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University IT Project Alignment with IT Governance Framework

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ABSTRACT: *Universities initiate Information Technology (IT) projects to fulfill their business needs. This study examines the IT project decision-making processes at four universities in the United States of America (USA). It assesses how these decisions align with the IT governance framework, which serves as the foundation for IT decision-making and accountability. The research findings show that universities' IT project decisions correspond with the components of the IT governance framework. These decisions aim to align IT project objectives with the university's strategic goals, maximize value delivery, manage project risks, and meet performance criteria. By aligning IT projects with the elements of the IT governance framework, universities can achieve their overall goals and ensure the successful implementation and execution of their IT initiatives.*

KEY WORDS: *IT governance, IT project, IT project in university, IT project alignment with IT governance*

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I. INTRODUCTION

Universities pursue IT projects to meet their operational and strategic needs. This study examines how decisions on IT projects align with the components of the IT governance framework. Specifically, it evaluates the connection between IT projects and the IT governance framework components: strategic alignment, value delivery, risk management, and performance management. By aligning IT projects with these IT governance framework components, universities can improve decision-making and accountability. This alignment helps universities manage IT projects more effectively and achieve their operational and strategic goals.

II. LITERATURE REVIEW

2.1 IT Governance Framework

The IT governance framework aligns IT projects with an organization's strategic goals, ensures the delivery of planned value, effectively manages internal and external threats and risks, and meets performance criteria (IT Governance Ltd., 2005). IT governance is crucial for improving organizational efficiency by guiding IT decisions and defining accountability and decision rights (Weill & Ross, 2004). This framework encourages accountability and transparency in IT management, ensuring the effective use of IT resources to support the organization's key objectives (ARDOC, 2024). The primary purpose of the IT governance framework is to oversee IT functions, establish roles and responsibilities, standardize and prioritize IT efforts, and align business and IT operations (Wessels & Loggerenberg, 2006). By providing consistency, processes, standards, and repeatability, IT governance enables effective IT operations, benefits realization, risk management, and value creation (Lainhart, J. W., Ballister, C. M., 2016).

The current literature describes IT governance as a framework that aligns IT projects with an organization's strategic goals, guides IT funding decisions, manages risks, and ensures performance results. This framework creates traceability to hold decision-makers responsible for their choices, thereby improving organizational decision-making processes.

2.2 IT Governance Framework – Its Application in Universities

A survey of over one hundred Chief Information Officers (CIOs) from universities in the USA highlights the potential benefits of implementing an IT governance framework within academic institutions (Creasey, 2008). An IT governance framework can help universities make informed decisions regarding IT project prioritization and approval (Yanosky & Caruso, 2008). By using this framework, universities can allocate resources and prioritize IT projects at an enterprise level, including various decentralized colleges and business units (Albrecht & Pirani, 2004). Furthermore, the IT governance framework ensures accountability among IT decision-makers for project outcomes (Clark, 2005). Successful IT governance implementation in a university requires aligning IT initiatives with the existing organizational strategy, driving positive organizational change, clearly defining goals, and securing dedicated support and sponsorship from executive leadership (Kvakik, 2004).

The IT governance framework aligns IT initiatives with the university's mission and strategic goals. It decides which IT projects to fund by collecting input from a wide range of stakeholders (CIO, Texas A&M University, 2021). This framework ensures that the best IT investments are chosen, risks are controlled, IT initiatives support the university's strategic objectives, and IT procurement solutions fulfill teaching, research, and operational needs (Division of Administration, Virginia Commonwealth University, 2024). Additionally, the framework guides university-wide IT decisions and the development of IT policies and standards (CIO, Texas A&M University, 2021). It offers strategic oversight and direction for IT policies, strategies, investments, and significant projects by involving a group of committees that represent stakeholders' needs across the university (Information Technology, NYU, 2024).

The existing literature shows that university IT governance connects IT projects with strategic goals and decides which projects to prioritize and fund when demand exceeds resources. IT governance committees may also choose and allocate funds for IT projects. Applying an IT governance framework in universities can lead to more strategic and efficient decision-making, ultimately boosting the overall success of IT investments and projects.

