

IT Governance Practices in the Development of Digital Space for the Orchestration of Learning Services in Higher Education

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Abstract

It is known globally that the Covid-19 pandemic has accelerated the digital transformation process in every aspect of the organization, which led to the question of how to define the strategy for the transformation itself can be measured and determined in an organized manner. The approach in producing the necessary efforts for the digital transformation process will involve the managerial and executive leaders outlining the resources needed for the business process, which sometimes leads to another problematic situation in how to make the resources can communicate and work together in the new landscape. Understanding the proper way to have the exact governance mechanism for the digital transformation process led to another topic, from solution to adaptation to achieve sustainable conditions for the organization. It raises another question of what ITG practice the university can implement in facing the challenges of multiple contexts of digital transformation from the IT division and academics. The decision-making needs to have happened in cross-functional teams under the expectation that the middle

ground can be achieved with IT as the subject for the business process changes. As the unprecedented situation occurs and might happen in the future, the transformation process under the practice of good ITG would become the innovative way and the breakthrough for higher education in overcoming the problems.

Keywords: IT Governance, Covid 19, Learning Services

1. Introduction

It is known globally that the Covid-19 pandemic has accelerated the digital transformation process in every aspect of the organization, which led to the question of how to define the strategy for the transformation itself can be measured and determined in an organized manner. The approach in producing the necessary efforts for the digital transformation process will involve the managerial and executive leaders outlining the resources needed for the business process, which sometimes leads to another problematic situation in how to make the resources can communicate and work together in the new landscape. It is also imperative to comprehend that the digital transformation process is about more than establishing the application in the business process as a shifting mechanism since it has more impact on the practices that led to the disruptive changes in the organization's business environment (Alenezi, 2021).

Higher education, for example, is affected by the situation, which mainly falls to the responsibility of the IT division in producing the strategy and the solution for the enablement of the learning process that academics run, which often has a dilemmatic situation from the non-uniform standards from each department (Bygstad et al., 2022). Moreover, since the nature of the material development for the learning process is run by the autonomy of the academic, it is possible to have multiple contexts upon establishing digital transformation under a centralized system and policy. Therefore, to have a specific mechanism for conducting the digital transformation process for the enablement of learning digitally, a practice producing the decision and set of control to overcome the situation is needed, with the implementation of Information Technology (IT) Governance (Mangundu, 2023).

Understanding the proper way to have the exact governance mechanism for the digital transformation process led to another topic, from solution to adaptation to achieve sustainable conditions for the organization. It raises another question of what ITG practice the university can implement in facing the challenges of multiple contexts of digital transformation from the IT division and academics. The decision-making needs to have happened in cross-functional

teams under the expectation that the middle ground can be achieved with IT as the subject for the business process changes.

Motivated by the case study from Telkom University, a private university in Indonesia that has a history of transforming the learning process into digital with the development of a new study program that would run not in the main university or distance education (PJJ) in 2019. It later becomes the milestone for the university to massively transform the whole process of learning digitally under a set of standards and policies. In the organization, with the establishment of a strategic unit in enabling the digital spaces for the development and learning delivery. Furthermore, with the regulation from the Ministry of Education and Culture (MENDIKBUD) of the Republic of Indonesia, Number 109/2013, the practices of conducting online learning with the support of a Learning Management System (LMS) was gradually increased, which became a competitive advantage in capitalizing the chance to leverage the business. As the unprecedented situation occurs and might happen in the future, the transformation process under the practice of good ITG would become the innovative way and the breakthrough for the university in overcoming the problems (Lubis et al., 2018).

This research will analyze the process of the digital transformation that Telkom University has done, resulting in a digital strategy for developing digital space to enable and support learning delivery. For the analytical phase, this research uses Design Science Research to propose the framework for the orchestration of the digital space as the practice of ITG that Telkom University has established.

