

Strategic Integration for Academic Excellence: Leveraging COBIT and PMBOK in Audit and Project Management Practices

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Abstract: This research aims to explore the strategic integration of the COBIT (Control Objectives for Information and Associated Technologies) and PMBOK (Project Management Body of Knowledge) frameworks in optimizing audit and project management practices in the academic world. This research draws on practice-based case studies as well as existing literature to highlight the benefits and strategies for implementing the strategic integration of COBIT and PMBOK in the academic world. Aligning governance with project management principles, an institution such as higher education can enhance their efforts to achieve academic excellence. COBIT and PMBOK integration strengthens audit practices by ensuring regulatory compliance, practical risk assessment, and robust controls. It also promotes a structured approach to project management, improved planning, resource allocation, risk mitigation, and communication. Collaboration between the audit and project management teams is facilitated through this integration, enabling effective communication, coordination and knowledge sharing. Colleges can then position themselves strategically to achieve academic excellence, aligning their operations with strategic goals and driving efficiency, transparency and accountability. Based on this discussion, it can be concluded that integrating the COBIT and PMBOK frameworks can advance the efforts of an institution, namely higher education, to achieve academic excellence and strengthen leadership in the field of education.

Keywords: Academic excellence; Audit Practice; COBIT; PMBOK; Project management

Introduction

In today's rapidly evolving academic landscape, universities face stiff competition to achieve and maintain their top-notch status. To excel in this highly competitive environment, universities must continually improve their audit practices and project management approaches (Wu et al., 2015). Information Technology governance enables educational institutions to achieve their vision by implementing best practices in the application of information technology (Nyonawan et al., 2018). Strategic integration of frameworks such as COBIT (Control Objectives for Information and Associated Technologies) (Garsoux, 2013; Ishlahuddin

et al., 2020) and PMBOK (Project Management Body of Knowledge) offer promising avenues for universities to optimize their operations and pursue academic excellence (Gunawan et al., 2018).

COBIT provides a comprehensive framework for information technology governance and control (Bernard, 2012), while PMBOK offers internationally recognized best practices for project management (Crawford, 2021). By strategically integrating this framework, universities can align their governance goals with project management principles, thereby driving increased efficiency, effectiveness, and outcomes.

How to Cite:

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Improving audit practices through the integration of COBIT and PMBOK allows universities to ensure compliance with regulatory requirements, effectively identify and assess risks, and establish robust control mechanisms (Bianchi et al., 2016; Coen et al., 2007). At the same time, this integration empowers universities to adopt a structured and standardized approach to project management, improving planning, resource allocation, risk mitigation and communication. Additionally, collaboration between the audit team and the project management team is facilitated through strategic integration, encouraging effective communication, coordination and knowledge sharing. This collaboration leads to improved decision-making processes, optimized resource utilization, and improved project outcomes.

Several studies focus on the alignment of COBIT and PMBOK, including comparative studies between COBIT and other information technology governance frameworks, such as the PMBOK research conducted (Bustamante et al., 2017; Chakir et al., 2016; Ramlaoui et al., 2014). In Indonesia, previous research has been conducted to evaluate the implementation of COBIT in projects related to higher education governance (Wijaya et al., 2017). However, this research expands the scope of previous research by concentrating on the alignment of COBIT and PMBOK in governance and project management in educational institutions.

This research aims to explore the benefits and strategies for implementing strategic integration of COBIT and PMBOK in an academic context. By leveraging this integration, universities can strategically position themselves to achieve academic excellence, align their operations with strategic goals and strengthen their leadership in education. In this context, Islamic universities also pay great attention to the management of information technology (IT) so that they comply with the regulations set by the COBIT regulatory body (Brand et al., 2007). One of its main characteristics is its process-oriented approach, with project management being one of the processes emphasized in the COBIT framework.

One of the processes in COBIT is "Manage Project", which guides how to manage a project to achieve its goals and targets effectively (Bianchi et al., 2018). These objectives include schedule, cost, and quality components, reflecting how the project can achieve the desired business outcomes outlined in the business case. Thus, it is clear that PMBOK and COBIT share the same goals of achieving project success, realizing program benefits, and aligning the portfolio with business objectives.

