An Exploration of IT Governance in University: Its Drivers, How It Maps to Theoretical Frameworks, and the Committee Structure Characteristics

Sam Ghosh, Ph.D.
Researcher
Email: timetravelgoer@gmail.com
The University of Maryland, College Park
USA

Abstract

The Information Technology (IT) governance in the universities is relatively new. Each university has established its own IT governance. This article studies the IT governance of multiple universities. This research is done by reviewing the publicly available information from the various university websites on the IT governance. This article describes the background of IT governance. It describes three prominent IT governance frameworks, which are Information Technology Governance Institute (ITGI) framework, Weill and Ross framework, and Grembergen and De Haes framework. It studies the common drivers to form IT governance in the universities. It studies how the IT governance in the universities maps to the guidelines of the three frameworks, as noted above. Finally, it discusses the characteristics of the IT governance committee structure in the universities. This research finds that a large number of universities has now established the IT governance to aid with university's strategic IT decisions on how to allocate the funds and resources, the IT governance in the universities adheres to the guidelines of the IT governance theoretical frameworks, and committees are formed to make decisions on the areas of teaching, research, administration and core IT.

Keywords: IT governance, IT governance in university, Information Technology Governance Institute, ITGI, Weill and Ross, Grembergen and De Haes, IT governance committee, IT governance background, IT governance driver, IT governance committee structure.

IT Governance Background

The concept of IT governance dates back to the 1960s. Garrity (1963) used the term "computer systems management control" in studying how the various organizational decisions affect the return on the technology investment. He surveyed twenty-seven companies with four years of computer usage and noted that the senior leaders of an organization influence the selection and management of the IT systems. A later research by Olson and Chervany (1980) studied twenty-eight large private organizations. They used the term "control of information services" and found that the organizational structure and leadership affected the IT decisions in an organization. Boynton and Zmud (1987) used the term "IT management responsibility" in determining the organizational need to share the information with various business units and the external agencies. Loh and Venkatraman (1992) used the term "technology governance" to explain the influence of governance on the decisions to outsource the IT services.

The word IT governance was used by Henderson and Venkatraman (1993) in their seminal paper in IBM Systems Journal. This paper described IT governance as a strategic alignment model, which is the connection between the business strategy and IT strategy and aims to derive the expected value of IT investment. In the same journal, Luftman, Lewisand Oldach (1993) described IT governance as the linkage between the business strategy, IT strategy and the organizational infrastructure.

The subsequent researches started proposing various IT governance frameworks. Korac-Kakabadse and Kakabadse (2001) defined IT governance as a framework that aids in achieving organizational goals through value-

add and by balancing the risks and returns on the IT projects. ITGI (2003) defined IT governance as the organizational structures and the processes to ensure that the organization sustains and extends its strategy and objectives, drive alignment, delivers value, manages risks and resources and performance requirements. Grembergen and De Haes (2004) defined IT governance as the organizational capacity, which is exercised by the organization's senior executives to achieve the synergy between business and IT. Peterson (2004) defined IT governance as the framework to align the IT efforts to the organizational priorities. Weill & Ross (2004a) defined IT governance as the accountability and decision-making framework. Simonsson and Johnson (2006) defined IT governance as the decision-making process with regards to the organization's IT goals, processes, and people on the tactical and strategic levels. Webb, Pollard, and Ridley (2006) supported the IT governance strategic alignment definition by Weill and Ross (2004a) and noted that the IT governance decision-making structure emphasizes on the alignment of IT with the business so that the desired business value is achieved by developing and maintaining effective IT control and accountability.

Table 1. Evolution of IT governance

IT Governance Research Areas	Source
Inception of IT governance	Garrity (1963), Olson &Chervany (1980), Boynton &Zmud (1987), Loh&Venkatraman (1992), Henderson &Venkatraman (1993)
IT governance frameworks	ITGI (2003), Peterson (2004), Korac-Kakabadse&Kakabadse (2001), Weill & Ross (2004b), Grembergen& De Haes (2005), Webb, Pollard & Ridley (2006), Simonsson& Johnson (2006)

IT Governance Theoretical Frameworks

The researcher's literature review found three prominent IT Governance frameworks. These three prominent IT governance frameworks are as follows:

- ITGI framework (2003, p. 20). This framework proposed five focus areas of IT governance, which are strategic alignment, value delivery, performance measurement, risk management and resource management.

- Weill and Ross framework (2004b). This framework proposed that IT governance is the IT decision making and accountability framework. The IT domain areas need to be considered in the decision-making. The IT decisions are expected to align IT with the organization's strategic objectives, realize the expected value, manage risks, manage resources and meet the performance criteria.