2. Conceptual Background

2.1 Digitalization and Digital Transformation

Digital transformation is currently emerging as one of the main priorities of educational organizations, notably higher education institutions. For example, corporate institutions are critical for gaining competitive advantage. Several authors have attempted to define the concept of digital transformation. For example, Hess (Hess et al., 2016) defined the term as a transformation by digital technology to improve overall performance and efficiency. It aligns with the, who stated that with the incorporation of digital transformation, an organization's processes, practices, procedures, competencies, systems, and models are transformed strategically and prioritized to capitalize on technological advancements and their increased social impact fully. In this environment, higher education institutions, like any other industry,

must expand holistically to remain relevant to changing market scenarios and trends and to remain an essential component of this transformation over time (Marks et al., 2016).

Today, digitalization refers to converting and integrating analog data into digital data with at least two characteristics (0 and 1) located in a different system . It is equally valid for procedures and workflows. Digitalization refers to converting analog work steps to digital ones based on data expressed in bits and bytes. In the context of digital transformation, this indicates that the starting point is not technology but a consequent problem and that this problem is to be solved in the best way possible using new thought patterns (“The Digital Change of Vocational Training and Business Education: What It Takes to Prepare Students for the Future Challenges of the Job Market,” 2021). In detail, three terms are distinguished by a more concrete differentiation. This distinction is made between the term’s digitization and digital transformation, which are interrelated. Figure. 1 highlights the boundaries and definitions of the phrases used in the digital transformation discussion by Kamsker and Slepcevic-Zach (“The Digital Change of Vocational Training and Business Education: What It Takes to Prepare Students for the Future Challenges of the Job Market,” 2021).

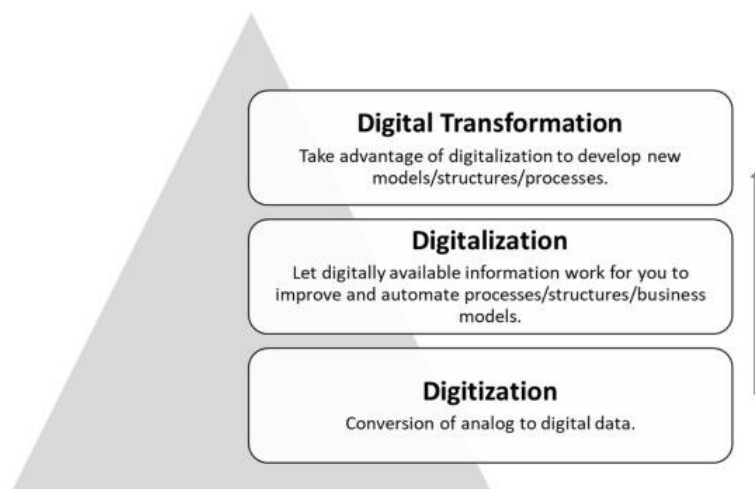


Figure. 1 Definition and delimitations of terms due to digital transformation

Digitization can be defined as the process of turning analog data into digital data, such as scanning a handwritten paper and converting it to digital format. This was done in order to create new workflows and improve existing ones. The existence of digitalization can now accelerate the job process. When enrolling on the website, for example, this technique substitutes filling out physical forms with digital ones on the website. This example demonstrates the great potential for applications that support quick task transfer procedures.

2.2 Digitalization in Higher Education

Higher education is the center of new knowledge economies for the 21st century (Sam & van der Sijde, 2014), and digital technology has become a key to realizing this potential. However, according to several studies, universities must catch up to other industries in digitalization. The use of digitalization in higher education institutions motivates the need for further development in the teaching and learning process. Kerres defines digitalization in the world of education as a comprehensive transformation of the learning process, from knowledge generation to knowledge communication. The ability to retrieve information via mobile devices at any time and location, search for interests, and develop knowledge refers to the design of learner-specific teaching and learning arrangements.

In many cases, higher education institutions are only considered as the suppliers of the employment program. On the other hand, educational institutions need to overcome existing and increasing demands for digitalization as an opportunity to conduct digital transformation. In Figure. 2, Alenezi has demonstrated the primary problems associated with digital transformation in higher education.



Figure. 2 Challenges Pertinent to Digital Transformation in Higher Educations

The transition from a traditional venue to entirely online distribution has only sometimes been smooth. Relationship and communication links must be established to encourage students to be engaged and contribute. Also, the information must be used efficiently. On the other hand, higher education needs to have the solution required with the increasing demands for digitalization as an opportunity to capitalize on the benefit of the transformation.