2.3 IT Governance Framework Components

Existing literature indicates that IT governance comprises four key components: strategic alignment, value delivery, risk management, and performance management.

2.3.1 Strategic Alignment

The strategic alignment component of an IT governance framework is essential for making sure that IT projects support an organization's goals, operations, and plans. This alignment is key for helping the organization stay competitive; however, it can be challenging to achieve when different parts of the organization operate independently and in a decentralized manner (IT Governance Institute, pg. 24).

IT alignment occurs when IT projects and investments align with the company's overall business strategy and goals (ARDOC, 2024). Organizations need to structure their IT governance to achieve this alignment through committees, budgeting processes, and approval mechanisms that reflect their mission, values, and culture (Weill, 2004). The success of IT project alignment is usually measured by criteria such as management excellence, operational excellence, and technology excellence (Buytendijk, Hatch, Oestreich, 2009). By focusing on these key areas, organizations can ensure their IT initiatives help them succeed and stay competitive in the market.

2.3.2 Value Delivery

The value delivery part of the IT governance framework is key to realizing benefits from IT investments. For IT value delivery to work well, it is crucial to manage both the actual costs and the return on investment (IT Governance Institute, pg. 26). The main goal of IT value delivery is to make sure that IT projects deliver tangible benefits and intangible value to the business (ARDOC, 2024).

The tangible financial value of IT projects can be assessed using metrics such as return on investment, payback period, and net present value. Furthermore, an IT balanced scorecard can include both tangible and intangible values (Grembergen & De Haes, 2005). It is vital to consider competitive advantage relative to other organizations (Wessels & Loggerenberg, 2006). The cost-benefit ratio can be a key indicator of the value added by the project (Serafeimidis & Smithson, 2000). By emphasizing value delivery, organizations can ensure their IT investments are cost-effective and boost their overall success and competitiveness.

2.3.3 Risk Management

The risk management component of an IT governance framework aims to protect IT assets from disaster, financial, regulatory, and technology risks. It involves setting up controls, escalation processes, and strategies to mitigate, transfer, or accept risks (IT Governance Institute, pg. 28). Effective risk management includes identifying, assessing, and reducing IT-related risks to minimize potential adverse outcomes (ARDOC, 2024). Establishing a benchmark for acceptable security and privacy risks based on established standards and policies is crucial (Clark, 2005). The organization's risk tolerances are vital in determining the level of risk that can be accepted in a project (Serafeimidis & Smithson, 2000).

2.3.4 Performance Management

The performance management part of the IT governance framework measures both tangible and intangible aspects, including financial returns and customer feedback (IT Governance Institute, pg. 31). Performance management sets the metrics and benchmarks needed to assess IT performance, encouraging ongoing improvement and accountability (ARDOC, 2024). The metrics used to evaluate performance results within an IT governance framework can differ depending on the organization's size, nature, and unique qualities (Schwarz & Hirschheim, 2003).

2.4 IT Governance Framework Components – Its Application in Universities

The literature review shows that key components of the IT governance framework, such as strategic alignment, value delivery, risk management, and performance management, are vital for aligning IT projects with universities' goals. This section will examine how these parts are used in IT efforts within the university setting.

2.4.1 Strategic Alignment

Strategic alignment within a university ensures that IT projects align with the institution's strategic goals. This alignment is achieved through improved communication among members of the IT governance committee (Kvaik, 2004; Creasey, 2008). However, the various departmental units within the university often have different interests, which complicates efforts to meet the diverse needs of all university stakeholders (Ismail, 2008).

A summit attended by over thirty higher education leaders highlighted the significance of IT governance in helping the university achieve its strategic goals. It was stressed that IT governance should be a key topic of discussion among board members (Golden, Holland, Luker & Yanosky, 2007). Fostering collaboration and communication across the university is essential for aligning IT projects with the institution's mission and strategic objectives (Enterprise Technology Services, Howard University, 2024). IT governance ensures that the campus IT strategy and the Office of IT align with the university's strategic plan (OIT, Boise State University, 2024). By implementing programs and processes, IT governance helps align IT outcomes with the university's mission (CIO, Texas A&M University, 2021).