- Grembergen and De Haes framework (2005). This framework proposed that IT governance is formed of the structure, process and relational mechanism of an organization.
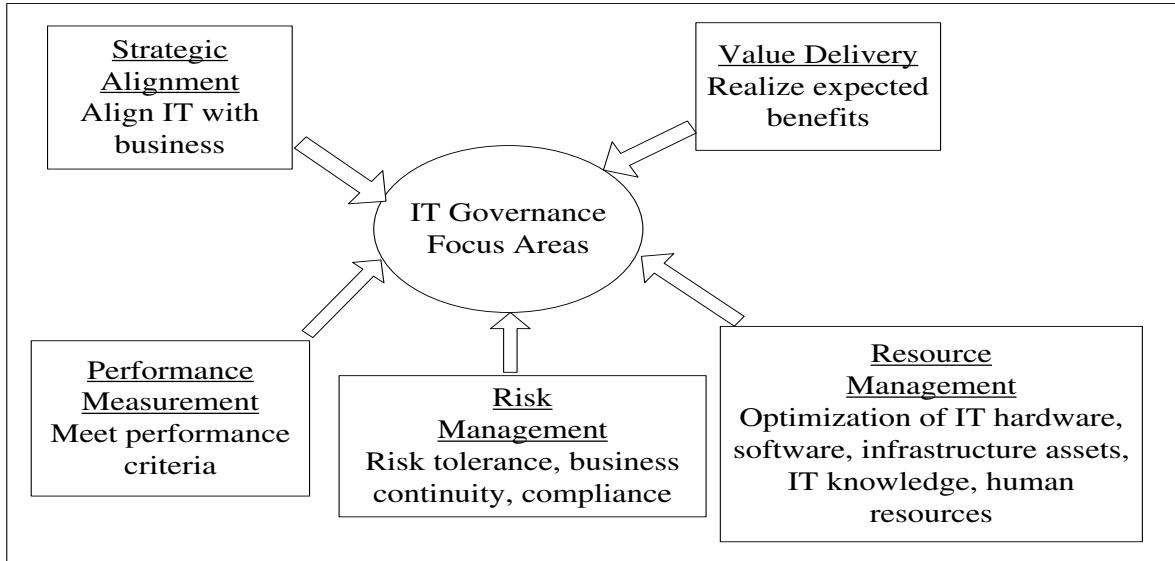
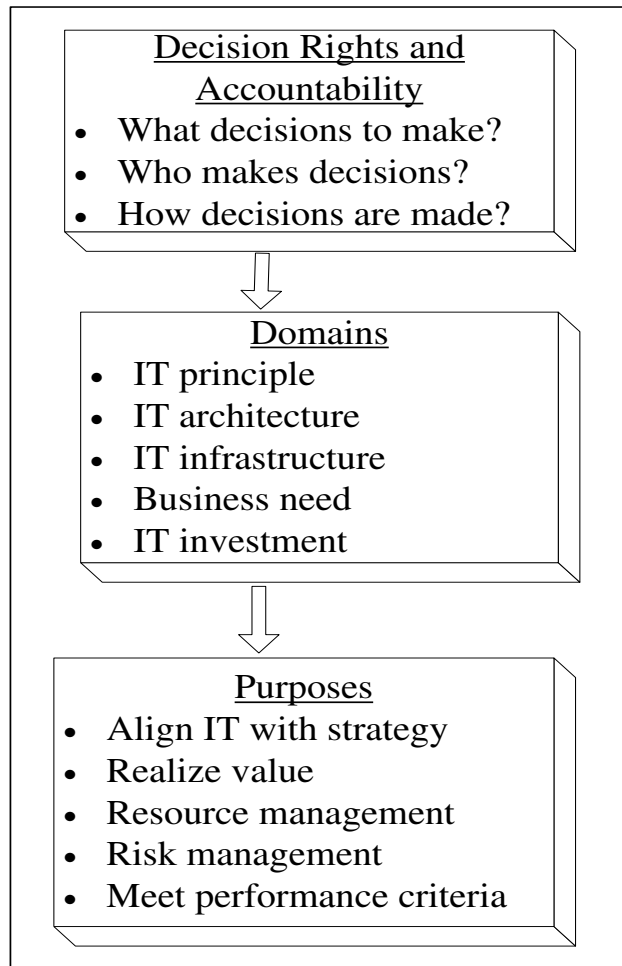Figure 1. ITGI framework (ITGI, 2003, p. 20)

