Enhancing Information Technology Maturity with the COBIT 2019 Framework: A Case Study of ABC Univeristy

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The increasing complexity of digital transformation in higher education institutions underscores the need for effective IT governance frameworks. ABC University, a medium-sized university in Indonesia, faces challenges in aligning IT operations with its strategic objectives, including overlapping applications, limited resources, and insufficient risk management. This study evaluates ABC's IT governance maturity using the COBIT 2019 framework to identify gaps and propose actionable recommendations. This study adopted a qualitative case study approach, incorporating structured interviews, focus group discussions (FGDs), observations, and document analysis. ABC's IT governance practices were mapped against COBIT 2019's maturity model, focusing on key processes such as risk optimization, security management, and IT change management. The results indicate that ABC's IT maturity level is at stage 2 (Managed), reflecting basic but structured governance practices. Key gaps include a lack of comprehensive risk management frameworks, limited documentation, and underutilized IT tools. The study recommends improving documentation, establishing standard operating procedures (SOPs), conducting regular risk assessments, and providing targeted training to enhance staff competency. The findings emphasize the importance of tailoring COBIT 2019 to address the specific challenges of medium-sized universities in developing countries. By implementing the proposed roadmap, ABC can achieve greater alignment between IT capabilities and institutional goals, contributing to improved operational efficiency, service quality, and regulatory compliance. This study offers practical insights for similar institutions seeking to enhance their IT governance maturity in the context of limited resources and dynamic technological environments.

A. Introduction

Information technology (IT) has evolved from a supportive function to a strategic enabler, driving advancements in academic outcomes, research, and global collaborations within universities [1], [2]. To ensure secure, accountable, and efficient digital transformation, IT governance in educational settings must align with the institution's vision and mission, sustaining competitive advantages and optimizing core and ancillary activities [3].

As a medium-sized educational institution in Indonesia, ABC Univeristy encounters significant challenges in managing its IT infrastructure, directly affecting its operational sustainability. ABC faces challenges such as overlapping applications, resulting in inefficiencies, increased errors, and delays in decision-making due to unintegrated systems [4].

Another critical challenge for ABC is the limitation of IT resources, encompassing a lack of personnel in the Information Systems and Communication Technology Office (ISCTO), constrained budgets for system development, and inadequate infrastructure such as servers and networks. These limitations hinder the university's ability to train IT staff, update software, and adopt advanced technology solutions, ultimately reducing its capacity to adapt to the dynamic technological environment [5].

If these challenges remain unresolved, ABC's strategic vision could be compromised. This condition is especially concerning in the digital transformation era, where leveraging technology is crucial for enhancing operational efficiency, academic service quality, and institutional competitiveness. To address this, ABC must adopt a strategic IT governance framework, such as COBIT 2019, to effectively align IT capabilities with organizational objectives [6].

Ministerial Regulation No. 139 of 2014 emphasizes the strategic use of IT in higher education to improve service quality and ensure institutional accountability. Although many studies have explored IT governance in large institutions or global contexts, research on medium-sized universities in developing countries remains limited. This gap highlights the need for tailored frameworks to address the specific challenges institutions like ABC face [7].

This study seeks to evaluate the IT governance maturity level at ABC using the COBIT 2019 framework and provide actionable recommendations for improvement. By focusing on key areas such as strategic alignment, resource management, and performance monitoring, the study contributes to the broader body of knowledge on IT governance in higher education and offers practical guidance for institutions undergoing digital transformation. Inefficient planning of university technology solutions often results in misalignment with institutional strategic goals and management processes.

Without a clear framework to guide effective and efficient technology adoption, such initiatives frequently deviate from their intended purposes, failing to deliver technological advancements with strategic value. Therefore, higher education institutions must adopt comprehensive IS/IT integration strategies tailored to their unique needs and requirements [8]. ABC's challenges in IT governance necessitate a framework specifically adapted to its context. While COBIT 2019 has seen increasing adoption, most existing studies focus on large institutions or global practices, leaving medium-sized universities in developing nations

underrepresented. This study addresses this gap by assessing IT governance maturity at ABC and proposing recommendations aligned with its strategic goals.

The study identifies critical problem areas from these challenges, including IT staffing management, strategic alignment between IT and business objectives, management support, and stakeholder involvement. By evaluating IT governance maturity and proposing actionable recommendations, this study aims to enhance IT governance practices at ABC, ensuring alignment with institutional goals and improved operational outcomes [5].

1. IT Governance

IT governance is a specialized subset of corporate governance pertinent to technical and managerial domains [9]. It encompasses best practices in planning, management, implementation, and performance evaluation, ensuring that IT effectively supports organizational objectives. In a business context, governance refers to a collection of policies, procedures, and actions organizations employ to define their strategies and achieve their goals [6]. IT governance focuses on creating value, optimizing benefits and risks, and managing resources efficiently [10]. It ensures organizational goals are achieved by addressing stakeholder needs, delegating roles and responsibilities, and monitoring compliance and performance [11].

IT governance comprises four core components: strategic alignment, value delivery, resource management, and performance measurement [9]. Strategic alignment ensures IT initiatives align with an organization's business strategies and operations, while value delivery focuses on confirming that IT systems provide expected benefits. Resource management prioritizes efficiently using IT investments, infrastructure, applications, and human resources. Lastly, performance measurement involves continuous monitoring of implementation to assess resource efficiency and process performance. From these perspectives, IT governance emerges as a critical aspect of corporate governance, designed to effectively align IT resources with organizational goals.

To improve information technology governance, ABC requires a framework to manage technical aspects and bridge the organization's strategic needs. COBIT 2019 was chosen because of its flexibility and focus on managing IT governance that is integrated with overall business objectives, making it more relevant compared to other frameworks such as ITIL or ISO 27001 in the context of a secondary education institution such as ABC.

