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Centralized and Decentralized Selection of Information Technology Projects in Universities

Dr. Sam Ghosh
Researcher, The University of Maryland, Maryland, USA

Abstract: *Universities undertake IT projects to meet their strategic and operational needs. However, the demand for these projects often exceeds the available funding. Consequently, universities must carefully prioritize which IT projects to pursue. To aid in this decision-making process, universities have established IT governance. IT governance at the university involves multiple committees that evaluate and approve IT initiatives within the institution.Universities are also known to make IT decisions through centralized and decentralized approaches. Centralized decisions incorporate input from various colleges or business units, ensuring a comprehensive review process. In contrast, decentralized choices are made independently by individual colleges or business units.This study delves into the specific context of IT project selection within universities. It aims to investigate how IT governance committees influence project selection and whether decisions are centralized or decentralized. This study involved an analysis of two large and two small universities in the United States of America (USA). The findings revealed that large universities exhibit decentralized IT project selection, bypassing the IT governance committee structure when funds are available. In contrast, small universities tend to demonstrate centralized decision-making by submitting IT project requests to IT governance committees. Overall, this research sheds light on the complexities of IT project selection in centralized and decentralized settings and emphasizes the importance of effective governance structures in guiding decision-making processes.*

Key Words*: IT governance, IT project, IT governance in university, IT project in university, IT project decision, centralized IT, decentralized IT*

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I. INTRODUCTION

The financial resources required to fulfill all the IT requests within a university significantly exceed the university's budget. Moreover, implementing an IT request that benefits one group of university stakeholders may not necessarily help another group with different business needs (Bhattacharya & Chang, 2007). Consequently, multiple IT requests in the university often compete for approval, necessitating the prioritization of these requests (Yanosky& McCredie, 2008). To address this challenge, a structured and objective approach can assist in making informed IT decisions, thereby balancing the diverse needs of the university's business stakeholders (Gosenheimer, 2012).

Universities commonly blend centralized and decentralized characteristics in their IT decision-making processes (McCredie, 2006). Centralized decisions are typically made under the purview of IT governance committees established within the university. Conversely, decentralized decisions are made autonomously by individual colleges or business units. Organizations must recognize whether an IT decision is centralized or decentralized; however, this awareness is often lacking (Hugoson, 2009). This research delves into the IT decision-making processes within universities, particularly focusing on project selection. It aims to determine whether the IT project selection process is centralized or decentralized and assesses the role of IT governance committee structures in the IT project selection process.

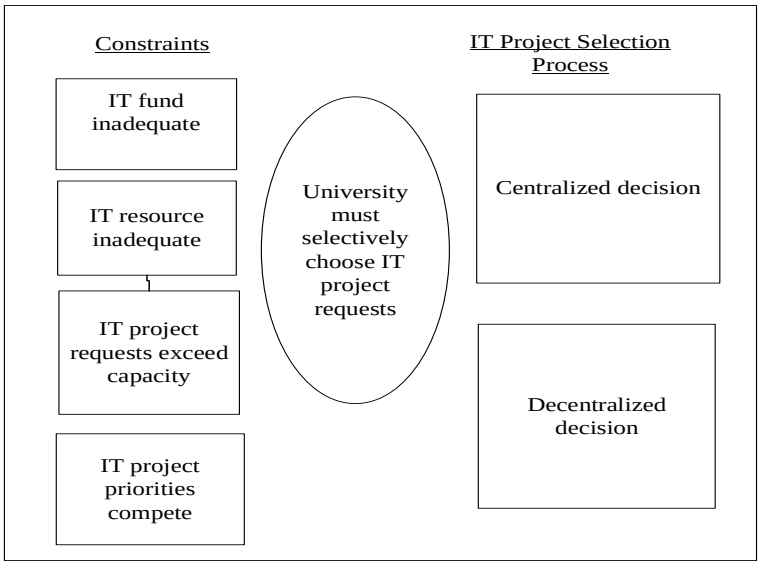

Figure 1. Study centralized and decentralized IT project selection in the university

II. LITERATURE REVIEW

2.1 Centralized IT Decision Making in University

Centralized IT decision-making at the university is characterized by aligning IT decisions with the institution's enterprise application strategies, needs, and objectives while ensuring transparency in the decision-making process (The University of North Carolina at Chapel Hill, 2024). Research indicates that smaller universities tend to adopt a centralized approach to IT decision-making (Salle, 2004; McCredie, 2006; Jaafar & Jordan, 2011). In a centralized decision-making structure, a central organizational unit is empowered to make decisions that benefit the entire organization, focusing on adding value across the board (Brown, 1997).