Table 1: University's Strategic Objectives

University's Strategic Objectives	Source
Teaching and transformational learning, research and innovation, information, and security infrastructure	CIO, Texas A&M University (2021)
Teaching and research, IT operations, cybersecurity	Information Technology, NYU (2024)
Educational technology, research, and scholarship, enterprise application	OIT, NCSU (2024)
Academic technology, administration, and operations	Division of Administration, Virginia Commonwealth University (2024
Administrative technology, research technology, teaching and learning, and IT risk	DIT, Virginia Tech (2024)
Academic technology, administrative technology, research technology, data, and security	OIT, UC Boulder (2024)
Instruction, infrastructure, research, and administrative system	Information Technology, CSU (2024)
Administrative system, IT security, infrastructure, learning and technology, research	Information Technology, Northwestern (2024)

Existing literature shows that the strategic alignment component of the IT governance framework is essential for aligning universities' IT initiatives with their main strategic goals. These goals include supporting and enhancing:
- university's administrative services, IT operations, and IT security,
- teaching and learning management system, and
- research.

2.4.2 Value Delivery

Value delivery in university IT projects is crucial for determining how limited IT funds should be allocated among various requests to maximize the value provided to the university (Creasey, 2008). Universities must ensure their IT projects are completed effectively to attain the desired benefits (The University of Wisconsin Oshkosh, 2024). By combining IT initiatives and promoting collaboration, universities can enhance the value gained from their IT investments (CIO, Texas A&M University, 2021). Additionally, universities must ensure that the chosen projects align with the institution's strategic goals to maximize the value derived from IT initiatives (Information Technology, NYU, 2024).

Existing literature highlights the significance of the value delivery component in IT governance. It aims to ensure that the funds dedicated to IT projects produce the expected value, which can be measured by quantifying both tangible and intangible benefits from IT initiatives.

2.4.3 Risk Management

Risk management within universities is essential for monitoring, evaluating, and reducing IT investment risks to achieve desired benefits (The University of Wisconsin Oshkosh, 2024). It also plays a key role in fulfilling universities' legal and regulatory responsibilities (Enterprise Technology Services, Howard University, 2024). By identifying IT risks, assessing potential impacts, and implementing controls and compliance reporting, universities can effectively handle the risks associated with technology (IRIS, Ohio State University, 2024). In today's digital era, universities heavily depend on technology to support their operations. They must invest in cybersecurity measures to protect sensitive data, ensure compliance, reduce cyber threat risks, and prevent potential fines

(Andersen, 2024). Additionally, risk management can be used to address security vulnerabilities in tools and technologies used for teaching, research, and administrative functions, thereby ensuring compliance and safeguarding data (CIO, The University of Illinois, Urbana-Champaign, 2024).
Existing literature highlights the importance of integrating risk management into the IT governance framework to manage risks associated with universities' diverse IT technologies and services. Universities can mitigate potential IT system risks by proactively addressing vulnerabilities and security threats.

2.4.4 Performance Management

The university's IT services and projects are expected to meet the quality criteria and expectations of university stakeholders (Clark, 2005). Research on Australian universities supports the idea that time, cost, benefits, and both technical and non-technical factors are key performance measures of IT governance in higher education institutions (Ko & Fink, 2010). In higher education, performance is not only linked to financial metrics; it also includes factors such as improving student learning, satisfying customers, securing the budget, and ensuring alignment in decision-making processes (Creasey, 2008). Effective performance management within the university is essential for overseeing IT projects, managing performance results, and establishing benchmarks (McCredie, 2006).

Existing research shows that the performance management part of the IT governance framework is crucial for monitoring the results of university IT projects and initiatives. Performance metrics may include financial measures, project quality, and customer satisfaction evaluations.

III. RESEARCH DESIGN

3.1 Research Methodology

The case study research methodology was selected for this study. The case study addresses “how” and “why” questions (Yin, 2009, p. 19). Furthermore, case study research is suitable when the study is conducted in the actual context of the setting (Baxter & Jack, 2008). The case study approach enables a detailed, multi-faceted exploration and analysis of complex issues in their real-life scenarios (Crowe et al., 2011). This research examined the characteristics of IT projects at the university and was carried out in a real-life context. The study aims to answer complex questions that are well-suited for a case study design. Therefore, case study research was deemed the most appropriate.

