaders to make institutional commitments that would enable technology integration for students' more meaningful learning experience. The investigation finding of Allen, Robbins, Casillas, and Oh (2008) showed that institutional commitment has a positive impact on student success. Further, the commitment is then translated into institutional policy which will be supported by the institutional supports for all academicians in the institution. The institutional supports are in line with Leithwood, Louis, Anderson, and Wahlstrom (2004) opinion that by providing teachers and others in the system with the necessary support and training to succeed, the school will achieve the greatest impact. Further, in order to monitor the implementation of digital learning, the leaders should be equipped with assessment and evaluation tools that will enable them to see the milestone achievements of the vision. According to Miller (2006) assessing organizational performance in higher education embraces assessment at the organizational, program, and process levels and evaluates the work from a perspective rooted in systems thinking.

The second essential element is the school culture. This element comprises the educational paradigm and type of organization. The importance of the educational paradigm is to provide guidelines for all teaching-learning processes in the university. Aligning the learning content and content delivery with the institutional paradigm of education will improve the students' educational experience. The leaders' understanding of institutional paradigm is in line with Deal and Peterson's (2016) opinion that the paradigm as the representation of the institutional mission and purpose becomes the central feature of school culture. Further, by understanding the type of organization, the digital leaders will be facilitated in leading and managing the institution. This understanding also will enable the leaders to promote the subordinates' performance by providing the most appropriate approaches and assignments to the subordinates. Avolio, Zhu, Koh, and Bhatia (2004) and Schneider, Ehrhart, and Macey (2014) proposed that organizational structures that include administration, mission, procedures, policies, staffing, climate, culture, and leadership might sensibly influence employees' level of commitment to the organization. Therefore, understanding the institution's culture enables leaders to lead and manage the organization better.

People-centered elements consist of focus on students and building mindset as Leurent and Shook (2019) mentioned that people – their skills and mindset – are an organization's strategic differentiator to unlock the promise of 4IR. Focusing on the students' educational experience will improve their readiness to face challenges exist in this disruptive era. Additionally, by focusing on students, the leaders will be able to

provide the most appropriate technology to support students learning. The leaders should also address the mindset of the academicians. To be able to successfully lead and manage in 4IR, the leaders should be able to change the old mindset that will hinder the institutional advancement and build a new mindset that will promote students' learning based on the rapid changes in the society. Leurent and Shook (2019), further, mention that people with the right skills are important. However, those with the right mindset are crucial in facing the challenges of 4IR.

The fourth element is the networking that covers networking with government, with other universities, with external organizations, and with communities. Mader, Mader, Zimmermann, Lechevin, and Diethart (2013) mentioned that universities act within their local environment, but at the same time show a strong national and international orientation and also depending on the research discipline. For sustainability, research, interactions, and networking with others are essential. The important feature of higher education is its three pillars of higher education, i.e. teaching, research, and community service. By elaborating on various networks, the leaders will be able to ensure the achievement of the institutional three pillars successfully.

The last element is lifelong learning. It covers awareness, knowledge, and skills. The leaders' awareness of technology and changes would enable them to be ready with new challenges in 4IR. Thompson and Miller (2018) mentioned that disruptive changes in higher education requires leaders to develop new aspects of their personal leadership skills that take into account disruptions of the academic environment and reflect thoughtful contemporary leadership and management scholars. Further, by equipping with knowledge about technology and learning sciences, the leaders will be able to face and solve any complex issues that might appear. Thompson and Miller (2018) further mentioned that leaders are expected to improve their agility. Leadership agility is a developmental skill that fosters greater flexibility and dynamic responsiveness when facing complex issues. Additionally, the leaders are expected also to improve their leadership and communication skills to be able to lead and manage the institution. Joiner and Josephs (2006) mentioned that there are four essential characteristics necessary for leadership agility: context setting, stakeholders, creative, and self-leadership. Further according to Thompson and Miller (2018) besides agility, the leaders should also improve their strong capacity for strategic, emotionally intelligent communication.

Researcher's Reflection

As a reflection based on the findings of the study, the researcher did not find any characteristics or practices that are uniquely based on local cultural values. The findings showcased evidences that are general rather than specific to a certain culture. Though the emergent themes in this study, i.e. school culture and people-centered, might be able to be claimed as unique to Indonesian culture, the researcher in this study could not find any empirical data supporting the claim.

Considering that digital leadership could be considered in its infancy in the education system, the uniqueness might not apparent yet in the study. The leaders provided evidences that support the general understanding of the nature of digital leadership found in various studies. However, the unique features that belong to the local culture were not exhibited during the data gathering.