Figure 2. Weill and Ross framework (Adapted from Weill & Ross, 2004b, pp. 1-55)
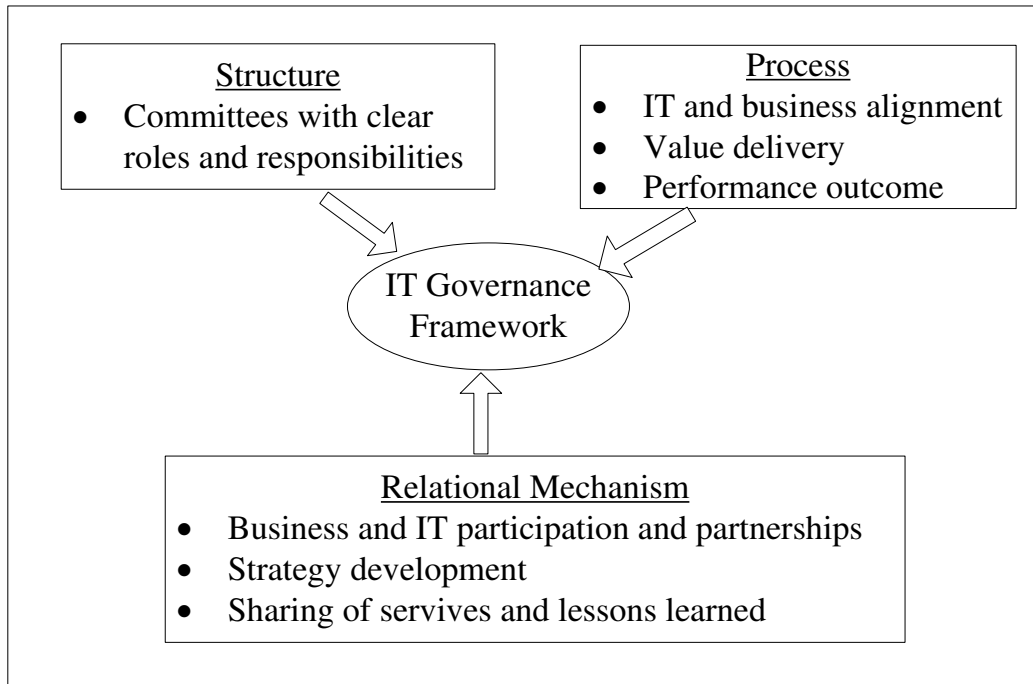
Figure3.Grembergen & De Haes framework (Grembergen & De Haes, 2005)

The purposes of Will and Ross framework (2004b) matches closely with the focus areas of the ITGI framework (2003). Weill and Ross framework (2004b) emphasized on how the decisions are being made. Grembergen and De Haes framework (2004) emphasized on the inter-connectivity between the business processes, technology and people. Weill and Ross (2004b, p. 10) noted that effective IT governance must address the following three questions:

- *"What decisions must be made to ensure effective management and use of IT?*
- *Who should make these decisions?*
- *How will these decisions be made and monitored?"*

The IT governance domains are the IT areas on which the decisions need to be made. Weill and Ross (2004b, p.10) defined five IT governance domains, which are as follows:

1. IT principles. Decisions on how to use the IT, such as promoting innovation through IT, standardization, the rapid development of the application and build versus buy.
2. IT architecture. Decisions on the IT technical choices, policies and guidelines such as integration of data and building shared services.
3. IT infrastructure. Decisions on how to upgrade the base foundations of the organization such as network, telecom, hardware and internet services.
4. The business application needs. Decisions on how to meet the business need using IT and any exception to the IT standards.
5. IT investment decisions and priorities. Decisions on how to acquire the IT funds, how much money to spend and where to spend.

Drivers to Form IT Governance in Universities

The driving force behind forming the IT governance in the universities is to address the IT decision making challenges. This section studies the challenges faced in the universities in making the IT decisions and how these challenges drove to the formation of the IT governance in the universities.

IT Decision-Making Challenges in Universities

The universities face the challenge in making-decisions on which IT project chooses and how much money to allocate to a project under the budget and resource constraints (Clark, 2005). The universities receive more IT project requests than it can support with its level of funding and resources. The IT project objectives vary. And IT project that satisfies the need of one group of stakeholders may not satisfy the need of another group of stakeholders. Reaching a consensus on the IT decisions are made even more difficult because of the campus politics (Kvavik, 2004).