2.3 IT Governance Practices in Higher Education

Information technology governance is a tool used in all companies, including universities (Bajgoric, 2014), to oversee and manage IT resources such as infrastructure technology and staff.

Additionally, IT governance supports corporate governance by assisting with strategy and mission fulfillment. Structures, procedures, and relational mechanisms are a few of the mechanisms that can be used with an IT governance framework (de Haes & van Grembergen, 2009). However, finding out the most suitable mechanism for a particular organization may be influenced by external factors such as the organization's nature, size, and location (Sambamurthy & Zmud, 1999).

The increased awareness about the importance of IT governance has become a phenomenon in higher education. Complexity and decentralized organizations like universities should review their IT governance mechanisms frequently to suit innovation and changes in their environment to adapt the modern technologies. The question is not just which framework to examine but also how to select and implement appropriate methods for a specific business scenario. Effective IT governance through high-level mechanisms like structure, process, and relational mechanisms improves financial performance. To realize the goals in teaching, research, and information transmission to society, it must reach a balance between financial and non-financial components.

2.4 Digital Space for Learning

University is a term for a place where people study. People have gotten acquainted with the digital space with the emergence of the internet. For example, they interfered with virtual items via PSs, mobile phones, and gaming technologies. In the past several years, the number of digital spaces permissible to upload information, images, videos, and converse in real-time or asynchronously has increased. It is a technically non-located environment that provides integrated affordances for learning and communication via digital devices (Bomsdorf, 2005). A substantial technical digital infrastructure generates the affordances. In Figure. 3, Bygstad has illustrated the relationship between pedagogy, technology, and organization to create the digital learning space.

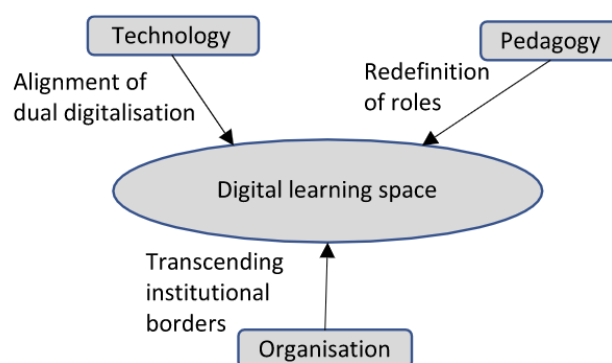


Figure. 3 The Digital Learning Space

At the same time, the COVID-19 pandemic has come and forced people to stay in their homes. In Indonesia, the government issued a decision to everybody to stay at their home to reduce the spread of the Covid-19 virus. This condition has become an obstacle for all sectors, especially in education. Synchronous meetings, teaching, collaborative learning, and course planning are all possible with online interactive tools (Collazos et al., 2021). These solutions require technological interfaces, frequently done via APIs, i.e., mechanisms that protect and resource these interactions. On the other hand, this has also encouraged many educational institutions to organize learning in the digital space.

3. Research Model and Hypotheses

This research follows the concept of digital learning space, an exploratory study in interpreting collaborative learning from teachers and students in higher education. In addition, this research has a follow-up issue in addressing the role of people in the organization, especially from the managerial in the structural and academic, to orchestrate the learning process in the digital space. Our research uses Design Science Research (DSR) as the guideline to identify the components we have analyzed from the document and the artifact from our case study at Telkom University. The focus is to define the structure and process that the organization's stakeholders have taken into action for the IT strategy and operational decision-making.

In addition, the following research, which proposes an ITG Model to construct the visualization of the connected component, is also included to be aligned with the concept of digital learning space to orchestrate the learning process (Sengik et al., 2022). The digital transformation in Telkom University has been in practice to accommodate the vision of producing international standard education. We have addressed the driver, strategy, and solution that Telkom University produced in **Error! Reference source not found.**

Figure 4. Chronology of the driver and solution for Transformation

4. Research Methodology

4.1 Distance Learning as the First Driver

The regulation for the enablement of distance learning is a challenge for the university to define the strategy first in aligning the required condition with the ability to process and govern the new business with the same output. Therefore, Table 1 will show the guidelines for distance education as the required condition that is visualized as the practice of governance for the university.