Although extremely useful for IT service management, ITIL (Information Technology Infrastructure Library) focuses on operational aspects and service management, especially ensuring consistent and quality services. ITIL less emphasizes strategic governance, including long-term planning, risk management, and performance measurement. In the context of ABC, which faces strategic challenges such as alignment between IT and organizational goals, a service-based approach such as ITIL does not fully cover the institution's needs [12].

Similarly, ISO 27001 focuses on information security management. This framework excels in establishing controls and standards to protect data and ensure compliance with regulations related to information security. However, its narrow focus on information security makes ISO 27001 less suitable for addressing broader

IT governance challenges in SMEs, such as resource management, cost optimization, and achieving digital transformation [13].

One of the strengths of COBIT 2019 is its flexibility in being tailored to the needs of different organizations, including post-secondary education institutions like SMEs. The framework also introduces design factors that allow institutions to align IT governance with the organization's strategic objectives, risk profile, and digital transformation needs [10].

Given the specific challenges ABCs face, such as overlapping applications and limited IT resources, COBIT 2019 can provide more relevant guidance to improve operational efficiency, ensure strategic alignment, and holistically address risks and compliance issues. This approach makes COBIT 2019 a more appropriate choice to help SMEs achieve their strategic objectives than other frameworks that are more limited in scope.

2. COBIT 2019

COBIT (Control Objectives for Information and Related Technology) is the most widely adopted IT governance framework. It is a comprehensive IT governance framework designed to help organizations address compliance challenges and align IT strategies with business objectives [10]. Its primary aim is to provide clear guidance and best practices for IT governance, enabling organizations worldwide to manage IT-related risks effectively. COBIT serves as a valuable tool for senior management, helping them understand and mitigate risks associated with IT operations.

COBIT distinctly separates governance and management, highlighting that these disciplines involve different activities and serve distinct purposes [14]. Governance focuses on setting objectives, monitoring performance, and ensuring alignment with organizational goals, whereas management emphasizes executing tasks and achieving these objectives through operational processes.

COBIT 2019 is an evolved version of the earlier COBIT 5 framework, tailored to address modern business challenges and dynamic IT environments. It introduces updates to governance principles, processes, and tools, enhancing its adaptability to diverse organizational contexts. Key enhancements include introducing design factors and a refined maturity model, enabling organizations to customize governance approaches to their needs [10].

3. Previous Research

This study reviews previous research and uses it as a reference. Taufik researched to measure the maturity level at The Secretariat of the Tax Court and provided recommendations for improvement following the measurement process [15]. This study has also researched the governance of higher education institutions, explicitly referring to the "Measurement of Maturity Level Higher Education Governance Using Balanced Scorecard (BSC) and COBIT 4.1" [7]. Additionally, the Institutional Directorate evaluated the maturity level of IT governance and offered recommendations for improvement after the measurement process [12].

While IT governance has been a prominent research topic in educational institutions, much of the existing work has primarily focused on large-scale or global institutions, often relying on earlier versions of governance frameworks like COBIT

4.1 or COBIT 5. For example, studies have explored IT maturity assessment processes and alignment goals but typically do not address the challenges faced by medium-sized institutions or those in developing countries, such as Indonesia [3].

Several recent studies utilizing COBIT 2019 have demonstrated its value in adapting IT governance to modern needs through design factors and enhanced maturity models. However, these studies often focus on either corporate environments or smaller-scale educational settings, with limited emphasis on actionable recommendations tailored to unique institutional characteristics. For instance, XYZ University's case study mapped organizational goals to enterprise goals. Still, it lacked a detailed exploration of how design factors like risk profiles and sourcing models could directly impact governance improvement [3], [16]. Similarly, research at educational foundations highlighted COBIT 2019's flexibility but emphasized general alignment rather than addressing specific IT governance weaknesses, such as resource constraints or overlapping systems [17].

B. Research Method

This study adopts a case-study approach, focusing on the ISCTO Division at ABC. It primarily articulates a vision of delivering professional IT and communication services tailored to the academic community's needs.

1. Data Collection

The primary instrument was a COBIT 2019-based Likert scale questionnaire to assess respondents' perceptions of IT governance practices. Additional instruments included interview guidelines, observation sheets, and documentation checklists. This study collected data using the following techniques:
1) Interviews: Key personnel from the ISCTO, including management and staff, conducted these interviews.
2) Focus Group Discussions (FGD): These discussions involve stakeholders gaining broader and deeper perspectives on IT governance practices.
3) Observations: The observations involved the direct on-site observation of IT governance implementation.
4) Document Analysis: Review and evaluate internal IT governance documents, including strategic objectives and organizational guidelines.

2. Analysis Method

This study evaluated the implementation of IT Governance according to best practices outlined by COBIT 2019. This study conducted a mixed-method analysis after collecting data through document studies, interviews, and FGD. The data analysis involved descriptive methods and followed four steps: data reduction, data entry, data display, and conclusion drawing.
1) Data reduction: the process by which the qualitative data collected is reduced, rearranged, and integrated to form a theory.
2) Data entry: this study inputted the data into the database using software.
3) Data display: this study presents the reduced data in charts, matrices, diagrams, graphs, and images. This visualization helps organize the data and identify patterns and relationships, allowing this study to conclude.

4) Concluding: this study answers the research question by determining the identified themes by considering explanations of observed patterns and relationships or by making contrasts and comparisons.