3.2 Research Questions

The main goal of this research is to analyze the decision-making process for IT projects within the university, emphasizing the factors that affect these decisions. As a result, the case study method was selected as the most suitable approach for this study. The research intends to answer the following questions:

- Research Question 1: How do IT project decisions within the university align with the IT governance framework?
- Research Question 2: What are the key findings related to IT project decisions within the university?

This research uses a case study approach to offer insights into the IT project decision-making process within the university context.

3.3 Data Collection

This study was carried out at four universities in the USA, each designated by the codes U1, U2, U3, and U4. The research examined three IT projects at U1 and one project each at U2, U3, and U4. Interviews were conducted with IT project stakeholders, including project team members, IT decision-makers, and end-users, to collect project data. Additionally, data was gathered from publicly available information in the universities' archives. U1 and U2 are research universities with a total student population of about 30,000, while U3 and U4 are classified as teaching universities with approximately 10,000 students. This study aimed to provide insights into the implementation and management of IT projects in higher education institutions, emphasizing the unique challenges and opportunities faced by universities of different sizes and academic focuses.

IV. RESULTS

4.1 Alignment with the IT Governance Framework

This section aims to answer the first research question on how the IT project decisions within the university align with the IT governance framework. The current literature suggests that IT projects should align with the elements of IT governance. These elements include:

- alignment with the organization’s strategic objectives,
- realization of the expected value,
- risk management, and
- performance management (Weill & Ross, 2004; ITGI, 2003; Creasey, 2008).

This section explores how the university IT projects studied have aligned with the four key components of the IT governance framework.

4.1.1 Alignment with the Strategy of the IT Governance Framework

The university's primary strategic goals are to improve teaching, administrative services, data security, IT security, and to prioritize research within research universities. The evaluated IT projects at the university support these strategic objectives in the following ways.

1. Teaching:

- The new web-based learning management system has enhanced teaching by providing a more engaging online learning experience (U1).

2. Administration, data, and IT asset security:

- The implementation of the new web-based payment transaction system has greatly enhanced the university's administrative and financial processes by incorporating advanced security and compliance features into the online payment platform (U1).
- The new IT administrative system has successfully integrated the administrative, human resources, and payroll systems, streamlining processes and improving overall efficiency (U3).
- The new degree planning IT system has provided invaluable support to the administrative staff by enabling university counselors to manage students' degree planning, ultimately improving the academic experience (U4).

3. Research:

- The new high-performance computing system has greatly advanced research in data-intensive computation (U2).

4. Teaching, administration, and research:

- A new email system has been introduced to benefit all university stakeholders, enhance communication, and support teaching, administration, and research activities (U1).

Separate IT governance committees have been created at the university to improve teaching, research, administration, and IT security efforts. These committees are responsible for reviewing, selecting, and prioritizing IT project requests in collaboration with the budget committee to obtain funding. Ultimately, project allocation and budgeting decisions are made by the university's finance division and top leaders, including the CIO and Vice President. Table 2 presents the criteria for the strategic alignment component of the IT governance framework and evaluates how the studied IT projects meet these criteria. This analysis offers insights into the effectiveness of the university's IT governance structure and its ability to support overall goals and objectives.

Table 2: Strategic Alignment with the IT Governance Framework

Criteria of Strategic Alignment	Strategic Alignment Observed
Meet organizational objective (ITGI, pg. 24)	The IT projects studied aligned with the university's core strategic objectives: supporting and enhancing teaching, research, administrative services, and data security.
Align with future goals of the organization (ITGI, pg. 24)	The university's future direction and business continuity were considered when selecting IT projects, tools, and technology.
The organization is better positioned than its competitors (ITGI, pg. 24)	The university conducted market research on other universities' IT tools and services before selecting to stay competitive (U1).
Formation of IT governance committees (Kvaik, 2004; Creasey, 2008)	Multiple IT governance committees are formed in universities to make decisions on the IT needs of the university to support and enhance its strategic objectives. Research universities were found to emphasize research and formed separate IT research governance to support and enhance research (U1, U2).

