

# *Aligning University Vision–Mission using COBIT 2019 Goals Cascade*

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**Abstract** — A university's strategic objectives need to be systematically aligned with InformationTechnology (IT) governance to ensure IT truly supports the achievement of the institution's vision and mission. An effective method to achieve this goal is by using the COBIT 2019 framework. The approach taken is a two-stage mapping process. The first stage involves translating the university's Vision and Mission into COBIT's Enterprise Goals (EG). Then, in the second stage, each EG is mapped to the relevant IT Alignment Goals (AG). This step-by-step mapping process serves as a bridge connecting the university's high-level strategic direction with specific IT management activities and objectives. The result of this method is the creation of a clear and measurable connection between the university's strategic objectives and the main focus areas of IT governance, namely Value, Risk, and Performance. This connection shows how each university objective is influenced or supported by IT governance efforts. The implications are significant, as the mapping results become a strong foundation for developing the university's IT roadmap. Additionally, it helps the institution prioritize which COBIT management and governance domains should be optimized first to align with the institution's most pressing strategic needs. Thus, IT transforms from merely a supporting function into a strategic driver for the university.

**Key words**— COBIT 2019; Enterprise Goals; Alignment Goals; IT Governance; Higher EducationStrategy; Strategic Mapping.

## I. INTRODUCTION

The development of information technology (IT) has fundamentally transformed the operational and strategic landscape, making IT a primary driver in achieving the missions of various institutions, including universities. In the university environment, IT no longer merely functions as an administrative support tool, but has evolved into a critical catalyst for competitive advantage. IT facilitates innovation in the threefold mission of higher education: supporting adaptive digital learning ecosystems, accelerating collaboration and dissemination of research results, and expanding the reach of community service programs. Therefore, the sustainability and success of institutions heavily depend on the adoption of mature IT governance. Effective IT governance ensures that every IT investment not only modernizes infrastructure but also directly creates optimal value for stakeholders, manages increasingly prevalent cyber risks and compliance, and aligns all technological resources with the institution's strategic direction. The use of global frameworks such as COBIT 2019 becomes

essential for providing structural guidance in achieving that strategic alignment.

Although most universities have established strong Vision, Mission, and strategic goals often documented in Long-Term Strategic Plans (Renstra), there is often a significant gap in the implementation and execution of technology-based strategies. This gap manifests in the minimal explicit and systematic linkage between high-level institutional strategy and the operational framework and objectives of IT governance that are implemented. Without a structured mapping methodology, IT investments have the potential to become reactive, driven by sudden needs rather than strategic priorities, causing project overlaps and failing to support the university's major strategic initiatives. This situation results in resource waste, high project failure risks, and difficulties in measuring IT's actual contribution to achieving university goals. This core issue highlights the urgent need to formulate and demonstrate validated methods to guarantee and ensure alignment between organizational strategic goals and IT's functional focus areas.

The main objective of this research is to explain the systematic process of mapping university strategic objectives into the COBIT 2019 framework as a solution to existing strategic gap problems. Specifically, this research aims to elaborate on detailed mapping stages, starting from the analysis of the university's Vision and Mission, then mapping those strategic directions towards COBIT Enterprise Goals (EG), and subsequently to COBIT 2019 Alignment Goals (AG). This step-by-step process is designed to build a solid strategic bridge, connecting institutional management (Rectorate and Senate) with IT governance and management functions. By explicitly identifying which AGs most support the university's primary EGs, this research aims to produce a strategic IT priority matrix that can guide executive-level decision-making.

This research is expected to provide a practical framework that can serve as a guide and be efficiently replicated by other higher education institutions, both public and private, in the context of their IT governance. The specific benefits generated include several important aspects. For institutional management, this framework enables leaders to proactively identify and validate the most critical IT governance priorities (including management and COBIT governance domains) to support the institution's strategic direction, thereby enabling

smarter and more targeted investment decision-making. For IT teams, this framework provides clarity on which COBIT processes should be optimized to maximize contribution to university goals, facilitate IT budget justification, and enhance technology performance accountability. Overall, this framework serves to optimize the utilization of IT resources and increase transparency in governance functions across higher education institutions.