3. Relevant COBIT 2019 Process Determination Method

The relevant COBIT 2019 processes and target maturity level are identified based on interviews with the Systems and Communication Technology Division. This study utilized the COBIT 2019 design toolkit, a spreadsheet-based tool provided by COBIT 2019 in Excel, to facilitate this process. This toolkit simplifies the selection of relevant COBIT 2019 processes for organizations. The procedure for completing the COBIT 2019 design toolkit follows the COBIT 2019 Design Guide guidelines. The selection of domains or processes to be measured is prioritized based on their significance and the resources available at the case study location [9].

This study adopts the COBIT 2019 framework to calculate the maturity level of IT governance implementation at ABC Palembang. Organizations choose COBIT 2019 for its comprehensive and up-to-date framework for managing and evaluating IT governance, allowing them to measure the effectiveness and efficiency of IT implementation. Table I compares the changes and updates between COBIT 5 and COBIT 2019, including adjustments in control aspects, objectives, and underlying methodologies.

Table 1. Comparison between COBIT 5 and COBIT 2019

COBIT 5	COBIT 2019
It consists of only five governance principles.	It consists of 6 governance principles.
It contains 37 processes supporting governance and management.	It contains 40 processes supporting governance and management with terminology changes.
Performance assessment uses a scale of 0-5 based on ISO/IEC 33000 standards.	The CMMI (Capability Maturity Model Integration) is the basis for performance assessment.
It does not have design factors.	It contains 11 design factors influencing IT governance design.

The decision to utilize COBIT 2019 as the framework for measuring IT maturity in this study is grounded in its advancements over its predecessor, COBIT 5, offering a more robust foundation for assessment. These advancements provide a stronger foundation for assessing IT maturity levels. COBIT 2019 introduces a more comprehensive and adaptive approach to IT governance and management, offering enhanced alignment with dynamic business needs and emerging technologies.

The framework incorporates additional design factors, such as enterprise goals, risk profiles, and compliance requirements, which provide a more nuanced assessment of IT capabilities. Furthermore, COBIT 2019 emphasizes continuous improvement and strategic alignment, making it particularly suitable for organizations striving to achieve higher levels of IT maturity. These enhancements position COBIT 2019 as a superior tool for evaluating IT governance maturity in complex and evolving organizational contexts, justifying its selection for this study.

This study began by mapping ABC's organizational goals to COBIT 2019's enterprise goals to select processes for evaluation. They identified critical alignment goals and chose relevant governance and management objectives for in-depth

assessment. For example, they prioritized 'Managed Risk (APO12)' and 'Managed Security (APO13)' based on their significance to the institution's digital transformation initiatives, as also emphasized in related research on IT governance in small and medium educational institutions [3], [9].

4. Maturity Level Measurement Method

This study's maturity level measurement method aims to produce recommendations for improving the ABC's IT governance process using the COBIT 2019 framework. The study measures the capability levels of selected COBIT 2019 processes, ranging from Incomplete (Level 0) to Optimized (Level 5). Each level corresponds to a maturity benchmark:

- Level 2 (Managed): Indicates basic but structured governance practices are in place.

- Level 3 (Defined): Represents more organized processes supported by formal documentation and standardized procedures.

These maturity levels provide actionable insights for improvement. For instance, processes at Level 2 might require enhanced documentation and formalization to reach Level 3, thereby fostering more reliable governance outcomes [9].

In this stage, this study collected qualitative data from FGD results. The data analysis for maturity level measurement employs coding, data entry, data display, and conclusion drawing. This study applied coding to the FGD results for each evaluated process. This study then entered the coded data into a spreadsheet, facilitating efficient data processing. The data is displayed in charts or tables to visualize the measured maturity levels. Finally, this study concludes by determining the maturity level for each process.

C. Result and Discussion

This section delineates the findings derived from evaluating IT governance maturity at ABC by applying the COBIT 2019 framework. The results identify strengths and critical gaps within key processes, including risk management, resource optimization, and strategic alignment. By systematically mapping the institution's IT governance practices to the COBIT 2019 maturity model, the study provides a nuanced assessment of the current state and lays the foundation for targeted improvements. The subsequent discussion contextualizes these findings within ABC's organizational objectives while offering insights into their broader implications for medium-sized higher education institutions undergoing digital transformation.

1. COBIT 2019 Process Identification

The COBIT 2019 process identification leveraged the COBIT 2019 Design Toolkit, a spreadsheet tool developed by ISACA to assist in selecting pertinent governance and management process requirements. Interviews with the Head of the Information and Communication Technology Office (ICT Office) and an evaluation of IT governance design factors informed this determination. The methodology encompassed analyzing enterprise strategy, organizational goals, risk profiles, IT-related issues, compliance demands, and IT roles. Each factor

contributed essential inputs for aligning processes with COBIT objectives. The study yielded the following results for the design factor.
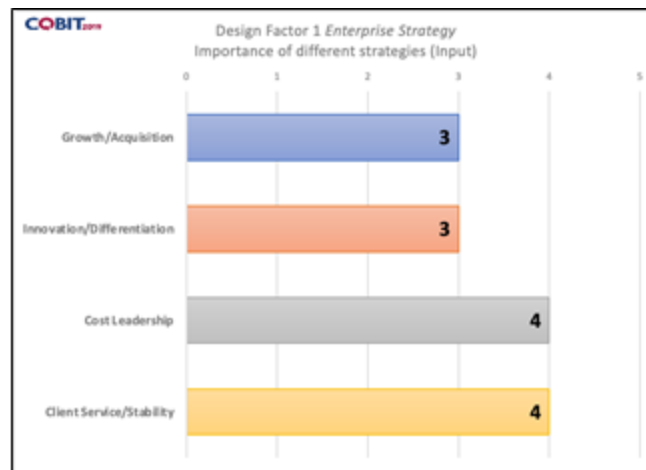