Centralized IT decision-making within an organization requires a strong centralized authority to discourage isolated IT decisions (Tavakolian, 1989). Universities can implement a centralized decision-making process by fostering collaboration among different business units and colleges under the guidance of the institution's IT governance committee structure (McCredie, 2006). This approach channels decision-making responsibilities through senior leaders who represent the IT governance committees within the university (Heier, Borgman, Mileos, 2009).

The university's IT infrastructure is increasingly moving towards a centralized model, particularly for IT services utilized by multiple business units (Salle, 2004). The IT services fundamental to a university's operations often require centralized coordination to attain maximum reliability and universal equity of access (Michalak, Facelli, Drew, 1999). Given the ubiquitous nature of IT within the university, consolidating IT activities into a central core can effectively meet the diverse needs of the institution (Morrison, 2019).

2.2 Decentralized IT Decision Making in a University

Decentralized IT decision-making within a university is characterized by individual colleges or business units making autonomous decisions without transparency (McCredie, 2006). Large universities often operate in a decentralized manner when it comes to IT decisions (Salle, 2004; McCredie, 2006). Individual colleges in a large university often function independently, thus failing to utilize the university's collective IT resources (Albrecht & Pirani, 2004).

Large universities with a significant research focus tend to give authority on instruction and scientific investigation to the local department level, thus inclining to make decentralized IT decisions (McGinn & Roth, 1999).Large universities are known to have a long, undirected evolution of the IT environment, and it was natural for them to make decentralized IT decisions (Michalak, Facelli, Drew, 1999). Many large universities encounter difficulties in aligning the decentralized units with the centralized decisions of the institution (Kreuger, 2005).

2.3 IT Governance in a University

Numerous universities in the United States have established IT governance structures to facilitate IT decision-making, including the University of North Carolina at Chapel Hill (2024), the University of Texas System, and the University of Virginia (2024) to name a few. A survey of over four hundred universities revealed the prevalence of IT governance within higher education institutions (Albrecht, Bender, et al., 2004).

IT governance serves as a framework for IT decision-making and accountability, primarily aligning an organization's IT initiatives with its strategic objectives, maximizing the value of IT investments, meeting performance expectations, and effectively managing risks and resources (Weil & Ross, 2004). Within a university setting, IT governance typically consists of multiple committees that are responsible for making IT decisions related to the institution's academic, research, administrative, and data protection needs (The University of North Carolina at Chapel Hill, 2024; The University of Texas at Austin, 2024; The University of Virginia, 2024).

III. RESEARCH DESIGN

3.1 Research Methodology

The research methodology selected for this study is a case study approach, as it allows for an in-depth exploration of the how and why questions in the contextual conditions of the case (Yin, 2009, p. 19). Case study research is particularly suitable for examining real-world situations, such as the decision-making processes within a university setting (Baxter & Jack, 2008). Given the exploratory nature of the topic, which aims to understand the factors influencing IT project selections in universities, a case study is considered the most appropriate research methodology (Ribbers, Peterson & Parker, 2002).

3.2 Research Question

The primary objective of this research is to enhance the understanding of how IT project selections are made within a university environment. To achieve this goal, it is imperative to formulate specific research questions. In this study, two key research questions have been identified:

- Research Question 1: How do IT governance committees impact the selection of IT projects within the university?
- Research Question 2: What factors contribute to the decision-making process of selecting IT projects in a centralized or decentralized manner within the university?

By addressing these research questions, this study seeks to illuminate the complex processes involved in IT project selection within university settings.

3.3 Data Collection

A study was conducted at four universities in the United States. These universities, identified as U1 and U2, are research institutions with a student population of approximately 30,000. The other two universities, identified as U3 and U4, are teaching universities with a student population of around 10,000.