This research focuses on the alignment between PMBOK and COBIT in the context of higher education

management such as Islamic universities which are the target or focus of the study. The initial phase requires an introduction to higher education management practices outlined in the PMBOK and COBIT process groups that are relevant to existing information technology management at an Islamic university. Next, the management practices of COBIT and PMBOK process groups will be correlated. After that, alignment of COBIT management practices with the PMBOK process will be implemented within an Islamic institution or university. The final step involves providing recommendations for best practices between COBIT and PMBOK that are suitable for an Islamic university. Based on the study or literature review, the novelty value of this study was found, namely the implementation of COBIT and PMBOK as steps to advance Islamic higher education. The implementation of COBIT and PMBOK is usually applied in the business or corporate world, but how if this is applied in the academic world, will it result in progress in the competitive system between universities or not.

Method

The methodology used in this research follows the flow as described in Figure 1 below.

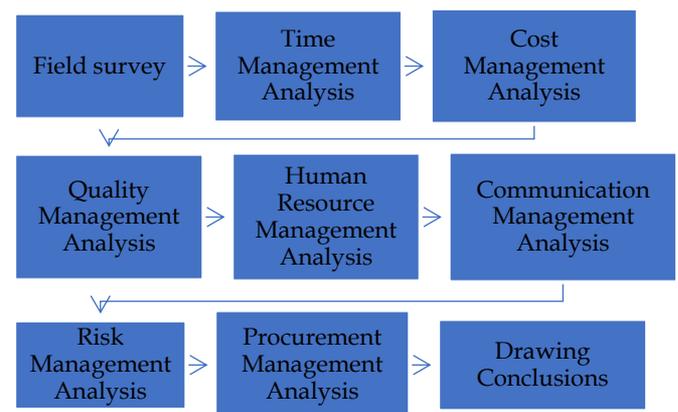


Figure 1. Methodology Flow: COBIT and PMBOK Integration

A detailed explanation of the method is as follows: Problem formulation involves defining and articulating the problem or issue that needs to be addressed clearly. This includes identifying the underlying causes, understanding the impact, and determining the scope of the problem. The result of the problem formulation is a well-defined problem formulation which becomes the basis for further analysis and decision making.

A literature review is a comprehensive study of existing literature, research, and publications related to the subject matter. It involves collecting and analyzing various sources of information, such as academic

papers, books, and articles, to gain a deeper understanding of the topic. The result of a literature review is a summary of existing knowledge, highlighting key findings, trends, and gaps in the literature. Field surveys involve collecting data and information by conducting surveys, interviews, or observations in real-world environments. It is used to collect primary data, such as the opinions, preferences, or behavior of individuals or groups. Field survey results are a collection of data or a collection of direct information that provides insight into the specific context or situation being studied.

Benchmarking is comparing an organization's processes, practices, or performance with other organizations or industry standards. This helps identify areas of improvement and best practices that can be adopted to improve performance. Benchmarking results are a set of benchmarking data or findings that highlight areas of strength and areas that require improvement. Identifying business objectives involves identifying specific goals, targets, or outcomes that an organization wishes to achieve from a business perspective. This includes aligning goals with the organization's overall strategy and considering factors such as market conditions, customer needs, and the competitive landscape. The result of identifying business goals is a clear set of measurable objectives that guide decision making and resource allocation.

Identifying information technology Goals: Similar to identifying business goals, this process focuses specifically on identifying the goals, targets, or outcomes that an organization wishes to achieve through information technology. This involves understanding how information technology can support and realize business goals, such as increasing operational efficiency, improving customer experience, or enabling innovation. Identifying information technology goals results in a set of information technology-related goals that are aligned with broader business goals (Weill et al., 2004).

Information technology Process Identification: This process involves identifying and documenting the various processes and workflows in the organization that involve the use of information technology. This includes mapping how information technology systems and applications interact with various departments or functions, identifying dependencies, and understanding the flow of information and data. The result of identifying information technology processes is a clear understanding of the information technology landscape within the organization, which helps in planning and decision making regarding information technology initiatives.

Gap Analysis: Gap analysis is the process of assessing the current state or performance compared to the desired state or performance. This involves identifying the gaps or differences between the two and analyzing the reasons behind them. Gap analysis helps understand the areas that require improvement or development to bridge the gap between the current state and the desired state. Gap analysis results in the identification of clear gaps, as well as recommendations for action or strategies to close these gaps.

Scope Analysis: Scope analysis involves analyzing and determining the boundaries, deliverables, and boundaries of a project or initiative. This includes identifying the specific objectives, achievable outcomes, and outcomes the project hopes to achieve and clarifying those that are not within the scope. Scope analysis helps in setting realistic expectations, managing stakeholder needs, and ensuring project success. The result of a scope analysis is a well-defined project scope statement that outlines the project boundaries and deliverables. Required Application Analysis: The software or system applications required to meet the project objectives are analyzed and determined. This involves assessing functional and technical requirements, considering factors such as scalability, usability, security, and integration with existing systems. The result of a required applications analysis is a clear understanding of the software applications that need to be developed, procured, or integrated to support the project.