Weir (2004) noted the following challenges in the IT decision-making in the university:

- Most senior leaders on campus are not experts in understanding the IT opportunities and risks. Those who understand the IT issues may only understand them from within their own functional areas, but lack the understanding of the diverse needs of the university. They may lack the understanding of the emerging technologies and trends.

- The IT budget in university is not increasing to meet the increase in demand for the IT services.
- The IT stakeholders in the university have varying needs and the projects offer varying challenges and values. The IT registration system in a university helps the administrative staff, while the classroom technology helps the faculty members and the students. All these projects contend for the same IT budget and resource.

- The IT project performance is not easy to measure, as many of the benefits are intangible and are realized over a long period of time.

Hilton (2009) noted that the universities struggle in answering the IT related questions on:

- How to reduce the cost of the essential IT services.
- How to commoditize the services and take advantage of economies of scale.
- How to let go of the IT services that are no longer needed.
- How to find money to invest in the new, strategic IT projects.

As such, it is critical to choose the right IT projects, on which the limited IT fund should be spent.

Table 2. IT decision-making challenges in university

IT Decision Challenges in University	Source
The IT project priorities compete and the priorities of the IT stakeholders vary.	Weir (2004), Yanosky& McCredie (2008), McElheran (2012)
The university's IT priorities evolve and the IT decisions have to adapt to the changes.	Clark (2005), Kvavik (2004)
The IT requests exceed the university's capacity. The university must selectively choose a projectbecause the IT funds and resources are limited.	Weir (2004), Hilton (2009)

Forming IT Governance in University

The universities have formed IT governance to address the IT decision making challenges and to aid in the IT decision making. A survey of the Chief Information Officers (CIOs) of the universities in the United States of America(USA) reported that setting up the governance structure is one of the top priorities in the universities (Dewey &DeBlois, 2006). IT governance was formed in the universities with a lot of fanfare with the expectation that it would align the university's IT endeavors with its priorities (Kvavik, 2004). A survey of thirty-five universities in the USA reported that these universities formed IT governance with the expectation that IT governance would help make the IT project investment decisions (Golden, Holland &Yanosky, 2007). IT governance in the university is expected to make the strategic-decisions, so that the IT projects meet the expected performance outcomes, align the IT with the university's strategic plan (Basu, Hartono, Lederer&Sethi, 2002) and meet the expectations of the university's IT stakeholders (Yanosky& McCredie, 2008).

A review of the publicly available information from the university websites revealed that many large and small nonprofit universities in the USA have now formed IT governance. In Washington University in St. Louis (2018), the IT governance was formed to advise on the IT strategies, priorities, services and investments. The structure was established in 2012 to make IT decisions in a more comprehensive and holistic manner," and to engage key stakeholders across the University in making recommendations on IT decisions and directions" (Washington University in St. Louis, 2018). In The University of Illinois System (2018), IT governance was formed to "implement a system of input and strategic decision-making, determine what decisions the governance structures make, create processes for investment and prioritization, ensure the collaborative design of services and infrastructure, provide a mechanism for communication, reporting and performance measurement."The University of Utah (2018) formed IT governance to help make decisions on how to prioritize the IT projects and to improve the IT investment decisions. University of Michigan(2018) formed IT governance to "ensure the effective and efficient use of institutional resources and capabilities in order to meet the goals of the University."IT governance was formed in the University of California at Berkeley to help university maximize its investment in IT, "improve the integration of IT strategic planning with campus strategic plans and objectives; provide strategic direction and prioritization on critical IT issues and investments; ensure that IT strategy delivers benefit and provides value, establish IT policies that support campus-wide IT priorities, strengthen partnership and alignment across the campus IT community; and ensure existing resources are being prudently invested" (Conrad, 2014). North Carolina State University (2018) formed IT governance to address the challenges with conflicting policies and IT planning efforts, ineffective and inefficient use of resources and to align the IT needs with the broader organizational need.

"IT governance helps institutions optimize their strategic decisions by including stakeholders in the decision-making process" (EDUCAUSE, 2017). The IT Governance in the university ensures that the IT efforts align with the university's mission, meet the expectations of end users (Weir, 2004). The IT Governance decisions in the university are aimed to improve the experience and operational efficiency of the students, staff and faculty members (Denna, 2014).IT governance in the university is defined as follows:

• The structure and the process to make an authoritative decision on the IT issues in the university. These decisions have a significant importance to the internal stakeholders, the university employees and students; and also on the external stakeholders, vendors, consultants and the community (Gayle, Tewarie& White, 2003).