The IT project selection process was analyzed at University U1, focusing on two specific IT projects. One project from each institution was examined at universities U2, U3, and U4. Interviews were conducted with various IT project stakeholders and decision-makers, including project team members and end-users, to gather valuable project information. Project artifacts and publicly available information on the universities' IT governance were also analyzed.This study provides an overview of these universities' IT project selection processes, shedding light on the various factors influencing decision-making in IT projects.

Table 1. Profile of universities studied

University	University Profile
U1	A large research university in the USA with a student count of around 30,000
U2	A large research university in the USA with a student count of around 30,000
U3	A small teaching university in the USA with a student count of around 10,000
U4	A small teaching university in the USA with a student count of around 10,000

Table 2. IT projectselection cases studied in the universities

University	Project Selection:Cases Studied
U1	Unified Email System
U1	Enterprise Learning Management System
U2	High Performance Computing
U3	Enterprise Administration System
U4	Degree Plan Automation

IV. RESULTS

4.1 Role of IT governance committees in selecting IT projects in the university

This section delves into the findings on the IT governance committee structure in the four universities under study and their roles in selecting the university's IT projects. Examining IT governance in these institutions aims to uncover the motivations for establishing IT governance, its committee framework, and its functions in selecting IT projects.

4.1.1 ITGovernance Drivers

The four universities under study have implemented IT governance as a strategic tool to align university-wide IT decisions with their objectives, prioritize IT requests, optimize the allocation of funds and resources, and increase the visibility of IT initiatives. However, the larger universities, U1 and U2, faced obstacles in establishing IT governance due to conflicting stakeholder interests and competing IT project priorities.

In the case of large university U1, standardizing IT governance policies proved challenging as influential stakeholders and IT project sponsors prioritized their interests. The Chief Information Officer (CIO) was crucial in driving IT governance implementation across all universities, collaborating closely with senior leaders to ensure alignment with strategic goals.Senior leadership's active support is essential for successfully implementinguniversity IT governance. Universities can effectively address challenges and achieve IT governance objectives by promoting stakeholder collaboration and communication.

Table 3. Drivers to form IT governance in universities

University	Drivers to Form IT Governance
U1	Achieve decision-making transparency, collaborate with university stakeholders, align IT with its strategic objectives, meet customer needs, ensure data reliability, and maintain IT security.
U2	Develop policies and standards to approve and prioritize IT work, improve collaboration between university units, resolve disagreements, effectively allocate resources and funding on IT projects, improve accountability and communication, and save time and money.
U3	Ensure the university's IT projects align with its policies, standards, priorities, and strategic objectives.
U4	Make intelligent decisions on the university's IT needs and effectively and efficiently use the limited IT funds and resources.

4.1.2 ITGovernanceCommittees

The four universities' IT governance structure consists of committees responsible for making decisions regarding the institution's IT needs. These committees focus on four primary areas:teaching, research, administration, and core IT infrastructure.

1.Teaching Committee

The universities under study have each established a teaching committee that identifies the IT requirements necessary to support teaching and enhance the overall learning experience. This committee is responsible for recommending IT projects aimed at improving on-site classroom technology and online learning platforms.Additionally, it provides guidance on the university's learning management system, course design websites, collaborative IT tools, and the integration of mobile devices for course delivery and multimedia content.

The primary goal of the teaching committee is to enhance teaching and learning methods while optimizing online programs. The committee includes faculty representatives from all colleges within the university. It is worth noting that different names across universities refer to the teaching committee, and variations exist in its roles and responsibilities among the four institutions. For instance, at research universities U1 and U2, separate teaching and research committees operate due to their distinct focuses. Conversely, teaching universities U3 and U4 have established a unified committee to address IT needs for teaching and research, as faculty members are engaged in both areas.

Furthermore, differences were observed at university U4, where a single committee is responsible for making decisions regarding IT needs for teaching, research, and administrative purposes. In this smaller university, the cross-functional committee makes IT decisions across various domains.

2.Research Committee

The research universities U1 and U2 have formed a dedicated research committee to evaluate the IT requirements necessary to support and enhance research efforts within the institution. In contrast, teaching universities U3 and U4 have chosen to streamline their initiatives by employing a single committee to address teaching and research IT needs.