One project alone may not meet the diverse needs of all university stakeholders. For instance, an IT initiative aimed at enhancing administrative services might not always support teaching efforts, even though both are key strategic objectives of the university. However, the email project in U1 effectively addressed the communication needs of various stakeholder groups, including students, faculty, and administration.

4.1.2 Alignment with the Value Delivery of the IT Governance Framework

The university IT projects examined implemented a new system aimed at delivering value through various criteria, as noted below.

- Ensuring the user community embraced and utilized the new IT system effectively.
- Facilitating the acquisition of new research grants and attracting talented researchers to join the university's research team.
- Evaluating the total cost of ownership associated with the proposed IT project.
- Determining when the investment in the proposed IT project would generate a return on investment.

By adhering to these criteria, the universities ensured the successful implementation and utilization of their new IT systems, ultimately enhancing efficiency, security, and overall value for the institution.

The project management office in the universities studied determined the financial metrics of value, but did not actively quantify the indirect measures of value added. According to existing literature, an IT balanced scorecard could incorporate tangible and intangible values (Grembergen & De Haes, 2005). Interestingly, the use of a balanced scorecard to assess value was not observed in the studied IT projects. Table 3 outlines the criteria for the value delivery component of the IT governance framework and demonstrates how the IT projects studied aligned with these criteria.

Table 3: Value Delivery Alignment with the IT Governance Framework

Criteria of Value Delivery	Value Delivery Alignment Observed
Delivery of IT projects on time (ITGI, pg. 26)	The IT projects examined took longer than the initially planned timeframe. In some cases, the scope was scaled back to prevent additional delays in delivering the IT system.
Delivery of IT projects within budget (ITGI, pg. 26)	The IT projects examined went over the budget. The project sponsor used discretionary funds to finish the project.
The return on investment needs to be assessed (ITGI, pg. 26, Serafeimidis & Smithson, 2000)	The return on investment, payback period, and cost-benefit analysis were calculated (U1, U3).
Realize intangible values (Grembergen, De Haes, 2005)	The intangible benefits of community outreach and goodwill were considered (U3).
Competitive advantage over other organizations (Wessels & Loggerenberg, 2006),	The university analyzed how peer institutions use IT products and services, using it as a benchmark to maintain competitiveness (U1).
Bundling the IT initiatives (CIO, Texas A&M University, 2021)	Price discounts were achieved on IT products through bundling with other IT products and offerings (U1).

The IT projects studied at universities faced challenges in accurately measuring their added value. This was because certain benefits developed gradually over time, and assessing indirect costs was difficult. Metrics such as cost savings, user adoption, increased usage, total cost of ownership, staff savings, time savings, and operational efficiency were used to evaluate the project's value add.

4.1.3 Alignment with the Risk Management of the IT Governance Framework

The IT projects examined at universities effectively manage risks using various strategies.

- Implementing a new email system ensured smooth communication with university-wide users, preventing potential disruptions in information flow. This proactive approach reduced the risk of miscommunication and inefficiencies (U1).
- The new online payment system has enhanced user convenience and significantly reduced the risk of non-compliance with legal and security standards. By safeguarding against potential lawsuits and data breaches, this project demonstrates a commitment to maintaining integrity and security (U1).
- The high-performance computing project aimed to reduce risks by securing upcoming contract grants and future opportunities. By addressing potential losses, it demonstrated a strategic effort to safeguard financial stability and growth (U2).
- The IT administrative system upgrade project aimed to provide 24/7 support, prevent audit failures, and avoid the technological obsolescence of proprietary IT systems. By proactively addressing these risks, the project sought to maintain operational efficiency and competitiveness in the ever-changing IT landscape (U3).
- The degree plan project aimed to reduce the risk of students facing graduation delays due to incorrect counseling. By offering accurate and timely guidance, the project intended to help students achieve their academic goals efficiently and effectively (U4).

The university's IT projects demonstrated a strategic approach to risk management, emphasizing a commitment to excellence, security, and innovation in the digital age. Protecting the security and integrity of data within the new IT system, with no reported breaches or security complaints, was also prioritized. The key IT projects focused on addressing risks related to the end-of-life of IT products, non-compliant IT systems, and the potential for financial loss and legal action. These projects were selected based on their importance in reducing these risks and ensuring IT infrastructure security and compliance. Table 4 outlines the criteria for the risk management aspect of the IT governance framework and assesses how well the IT projects under study meet these criteria.