• The committee structure to collect the opinions, viewpoints, and data to make the IT decisions in the university (Secondat& Montesquieu, 2008).

• The principles to align the IT projects with the university's strategic objectives (Yanosky& McCredie, 2008). IT governance structure was used in the University of Cincinnati to achieve the alignment between the IT initiatives and the strategic objectives of the university (Albrecht &Pirani, 2004).

Table 3. Drivers to form IT governance in university

Drivers to Form IT Governance in University	Source
Alignment Align IT with the university's strategic objectives, make decisions on which IT projects to fund, make strategic IT decisions to support and enhance teaching, research and administration.	Gayle, Tewarie& White (2003),Albrecht &Pirani (2004), Dewey &DeBlois (2006)
Support Operations Make the operational IT decisions to support essential IT services and strategic need. Manage and maintain hardware, software, desktop and network, telecommunication and conduct capacity planning for future growth.	Hilton (2009), University System of Georgia IT Handbook (2018)
Innovation Make the IT decisions to promote innovation and advance the use of technology.	Bowen, Cheung & Rohde (2007), Yanosky& McCredie (2008)
Stakeholder Need Meet the need of university stakeholders, increase customer satisfaction, standardization; eliminate duplicate technology, reliable and cost effective service.	Clark University IT Services (2018), Yale University IT Services (2018)
Communication Receive campus community feedback in multiple ways to ensure decisions made reflect the needs of the institution, units, departments and individuals. Communicate the IT performance. Transparency in communication and communicate campus wide IT vision aligned with university's mission and goals. *Communicate* IT decisions to the stakeholders on funding and decision-making.	University of Michigan (2018), The University of Queensland (2018),The University of Texas at Austin (2018), Texas A&M University (2018)

Yanosky and Caruso (2008) suggested that the following are the elements of effective IT governance in the university:

- Clearly state the IT decision-making roles and responsibilities.
- The key IT decision makers should have an understanding of the high-level IT processes.
- Include the key stakeholders in the IT decision making.
- Use the IT governance processes in the project portfolio, project prioritization and project approval.

Kvakik (2004) suggested the following guidelines for establishing effective IT governance in the university:

- Represent and advocate the existing organizational structure and drive towards a positive organizational change.
- Make sure that the IT governance committee members have the necessary knowledge to fulfill their responsibilities.
- Obtain a strong support and sponsorship from the higher up executives.
- Align the IT effort with the university's vision and priorities.

The EDUCAUSE (2007) summit attended by over thirty higher education leaders emphasized on the following expectations of the university's IT governance:

- Align the IT with the university's strategic goals. IT governance must be a topic of discussion among the board members.
- The university's CIO must be a part of the university-wide enterprise strategic decision. The CIO will help the other executives understand the critical role of IT so that collaborative decisions could be made.

The university politics should not affect IT governance. The IT decision makers in the university need to trust the IT governance process and the CIO should work towards building the trust (Golden, Holland &Yanosky, 2007).

Good IT governance in the university is expected to ensure the consistency and accountability; so that when something goes wrong, or right, it is easier to trace what happened and what could be done about it (Chavira, 2013). IT governance is expected to make the important decisions about the security and data recovery, learning management system, hardware, software, infrastructure, outsourcing and utilization of shared IT resources (Lorenzo, 2008).

How University's IT Governance Maps to Theoretical Frameworks

This section studies how the IT governance in the university maps to the principles of the three prominent IT governance frameworks. The principles from three prominent IT governance frameworks, Weill & Ross framework (2004b), Grembergen& De Haes framework (2005) and ITGI framework (2003) are listed in this section. Next, the publicly available information from the university websites is studied to understand how the IT governance of the university maps to the principles of the three frameworks.

1. Accountability and Decision Rights (Weill & Ross, 2004b, pp. 1-55)

The IT governance in the university establishes the accountability and decision rights on the IT decisions. IT governance committees are formed to make decisions on the university's IT needs, and those committees are held accountable for those decisions. The IT governance in The University of North Carolina at Chapel Hill (2018) maps closely to the Weill and Ross (2004b, pp. 1-55) accountability and decision-making framework and provides the guidelines on the universities IT decisions on:

- *"Who makes decisions pertaining to goals, policies, investment, infrastructure, and architectures*
- *Who provides input and analyzes issues*
- *Who is held responsible and accountable?*
- *Who settles disputes?*
- *How decisions are made, implemented and managed."*

In The University of Texas at Austin (2018), the IT governance committees are held accountable for delivering on their responsibilities, and the appropriate constituency groups across campus are represented in the decision-making committees. In Texas A&M University (2018), the IT governance committees are held accountable to make

the "IT decisions with the subsequent implementation and execution of decisions in a timely manner."The University of Rhode Island formed IT governance to create a "culture of accountability that values and acts to use resources efficiently, continually improves services, and effectively manages risks to privacy and security" (Goldstein & Associates, LLC., 2015).