At U1 and U2, the research committee strongly emphasizes identifying and addressing the IT needs for sustaining the university's research initiatives. This committee is responsible for making strategic decisions regarding technology implementation to support both current research endeavors and future demands. This includes overseeing the management of computer servers, research instruments, and data analytics tools. The research committee at U1 and U2 comprises faculty representatives from all academic colleges, ensuring a comprehensive and collaborative approach to addressing the university's IT requirements.

3.Administrative Committee

The four universities under study established a committee comprising representatives from human resources offices, the controller, registration, and general administration to address the IT needs necessary to support and enhance administrative services. This committee was tasked with making decisions regarding various administrative functions, including student registration, grade book and degree management, purchasing, record keeping, accounting, finance, payroll, online procurement, and data security.

While universities U1, U2, and U3 formed a distinct administrative committee, a unique approach was observed at the smaller university U4, where the administrative and teaching committees were combined. This variation highlights the diverse strategies employed by different institutions to address their administrative IT needs.

4. Core IT Committee

The four universities involved established the core IT committee to address the university's IT needs. Each university designated a unique name for its respective committee. Members of this committee possess a high level of expertise in IT products and services. The membership includes IT directors, specialists, and personnel from the IT office. Their primary responsibility is to make decisions regarding the university's IT infrastructure, network, telecommunications, data, applications, IT asset security, cloud services, and internet-based services.

Additionally, the core IT committee is a valuable resource for other IT committees by providing domain-specific input. The university's help desk and technical support teams are represented on this committee to ensure that all IT support needs are considered. Furthermore, the committee discusses training requirements for end users and help desk staff to ensure that all IT needs are effectively met. The core IT committee is crucial in guiding the university's IT decisions and ensuring that all IT requirements are comprehensively addressed.

5. IT Council Committee

The IT council committee is established at the university U2 and the smaller universities U3 and U4. Its primary function is to assess university-wide IT requests, which are then reviewed by the teaching, research, and administrative committees. This cross-functional committee comprises representatives from various colleges and business units, with some members overlapping with other IT governance committees.

The IT Council Committee is essential for prioritizing university-wide IT projects at University U3. This institution has a formal project prioritization process developed by the Project Management Office (PMO). When evaluating IT project requests at U3, the IT Council Committee considered several key criteria:

- Alignment with the university's strategic objectives.
- Compliance with audit, accreditation, regulations, legal, and compliance requirements.
- Impact on multiple colleges.
- Urgency of the project request.
- Cost and benefits of project execution.
- Risks associated with not executing the project.
- Availability of funds and resources.

By adhering to these criteria, the IT council committee at University U3 ensures that IT projects are prioritized effectively and in alignment with the university's goals and objectives.

6. Executive Committee

The four universities have established a final decision-making body to approve IT requests. The names of this committeediffer among the universities studied. This committee includes top officials, including the president, chancellor, and provost, with the highest authority in making final IT decisions at these universities.

4.2 Centralized and Decentralized IT Project Selection in the University

This section delves into the research findings on IT project selection in the universities studied and whether the projects are selected in a centralized or decentralized manner.

4.2.1 Project Selection in a Centralized Manner

At the university, U2, the project was initiated by a specific college. Unfortunately, the college lacked the funds to carry out the project, prompting them to seek assistance from the university's IT governance committees. Through negotiations with various departments that stood to benefit from the project, the IT council committee successfully secured contributions toward the project cost. Although the project initially began decentralized, the final decision on IT project selection was made centrally with the guidance of the IT governance committees. This project proved to be advantageous for multiple departments within the university.

Similarly, projects at universities U3 and U4 faced financial constraints, leading their sponsors to seek support from the IT council committee. These universities follow a process in which university-wide IT requests are reviewed by the IT council committee, which then forwards IT project requests to other IT governance committees for approval. The decision-making process for IT project requests at U3 and U4 is centralized. At U3 and U4, the IT governance committees prioritize university-wide IT project requests, ensuring efficient resource allocation.

4.2.2 Project Selection in a Decentralized Manner

The IT project selection process at a large university, U1, was found to be decentralized for the project studied. The Office of IT in U1 independently selected, funded, and executedthe IT project. These project requests were not brought to the attention of the IT governance committees, resulting in lower awareness among committee members regarding university-wide IT initiatives.