Figure 1. Design Factor 1: Business Strategy

Figure 1 illustrates the Design Factor 1: Enterprise Strategy analysis based on the COBIT 2019 framework, highlighting the importance of different strategic priorities within the organization. The evaluation uses a scale from 0 to 5, where higher values indicate greater strategic importance than lower values. The findings reveal the following:

1. Cost Leadership and Client Service/Stability received the highest scores, both at 4, indicating that these strategies are of primary importance for the organization. These conditions suggest a strong focus on operational efficiency and maintaining stability in client services.
2. Growth/Acquisition and Innovation/Differentiation scored 3, demonstrating that while these strategies are considered important, they are secondary to the organization's prioritization of cost efficiency and service stability.
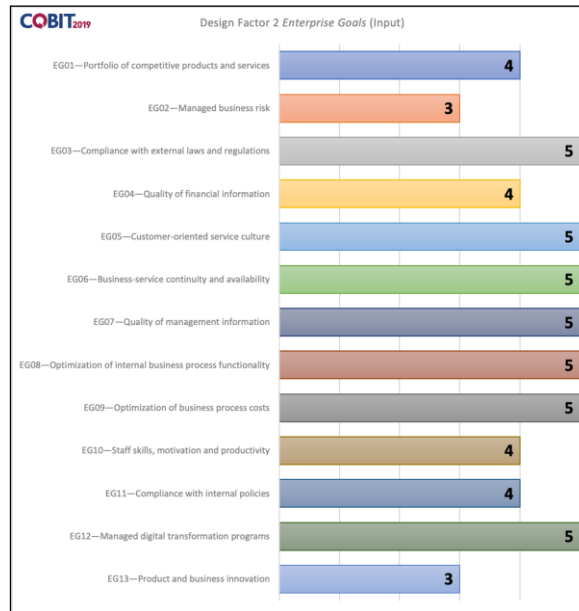
Figure 2. Design Factor 2: Enterprise Goals

Figure 2 presents the Design Factor 2: Enterprise Goals analysis, as outlined in the COBIT 2019 framework, evaluating the importance of various organizational goals on a scale from 0 to 5. Higher scores indicate goals more critical to the organization's strategic direction. The analysis reveals the following key insights.

1. Several goals achieved the highest score of 5, reflecting their critical importance to the organization. These include:
   a. EG03: Compliance with external laws and regulations
   b. EG05: Customer-oriented service culture
   c. EG06: Business-service continuity and availability
   d. EG07: Quality of management information
   e. EG08: Optimization of internal business process functionality
   f. EG09: Optimization of business process costs
   g. EG12: Managed digital transformation programs.

   These goals collectively emphasize the organization's strong focus on regulatory compliance, operational efficiency, service quality, and digital transformation.

2. Goals such as EG01: Portfolio of competitive products and services, EG04: Quality of financial information, EG10: Staff skills, motivation, and productivity, and EG11: Compliance with internal policies scored 4, indicating their significant but slightly lower priority compared to the top-ranked goals.

3. Goals like EG02: Managed business risk and EG13: Product and business innovation received the lowest score of 3, suggesting these areas are of moderate importance relative to other organizational priorities.

This analysis demonstrates that the organization prioritizes operational stability, compliance, and efficiency, emphasizing service continuity and optimizing business processes. Additionally, the emphasis on digital transformation underscores the organization's commitment to leveraging technology to enhance its strategic objectives. The lower priority assigned to business risk management and innovation may reflect the organization's current focus on consolidation rather than exploratory growth or risk-taking activities.
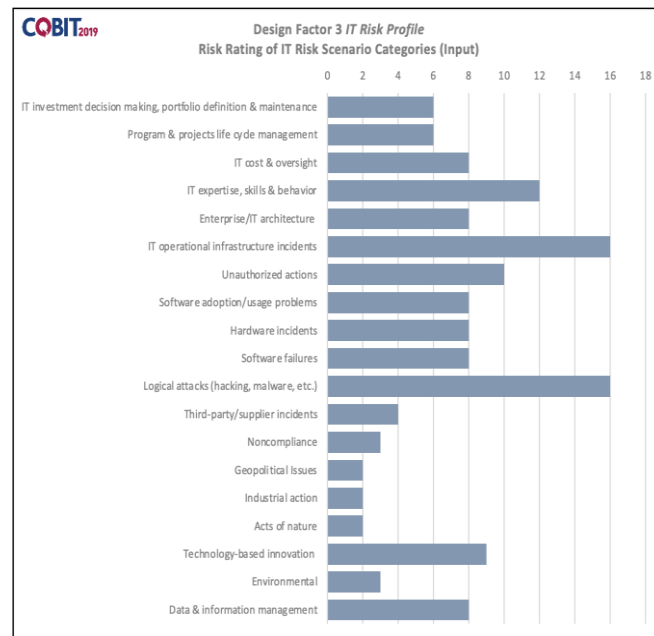
Figure 3. Design Factor 3: Risk Profile of the Enterprise

Figure 3 illustrates the risk ratings associated with various IT risk scenario categories, as outlined in COBIT 2019, specifically focusing on Design Factor 3: IT Risk Profile. Each category reflects the perceived risk level in IT investment decision-making and operational management. The highest risk ratings are observed in unauthorized actions, logical attacks (hacking or malware), and technology-based innovation, indicating significant vulnerabilities in security and adaptability to technological changes. Similarly, risks related to IT operational infrastructure incidents, software failures, and hardware incidents are also prominent, reflecting critical challenges in maintaining IT reliability and functionality.