2. Committees with clear roles and responsibilities (Grembergen& De Haes, 2005).

The IT governance in the university is formed of committees with specific roles and responsibilities. The universities typically from separate committees to make decisions to support the teaching, research, administration and the technology infrastructure. Table 1 in the Appendix captures the names of the IT governance committees formed by the universities researched.

Teaching and Learning Committee

The teaching committee makes decisions on how to enhance the learning experience through the innovative use of IT and online learning, through the use of various learning management systems (Yanosky and McCredie, 2008). In The University of Utah (2018), The Teaching and Learning Committee has the responsibility to make decisions on the "learning management system, classroom technology, teaching and collaboration tools, and other teaching and learning technology tools" and will "prioritize projects, identify initiatives, and allocate seed money to innovative technology projects that support teaching and learning at the University."In Washington University in St. Louis (2018), The Teaching and Learning Domain committee "focuses on IT strategy, services, projects, and investments to improve learning and instruction."In Northwestern University (2018), IT governance Educational Technology Advisory Committee "provides oversight and sets priorities for the use of educational technologies that support the learning and teaching" such as Canvas learning management system, and Active Learning Environments that encourage student collaboration and peer teaching. In Washington State University (2018), Instructional Technology sub-committee is formed to recommend the strategies, priorities, policies, and standards with regard to technology used for instruction, evaluate classroom technologies and life-cycle make recommendations for improvement and funding, explore current and emerging faculty-centered instructional technologies and support for improved technology integration to enhance teaching and learning.

Research committee

The research committee makes decisions on how to support computationally intensive studies (Yanosky and McCredie, 2008) and to support the university's research initiatives. In Washington University in St. Louis (2018), the Research Information Systems Domain committee "focuses on strategy, services, projects, and investments to improve research technology" and covers the research areas around the clinical applications and research operations applications. In Washington University in St. Louis (2018), a few noteworthy IT projects governed by the Research Information Systems Domain committee to support the research initiatives are the high bandwidth network between campuses as well as the outside world, Research Storage Project to centralize the data storage and archival for researchers, and Electronic Laboratory Notebooks to explore the options for electronic laboratory notebooks on campus. In Northwestern University (2018), IT Research Technology Advisory Committee provides "strategic direction for research technology services and support that effectively support researchers, nurtures collaboration and partnership," reviews "requests for the evaluation and/or delivery of new research technologies," and makes recommendations on the training needs and additional initiatives to meet the current and emerging research needs.

The research universities have formed a separate committee to emphasize the use of IT to support the university research. On the other hand, the universities conducting less research did not form a research committee. A variation was found in the IT governance structure of The University of Utah (2018), which is a research university, but without a dedicated research committee; but has formed Strategic Information Technology Committee, which "considers technology-related issues brought forth by faculty, students, staff, and researchers and seeks solutions that align with the University's mission and strategic goals."

Technology Infrastructure Committee

The technology infrastructure committee makes the IT decisions on the university-wide policy and standards on the IT regulations, compliance, security, best practices, and how to support the use of new technologies including web, mobile and cloud services (Yanosky and McCredie, 2008). In Washington University in St. Louis (2018), The Security and Privacy Domain Committee makes recommendations on the IT security, technology, and the infrastructure. In Northwestern University (2018), IT Governance Infrastructure Advisory Committee ensures the "alignment of IT infrastructure services with academic and administrative direction, goals, and priorities" and considers "new infrastructure requirements or emerging technologies."

Administrative Committee

The administrative committee makes the IT decisions to support the administrative functions of the university, such as the student registration, payroll, and human resource. In Washington University in St. Louis (2018), The Administrative Domain Committee prioritizes the new IT investments to develop the strategy for the administrative functions on the alumni development, finance, human resources, communication and relationship management, and student administration. In Northwestern University (2018), IT Governance Administrative Systems Advisory Committee provides oversight and sets priorities for the "administrative systems' ongoing operations, enhancements, and new initiatives."The University of Utah (2018) has shown a variation by not forming the administrative committee, instead formed the IT Architecture and New Technology Committee, which is "is entrusted with hearing IT issues and makes recommendations that affect IT architecture and architecture standards, IT common services."