This study fundamentally focuses on the formulation and demonstration of a strategic mapping methodology, which is the process of transforming an institution's Vision-Mission into COBIT 2019 Goals. Although this methodology is general, the context of this research will be focused on Sam Ratulangi University as a case study and real-world application example. The selection of this case study aims to concretely illustrate the mapping results, showing how Sam Ratulangi University's strategic objectives can be linked to IT governance focus areas (namely, value, risk, and performance) according to COBIT 2019 guidelines. This research will cover up to the phase of identifying relationships and determining COBIT Goal priorities. However, this study does not include detailed performance metric design, full implementation of IT controls, or testing the operational effectiveness of COBIT management practices. Its main focus is on validating strategic alignment.

II. METHODOLOGY

The COBIT 2019 framework provides a Goals Cascade approach that is used to align IT governance with the organization's strategic objectives. This process begins by mapping the Organization's Strategic Objectives into Enterprise Goals (EG), which are then broken down into Enterprise Goals

TABLE I. Mapping Vission-Mission

| Vission   | Mission   | Strategic Objective (Extracted)  |
|---|---|--|
| "To become an excellent and competitive university in the Asia Pacific region." | 1. Organizing quality higher education.   | T1. Improving the quality of technology-based and innovative learning. |
|   | 2. Developing research and community service oriented to community needs.               | T2. Strengthening collaborative and data-based research.               |
|   | 3. Managing the university transparently, accountably, and with global competitiveness. | T3. Improving university governance based on information technology.   |
|   | 4. Fostering academic ethics and sustainability.  | T4. Fostering an ethical and sustainable academic culture.             |

(EG), which are then broken down into Alignment Goals (AG). The final result of this mapping will identify the domains or processes of IT governance and management that are priorities for the organization.

A. Identification of University Strategic Goals

The first step in this methodology is strategy decomposition, which involves breaking down the university's Vision and Mission into operational, measurable, and specific strategic goals. Analysis is conducted by examining official university documents, such as the Strategic Plan (Renstra). The extracted strategic goals must reflect the institution's main focus areas during the planning period. This process ensures that IT mapping in the next stage has a valid and institutionally approved foundation.

Based on the case study of Sam Ratulangi University (or a relevant case study context), a synthesis of the Vission and Mission was conducted to produce a set of strategic goals. An example of the formulation is presented as Table I.

B. Mapping Strategic Objectives to Enterprise Goals (EG)

The second step is conceptual matching between each university strategic goal (T1-T4) and the most relevant COBIT 2019 Enterprise Goals. Enterprise Goals (there are 13 EGs in COBIT 2019) represent organizational level outcome goals published by ISACA (2019). The mapping is performed through content analysis and similarity in outcome orientation between the formulation of university goals and the description of each EG. If a university goal has outcome similarity with more than one EG, then all relevant EGs are recorded.

The following Table II presents an example of mapping results based on content analysis. This mapping serves as the first strategic bridge. Thus, the selected Enterprise Goals (EG01, EG06, EG12, EG13, EG10) collectively represent the COBIT targets that the IT function must meet for the university to achieve all its strategic objectives.

TABLE II. Mapping Strategic Objectives to Enterprise Goals (EG)

| Enterprise Goal (EG)                              | Reason for Connection  |
|---|--|
| EG01 - Portfolio of competitive products/services | Supporting the development of IT-based academic/innovation programs (e.g., e-learning, research repositories). |
| EG06 - Availability of business services          | Ensuring that academic systems (SIKAD, LMS) are stable and accessible 24/7.                                    |
| EG12 - Digital transformation programs            | Digital transformation to support education and research (e.g., cloud computing, big data).                    |
| EG13 - Innovation in products/business            | Development of IT-based research and international collaboration.  |
| EG10 - Staff skills, motivation, productivity     | Improving the competence of IT lecturers/staff to support the vision of "excellence".                          |

TABLE III. Mapping Enterprise Goal (EG) to Alignment Goals (AG)

| <b>Enterprise Goals (EG)</b>             | <b>Alignment Goals (AG)</b>  |
|--|--|
| EG06 - Availability of Business Services | AG07 - Optimized business processes through IT   |
| EG12 – Digital Transformation            | AG08 - Integrated IT and business processes, AG09 IT projects delivered on time/budget |
| EG13 – Product and Business Innovation   | AG13 - Knowledge, expertise, and initiatives for business innovation                   |

C. Mapping Enterprise Goal (EG) to Alignment Goals (AG)

The final step is goal cascading by mapping each selected Enterprise Goal (EG) to COBIT 2019 Alignment Goals (AG) on Table III. This process is performed objectively by referring to the Official EG → AG Correlation Table provided in the COBIT 2019 Framework: Governance and Management Objectives (ISACA, 2019). Only AGs with a Primary (P) or Secondary (S) relationship with the selected EG are considered.