Table 4: Risk Management Alignment with the IT Governance Framework

Criteria of Risk Management	Risk Management Alignment Observed
Risk of technological obsolescence (ITGI, pg. 28)	The new email system lowered the risk of technological obsolescence because the previous system was outdated (U1).
Risk of data loss (ITGI, pg. 28)	The new system reduced the risk of data loss. The previous method relied on error-prone manual data entry (U4).
Safeguard against monetary loss (ITGI, pg. 28)	The new project helped secure additional grants that would have been lost otherwise (U2).

Stay compliant to mitigate risks associated with cyber threats and fines (Andersen, 2024)	The outdated financial and human resources system was at risk of failing the audit, but the new system resolved that (U3).
Risk of being non-compliant with regulation (ITGI, pg. 28)	The new system ensured that the online payment system met the security audit (U1).

4.1.4 Alignment with the Performance Management of the IT Governance Framework

University IT projects used different strategies to manage performance, as outlined below.

- Achieve a high adoption rate among end users of the new IT system.
- Ensuring a smooth and consistent user experience for online transactions.
- Reducing data entry errors through automated system processes.
- Designing the new IT system as a repeatable business model and making integration easy for inexperienced users (U1).
- Ensuring that the new IT system implementation does not disrupt business operations (U3).

These strategies played a key role in enhancing IT project performance in university settings, highlighting the importance of effective management and the adoption of new technologies. Table 5 shows the criteria for the performance management part of the IT governance framework and assesses how the IT projects studied met these criteria.

Table 5: Performance Management Alignment with the IT Governance Framework

Criteria of Performance Management	Performance Management Alignment Observed
Meet the quality measure (ITGI, pg. 26)	The IT projects analyzed did not fully meet quality standards. Requirements were overlooked, and defects were found after the post-production release.
Improved customer experience and adoption (ITGI, pg. 31)	The users have successfully adopted the IT projects across all the universities. This was also because the stakeholders had no other choice.
Business continuity (ITGI, pg. 31)	The business model was repeatable, and users could be added to the new IT system (U1). It was also discovered that the post-production business was disrupted because the new system exceeded its storage capacity within the first few months of use (U2).
Metrics and benchmarks to evaluate IT performance (ARDOC, 2024)	A service level agreement was created, and metrics for the new system's response time and scheduled uptime were tracked across all projects.

Performance was evaluated based on response time, adherence to functional and technical requirements, and the lack of unexpected errors. Help desk call metrics for the new system served as an indicator of customer satisfaction. These metrics helped identify any system defects, missed requirements, or the need for end-user training.

4.2 IT Project Decision Findings

This section aims to answer the second research question regarding the key findings related to IT project decisions within the university. It covers issues such as conflicts in IT project decisions, customer complaints, the choice between building an IT system in-house with the university's IT staff versus procuring an IT product, and the decision to host an IT system in-house using the university's infrastructure versus outsourcing it to an external cloud vendor.

4.2.1 Conflict in IT Decision-Making

Conflicts have emerged within the IT governance committees over how to allocate the university's limited funds among various project requests. Budget constraints have made it challenging to fund all projects, as the required amounts exceed the available budget. Prioritizing projects has been challenging because some may align with one strategic goal while conflicting with another.

Decision-making conflicts have not been observed within individual IT governance committees, as members prefer to reach a consensus. When voting is used, most votes usually support the same decision. However, some committee members hesitate to vote, preferring not to formalize their stance in writing. The university's CIO can influence decisions with support from senior leadership, which can sometimes lack transparency. Disagreements between IT governance committees are often documented, highlighting the need for better communication and collaboration within the university's IT governance structure.

4.2.2 Customer Complaints

The end users of the new IT system identified specific requirements that were overlooked in the product release. Additionally, the IT system experienced sudden terminations and flaws caused by faulty software coding or system configuration, which went undetected during development and testing phases. As a result, end users expressed dissatisfaction with the system. This oversight resulted from inadequate documentation,

misinterpretation of requirements, and failure to verify them with the end users. It has been determined that involving stakeholders in the design process, validating the system with users, and maintaining open communication with those stakeholders are essential to ensuring that project requirements are met. The success of the IT system relies on the quality of business analysis and the thoroughness of the gathered requirements. Requirements should be carefully scoped and prioritized for iterative releases, with active participation and engagement from end users throughout the development cycle to minimize communication gaps.