3. Strategic Alignment (ITGI, 2003, p. 20, Weill & Ross, 2004b, pp. 1-55, Grembergen& De Haes, 2005).

The IT investments in the university are expected to align with the university's strategic objectives. The strategic alignment in The Washington University in St. Louis (2018) is defined as "*aligning the IT function with university strategy to meet defined university goals and objectives.*"In Northwestern University (2018), the IT governance aligns the university's IT initiatives with the university's strategic plan and the business priorities; and establishes campus-wide IT priorities and policies in accordance with the university's strategic plan. In The University of North Carolina at Chapel Hill (2018), IT governance ensures the "*alignment of the University's enterprise application strategies with the University's academic mission, needs and objectives.*"

The IT governance issues are more strategic in the large universities than in the small universities, as the larger universities are focused on research and innovation, not just teaching (McCredie, 2006). As per McCredie (2006), some of the concerns of IT governance in the large, decentralized universities are as follows:

- The large universities have multiple IT divisions, which do not collaborate or share the IT governance best practices. Their effort may cater to the unit needs, instead of being aligned with the organizational priorities.
- IT governance consists of a combination of autonomous departments and the centralized unit, whose interests might conflict.

Universities form a separate strategic committee to ensure that the IT efforts align with university's strategic objectives. IT funding and project prioritization is a key decision made by the strategic committee (Yanosky and McCredie, 2008). In Washington University in St. Louis (2018), the IT Leaders Committee and the IT Council Committee align the IT proposals to the enterprise architecture, support model, IT Capital Plan, IT policy and principles, and then make the necessary recommendations. The strategic committee in University of Michigan(2018) "*focuses on strategic alignment and prioritization of investments. It helps ensure IT is working on the most important projects for the University and that appropriate resources are allocated to different areas.*" In North Carolina State University (2018), the objective of the strategic committee is to make sure that "*the university's IT strategy advances*

the university's academic/business missions, needs and objectives." In Texas A&M University (2018), the strategic committee ensures "*holistic alignment of IT resources and services University-wide.*" In The University of Utah (2018), strategic committee makes decisions on university "*programs, policy and initiatives that address central architecture, new technologies, funding, strategic and enterprise programs.*"

4. Value Delivery (ITGI, 2003, p. 20, Weill & Ross, 2004b, Grembergen& De Haes, 2005)

The IT initiatives in the university are expected to deliver the expected value. In Washington University in St. Louis (2018), "value delivery means ensuring economic and benefits values are realized in all IT investments, from project selection to implementation to ongoing management throughout the lifecycle." In The University of Queensland(2018), value delivery is to "maximize the value of Information Technology resources to provide stakeholder value."In The University of North Carolina at Chapel Hill (2018), value delivery ensures that the IT "enterprise applications deliver benefit and provide value to the University's overall business functions."The guiding principle of the IT governance in North Carolina State University (2018) is to assure that "the IT strategy delivers benefits and provides value." In Texas A&M University (2018), IT governance plays an important role in "value realization, optimization of IT investment", and "IT creates optimal value (bundle of benefits less the actual costs as viewed by the consumer of an IT service or resource) by delivering the services and resources necessary to enable the fulfillment of the University mission and business objectives."In The University of Wisconsin at Oshkosh (2018), the IT governances ensure that the IT investments are effectively executed and the intended benefits are realized.

5. Performance Measurement (ITGI, 2003, p. 20, Weill & Ross, 2004b, Grembergen& De Haes, 2005)

The IT projects in the university are approved and supported by the university's IT governance and are expected to meet the performance criteria. In Washington University in St. Louis (2018), "performance measurement includes determining and establishing performance measures to define the success of IT projects and services. Measurement of alignment with university strategy, funding allocation, and project results are considered." The University of Queensland (2018), performance measurement "includes determining and establishing performance measures that define the success of IT projects and services. Measurement of alignment with University strategy, funding allocation, and project results are also considered." In North Carolina State University (2018), IT performance is tracked and monitored through established metrics. In Texas A&M University (2018), IT governance guideline is used to monitor "performance and compliance against agreed-on direction and objectives."