Table 1 Guideline for distance learning

Domain	Description	In-depth Context
Process	The characteristics for the learning process that need to be supported.	<ul style="list-style-type: none"> • Student centered learning. • The use of technology and information system.
Organization	Minimum organization to manage the process.	<ul style="list-style-type: none"> • IT division to support the technical process. • Academic partner for the supporting system in the distance.
Human Resources	Specific resources to deliver and support the learning.	<ul style="list-style-type: none"> • Teachers with technological knowledge. • Educational staff manage supporting element for teaching.
Internal Quality Assurance	Functions in assuring the process delivered meets with the standard.	<ul style="list-style-type: none"> • Defining the quality of the education that is aligned with the standard in regular program.

In a context that requires technology to be developed as the main subject so that it can be used across dimensions, a deep understanding of digital governance is needed for the organization with a clear goal in achieving the value of the business process. This regulation would later become a point of awareness in doing the transformation to capitalize on the business opportunity that is based on the existence of digital governance to comply with standards and policies.

4.2 Government Program as the Second Driver

The government of Indonesia, through the Directorate of Learning and Student Affairs and Directorate General of Higher Education, promoted a strategic program called Pendidikan

Daring Indonesia Terbuka dan Terpadu (PDITT) in 2014, which became the source for innovations in developing digital materials in an online platform or LMS. However, in practice, organizations need to consider how the development of IT infrastructure can accommodate digital materials creation with various standards based on learning designs set by academics (Sengik et al., 2022). In this case, Telkom University has made a strategic plan with the establishment of supporting units for digital material development and information system services. Figure. 4 will show a diagram of strategic initiatives from the perspective of ITG practice in the form of developing online education service support units that are visualized in DSR implementation.

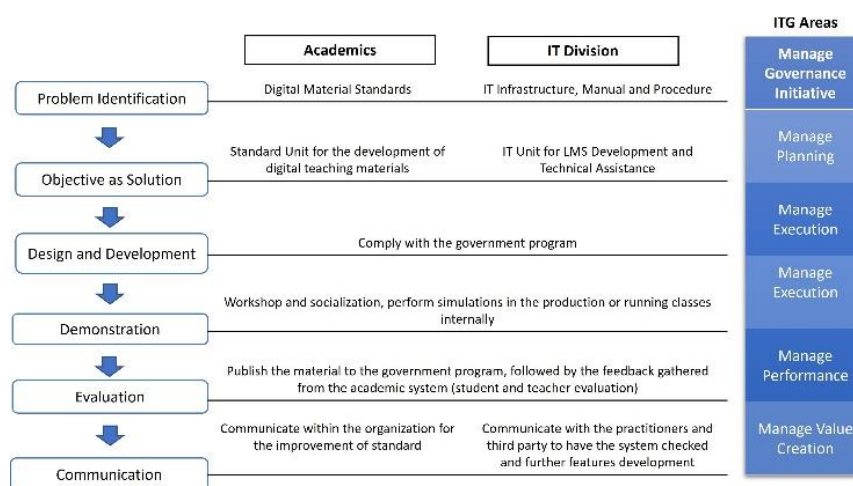


Figure. 4 Strategic initiatives in supporting PDITT program

4.3 Digital Space Development

According to the document from the informatic department at Telkom University, the first distance program was established in 2019 for undergraduates in informatics. The event was also followed by the massive program for digital materials development in all departments, which aims to improve business processes internally by providing access to online learning for all students and externally by collaborating with other organizations. The program involves all managerial and executive levels in academic and other support divisions to achieve the expected results for the organization.

Following the document about the Strategic Plan for the development of online learning, Telkom University has defined the alignment between the structures and the process with the organization's role and responsibility, as shown in Table 2.