Moderate levels of risk are noted in areas such as IT investment decision-making, portfolio definition maintenance, program and project life cycle management, and enterprise/IT architecture, suggesting improved governance and strategic alignment in these domains. Additionally, risks related to third-party/supplier incidents, noncompliance, and geopolitical issues underscore the external pressures and dependencies affecting IT operations. Lower risk ratings are attributed to acts of nature, industrial actions, and environmental concerns, indicating less frequent or less impactful occurrences of these scenarios within the studied context. Data and information management risks also display a lower

priority than other categories. This distribution of risk ratings provides critical insights for prioritizing mitigation strategies and aligning organizational resources to address the most significant vulnerabilities within the IT environment.

Figure 4 describes Design Factor 4: I&T-Related Issues - Importance of I&T-Related Issues (Input) from COBIT 2019. Analyzing I&T-related issues identifies several critical factors influencing organizational performance and IT governance. The most significant issues include failures to meet regulatory or contractual requirements, significant IT-related incidents (e.g., security breaches, data loss, or application errors), and service delivery problems by IT outsourcers, reflecting operational and compliance challenges.
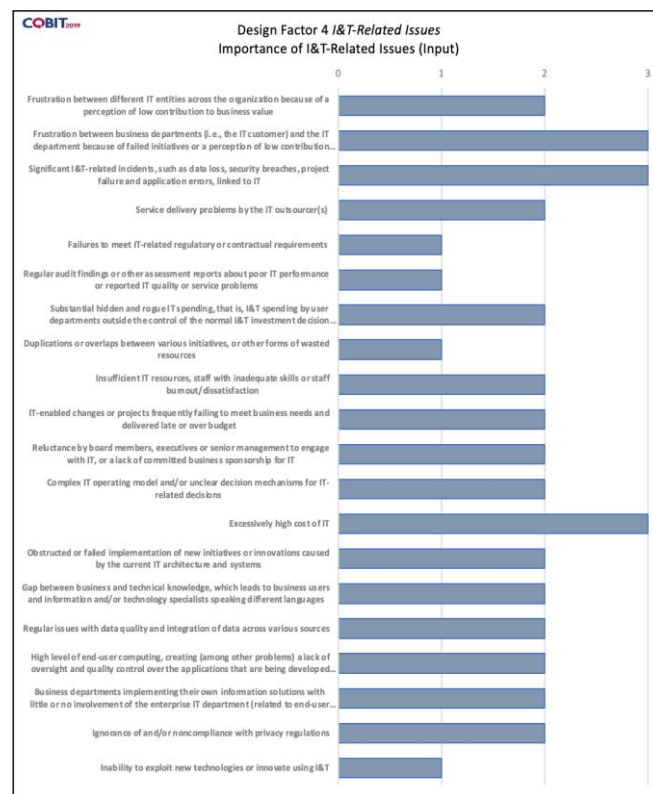

Figure 4. Design Factor 4: Current Enterprise I&T-Related Issues

Moderate importance is assigned to issues such as hidden or rogue IT spending, duplications or overlaps in IT investments, and insufficient IT resources or staff skills, indicating inefficiencies in resource allocation and management. Challenges such as excessively high IT costs, complex IT operating models, and obstructed innovation due to legacy IT systems further highlight constraints in achieving organizational agility and strategic alignment.

Less critical issues include noncompliance with privacy regulations, limited adoption of new technologies, and gaps between business and IT collaboration, which, while less pressing, still underline areas requiring improvement for enhanced IT-business integration. These findings underscore the need for targeted interventions to address regulatory, operational, and strategic gaps within the IT environment, enabling improved governance and organizational resilience.

Figure 5 presents the distribution of perceived IT threats defined in Design Factor 5 of COBIT 2019. It illustrates an equal division between "High" and "Normal" threat levels, with each category representing 50% of the total assessment. This parity indicates that organizations equally recognize significant threats alongside standard risks within their IT environments. The findings suggest a balanced awareness of critical and routine vulnerabilities, highlighting the need for comprehensive risk management strategies that address high-impact threats and regular operational challenges.
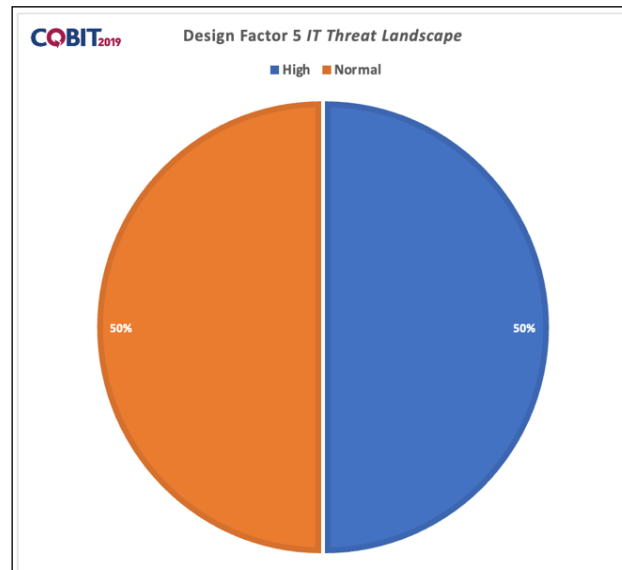