Despite the decentralized nature of IT project selection at U1, there was no urgent need to change the decision-making process. Transitioning to a unified intake process for all IT projects within the university would likely create disruption and face resistance from influential stakeholders. Consequently, the senior IT leaders at U1 were hesitant to implement any changes to the project prioritization processes.Campus politics and the influence of sponsors were significant barriers to formalizing the project prioritization process at U1. While there is recognition of the need for change, influential stakeholders and campus politics hinder progress toward a more centralized and formalized project prioritization process.

V. DISCUSSIONS

5.1 IT Governance Committee Structure Variation

In a large research university, distinct committees are established to address the IT needs of its research and teaching departments. Conversely, in a smaller teaching university, a single committee is responsible for making IT decisions that impact teaching and research initiatives.

The IT council committee serves as a vital link between the various decentralized colleges within the university, advocating for shared project costs and promoting collaboration among departments. By facilitating centralized decision-making, the IT council committee enhances university-wide IT awareness and effectively prioritizes IT requests that benefit the institution.In contrast, the absence of an IT council committee in the large university U1 led to a lack of coordination among business units when selecting and executing IT projects. Overall, the role of a cross-functional IT council committee is crucial for aligning IT decisions with the university's strategic goals, fostering collaboration among departments, and ensuring the efficient allocation of resources for IT projects.

Large Research University => Separate IT governance committee for Teaching and Research
Small Teaching University => Same IT governance committee for Teaching and Research
IT Council Committee => Unifying force

Figure 2. IT Governance Committee Structure Variation in Universities

5.2 Centralized and Decentralized IT Project Selection Characteristics

The existing literature indicates that large universities are known to make IT decisions in a decentralized manner (McElheran, 2012; Yanosky, 2010; McGinn & Roth, 1999). This research supports the knowledge that large universities' decentralized colleges and business units may bypass IT governance if the project sponsor has the necessary funds. Consequently, IT project selection is often conducted in a decentralized manner without involving the IT governance committee. As a result, these projects frequently miss the chance to leverage university-wide IT resources and organizational knowledge.

The decentralized nature of colleges within large universities often leads to campus politics that hinder the standardization and enforcement of IT governance guidelines. Compared to small universities, IT governance at large universities tends to be less authoritative. However, it is important to note that large universities, where business units have historically made decentralized IT decisions, may also exhibit centralized behavior if they lack the funds and resources to implement a project.

Conversely, in small universities, IT requests are typically brought to the attention of IT governance committees. These committees then select IT projects based on university-wide IT needs. This centralized approach ensures that IT projects align with the university's goals and resources.

5.3 IT Project Selection Characteristics Under ITGovernance

Projects with a higher level of urgency are typically selected for execution. The urgency level is determined by the loss of support for IT products in U1 or the lack of compliance in U4. Additionally, the

influence of the project sponsor and the availability of funds also play a role in determining which projects will be selected.

The project selection process does not face conflict when the sponsoring unit has the project funds. Project cost alone does not hinder project selection if funds are available. Projects that experience higher levels of conflict during the selection process are typically those for which funds are not readily accessible. However, exceptions arise when projects must undergo an IT procurement process and have multiple potential vendors or service providers to choose from.

The universities studied expressed a preference for consensus in IT decision-making. While conflicts were not found within the same IT governance committee structure, issues arose regarding which IT projects should receive funding and how the limited IT funds should be allocated among competing project requests. Senior university leaders' support was crucial for resolving conflicts and obtaining approval for project funding. Table 5 outlines the strengths, weaknesses, opportunities, and threats (SWOT) of the IT project selection within the university's IT governance structure.