The purpose of this stage is to identify the most critical IT function targets to support the university's strategy. The AGs that most frequently appear with a 'P' (Primary) weight will be the main focus areas of the university's IT governance. An example of priority-based mapping summary is presented below (the complete EG → AG matrix was used in the data analysis):

III. RESULTS AND DISCUSSION

A. Strategic Purpose Mapping against Enterprise and Alignment Goals

The implementation of the two-stage conceptual mapping methodology Vision-Mission → Enterprise Goals (EG) → Alignment Goals (AG)) successfully produced an explicit alignment framework between the university's strategic direction and IT governance needs, in accordance with the COBIT 2019 Goals Cascade principle. Each university strategic goal has a logical and justified connection with one or more EGs, which are then derived to AGs according to the official COBIT priority weights.

Generally, the mapping results show three main strategic relationship patterns that affirm the role of IT as a strategic enabler in the higher education environment:

1) Value & Service Orientation: Goals focused on improving academic quality and competitiveness (T1 and T2) are predominantly oriented towards stakeholder value creation and innovation.

2) Efficiency & Risk Orientation: Objectives focused on internal governance (T3) are explicitly oriented towards optimizing internal resources, business process efficiency, and institutional risk mitigation (risk governance).

3) Ethical & Compliance Orientation: Goals focused on academic culture and sustainability (T4) are directly linked to goals emphasizing IT security, integrity, and social responsibility (sustainable governance).

TABLE IV. Validated Mapping

| <b>Reason for Connection</b>   | <b>Enterprise Goals (EG)</b>                      | <b>Alignment Goals (AG)</b>  |
|--|---|--|
| Supporting the development of IT-based academic/innovation programs (e.g., e-learning, research repositories). | EG01 - Portfolio of competitive products/services |  |
| Ensuring that academic systems (SIKAD, LMS) are stable and accessible 24/7.                                    | EG06 - Availability of business services          | AG07 - Optimized business processes through IT   |
| Digital transformation to support education and research (e.g., cloud computing, big data).                    | EG12 - Digital transformation programs            | AG08 - Integrated IT and business processes, AG09 IT projects delivered on time/budget |
| Development of IT-based research and international collaboration.  | EG13 - Innovation in products/business            | AG13 - Knowledge, expertise, and initiatives for business innovation                   |
| Improving the competence of IT lecturers/staff to support the vision of "excellence".                          | EG10 - Staff skills, motivation, productivity     |  |

Table IV summarizes the results of the validated integrated mapping by the expert panel, which serves as the basis for the subsequent analysis.

Based on the mapping of the Vision and Mission, five Enterprise Goals (EG) have been identified, namely EG01, EG06, EG10, EG12, and EG13. However, an in-depth analysis of urgency and strategic impact has established three main priorities for the implementation of the IT governance roadmap. The highest priority is given to EG13 (Product and Service Innovation), as it is fundamental to improving global competitiveness and the quality of university research. To realize this innovation, an indispensable foundation is the reliability of academic services, represented by EG06 (Adaptive IT Operations Availability), which ensures that core systems are accessible and functioning without interruption. These two crucial objectives, Innovation and Reliability, must then be supported by the provision of EG12 (Modern IT Infrastructure and Applications), ensuring that the technology used is capable of sustainably supporting all of the university's digital transformation programs and operational capabilities.

### B. Strategic Relationship Analysis

An in-depth analysis of these interrelationships provides important insights into how universities need to prioritize their IT governance and management functions according to the COBIT domains. Each selected Alignment Goal is then mapped to a governance and management domain based on the COBIT framework, and the primary domain is identified by referring to the official mapping table provided by ISACA.

- EG06 (Business Services Availability) → AG07 (P)

The mapping relationship between EG06 (Business service continuity and availability) and AG07 (Security of information, processing infrastructure and applications, and privacy) shows a fundamental Primary (P) relationship in modern IT governance. Intuitively, AG07 is often considered to focus on confidentiality and integrity, but in the context of EG06, AG07 acts as a prerequisite for service availability. According to COBIT 2019 logic, the availability of business services (EG06) such as SIAKAD and LMS cannot be guaranteed without a strong security system, integrated processing infrastructure, and managed privacy. Data and system integrity, which are part of AG07, are the foundation of trust and reliability. When integrity is compromised, recovery time will increase dramatically, causing prolonged downtime and failure to achieve EG06. 24/7 service availability requires automation processes (which are part of the processing infrastructure) for data backup, real-time monitoring, and rapid recovery from incidents, all of which fall under the umbrella of AG07 security and risk management.