Figure 5. Design Factor 5: Threat Landscape

Figure 6 illustrates the distribution of compliance requirements as outlined in Design Factor 6 of COBIT 2019. It reveals that 75% of organizations categorize their compliance requirements as "Normal," while 25% assess them as "High." Notably, no organizations are reporting "Low" compliance requirements. This distribution indicates a predominant recognition of standard compliance obligations, with a significant minority identifying heightened concerns. The findings emphasize the importance of maintaining robust compliance frameworks to address typical and elevated regulatory demands in organizational governance.
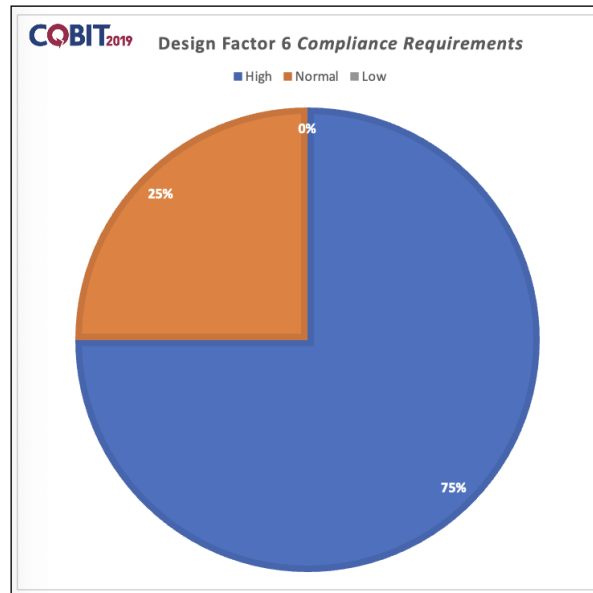
Figure 6. Design Factor 6: Compliance Requirements

Figure 7 depicts the IT role assessment outlined in Design Factor 7 of COBIT 2019. Both "Support" and "Factory" roles are rated highest, each receiving a score of 5, indicating their critical importance in organizational operations. The "Turnaround" and "Strategic" roles are closely followed, with scores of 4, reflecting their significant but slightly lesser impact. These findings highlight the essential functions of IT in supporting daily operations and enhancing productivity while emphasizing the importance of IT in strategic initiatives and organizational transformation.
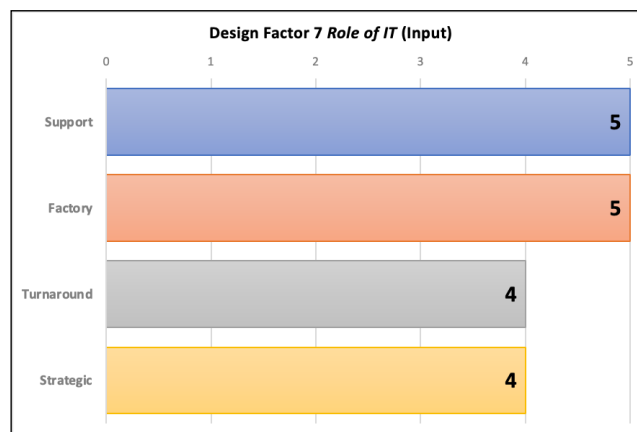

Figure 7. Design Factor 7: Role of IT

Figure 8 illustrates the distribution of IT sourcing models as outlined in Design Factor 8 of COBIT 2019. It reveals that 50% of organizations rely on "Insourced" IT solutions, while "Outsourcing" accounts for 30%, and "Cloud" solutions represent 20%. This distribution indicates a strong preference for insourcing IT resources, suggesting that organizations value direct control and management of their IT

functions. The findings also highlight a significant, though lesser, reliance on outsourcing and cloud services, reflecting a diverse approach to IT sourcing that balances internal capabilities with external support.
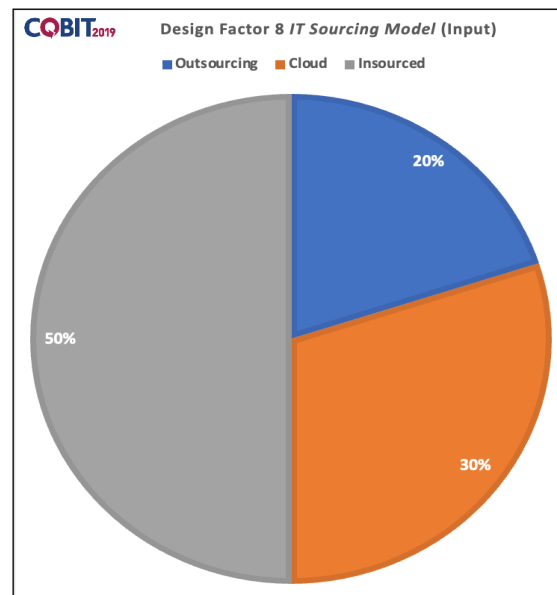

Figure 8. Design Factor 8: IT Sourcing Model

Figure 9 presents the distribution of IT implementation methods as outlined in Design Factor 9 of COBIT 2019. It shows that 40% of organizations employ "DevOps" methodologies, while both "Agile" and "Traditional" methods account for 30% each. This distribution indicates a significant inclination towards DevOps practices emphasizing collaboration and continuous delivery. The equal representation of Agile and Traditional methods suggests that organizations are leveraging a mix of contemporary and established approaches to IT implementation, reflecting a diverse strategy to optimize project outcomes and enhance operational efficiency.
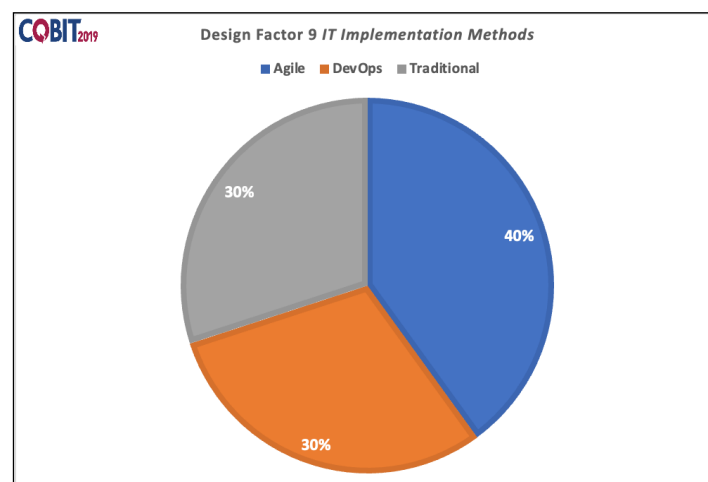