Chapter 4
Conclusion and Recommendations

This section provides the study conclusion and proposes some recommendations for government regulators, institution leaders, and future research.

Conclusion

Based on the findings of the study, the following conclusions are made:

The first research question of this study was: How do characteristics of leaders in accredited institutions differ from or similar to the characteristics enshrined in ISTE Standards for Educational Leaders, in terms of being: (1) equity and citizenship advocate, (2) visionary planner, (3) empowering leader, (4) system designer, and (5) connected learner.

The findings showed that Case 1 leaders manifested leadership features aligned with ISTE Standards for Educational Leaders. There were similarities of the leaders' leadership features found in the study with the characteristics of the standards. Further, the study also found two features not present in the standards, i.e. school culture and people-centered. These two emergent elements were unique in this institution.

Case 2 leaders, from the study's findings, showed similar leadership characteristics with ISTE standards. The similarities were apparent in the case's emergent themes, i.e. institutional management, networking, and lifelong learning. Additionally, the study also found that there were two emergent themes present in Case 2, i.e. school culture and people-centered.

In Case 3, the study found that the leadership in this institution featured similar characteristics with ISTE standards. The manifestation of the similarities were in the case's emergent themes institutional management, networking, and lifelong learning. This institution also featured two emergent themes in its leadership practice, i.e. school culture and people-centered.

To sum up, in relation to the first research question, all the cases featured similar characteristics with the standards with two unique emergent elements: school culture and people-centered.

The second question in this study was: How do leadership practice differ among leaders in accredited institutions, in terms of being: (1) equity and citizenship advocate, (2) visionary planner, (3) empowering leader, (4) system designer, and (5) connected learner.

In terms of being the equity and citizenship advocate, the findings showed that all the cases manifested their commitment and policy categories under the institutional management theme. In this characteristic, the cases showed similar practice.

As a visionary planner, the study found that there were two emergent themes associated with the characteristic, i.e. institutional management and lifelong learning. All the three cases associated the institution's policy, assessment, and evaluation, and personal skills in this category. Meanwhile, Case 2 commitment emerged as its differentiator in the category as well as Case 3 adaptability.

In empowering leader characteristic, the theme emerged in all the cases was institutional management. The emerging categories of the three cases were commitment, policy, and supports.

As a system designer, the study found three emergent themes aligned with this characteristic, i.e. institutional management, networking, and lifelong learning. The categories of the three themes found in the study had similar characteristics with the fourth characteristics of the standards.

Being a connected learner, the study found that the leaders in three cases manifested features similar to this characteristic. The emergent themes found in the study consisted of institutional management, networking, and lifelong learning.

To sum up, the difference of digital leadership practices among leaders in accredited institutions was on each university leadership manifestation of organization culture that underlined their activities. However, more similarities were found instead of differences.

The third research question was: How does a digital leadership model in higher education in Indonesia look like.

The findings of this study proposed a leadership model in higher education that comprised of five essential elements, i.e. institutional management, school culture, people-centered, networking, and lifelong learning. The first element, institutional management, comprised of four categories: commitment, policy, supports, and assessment and evaluation. The school culture element consisted of the educational paradigm and type of organization categories. The third element, people-centered comprised of two categories, i.e. focus on students and building mindset. The fourth element, networking, comprised of four categories: collaboration with government, collaboration with other universities, networking with external organizations, and working with communities. Meanwhile, the fifth element, lifelong learning consisted of three categories: awareness, knowledge, and skills.

In conclusion, the study found that the higher education leadership in Indonesia shared similarities with ISTE Standards for Educational Leaders and further the study also proposed a working framework for digital leadership in selected accredited private universities in Indonesia.

Recommendations

Based on the conclusions of the study, the following recommendations are suggested:

1. The study found that all the cases combined various standards for digital leadership. Therefore, Indonesian government regulators are advised to set national standards for educational leaders in the country. The availability of national standards would provide guidance for education institutions to operate optimally in this digital era. Further, the implementation of such national standards would result in better competitiveness of the national education system at the international level.
2. Indonesian educational leaders are suggested to build confidence as well as adaptability and flexibility in facing the advancement of technology. Further, collaboration and networking with external parties would be expected to improve the quality of education in the institution in order to provide a better learning experience for the students.
3. Further research on how educational leaders give meaning to the implementation of the digital leadership framework in Indonesia would be ideal and encouraged.

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