Time Management Analysis: Time management analysis involves analyzing and planning the allocation of time and resources to ensure timely completion of project milestones and tasks. This includes creating a project schedule, identifying the critical path, estimating task duration, and considering resource availability. The result of time management analysis is a well-structured project timeline and schedule that helps monitor progress, manage dependencies, and ensure timely project completion.

Cost Management Analysis: Cost management analysis involves analyzing and estimating the budget, expenses, and financial resources required for a project or initiative. This includes identifying cost drivers, conducting cost-benefit analysis, and budgeting for various project components. The result of a cost management analysis is a comprehensive cost management plan that outlines cost projections, cost control measures, and financial considerations for the project.

Quality Management Analysis: Quality management analysis focuses on planning and implementing processes, standards, and actions to ensure the quality and reliability of project outcomes.

This involves establishing quality targets and criteria, establishing quality control processes, and implementing quality assurance activities. The result of a quality management analysis is a comprehensive quality management plan that outlines strategies and actions to achieve and maintain the desired quality level throughout the project. **Human Resource Management Analysis:** Human resource management analysis involves analyzing and planning the allocation, roles, responsibilities, and skills required for project team members. This includes identifying required resources, conducting a skills assessment, and developing a resource management plan. Human resource management analysis produces optimal resource allocation plans that ensure the right people with the right skills are assigned to projects.

Communication Management Analysis: Communication management analysis focuses on planning and implementing effective communication channels, protocols, and strategies to facilitate the smooth flow of information within the project team and stakeholders. This involves identifying stakeholders, determining communication needs, and establishing communication processes. The result of a communications management analysis is a comprehensive communications plan that outlines communication goals, methods, and frequency to ensure effective project communications.

Risk Management Analysis: Risk management analysis involves identifying, assessing, and mitigating potential risks and uncertainties that may impact the success of a project. This includes conducting risk assessments, developing risk mitigation strategies, and establishing risk monitoring and control processes. Risk management analysis produces a comprehensive risk management plan that identifies potential risks, assesses their likelihood and impact, and outlines strategies to mitigate or respond to those risks.

Procurement Management Analysis: Procurement management analysis involves analyzing and planning the procurement and acquisition of resources, materials, or services required for a project. This includes identifying procurement needs, conducting supplier evaluations, and developing procurement strategies. The result of procurement management analysis is a procurement plan that outlines procurement requirements, processes, and schedules to ensure timely acquisition of project resources. **Project Integration Analysis:** Project integration analysis focuses on assessing and ensuring the integration and coordination of various project components, processes and activities to achieve the desired results. This involves identifying interdependencies, establishing integration points, and developing an integration

management plan. Project integration analysis produces a comprehensive integration management plan that outlines strategies and actions to ensure smooth coordination and integration across the project.

Implementation Strategy: Implementation strategy involves developing a strategic plan or approach to implement and execute a project or initiative. This includes defining implementation steps, allocating resources, setting milestones, and considering change management aspects. The result of an implementation strategy is a well-defined plan that guides project execution, ensuring that objectives are achieved effectively and efficiently.

Result and Discussion

Identify Information Technology Goals

The main step of the analysis process in this study involves identifying the purpose of information technology. In the COBIT framework there is already a mapping between business goals and information technology goals (Sufyana et al., 2018). Through the output of this mapping, we can identify various information technology objectives that have the potential to support business objectives in a company or institution (Machmudi, 2019). By referring to the previously mentioned COBIT business objectives, you can connect information technology objectives that are relevant to a company, as illustrated in the table below.

Table 1. Information Technology Objectives and Their Relevance to a Company's Objectives

BSC dimensions	Code	Related to Company Goals	COBIT IT Related Goals
Finance	EG5	Financial Transparency	6
	EG6	Customer Oriented Service Culture Continuity and	1. 7
	EG7	Availability of Business Services	4. 10. 4
Customer	EG9	Information-Based Strategic Decision Making	1. 14
	EG11	Optimization of Business Process Functionality	1. 7. 8. 9. 12
Intern	EG12	Business Process Cost Optimization	5. 6. 11
	EG13	Managed Business Change Program	1. 3. 13
Learning and Growth	EG14	Operational And Staff Productivity	8. 16
	EG16	Skilled And Motivated People	16

From the mapping results in the table above, it can be seen that the information technology-related objectives of COBIT are present in the central information technology unit of a company.

