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DIGITAL GOVERNANCE MODEL: INTEGRATION OF UNIVERSITY GOVERNANCE AND IT GOVERNANCE FOR SUSTAINABLE TRIDHARMA PERFORMANCE

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Abstract

This study aims to develop a *Digital Governance Model* that integrates *University Governance* and *Information Technology Governance* through the Enterprise Architecture Planning (EAP) approach to enhance the performance of the Three Pillars of Higher Education (Tridharma). The analysis reveals that the existing digital systems used by lecturers such as teaching management, research and publication systems, and community service platforms remain fragmented and lack interoperability, resulting in data redundancy, process inefficiencies, and low institutional reporting accuracy. The implementation of EAP produces a comprehensive architecture blueprint emphasizing the principles of single source of truth, API gateway, standardized institutional metadata, and integrated academic services. This integration enables seamless communication across internal and external systems (SISTER, PDDIKTI, SINTA, OJS), ensuring that all Tridharma related activities are automatically documented, efficient, and consistent. The study concludes that EAP strengthens digital governance in higher education institutions, improves lecturer productivity, and supports sustainable Tridharma performance through a structured and adaptive IT architecture.

Keywords: Enterprise Architecture Planning, Digital Governance, University Governance, IT Governance, Higher Education

I. INTRODUCTION

The development of digital technology has significantly changed the way universities manage resources, academic services, as well as learning, research, and community service activities. In this context, the concept of *university governance* is an important foundation to ensure that institutional management runs effectively, transparently, accountably, and is responsive to the needs of stakeholders. However, the increasing complexity of academic and administrative services demands a more strategic integration of information technology (IT) governance so that the decision-making, data management, and service distribution processes can run in a coordinated manner. Therefore, the integration *of university governance* with IT governance is an urgent need to support the optimization of the performance of higher education institutions.

The performance of the Tridharma of higher education education, research, and community service increasingly depends on the ability of institutions to utilize IT effectively and in a structured manner. Many universities face challenges such as fragmentation of information systems, low data quality, and the lack of a comprehensive digital governance model to synergize academic and administrative processes. This research offers the development of *a Digital Governance Model* that integrates the principles *of university governance* and IT governance as a strategic framework to improve the efficiency, service quality, and sustainability of Tridharma performance. This model is expected to be an

innovative solution for universities in creating modern governance that is adaptive to digital transformation.

In addition to the demands of digital transformation, strengthening university governance also has a strong foundation in national regulations. Law Number 12 of 2012 concerning Higher Education emphasizes that the implementation of higher education must meet the principles of accountability, transparency, quality assurance, and effectiveness in the management of the Tridharma. The regulation is emphasized through Permendikbud Number 3 of 2020 concerning National Standards for Higher Education which requires the integration of information systems to support academic management, research, and community service in a measurable manner. In addition, Ministerial Regulation PAN-RB Number 95 of 2018 concerning Electronic-Based Government Systems (SPBE) strengthens the urgency of implementing IT governance in all government institutions, including state universities, to create interoperability, service efficiency, and better data quality. This regulatory framework shows that the integration between *university governance* and IT governance is not only a strategic need, but also a normative mandate that must be fulfilled to ensure the sustainability of university performance.

The governance framework of higher education is also closely related to accreditation regulations that set the quality standards of institutions and study programs. The Regulation of the National Accreditation Board for Higher Education (BAN-PT) Number 1 of 2020 concerning the Higher Education Accreditation Mechanism emphasizes that the internal quality assurance system must be supported by valid, integrated, and traceable data through information systems. In addition, the Higher Education Accreditation Instrument (IAPT) 3.0 and the Study Program Accreditation Instrument (IAPS) 4.0 emphasize the importance of governance, leadership, and *evidence-based resource* management, most of which require the support of digital technology. Thus, accreditation encourages universities to implement reliable IT governance in order to be able to meet key performance indicators, improve sustainable quality, and ensure accountability in the implementation of the Tridharma.

Previous studies have shown that IT governance has an important role in improving the effectiveness of academic services in universities. A study by Al-Rasaifi et al. (2021) confirms that the implementation of *IT governance* that is in line with organizational strategy is able to improve institutional performance through the use of accurate data and more efficient work processes. Meanwhile, research by Nugroho and Utami (2020) on universities in Indonesia emphasized that digital readiness and the maturity of information systems are crucial factors in supporting accountability and the quality of academic services. The findings show that IT governance cannot be separated from the need for institutions to improve the quality of the Tridharma.