Training sessions were held to educate end users on proper use of the IT system, thereby reducing errors caused by user misunderstandings. Help desk tickets were submitted by users who had difficulty with the new system, emphasizing the importance of thorough training. However, scheduling conflicts made it difficult to provide instructor-led training to all end users, leading to the distribution of training materials and recorded sessions. The university sought assistance from the vendor in creating a training manual to help end users effectively navigate the new IT system.

4.2.3 Build Versus Buy

This research shows that university IT projects tend to develop systems internally when university staff has the necessary skills, resources, and time. This method is preferred because it avoids the need to seek extra funding to buy pre-made IT systems. Projects that involve getting new IT software and infrastructure often require customizing and setting up these systems with help from vendor companies and university IT staff.

Table 6: Comparison of Build Versus Buy

Criteria	Build	Buy
Custom fit	A higher level of customization to the university's business requirements was achieved when the IT product was developed by its IT staff. The user interface and workflow were explicitly tailored to the university's needs.	The IT products purchased by the university were found to be less tailored to the university's specific business needs. The IT system acquired by the university lacked certain features that users expected. This is because the IT vendor did not design the product solely for the university but for multiple clients. For the IT system purchased, additional configuration was necessary to meet the university's unique business requirements.
Technical fit	Technical fit would improve if the system were built using the technology available at the university.	The IT systems also had a better technical fit. This is because the universities purchased IT products compatible with their existing technical architecture.
Time to develop	Development time must be included if the university's IT staff developed the system.	If procured, the IT product would be readily available upon purchase; however, the procured product required custom configuration and integration to work with the university's IT architecture.
Quality	The quality of the built system was found to be lower, and a higher percentage of coding-related errors were missed during testing.	The IT system procured reported lower system errors because the prior customers had already used it.

4.2.4 On-Site Versus Off-Site Hosting

When considering a new IT system for a project, universities must decide whether to host it on-site within their IT infrastructure and manage it internally or have a vendor host the system remotely. Universities are increasingly interested in off-site hosting. This decision depends on factors like cost, security, and ease of maintenance. Ultimately, the choice of hosting location for an IT system can significantly influence the success of a project.

Table 7: Comparison of On-Site and Off-Site Hosting of the IT System

Criteria	On-Site Hosting	Off-Site Hosting
Accommodate an increase in demand	On-site hosting was found to be insufficient in handling the increased demand due to limited IT infrastructure capacity.	Off-site hosting was chosen to accommodate rising demand. The off-site solutions provided greater capacity through a resource-sharing model among multiple customers.
Flexibility on data control and its security	The university had better control over how the data is stored, where it is stored, and how to enforce custom security constraints.	An off-site system provided similar data security and additional security options but offered less control. The university was bound by the standards established by the hosting agency.
Custom support	The university's help desk support team was trained on the IT product to offer customized support.	The support was provided by a vendor lacking in-depth knowledge of the university's IT system and operations.
Disaster recovery support	On-site hosting offered less support for disaster recovery. Due to funding limitations, the universities could not spend much on additional servers for backup and recovery systems.	The off-site system provided enhanced support for disaster recovery. Due to the usage-based sharing model, the system offered improved disaster recovery and redundancy.
Cost	The expense of supporting and maintaining the on-site system became part of the annual operational cost.	The cost of hosting the system off-site was similar to hosting it on-site. A cost comparison was conducted between on-site and off-site hosting. The off-site option offered a discount based on usage and volume, which was not possible with on-site hosting.

V. CONCLUSION

The IT projects studied in universities aligned with the components of the IT governance framework. These projects supported and advanced the university's key strategic objectives, such as improving teaching, administrative services, data and asset security, and research. Also, the IT projects aimed to deliver expected value, manage risks, and meet performance standards. However, misalignments with IT governance framework components occurred because the project outcomes did not always meet expectations.

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