Table 2. Company Objectives Related to Information Technology

Code	Company Goals
ITG3	Executive Management Commitment to Making Decisions Regarding Information Technology
ITG4	Managing Business Risks Related to Information Technology
ITG5	Realizing the Benefits of Investments and Service Portfolios Supported by Information Technology
ITG6	Transparency of Information Technology Costs, Benefits and Risks
ITG7	Providing Information Technology Services According to Business Needs
ITG8	Adequate Utilization of Applications, Information and Technology Solutions
ITG9	Information Technology Agility
ITG10	Information Security, Infrastructure, And Application Processing
ITG11	Optimization of Information Technology Assets, Resources and Capabilities
ITG12	Empowering and Supporting Business Processes by Integrating Applications and Technology into Business Processes
ITG13	Organizing programs that provide benefits, on time, within budget, and meet requirements and quality standards
ITG14	Availability of Reliable and Useful Information for Decision Making
ITG16	Competent and Motivated Business and Information Technology Personnel

Identify Information Technology Processes

The next step involves aligning the COBIT process with the information technology Goals. In the context of this case study, the researcher chose the Deliver, Service, and Support (DSS) domain from the COBIT framework (Fradinata et al., 2021). After mapping the

Goals information technology in the central information technology unit of a company, the relevant processes related to the Goals information technology can be identified. List of processes that correspond to information technology objectives after mapping.

Table 3. Information Technology Goals After Mapping

IT Related Goals	COBIT Process
ITG1	EDM01. EDM02. APO01. APO02. APO03. APO05. APO07. APO08. BAI01. BAI02
ITG3	EDM01. EDM05
ITG4	EDM03. APO10. APO12. APO13. BAI01. BAI06. DSS01. DSS02. DSS03. DSS04. DSS05. DSS06. MEA01. MEA02. MEA03
ITG5	EDM02. APO04. APO05. APO06. APO11. BAI01
ITG6	EDM02. EDM03. EDM05. APO06. APO12. APO13. BAI09
ITG7	EDM01. EDM02. EDM05. APO02. APO08. APO09. APO10. APO11. BAI02. BAI03. BAI04. BAI06. DSS01. DSS02. DSS03. DSS04. DSS06. MEA01
ITG8	APO04. BAI05. BAI07
ITG9	EDM04. APO01. APO03. APO04. APO10. BAI08
ITG10	EDM03. APO12. APO13. BAI06. DSS05
ITG11	EDM04. APO01. APO03. APO04. APO07. BAI04. BAI09. BAI10. DSS01. DSS03. MEA01
ITG12	APO08. BAI02. BAI07
ITG13	APO05. APO07. APO11. APO12. BAI01. BAI05
ITG14	APO09. APO13. BAI04. BAI10. DSS03. DSS04
ITG16	EDM04. APO01. APO07

After mapping the Goals related to information technology and identifying relevant subdomains or processes, the next step is to select specific processes within the DSS subdomain that will be the focus of this research. Information about the selected DSS subdomains that are the focus of the research.

Table 4. Information Regarding DSS Subdomains

Code	Description
DSS01	Manage Operations
DSS02	Manage Service Requests And Incidents
DSS03	Manage Issues
DSS04	Manage Continuity
DSS05	Manage Security Services
DSS06	Manage Business Process Controls

Gap Analysis

To confirm the validity of the conditions that have been established, the next step is to strengthen them by collecting evidence identified in the COBIT DSS

Domain (Andry, 2016). The collected evidence will be analyzed by comparing the alignment with the current state, which serves as a specific evaluation measure. From this data, some evidence may be collected, while other evidence may not be found. A description of the expected state of evidence is also included, which serves as an evaluation of the level of capability achieved. Through the process of collecting this evidence, the current condition of a company can be known. This data is then processed to determine the level of achievement in current conditions using ability levels.

From the capability results obtained, and to make it easier to identify current conditions based on predetermined capability criteria, the accumulated value is rounded up. The gap in information technology service management is measured by comparing the level of capability of a company's Information Technology Center between "as-is" conditions and "to-be" conditions (Putri et al., 2020). If presented in tabular form, the gap in information technology service process capability levels looks like the table below.