On the other hand, some research focuses on *university governance* as an important foundation in building transparent and accountable governance. Research by Marginson (2019) shows that university leadership and organizational management have a direct influence on the achievement of Tridharma performance, especially in terms of academic coordination and resource management. Local studies by Sari and Prasetyo (2022) also show that *good university governance* increases public trust and supports the implementation of internal quality assurance. However, these studies generally still separate the discussion between *university governance* and IT governance, so they have not discussed the integration of the two thoroughly.

Based on this analysis, it appears that there is a *research gap* that although IT governance and *university governance* have been widely studied, the integration of the two in one *digital governance* model to improve Tridharma performance in a sustainable manner has not been comprehensively discussed. Previous research has highlighted the technical aspects of IT governance or the institutional aspects of university governance separately, so it has not provided an integrated model framework that can be a strategic guideline for universities in

dealing with digital transformation. Therefore, this research is here to fill this gap by offering a *Digital Governance Model* that integrates IT governance and *university governance* as a new approach to improve efficiency, accountability, and sustainability of the performance of the Tridharma of Higher Education.

Digital transformation in higher education presents various challenges in the management of academic services, research, and community service. Although *university governance* and IT governance have been regulated in various national policies, many universities still face problems in the form of low system integration, data disintegration, weak coordination across units, and lack of strategic use of technology to support decision-making. This condition causes the implementation of the Tridharma to run less than optimally and unsustainable. These problems show the need to develop a digital governance model that is able to synergize institutional and technological aspects in an integrated manner.

This research aims to develop a *Digital Governance Model* that integrates *university governance* with IT governance as a strategic framework to improve the performance of the Tridharma of Higher Education in a sustainable manner. In particular, this study aims to: (1) analyze the condition of IT governance and institutional governance in universities; (2) identify the factors influencing the successful integration of digital governance; and (3) formulate a conceptual model that can be used as an implementation guide for universities in improving efficiency, accountability, and quality of academic performance. Thus, this research is expected to make a theoretical and practical contribution to the development of higher education governance in the digital era.

II. RESEARCH METHODS

Enterprise Architecture Planning (EAP) is a systematic approach to designing a comprehensive information and technology architecture to support the business needs of an organization. Spewak and Hill (1995) explained that EAP functions as a planning framework that integrates business processes, data, applications, and technological infrastructure so that it is aligned with the strategic goals of the institution. In the context of higher education, EAP is an important foundation because it is able to synergize the needs of the Tridharma of education, research, and community service with the development of a coordinated, measurable, and sustainable information system.

The implementation of EAP in higher education focuses on an in-depth analysis of academic business processes, organizational structures, data needs, and digital services that support operational and academic activities. According to Lankhorst (2017), enterprise architecture in the higher education sector allows institutions to create consistent system integration, workflow efficiency, and improved quality of technology-based services. Through planning stages such as *business modeling*, *data architecture*, *application architecture*, and *technology architecture*, EAP produces a digital blueprint that can be used as a guideline for the implementation of effective IT governance.

In relation to IT governance, EAP helps universities ensure that all IT resources, whether hardware, software, data, and human resources, are managed with the principles of efficiency, accountability, and strategic alignment. Research by Fibrianto and Rosmansyah (2020) shows that the implementation of EAP in a number of universities in Indonesia is able to improve data consistency, interoperability of academic information systems, and the accuracy of institutional performance reports. Furthermore, EAP facilitates the integration between university governance and IT governance through the alignment between the vision of higher education and the development of digital technology that supports data-driven decision-making processes.

Thus, the EAP approach not only plays a role in designing information system architectures, but also becomes a strategic instrument in building modern and adaptive IT governance in higher education. This approach ensures that digital transformation is directed,

consistent, and supports the achievement of Tridharma performance in a sustainable manner. EAP also serves as a link between organizational needs and technology solutions, thus providing a strong foundation for the development of an integrated and relevant *Digital Governance Model* in the ever-evolving higher education environment.

Enterprise Architecture Planning has 7 (seven) main components that indicate the stages for determining and planning the implementation of information systems architecture. These seven main components are grouped into 4 (four) parts.