Table 4. SWOT: IT project selection under IT governance in the university

Strengths • Forming IT governance was a step in the right direction • Senior leaders of the university acknowledged the importance of IT governance • The university's IT governance aimed to align the IT with the university's core strategic priorities, which are teaching, research, and administration • IT governance emphasized transparency in decision-making, communication with the stakeholders, and managing their expectations • Centralized IT had a higher awareness of university-wide IT needs	Weaknesses • IT governance committee members had a lower awareness of the university-wide IT needs, particularly in the larger, decentralized university • The decentralized colleges in large universitiesbypassed the IT governance processes and missed out on economies of scale, lessons learned, resource sharing, and standards • The IT governance guidelines were not strongly enforced in the decentralized university • The universities did not always use a formal process to prioritize the IT project requests
Opportunities • Clearly define the roles and responsibilities of the IT governance committee members • Objectively prioritize the projects and allocate the funds and resources accordingly • Make informed decisions by involving the key decision-makers, stakeholders, and subject matter experts (SMEs)	Threats • If IT governance were unable to prioritize the projects, then less urgent projects would be chosen erroneously • If IT governance were unable to secure the funds and resources, the critical projects would be kept on hold • If IT governance were unable to effectively communicate to the stakeholders, the clarity in the IT decision-making would be lost

5.4 Project Prioritization Characteristics

Universities prioritize IT project requests, choosing to execute those with a higher priority. However, determining the priority of a project within a university is complex due to the varying priorities of teaching, research, and administration, which make it challenging to rank projects accordingly. Additionally, since projects cater to different stakeholders, their value adds differ significantly. For example, an IT project that enhances teaching may not necessarily benefit research efforts within the university. These conflicting priorities among departments and business units make IT project prioritization decisions particularly challenging in the university setting.

A prioritization matrix is a valuable tool a university can use to make difficult IT decisions systematically and without bias (Gosenheimer, 2012). When universities are challenged to select projects, they often prioritize them based on their importance. However, ranking projects can be complex, as what may be crucial to one department might not hold the same significance for another within the university. Even if a project aligns with the university's strategic goals, it may only benefit a specific group.

Furthermore, the weight assigned to each criterion in the project prioritization matrix may need to be adjusted if the university's priorities shift. This can lead to subjective judgments being made when determining

the importance of each project. A prioritization matrix is just a tool, and its effectiveness relies heavily on the individuals' judgment (Gosenheimer, 2012). Therefore, if a university implements a prioritization matrix for project selection, it should do sowith caution and with a clear understanding of potential biases.

5.5 Project Prioritization Characteristics with Scoring

The research reveals that University U3 implemented a scoring system to prioritize IT project requests. Each IT project request at U3 underwent evaluation based on specific criteria, such as institutional impact, risk, outreach, and value. Weight was allocated to each category, and a score was assigned to each request based on these criteria. The total score for each project was determined by multiplying the weight of each criterion by its corresponding score and summing the values. A higher priority score indicated greater importance, with projects receiving higher scores ranked as higher priorities.

Despite using this scoring system, University U3 ultimately chose a community outreach project over an IT network project. The community outreach project focused on creating a website for alumni to donate online to the university, scoring high in institutional impact. In contrast, the network refresh project received a lower score and was put on hold. This decision highlights that while the scoring model can serve as an objective method for project selection, the outcome may require further analysis.

VI. LIMITATIONS

The selected cases studied in this research were determined by the universities that agreed to participate within the specified timeframe. It is important to note that this research does not cover all potential unique combinations. Data collection for this study was limited to interviews with project stakeholders and publicly available information regarding the projects. A single investigator, the author, conducted this case study. Multiple investigators can provide diverse insights to enhance the depth of research, potentially yielding different results or even arriving at the same conclusion, thereby bolstering the credibility of the findings (Eisenhardt, 1989).

VII. FUTURE RESEARCH

Further research is needed to understand the impact of IT governance within universities and its influence on IT decision-making. Research could explore potential cost savings and efficiencies gained through centralized project management and resource sharing. Campus politics that deter centralized decision-making would be a topic of interest. Future research could examine how the PMO guides the university in standardizing project selection. By conducting research in these areas, universities can better understand the added value of IT governance and make informed decisions to optimize IT project outcomes.

VIII. CONCLUSION

This study reinforces the established understanding that university IT governancecomprises multiple committees and that IT decisions are made through centralized and decentralized processes. Building upon existing research, this study explores the specific context of IT project selection within universities. It reveals that the selection of IT projects also follows a combination of centralized and decentralized approaches. The project selection process may vary among universities, with the IT governance committees significantly influencing these decisions.

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