Table 5. Gaps in Information Technology Service Process Capability Levels

Code	Description	Target Level "To-Be"	Current Level "As-is"	Gap
DSS01	Manage Operations	4.00	4.00	0.00
DSS02	Manage Service Requests and Incidents	4.00	3.00	1.00
DSS03	Manage Issues	5.00	4.00	1.00
DSS04	Manage Continuity	5.00	4.00	1.00
DSS05	Manage Security Services	5.00	5.00	0.00
DSS06	Manage Business Process Controls	5.00	4.00	1.00

Based on the table above, the overall level of ability obtained is 4-Managed and Measurable. Recommendations are given for domains that have gaps, namely Domains DSS02, DSS03, DSS04, and DSS06. Information technology process priorities are determined based on COBIT by increasing the level of capability of the information technology process. Processes at level 3 will be upgraded to level 4, and capability levels that have reached level 4 can be further upgraded to level 5. Recommendations given to improve the quality of Information Technology in a company to achieve the vision of becoming one of the leaders in the field of Information Technology 10 best campus in Asia (Molly et al., 2017).

To find out the gap between the desired condition and the current condition, a gap analysis is carried out. Two processes, DSS01 and DSS05, have a gap of zero, while the other four processes, DSS02, DSS03, DSS04, and DSS06, have a gap of one. From this data, it can be seen which processes need to be repaired first, namely processes with a gap value of one or more, such as DSS02, DSS03, DSS04, and DSS06. Meanwhile, other processes still need to be prioritized for improvement.

Quality Management Analysis

Clearly define project quality objectives. These goals must be specific, measurable, achievable, relevant, and time-bound (SMART) (Syahputra, 2023). For example, the quality objective is to ensure that all modules are error-free and meet specified requirements. Identify Quality Criteria: Identify specific criteria that will be used to measure the quality of project outcomes. This may include factors such as functionality, usability, reliability, performance, security, and compliance with industry standards.

Develop Quality Metrics: Define measurable metrics to assess the quality of each module. For example, you can use metrics such as defect density (number of defects per module), customer satisfaction ratings, or compliance with coding standards (Rakasiwi, 2023). Establish a Quality Assurance Process: Implement a quality assurance process to ensure that the project is implemented in accordance with established quality standards. This may involve conducting regular code reviews, conducting testing and validation activities, and ensuring compliance with relevant quality management frameworks or methodologies. Perform Quality Control Activities: Perform quality control activities to monitor and verify the actual quality of project deliverables. This may involve carrying out inspections, audits or testing to identify any deviations from specified quality criteria.

Document and Track Quality Issues: Keep records of any quality issues or defects identified during the project. Document the nature of the problem, its impact, and the actions taken to address it. Use a tracking system or project management tool to monitor the status of quality issues and track their resolution (Riesna et al., 2023). Continuous Improvement: Regularly review quality management processes and results to identify areas for improvement. Use feedback from stakeholders, learnings from previous projects, and industry best practices to improve overall project quality. Communication and Collaboration: Foster open communication and collaboration among project team members to ensure a shared understanding of quality goals and to address any quality-related concerns or challenges.

Human Resource Management Analysis

To conduct a Human Resource Management analysis for an information technology project, you can consider several aspects. Assess human resource requirements for the project, taking into account the number of modules, their complexity, and the estimated effort required (Rini et al., 2019). Determine the types of skills and expertise required for each module and create a comprehensive resource plan. Identify available resources within the organization or team that have the required skills and expertise. If there are gaps in available resources, develop a plan to acquire or allocate additional resources, such as recruiting new team members or outsourcing certain tasks.

Formulate the project team taking into account the skills, knowledge and experience required for each module. Ensure that team members are suited to their assigned roles and that there is a balance of expertise across different areas of the project. Clearly define the roles and responsibilities of each team member involved in the project. Establish a clear organizational structure, including project managers, module leaders, developers, testers, and other relevant roles (Rini et al., 2019). Identify skill gaps among team members and provide necessary training and development opportunities to enhance their capabilities. This can take the form of technical training, project management training, or specific training related to the module being developed.

Foster effective communication and collaboration within the project team. Have regular team meetings, provide open communication channels, and encourage knowledge exchange and collaboration between team members. Implement a performance management system to monitor and evaluate team member performance. Set clear performance expectations and goals, provide regular feedback, and recognize and reward achievements. Identify potential risks related to human resources, such as team member turnover, skills gaps, or unavailability of resources. Develop mitigation strategies to overcome these risks and ensure project continuity (Yulianti et al., 2024). Consider the impact of human resource management on stakeholders, such as team members, project sponsors, and end users. Keep stakeholders informed about the project team structure, roles, and responsibilities, and keep open lines of communication with them.

Ensure compliance with all relevant laws, regulations and employment ethics standards in managing human resources for the project. Treat team members fairly and with respect, providing a conducive work environment that encourages diversity and inclusion.