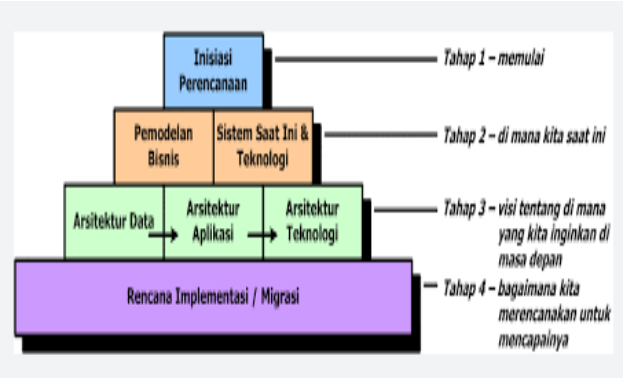

Figure 1. System Development Methods

Stages of Architecture Planning for IT Governance in Higher Education

1. Initial Planning Stage

The implementation *of Enterprise Architecture Planning* (EAP) for the development of IT governance in universities begins with the establishment of strategic goals to improve efficiency, integration, and quality of digital services in supporting the tridharma of higher education. Its main focus is to improve the integration of academic systems, administration, research, and community service. This project involves key stakeholders such as the rector, vice chancellor, academic bureau, LPPM, IT team, faculty, and students. At this stage, the formulation of an IT architecture vision and IT governance blueprint is carried out which includes infrastructure, applications, security standards, and data management. Data collection was carried out through FGDs, unit leader interviews, user surveys, and analysis of policy documents to ensure that EAP is aligned with the university's strategic plan (Renstra).

Business modeling and existing systems in universities describe the conditions of various applications and processes that run separately between academic, financial, HR, research, and student service systems. Disconnectedness between systems leads to overlapping data, weak information validity, and business process inefficiencies. In the implementation of EAP, a mapping of the university's core business processes (*core, supporting, and managerial processes*) is carried out to see the ideal integration point. Modern technologies such as cloud computing, campus ERP integration, *Learning Management System* (LMS), and API-based systems are used to support integrated IT governance. Through this stage, universities can harmonize applications, infrastructure, and business processes so that academic and administrative services are created, more effective, responsive, and support the improvement of the quality of education.

2. Data Architecture Design Stage

The data architecture in EAP for IT governance in higher education focuses on integration, security, and management of cross-unit data such as student data, lecturers, curriculum, research, publications, finance, attendance, and other tridharma activities. All data is organized in an enterprise data model and stored in a centralized database that meets interoperability, security, and consistency standards. Colleges can leverage cloud platforms to

improve scalability, real-time access, and data resiliency. In addition, analytical technology is used to support strategic decision-making for leaders, such as lecturer performance analysis, student participation rates, research monitoring, and academic service quality. The implementation of this data architecture increases operational effectiveness and supports sustainable digital transformation.

3. Application Architecture Design Stage

The application architecture in EAP for IT governance in higher education includes the integration of all major applications such as Academic Information Systems, Financial Systems, HR Systems, LMS, Quality Assurance Systems, and Research Information Systems. The applications are designed to be interconnected in a single ecosystem of digital services, leveraging middleware and APIs for real-time data exchange. Applications are built on cloud or hybrid cloud platforms to ensure scalability and ease of maintenance. In addition, the application interface is made user-friendly to make it easier for users such as lecturers, students, education staff, and leaders to get access to information quickly and precisely. This integration supports the creation of transparent, efficient, and *data-driven university governance*.

4. Technology Architecture Design Stage & Implementation Plan

The implementation of EAP in universities aims to design a technology architecture that supports the integration of digital systems and effective governance. This process includes analyzing existing IT infrastructure, mapping future technology needs, and building the ideal architecture for networking, servers, security, and data centers. Challenges that often arise include budget limitations, human resource readiness, and resistance to change. The implementation stages are carried out in stages, such as system migration to an integrated digital platform, hardware updates, implementation of new software for academic and administrative services, and training for lecturers and education staff. Periodic evaluations ensure IT architecture remains relevant to the dynamics of higher education needs and policies. With EAP, universities can improve the quality of digital services, governance effectiveness, and competitiveness towards Smart Campus.

III. DISCUSSION

3.1. Research Results

The results of the study show that the integration *of university governance* and IT governance plays an important role in building *a Digital Governance model* that is able to improve the effectiveness of academic services and the performance of the tridharma in a sustainable manner. Through activity mapping using *the Porter Value Chain approach*, it was found that the main activities of universities such as new student admissions, academic services, financial services, libraries, and the distribution of academic information are greatly influenced by the readiness of digital infrastructure and the quality of IT governance. The integration of this business process into the digital governance model results in services that are more efficient, transparent, and responsive to the needs of students and lecturers.

This study shows that in *inbound logistics activities*, data readiness and information management quality are key elements for the success of the next process. The management of student data, lecturers, finance, and teaching materials that are integrated in the digital system has been proven to increase information consistency and accelerate services. Meanwhile, at the *operations stage*, the lecture process, academic administration, research, and community service become more measurable when supported by an integrated academic information system, LMS, and administrative application. This directly contributes to the increase in the achievement of the tridharma of higher education, especially in the aspects of efficiency and work productivity of lecturers.