Figure 9. Design Factor 9: IT Implementation Methods

Figure 10 illustrates the distribution of technology adoption strategies defined in Design Factor 10 of COBIT 2019. It reveals that 35% of organizations identify as "First movers," while another 35% classify themselves as "Followers." The remaining 30% fall into the "Slow adopters" category. This distribution indicates a balanced approach among organizations, with a substantial portion actively seeking to lead in technology adoption while a similar number prefer to follow established trends. The presence of slow adopters highlights the diversity in strategic approaches to technology integration, suggesting varying levels of risk tolerance and innovation readiness within the organizational landscape.
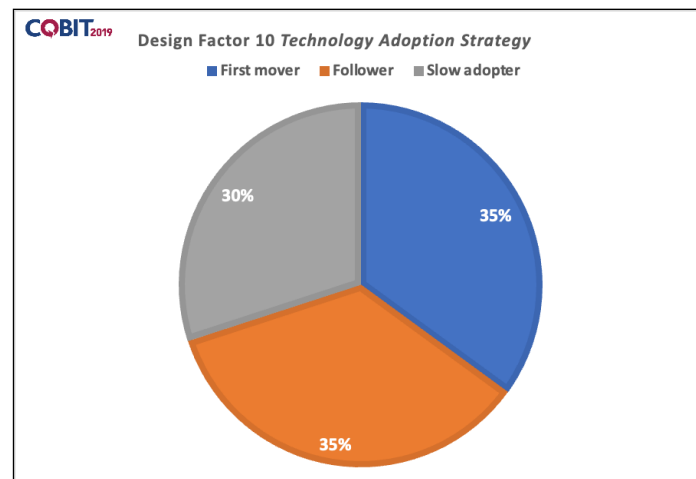

Figure 10. Design Factor 10: Technology Adoption Strategy

The governance and management objectives emphasized critical processes such as risk optimization (EDM03), managed security (APO13), and IT change management (BAI06). The target capability level was set uniformly at level 3 for all these processes, underscoring the need for structured, systematic, and thoroughly documented governance practices. Table II provides an overview of the selected processes and their priorities.

Table 2. Target Capability Level

Governance and Management Objectives	Governance and Management Objectives Priority	Capability Level Target
EDM03 - Ensure Risk Optimization	50	3
APO12 - Managed Risk	50	3
APO13 - Managed Security	50	3
BAI02 - Managed Requirements Definition	50	3
BAI03 - Managed Solutions Identification & Build	50	3
BAI06 - Managed IT Changes	50	3
BAI07 - Managed IT Change Acceptance and Transitioning	50	3
BAI10 - Managed Configuration	50	3
DSS01 - Managed Operations	50	3

Governance and Management Objectives	Governance and Management Objectives Priority	Capability Level Target
DSS02 - Managed Service Requests & Incidents	50	3
DSS03 - Managed Problems	50	3
DSS04 - Managed Continuity	50	3
DSS05 - Managed Security Services	50	3
MEA03 - Managed Compliance with External Requirements	50	3

2. Maturity Level Measurement

The maturity assessment followed a structured evaluation framework based on COBIT 2019's capability model. FGD and questionnaires were conducted with ISCTO personnel to determine the current maturity levels. The assessment applied a four-level capability scale: Not Achieved (N), Partially Achieved (P), Largely Achieved (L), and Fully Achieved (F).

The maturity assessment revealed that while several processes exhibited a structured approach and largely met governance standards, others required further enhancements. Key findings include EDM03 and APO12, which achieved level 2 but require improved structure and documentation to reach level 3. APO13 met its target at level 3, showing effective security measures. Similarly, BAI02 and BAI06 require refined workflows, while DSS01 exceeded expectations at level 4, indicating robust operational capabilities.

Table 3. Maturity Level

COBIT 2019 Process	Capability Level					Description
	1	2	3	4	5	
EDM03		✓				Managed
APO12		✓				Managed
APO13			✓			Defined
BAI02			✓			Defined
BAI03			✓			Defined
BAI06		✓				Managed
BAI07			✓			Defined
BAI10		✓				Managed
DSS01				✓		Quantitative
DSS02			✓			Defined
DSS03			✓			Defined
DSS04		✓				Managed
DSS05			✓			Defined
MEA03		✓				Managed

Figure 11 assesses maturity levels across various managed processes, comparing actual evaluation results (in blue) against targeted goals (in orange). Each axis represents specific processes, such as "Managed Security Services," "Managed Operations," and "Managed Risk Optimization." The chart reveals notable gaps between current performance and desired targets, particularly in "Ensure Risk Optimization" and "Managed Security." While some processes, such as "Managed

Configuration" and "Managed IT Changes," show closer alignment with targets, others indicate significant room for improvement. This analysis underscores the need for focused initiatives to bridge these gaps and enhance the overall maturity of IT governance and management practices.
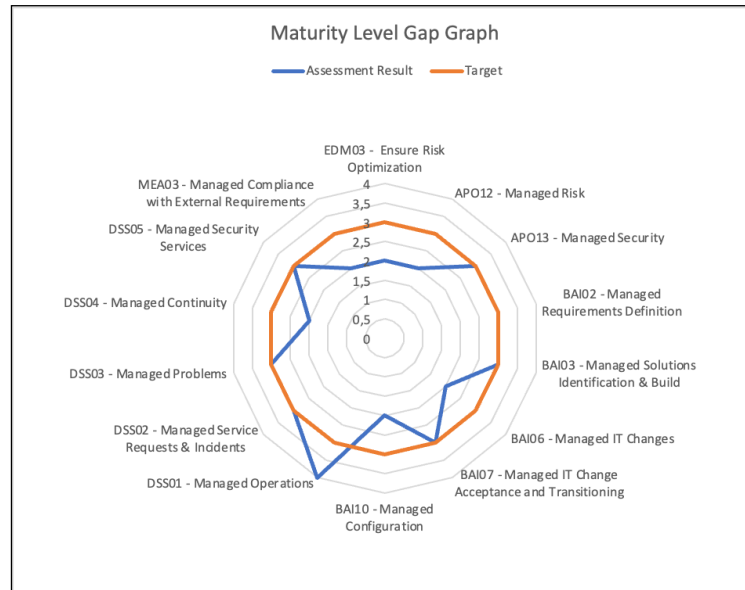