Communication Management Analysis

Identify all stakeholders involved in the project, including team members, project sponsors, clients, end users, and other interested parties. Create a comprehensive list of stakeholders with their contact information and roles. Determine project communication goals, such as ensuring a clear understanding of project goals, progress updates, addressing concerns, and facilitating collaboration between team members and stakeholders (Saksono et al., 2024). Determine the right communication channels to reach various stakeholders effectively. This can include email, project management software, video conferencing tools, project documentation, and face-to-face meetings.

Develop a communications plan that outlines when, how, and what information needs to be communicated to each stakeholder. Consider the frequency of communication, level of detail required, and preferred communication methods for various stakeholders. Define reporting structures and mechanisms for project updates and progress tracking. Determine what information should be included in the report, the frequency of reporting, and the recipients of the report.

Assign communication responsibilities to specific team members or roles. Clearly define who is responsible for communicating with each stakeholder, and ensure accountability for timely and accurate communications. Establish feedback mechanisms to encourage two-way communication. Provide opportunities for stakeholders to provide feedback, ask questions, or express concerns regarding the project. Actively listen to feedback and address any issues or concerns that arise.

Identify potential communications risks and develop strategies to mitigate them. This includes overcoming potential miscommunication, managing conflict, and ensuring that important information is shared effectively with stakeholders (Saksono et al., 2024). Consider cultural or language differences among stakeholders. Adapt communication approaches to ensure that messages are understood and received appropriately by all stakeholders. Regularly evaluate the effectiveness of project communications. Gather feedback from stakeholders, assess whether communication objectives have been achieved, and make adjustments to the communication plan if necessary.

Risk Management Analysis

Risk Identification: Identify potential risks that may impact the successful completion of the project. This can be done through brainstorming sessions,

reviewing previous projects, consulting with team members, and analyzing project documentation. Consider risks related to technology, resources, requirements, schedule, budget and external factors (Saksono et al., 2024).

Risk Assessment: Evaluate identified risks based on their likelihood of occurrence and potential impact on the project. Assign a risk rating or score to each risk to prioritize for further analysis and response planning. This can be done using qualitative techniques, for example the Likelihood-Impact matrix or quantitative techniques, for example Monte Carlo simulation (Jos et al., 2020). **Risk Analysis:** Analyze each identified risk in more detail to understand its root causes, potential consequences, and possible triggers or warning signs. Assess the characteristics of each risk, such as nature, type, and magnitude, to gain a deeper understanding of their potential impact on project objectives. **Risk Response Planning:** Develop strategies and action plans to proactively address identified risks. Determine the most appropriate response to each risk, considering options such as risk avoidance, risk mitigation, risk transfer, or risk acceptance. Assign responsibility for implementing risk responses and set timelines for implementation.

Risk Monitoring and Control: Continuously monitor identified risks throughout the project life cycle. Regularly assess the effectiveness of implemented risk responses and evaluate any changes in the risk landscape. Update the risk register and communicate any significant changes or new risks to the project team and stakeholders. Implement emergency plans if necessary (Santony, 2020). **Risk Communication:** Establish a clear and effective communication plan for risk management. Ensure project stakeholders are aware of identified risks, mitigation strategies, and contingency plans. Foster open and transparent communication channels to encourage reporting of new risks or changes to existing risks.

Learning: Continuously record and document learning from risk management activities. Analyze the effectiveness of risk responses, identify areas for improvement, and update risk management processes and procedures for future projects. **Risk Documentation:** Maintain a risk register or risk log that includes all identified risks, their assessment, assigned responsibilities, planned responses and current status. It serves as a central repository for tracking and managing project risks.

Procurement Management Analysis

Procurement Planning: Identify the goods, services, or resources that need to be procured for the

project. This may include software licenses, hardware equipment, external consultants, or other things necessary for successful project implementation (Fadhli et al., 2021). **Supplier Identification and Evaluation:** Identify potential suppliers or vendors who can provide the required goods or services. Evaluate suppliers based on factors such as experience, expertise, financial stability, quality of output, and their ability to meet project deadlines.

Procurement Strategy: Determine the most appropriate procurement strategy for each good or service to be purchased. Evaluate options such as competitive bidding, negotiation, or outright purchase. Consider factors such as costs, time constraints, quality requirements, and legal or regulatory considerations (Fitriani et al., 2023). **Contracts:** Develop contracts or agreements with selected suppliers that clearly define the scope of work, deliverables, schedule, price, payment terms, and other related terms and conditions. Ensure that the contract provides adequate protection for the project and clearly outlines the rights and responsibilities of both parties.