In the aspect *of outbound logistics*, the study found that the digitization of service distribution processes such as the provision of transcripts, certificates, diplomas, and digital repositories of scientific publications increases accessibility and user satisfaction. Promotion and admission activities for new students who use digital platforms also show increased effectiveness, because universities are easier to reach prospective students and convey their advantages more widely. This integration strengthens the image of the institution while increasing academic appeal. In terms of supporting activities, the research found that institutional governance, human resource management, financial management, and information technology development provide the main foundation for the sustainability of *digital governance*. Modern IT infrastructure, data security policies, and standardized technology procurement processes have been proven to accelerate digital transformation in universities. Human resource management that encourages the improvement of the competence of lecturers and education personnel also has a significant effect on the quality of the implementation of the tridharma, especially in the adoption of learning and research technology.

The results of the research based on *the Enterprise Architecture Planning (EAP)* method show that the integration of IT governance in lecturers' activities has a significant impact on improving the performance of the tridharma. Through the stages of data architecture, application, and technology analysis, it was found that various systems used by lecturers so far such as academic information systems, e-learning, research systems, and scientific repositories—are still not optimally integrated. This leads to duplication of data, reporting delays, and low accuracy of academic and research information. The implementation of EAP in this study helps to design an IT architecture blueprint that allows the integration of lecturer data centrally so as to support the learning, research, and community service processes in a more efficient and standardized manner. In the application architecture design stage, the research found that the main need of lecturers is an integrated, adaptive, and easy-to-use system for all tridharma activities. EAP produces an integrated application design that connects lecture processes (LMS and SIAKAD), research reporting, scientific publications, and community service activities in one digital ecosystem. This integration allows lecturers to access, manage, and report all tridharma activities through one centralized portal (*single sign-on*). The results of the implementation test showed an increase in lecturers' work efficiency, especially in terms of digital classroom management, acceleration of the preparation of BKD reports, and increased visibility of lecturers' research outputs and publications.

Overall, the application of the EAP method in this study proves that a planned and integrated IT architecture is able to strengthen *digital governance* and the performance of the lecturers' tridharma. The integration of data architecture and applications provides a foundation for data-driven decision-making, encourages increased lecturer productivity in learning, and accelerates the research and community service process through the support of a consistent and connected digital system. Thus, EAP functions as a strategic approach in building IT governance that supports the sustainability of the tridharma of higher education while improving the quality of academic services as a whole.

3.2. Discussion

1. Analysis of IT Governance Conformity with University Governance

The results of the analysis show that IT governance in higher education has not been fully integrated with the principles *of university governance* which emphasizes transparency, accountability, effectiveness, and sustainability. The IT planning process is still seen as a technical function, not yet an integral part of the institution's strategic planning. On the other hand, the needs of lecturers in the implementation of the Tridharma of teaching, research, and community service experience challenges in data access, service flows, and system integration. This condition strengthens the urgency of implementing an EAP-based digital governance

model to align institutional vision, user needs, and existing IT capabilities. The integration of IT governance with *university governance* is needed primarily to ensure that digital services support the university's key performance indicators (KPIs). For example, institutions need a research and publication management system that is connected to SINTA, GARUDA, and internal journal platforms so that lecturers can increase productivity. Without this integration, Tridharma's performance has the potential to be stagnant and not well documented. Therefore, EAP serves as a framework for systematically designing strategic alignment through standardized business modeling, data architecture, applications, and technologies.

2. Application of EAP to the Tridharma Business Process of Higher Education

The EAP approach in this study is carried out by mapping the actual business process (as-is) and determining future needs (to-be). At the *business and current system modeling stage*, it was found that the teaching, research, and service processes are still partially running and have not been fully digitized. Some of the data is still scattered across various platforms such as Excel, Google Forms, Academic Driver's License, or faculty databases. This leads to data duplication, information inconsistencies, and reporting delays. The *initiating and goal setting* stage produces strategic recommendations in the form of the need for academic system integration, research repository, service monitoring system, e-learning portal, and integrated lecturer performance dashboard. The ultimate goal is to create a unified data flow that allows leaders to make *data-driven decisions*. Thus, EAP plays a role in bridging the needs of institutions and technological capabilities so that all Tridharma activities can run effectively and measurably.