Table 2 Strategic Plan with the ITG Alignment

Domain	Description	Relevancy	Responsibilities
Structure	Teacher as the center of knowledge worker for the education	University strategic plan document	Academic Directorate and Faculty
Structure	The development of facility to accommodate the learning support system	IT Infrastructure Development Plan	IT Division, Finance and Logistic
Structure	Approach for iterative design for the learning process management	Academic Education Plan	Academic Directorate, Standard Department and Faculty
Process	Minimize the complexity of learning management with the implementation of comprehensive learning infrastructure	IT Infrastructure Development Plan	IT Division and Faculty
Process	Quality Assurance for the process of online learning	Internal and External Standard	University and Quality Assurance Department
Process	Enrich the features of online learning according to technological developments	University strategic plan document	Standard Department and IT Division
Relational	Compliance with the government regulation in the implementation, integration and quality assurance	Regulation and Standard	University
Relational	Expanding the scope of service with the purpose of partnership with other institution and industry.	Academic research and studies	Academic Directorate, and Faculty
Relational	Knowledge Management	SWOT Analysis	Standard Department and IT Division

The establishment of digital space has been incorporated into a collaborative strategic design between academic and supporting departments to ensure that the process of digital utilization through the IT infrastructure is in a framework of planning or design, development, and delivery. The orchestration of the digital space at Telkom University produces a cyclic framework of

design and development that is run by the collaboration of the academic and IT support Unit. The next phase is to deliver the material into several applications to be consumed internally and externally. The last phase is gathering feedback directly from the user and the system. Fig. 5 will show the complete orchestration of the digital space of Telkom University.

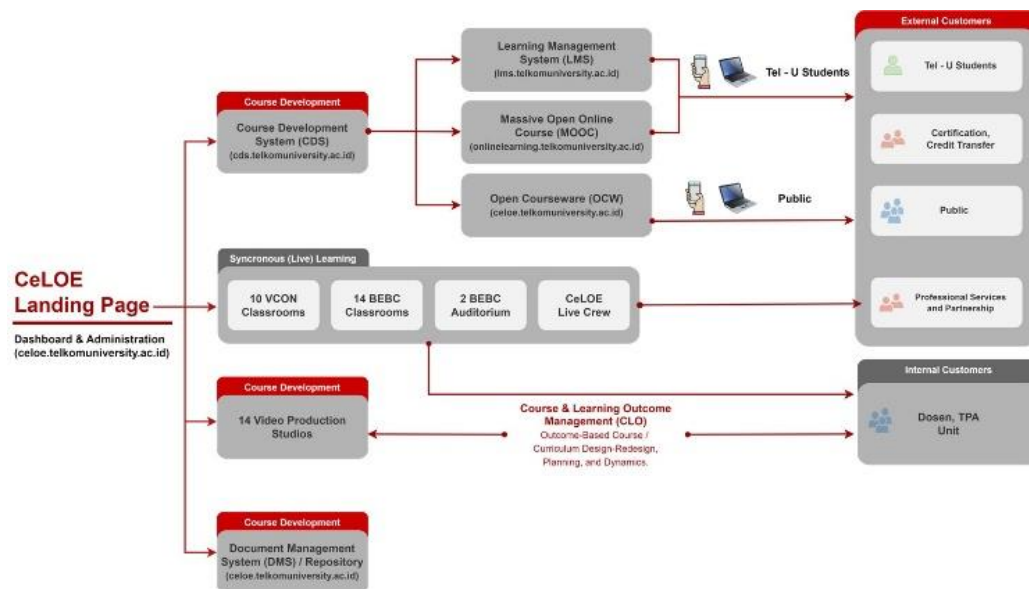


Fig. 5 Digital Space Orchestration

5. Data analysis and results

Digital Transformation can be perceived as the effort from the organization to capitalize on the benefits of technology utilization, which is correct, but somehow has a profound meaning in terms of aligning with the strategy to control, so it will minimize the high coupling from the dynamic changes in the technology and the problem to integrate as a whole organization. The approach of ITG practice can also create a dilemma related to decision-making and strategies that need to be prepared so that synergies with IT governance principles support and improve business aspects into new landscapes. With conditions in higher education that have the characteristics of autonomy over the implementation of education from each department, drivers are needed from internal and external organizations so that various contexts in the use of IT for learning can be aligned in a digital space.

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