Procurement Execution: Execute the procurement plan by initiating the procurement process with selected suppliers. Monitor procurement activities, ensure suppliers deliver goods or services according to agreed terms. Maintain open communication with suppliers to address any issues or changes that may arise during the procurement phase. **Contract Administration:** Monitor and manage contracts throughout the project life cycle. Ensure suppliers comply with the terms and conditions outlined in the contract, including quality standards, delivery schedules, and payment schedules. Manage any necessary changes or amendments to contracts as needed.

Supplier Performance Evaluation: Continuously assess supplier performance to ensure that they meet project quality, cost, and delivery requirements (Kadir et al., 2020). Establish performance metrics and conduct regular evaluations to identify areas for improvement or concern. Address any performance issues with suppliers through appropriate actions, such as performance improvement plans or contract penalties. **Risk Management:** Identify and manage procurement-related risks, such as poor supplier performance, supply chain disruptions, or budget overruns. Develop risk mitigation strategies to minimize the potential impact of these risks on the project. **Procurement Documentation:** Maintain comprehensive documentation related to procurement activities, including supplier selection criteria, contracts, purchase orders, invoices and other relevant records. This

documentation serves as a reference for future audits, reporting, and procurement activities.

Learning: Record and document learning from the procurement management process. Analyze the effectiveness of procurement strategies, supplier selection criteria, and contract administration procedures to improve future procurement activities.

Project Integration Analysis

To perform a Project Integration analysis for the project, you can consider the following aspects:

Project Charter: Review the project charter to gain a clear understanding of the project's goals, scope, deliverables, stakeholders, and overall project direction (Belferik et al., 2023). Ensure the project charter is aligned with the organization's strategic goals and objectives. **Stakeholder Management:** Identifying and analyzing project stakeholders, including sponsors, clients, end users, team members, and other individuals or groups who impact or influence the project. Assess their expectations, interests, and potential impact on project success.

Project Scope: Evaluate the project scope to ensure that it is clearly defined, well understood, and aligned with project objectives. Analyze potential scope changes or additions and assess their impact on project integration. **Project Planning:** Review the project plan, including the work breakdown structure (WBS), schedule, resource allocation, and budget (Sitanggang et al., 2019). Analyze interdependencies between project tasks, milestones, and deliverables to ensure smooth integration and coordination.

Change Management: Assess existing change management processes and procedures to handle potential changes throughout the project life cycle. Evaluate how changes are identified, assessed, approved, and communicated to stakeholders. Analyze the impact of changes on project integration and identify strategies to manage them effectively. **Communication and Collaboration:** Evaluate the effectiveness of communication and collaboration within the project team and with stakeholders. Assess clarity, frequency, and communication channels. Analyze how information is shared, documented, and disseminated to ensure effective integration and alignment among team members and stakeholders.

Risk Management: Analyze existing risk management processes and strategies to identify, assess, and mitigate project risks. Assess how risks are integrated into project planning and decision-making processes. Analyze the impact of risks on project integration and identify contingency plans to address them. **Quality Management:** Evaluating quality management processes and procedures to ensure that

project results meet required standards and expectations (Setyawan et al., 2018). Analyze how quality assurance and control activities are integrated into project implementation and how deviations are identified and addressed.

Project Monitoring and Control: Assess existing monitoring and control mechanisms to track project progress, identify deviations, and take corrective action. Analyze how integrated change control, performance measurement, and reporting are implemented to ensure project integration and alignment with objectives. **Learnings:** Review learnings from previous projects or project phases to identify best practices, areas for improvement, and strategies for better project integration. Analyze how these learnings are incorporated into current projects to improve integration efforts. By analyzing and managing this aspect of Project Integration, you can ensure that project components are coordinated effectively, aligned with project goals, and integrated into a cohesive whole. This will help increase the success of the project and achieve the desired results.

Implementation Strategy

To create a project implementation strategy, you can follow these steps:

Define Project Goals and Objectives: Clearly define the aims and objectives of the project. Make sure that the goals are specific, measurable, achievable, relevant, and time-bound (SMART) (Syahputra, 2023). These goals and objectives will guide the implementation strategy. **Develop a Project Plan:** Create a detailed project plan that outlines the activities, tasks, schedule, resources, and dependencies required for successful project implementation. Break the project into manageable phases or milestones to facilitate progress tracking and ensure smooth implementation.

Resource Allocation: Identify and allocate the resources required for each stage of the project. This includes human resources, funding, equipment, technology, and other resources needed to implement the project plan. Ensure resources are allocated adequately and available when needed. **Stakeholder Engagement:** Develop a stakeholder engagement plan to actively engage and communicate with stakeholders throughout the implementation process. Identify key stakeholders and their roles, and determine strategies to engage and address their needs and concerns. Foster open and transparent communication channels.