3. Data Architecture as a Foundation for Tridharma Performance Integration

Data architecture is the main pillar of EAP because all Tridharma activities require valid, consistent, and easily accessible data. The mapping results showed that teaching data (RPS, attendance, grades), research data (title, team, outputs, DOI), and service data (documentation, IPR outputs, publications) were not yet in one institutional repository. This condition causes lecturers to have to enter repetitive data on different platforms, thereby reducing the efficiency and accuracy of reporting. Through EAP, *an enterprise data model* is designed that describes key entities such as Lecturers, Courses, Research, Publications, IPR, Service, Partners, and Tridharma Outputs. The data is consolidated in *an integrated data repository* so that cross-process integration can occur automatically. This model supports various needs, such as BKD reports, LKD, filling in SISTER, BAN-PT accreditation, and institutional performance evaluation.

4. Application Architecture to Support Tridharma Digital Services

The application architecture is designed to ensure that all digital services in the university can be interconnected and operate in an integrated manner. Through the EAP approach, several strategic systems are recommended, such as the Integrated Teaching Information System, Research and Publication Management System, PKM System, *Institutional Repository*, Lecturer Performance Dashboard and Study Program, as well as external integration with SISTER, PDDIKTI, SINTA, and OJS. During the analysis, it was found that some applications were available but ran independently, so lecturers had to make repeated data inputs for teaching, research, and performance reporting purposes. This disconnection reduces efficiency and hinders optimal data utilization. With the implementation of EAP, the application architecture design is geared towards interoperability through the use of API Gateways, standardization of institutional metadata, and the implementation of *the concept of single sign-on*. This integration allows all applications to communicate automatically so that lecturers' activities, such as uploading publications, filling out teaching logs, or reporting community service activities, can

be recorded simultaneously on all systems that need it. The principle of *a single source of truth* is the main basis, where each data is only input once and becomes the official source used by all applications. This approach has been proven to reduce redundancy, improve data quality, and speed up the reporting and performance monitoring process of Tridharma.

5. Technology Architecture as a Digital Governance Enabler

The technology architecture includes server infrastructure, networking, information security, and cloud services. The results of the analysis show that institutions need to increase server capacity, optimize *load balancing*, implement *role-based access control*, and integrated backup. In addition, supporting technologies such as *containerization, microservices*, and *cloud storage* are needed so that digital architecture is flexible and easy to develop. The implementation of EAP allows universities to choose technology that suits their needs, rather than technology that occurs on an ad-hoc basis. With a strong technological foundation, digital services become more stable, secure, and able to support the continuous improvement of Tridharma's performance.

The integration of EAP with lecturer activities has a significant impact on improving the performance of Tridharma. Through business process mapping and data architecture, this study found that lecturers need a digital workflow that reduces administrative burden. With an integrated system, lecturers can focus on the essence of the Tridharma: improving the quality of learning, research productivity, and the sustainability of service activities. Digital systems that support the automation of BKD reports, publication track records, and research management have been proven to improve efficiency and accuracy of performance. In terms of research, EAP integration allows the system to document the entire process from proposals, funding, collaboration, to publication and IPR. By utilizing an interconnected application architecture, research output data is directly connected to the lecturer's performance system and the leader's dashboard. This accelerates the monitoring and evaluation process, and provides convenience for lecturers in preparing accreditation documents or institutional reporting. In community service, the EAP-based system provides a means of documentation of activities, impact assessments, and partner management. With this integration, service activities can be planned more strategically and produce measurable outputs. IT integration in Tridharma is not only related to automation, but is the foundation of the institution's digital transformation that ensures data connectivity, program sustainability, and improvement of the overall quality of lecturer performance.

IV. CONCLUSION

This research shows that the implementation of Enterprise Architecture Planning (EAP) is able to be a strategic approach in building an integrated *Digital Governance* model to support the performance of Tridharma in higher education. Through the analysis of data architecture, applications, and technology, it was found that various systems that have been used by lecturers such as teaching, research, service, and performance reporting systems are still running separately, causing data duplication, process inefficiency, and weak information accuracy. EAP then provides a foundation for designing a comprehensive integration through an architectural *blueprint* that connects all digital services systematically and in harmony with university governance. The results of the study show that the application architecture built on the principle of *single source of truth*, API gateway, and institutional metadata standards has succeeded in creating interoperability between internal and external systems such as SISTER, PDDIKTI, SINTA, and OJS. This integration significantly improves the efficiency of lecturers' work in the management of teaching, research, publication, and community service, while strengthening the accuracy and consistency of data for institutional reporting and accreditation needs. In addition, the presence of performance dashboards and institutional repositories allows

university leaders to make data-driven decisions more quickly and precisely. Overall, this study proves that the integration of IT governance through the EAP method not only improves operational processes, but also improves the quality of academic services, performance transparency, and sustainability of Tridharma. Thus, EAP plays a key role in building a *Digital Governance Model* that is adaptive, effective, and able to answer the challenges of digital transformation of higher education in the modern era.

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