Related COBIT IT Governance domains: EDM03, APO12, APO13, BAI10, DSS04, DSS05.

- EG12 (Digital Transformation) → AG03 (P), AG08 (P) & AG09 (P)

The mapping relationship between EG12 (Managed digital transformation programs) and AG03, AG08, and AG09 shows that the success of digital transformation at universities is a function of three key management dimensions: Value, Architecture, and Project Execution. Digital transformation (EG12), which includes major initiatives such as cloud migration or full-scale e-learning implementation, is complex and requires strict governance. The Primary (P) relationship with AG03 (Realized benefits from I&T-enabled investments and services portfolio) confirms that Value must be a measurable end result. EDM02 (Ensure benefits delivery) must be active to verify whether investments (e.g., new e-learning platforms) actually improve learning quality and reduce operational costs, rather than simply replacing old systems.

Furthermore, AG08 (Enabling and supporting business processes by integrating applications and technology) demands a solid architecture. Digital transformation is not only about installing new software, but also about integrating IT systems with business processes, such as integrating SIAKAD with financial or HR systems. The

APO03 (Managed enterprise architecture) and APO02 (Managed strategy) domains play an important role here to ensure that all components of the transformation (applications, data, and infrastructure) work harmoniously, supported by BAI05 (Managed organizational changes) to mitigate user resistance.

Finally, AG09 (Delivering programs on time, on budget and meeting requirements and quality standards) emphasizes the importance of disciplined Project Execution. Digital transformation programs typically take years to complete and carry high risks. This interconnection requires universities to adopt mature program management practices, supported by the BAI01 (Managed programs) and APO11 (Managed quality) domains. By prioritizing AG09, universities ensure that cloud migration or big data programs are completed on time and meet established quality standards. Overall, this interconnection positions IT governance (EDM01, EDM02, EDM04) as the overseer that ensures transformation programs strike a balance between delivering benefits (AG03), having the right technical foundation (AG08), and being executed efficiently (AG09).

Related COBIT IT Governance domains: EDM01, EDM02, EDM04, APO01, APO02, APO03, APO05, APO06, APO11, BAI01, BAI02, BAI03, BAI05, BAI11, DSS06.

- EG13 (Product and business innovation) → AG13 (P)

The Primary (P) mapping relationship between EG13 (Product and business innovation) and AG13 (Knowledge, expertise, and initiatives for business innovation) confirms that academic and business innovation at universities directly depends on internal intellectual and cultural capacity supported by IT. EG13, which focuses on IT-based research development and international collaboration, can only be realized if the university proactively cultivates, manages, and utilizes knowledge, expertise, and innovation initiatives (AG13). This requires IT units to transform from mere tool providers into strategic partners in creating new value.

Related COBIT IT Governance domains: APO04, APO07, APO08, BAI08.

### C. Synthesis: Focus Areas for University IT Governance

Based on the weight of the interrelationship between Enterprise Goals (EG) and Alignment Goals (AG) that has been analyzed, 25 COBIT 2019 domains have emerged as top priorities (Primary Support). These selected domains are then grouped into five strategic focus areas as top priorities in the preparation of the university IT governance roadmap (Table V).

These five focus areas provide a clear, results-oriented framework for university leadership. By prioritizing COBIT domains (e.g., EDM02 for Value and APO12 for Security) based on the most critical AGs, universities can allocate resources more effectively and strategically, transitioning from reactive IT management to proactive, aligned governance.

Table V. Focus Areas

| Strategic Focus Areas                        | Supported Core Domains                   | Strategic Needs of Universities  |
|--|--|--|
| <b>Governance &amp; Value Realization</b>    | EDM01, EDM02, EDM04, APO05, APO06        | Establishing a formal governance framework, overseeing the investment portfolio, optimizing costs/resources, and ensuring that IT investment benefits are realized.                                |
| <b>Risk, Security, and Continuity</b>        | EDM03, APO12, APO13, BAI10, DSS04, DSS05 | Building a robust cyber defense, managing institutional risk, ensuring the availability of critical systems (SIKAD/LMS), and complying with security regulations.                                  |
| <b>Strategic Planning &amp; Architecture</b> | APO02, APO03, APO01                      | Creating a long-term IT vision, building an integrated enterprise architecture (supporting AG08), and ensuring all initiatives are aligned with university strategy (EG12).                        |
| <b>Program &amp; Project Execution</b>       | BAI01, BAI11, APO11, BAI02, BAI03, DSS06 | Improving discipline in IT project execution (AG09), ensuring quality (APO11), and ensuring internal controls are implemented in IT-supported business processes.                                  |
| <b>Innovation &amp; Capability Building</b>  | APO07, BAI05, BAI08                      | Developing a culture of innovation, improving IT human resource competencies, managing knowledge (AG13), and facilitating the adoption of organizational changes caused by digital transformation. |