Risk Assessment and Mitigation: Conduct a thorough risk assessment to identify potential risks and challenges that may arise during project implementation. Develop risk mitigation strategies to minimize their impact on the project. Assign

responsibility for risk management and establish processes for monitoring and managing risks periodically (Santony, 2020).

Change Management: Anticipating and planning for potential changes that may occur during the implementation process. Establish a change management process that includes assessing change requests, evaluating their impact on the project, obtaining necessary approvals, and communicating changes to relevant stakeholders. Ensure that changes are effectively integrated into project plans and implementation strategies. **Training and Knowledge Transfer:** Identify any training needs for team members or end users who will be involved in the implementation. Develop training plans to provide the knowledge and skills necessary for successful project implementation. Ensure proper knowledge transfer and documentation to facilitate a smooth transition and ongoing support.

Implementation Phases and Milestones: Divide the implementation process into phases or milestones to facilitate progress tracking and ensure that the project stays on schedule. Establish clear outcomes and success criteria for each phase to assess progress and ensure quality (Birmano, 2019). **Quality Assurance and Control:** Establish quality assurance and control processes to monitor and evaluate implementation activities. Establish quality standards, metrics, and checkpoints to ensure that project outcomes meet required quality levels. Implement regular quality reviews and audits to identify and address any deviations or issues.

Monitoring and Evaluation: Continuously monitor and evaluate the progress of implementation towards the goals and objectives that have been set. Regularly assess project performance, milestones achieved, and any deviations from plan. Use feedback to make necessary adjustments, overcome problems, and ensure the project remains on track (Ariefni et al., 2018).

Documentation and Reporting: Maintain comprehensive documentation throughout the implementation process. Document important decisions, actions taken, learnings, and any changes made. Develop a reporting mechanism to provide regular up-to-date information to stakeholders regarding progress, achievements and challenges faced during implementation (Magdalena et al., 2023). **Continuous Improvement:** Foster a culture of continuous improvement throughout the implementation process. Encourage feedback from team members, stakeholders, and end users. Analyze lessons learned and best practices to improve future project implementation. By following these steps and adapting them to the specific needs of your project, you

can create an effective implementation strategy that guarantees the successful implementation of the project and the achievement of its goals and objectives.

Based on the description above, it can be understood that the integration of COBIT and PMBOK can facilitate stronger information system governance. This framework provides a comprehensive approach to identifying and addressing information technology-related risks, ensuring compliance with regulatory requirements, and enhancing data security. The organization was able to establish strong governance controls over its information systems, thereby mitigating potential risks associated with project implementation.

Collaboration between the audit team and project management plays a critical role in the success of an integrated approach. The exchange of knowledge and expertise between these teams fosters cross-functional collaboration, enabling a holistic understanding of project risks and control requirements. This collaboration also results in improved communication, coordination and resource allocation, thereby contributing to smooth project implementation and reducing the occurrence of rework or delays. The discussion of the results emphasizes the significant impact of the integration of COBIT and PMBOK on organizational performance. This framework provides a structured and comprehensive approach to optimizing project success, improving governance and control over information technology systems, and driving overall organizational efficiency. By leveraging the strengths of both frameworks, organizations can achieve better alignment between information technology initiatives and business objectives, resulting in better project outcomes and effective information technology governance.

Conclusion

Based on the research that has been presented, it is concluded that the integration of COBIT and PMBOK can improve audit practices and management synergy at a college or university. By aligning higher education management principles with information technology governance objectives, the integrated framework has demonstrated significant improvements in graduate outcomes and effective control of higher education information systems. The integration of COBIT and PMBOK provides a powerful framework that improves audit practices and higher education management synergy. By aligning project management principles with information technology governance goals, this integrated approach improves graduate outcomes and provides effective control of higher education

information systems. A case study at an Islamic university illustrates the successful implementation of this framework, highlighting its ability to optimize the level of success in educational management, strengthen information system governance, and align information technology initiatives with university goals. Collaboration between the audit team and college management is emphasized, thereby encouraging cross-functional cooperation and knowledge sharing. Further research could explore empirical studies to validate and refine the integrated framework, continuous improvement strategies to increase higher education effectiveness, and exploration of integration with the latest versions of the COBIT and PMBOK frameworks. Overall, this research has a significant impact by providing practical guidance for universities wishing to integrate COBIT and PMBOK, because it can improve audit practices, optimize university management processes, and can encourage the success of an Islamic university in managing education.

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Author Contributions

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Conflicts of Interest

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