Figure 11. Maturity Level Gap Graph

3. Gap Analysis

The gap analysis identified significant areas for improvement by comparing current maturity levels against the desired targets. Six key processes, including EDM03, APO12, and BAI06, exhibited notable gaps that require enhancements in structure, documentation, and systematic implementation to achieve level 3 maturity. For example, EDM03 and APO12 need better-defined frameworks for risk evaluation and management, while BAI06 calls for more streamlined change management procedures. MEA03 also requires a focus on ensuring comprehensive adherence to external compliance requirements. Conversely, APO13 and DSS03 successfully met their maturity targets, reflecting their alignment with established governance objectives.

4. Recommendations

Formulate recommendations for improving processes based on the activities specified in COBIT 2019 to align with unmet maturity targets. The maturity assessment results show that six COBIT 2019 processes have not reached the expected maturity levels. Address the identified gaps and achieve the target maturity levels by recommending several actions. For EDM03 (Ensure Risk Optimization), ABC should conduct workshops to raise staff awareness of risk management practices and create a comprehensive risk management framework. Regular updates to risk profiles are essential to align with organizational objectives.

For APO12 (Managed Risk), establishing a dedicated risk management team is crucial, alongside adopting advanced tools for real-time risk monitoring and

conducting regular risk evaluations. Addressing BAI06 (Managed IT Changes) requires standardizing change management processes through clear SOPs and utilizing automated tools to track changes effectively. Regular impact assessments will help refine the process further. For MEA03 (Managed Compliance), maintaining a comprehensive registry of regulations, enhancing data security measures, and performing regular audits are vital.

Improve process reliability for BAI10 (Managed Configuration) by implementing configuration management tools and periodically validating data accuracy. For DSS04 (Managed Continuity), ABC should establish disaster recovery plans, conduct simulations to test their effectiveness and prioritize critical IT services during recovery efforts.

D. Conclusion

ABC's IT governance maturity has reached 'Managed' or 'Defined' levels, yet gaps in risk management and continuity planning remain. This study proposes actionable recommendations to address these gaps and achieve higher capability levels. Implementing these improvements is expected to elevate IT governance maturity and align IT operations with the university's strategic objectives, improving service delivery and regulatory compliance.

This study highlights how tailored adoption of COBIT 2019 can address unique governance challenges in medium-sized universities like ABC. The study highlights critical gaps in risk management, strategic alignment, and IT continuity planning, which serve as actionable areas for improvement. Implementing the proposed recommendations can enhance IT governance maturity and strategic alignment at ABC.

1. Implications for Practice

This study highlights the critical need to adapt IT governance frameworks, such as COBIT 2019, to meet the unique requirements of medium-sized universities in developing countries. The results offer valuable guidance for policymakers and institutional leaders to design governance practices that enhance efficiency, ensure compliance, and achieve strategic alignment while addressing challenges like resource limitations and system redundancies. Specifically for ABC, the recommendations provide a clear and actionable roadmap for improving IT governance, with practical steps that can be implemented in the short term and as part of long-term strategic planning.

A. Short-term Actions
In the immediate term, ABC should prioritize the establishment of a comprehensive risk management framework and standardizing IT processes. This condition can include conducting workshops and training sessions to raise awareness among staff about the importance of IT governance and risk management practices. Additionally, implementing clear standard operating procedures (SOPs) for change management and configuration processes will help mitigate inefficiencies caused by overlapping applications and improve data reliability.

B. Long-term Strategies

ABC should invest in building a dedicated risk management team and adopt advanced IT tools to facilitate real-time monitoring and compliance with external regulations. Furthermore, the university could focus on developing a robust IT infrastructure to support strategic initiatives, such as digital transformation and service continuity, integrating modern technologies like cloud-based solutions or automation tools to enhance operational efficiency and scalability.

C. Strategic Alignment

Management must establish a governance structure that fosters collaboration between IT and non-IT stakeholders to ensure alignment with institutional goals. Conduct periodic evaluations using the COBIT 2019 maturity model to monitor progress and identify new areas for improvement. By embedding IT governance practices into the university's broader strategic planning process, ABC can better leverage its IT capabilities to achieve its academic and administrative objectives.

D. Strategic Alignment

Beyond ABC, these insights have broader relevance for other medium-sized higher education institutions, particularly in developing countries. The case study demonstrates how tailoring IT governance frameworks like COBIT 2019 to address organizational needs can bridge gaps in resource constraints, enhance regulatory compliance, and enable digital transformation.

2. Recommendations for Future Research

This study opens avenues for further research into IT governance in higher education, particularly in diverse institutional and regional contexts. Future studies could explore: 1) Comparative analyses of IT governance practices between large and medium-sized universities. 2) Longitudinal studies to measure the impact of governance improvements on institutional performance. 3) Integrating emerging technologies, such as AI and blockchain, into IT governance frameworks. 4) The role of stakeholder engagement in enhancing IT governance maturity.

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F. References

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