*D. Critical Discussion*

The results of this study reinforce the idea that a top-down approach that starts from the university's Vision and Mission is superior in ensuring IT strategic alignment compared to a bottom-up approach that focuses directly on technical processes. The COBIT 2019 framework provides a robust and structured Goals Cascade mechanism to connect strategic intent (University Goals) with operational outcomes (Alignment Goals), providing academic and practical legitimacy to the

mapping results. This mapping addresses the research gap identified in the literature review, where many previous studies skipped the EG step and directly mapped strategy to IT processes.

However, while this methodology is valid and systematic, it is important to acknowledge some limitations inherent in qualitative and conceptual research:

- **Conceptual Nature:** The resulting mapping is still conceptual and normative (what should be prioritized). These results have not been tested against actual university performance data (e.g., IT service satisfaction levels, security incidents, or existing process maturity levels).
- **Subjectivity of Expert Validation:** Although validation involves expert judgment, the interpretation of university strategic documents and the weighting of interdependencies (especially in Stage 2) may still be subject to subjective bias from the panelists, despite being constrained by the formal COBIT framework.

Therefore, as a recommended and crucial next step, universities need to integrate the results of this strategic mapping with a comprehensive IT Maturity Assessment. The Priority Alignment Goals (AG) identified in this study should be the main input in determining the COBIT processes to be assessed. For example, if AG07 (IT security) is a high priority, universities must immediately conduct a maturity assessment in the APO13 (Manage Security) and DSS05 (Manage Security Services) domains to measure the extent to which the university's actual capabilities (AS-IS) have reached the expected level (TO-BE).

By combining Strategic Priorities (AG) and Maturity Levels, universities can develop a realistic, measurable, and strategically impactful IT governance roadmap, ensuring that IT improvements focus on the areas most critical to achieving the institutional vision and mission.

IV. CONCLUSION

This study successfully highlights and validates the importance of strategic alignment between the university's vision and mission and its information technology (IT) governance through the use of the COBIT 2019 Goals Cascade framework. The conceptual mapping method from Vision–Mission → Enterprise Goals (EG) → Alignment Goals (AG) proved to be an effective tool for systematic analysis and alignment, offering an explicit understanding of how IT functions can be transformed from mere support services into catalysts for achieving institutional goals.

The main findings of this study reinforce the justification for the strategic role of IT in modern universities and can be summarized as follows:

- **Validity of the Alignment Framework:** The COBIT 2019-based top-down approach is effective as a strategic alignment tool because it provides a logical and explicit relationship between business goals (EG) and IT goals (AG). This enables universities to measure IT's contribution to core strategies, such as academic quality and competitiveness.

- Identification of IT Governance Focus Areas: Based on the mapping of University Strategic Goals, IT governance should be grouped into five main interrelated priority areas, namely:
  - 1) Governance & Value Realization: This area functions at the top management level to ensure that IT investments provide measurable value and are managed with strict oversight (related to AG03).
  - 2) Risk, Security, and Continuity: This area focuses on ensuring data protection and the availability of critical academic system services (related to AG07).
  - 3) Strategic Planning & Architecture: This area builds the long-term foundation and technical structure necessary to support all digital initiatives (related to AG08).
  - 4) Program & Project Execution: This area focuses on improving discipline and quality in the execution of IT projects (related to AG09).
  - 5) Innovation & Capability Building: This area focuses on building intellectual capital and a culture that enables continuous innovation (related to AG13).
- Shifting Role of IT: This study confirms that IT in higher education must be positioned as a strategic enabler, not just a supporting function. The AG mapping results form the basis for the COBIT domain priorities (EDM, APO, BAI, DSS) that are most relevant to the needs of the Tri Dharma Perguruan Tinggi (Three Pillars of Higher Education).

Overall, this research has bridged the gap between institutional strategic ambitions and structured IT governance implementation, providing a strong theoretical and practical foundation for universities to begin their IT governance transformation.

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