6. Risk Management (ITGI, 2003, p. 20, Weill & Ross, 2004b)

The IT governance in the university manages the issues and the risks related to the unauthorized access to data and information, disruption of the IT services and any violation of the regulatory and compliance policies and procure. The university's IT division works with the university community to set up the IT policies, procedures and initiates IT projects to safeguard against these issues and risks. At Washington University in St. Louis (2018), risk management involves examining risks and security objectives across the IT enterprise and implementing protective measures to improve the university's risk posture. In The University of Queensland (2018), IT governance committee ensures "compliance and Information Technology Risk is identified and mitigated appropriately" and it "involves examining IT risks and security objectives across the institution and implementing mitigating measures that reduce the University's risk profile. Compliance with government guidelines and legislation and with good procurement practice is also monitored." In North Carolina State University (2018), IT governance guidelines are set to understand the "awareness of IT risks, and effective Bund appropriate management of these risks." In Texas A&M University (2018), IT governance committee communicates the IT-related risk, risk management activities, privacy-related policies, procedures, on-campus information security, and data privacy-related work. In The University of Wisconsin at Oshkosh (2018), IT governance sets policies to monitor, evaluate and mitigate the IT investment risks and realizing the opportunities.

7. Resource Management (Weill & Ross, 2004b, pp. 1-55, ITGI, 2003).

The IT governance in the university oversees the university's IT infrastructure and asset needs, including the personnel, software, hardware, and the network. In Washington University in St. Louis (2018), "resource management includes optimizing IT resource capacity and performance while forecasting future IT needs to plan for changing staffing requirements. The IT governance structure provides macro level direction on resource management." In The University of North Carolina at Chapel Hill (2018), the IT governance ensures "optimal investment in and proper management of software development resources including applications and support staff."In The University of Queensland (2018), resource management "includes optimizing IT resource capacity and performance while forecasting future needs, including the appropriate IT staffing profile." In North Carolina State University (2018), IT governance committee provides guidelines on "optimal investment in and proper management of IT resources, including applications, information, infrastructure, and people."In The University of Wisconsin at Oshkosh (2018), IT governance considers the allocation of financial, human and tangible resources in alignment with the university priorities.

8. IT Domains - IT Principle (Weill & Ross, 2004b)

The IT governance in the university considers the IT domain of IT principle on how to use IT to meet university's strategic and operational needs. In Washington University in St. Louis(2018) "the IT governance structure is forward thinking able to respond to the rapidly evolving world of technology innovation" and sets guidelines on "technical guidelines and standards." The IT governance's strategic plan for the North Carolina State University (2018) provides the blueprint needed to "lead IT innovation and to fully engage campus stakeholders and partners in the process" and it "provides the direction, tools, and structure for the IT community to transform into an active and sought-after partner for creative solutions and efficient, effective services and support; address the IT-centric issues, needs and shared concerns required to weave technology into the fabric of the University; and deliver a unified and balanced approach to a diverse culture and distributed campus IT environment." In Northwestern University (2018), the IT governance structure "establishes the strategic, operational, and technical decision-making process necessary to ensure an innovative, reliable, and robust information technology." In Emory University (2018), "the IT Architecture Group works closely with groups spearheading new technology and standards to help operationalized and document new technology and practices in their initial phases of adoption."

9. IT Domain - IT Architecture, IT Infrastructure (Weill & Ross, 2004b)

The IT governance in the university makes decisions on the IT domains of the university's IT architecture and IT infrastructure. In Washington University in St. Louis (2018), the IT Leaders Committee recommends the IT strategy and architecture, "focuses on decisions such as IT policy, IT architectures and IT infrastructure." In Northwestern University (2018), IT Governance Infrastructure Advisory Committee recommends "new infrastructure requirements or emerging technologies" ensures "alignment of IT infrastructure services with the academic and administrative" priorities, advises on IT security, controls and policies. In The University of North Carolina at Chapel Hill (2018), IT Infrastructure Coordinating Committee makes decisions on the core IT infrastructure, such as the data center facilities, networking, storage, virtualization technologies, service location technologies, infrastructure services including Directory Services, Databases and Web services, and the infrastructure efficiency processes. In The University of Utah (2018), the Architecture and New Technology Committee "is entrusted with hearing IT issues and making recommendations that affect IT architecture and architecture standards, common IT services, and the adoption and implementation of new technologies," application and data architecture, cross-functional enterprise projects and IT security issues. In Emory University (2018), Technology Infrastructure Committee evaluates the "strategic importance and utility of each proposed project with a focus on maintaining architecture and security standards across campus."

10. IT Domain - Business Need (Weill & Ross, 2004b)

The IT governance in the university makes decisions on the IT domain of business need by evaluating the business need for an IT project, selects the project, and sets the priority. The IT governance in Northwestern University (2018) "establishes campus-wide IT priorities and policies in accordance with the University Strategic Plan, and is accountable to the University."Washington University in St. Louis(2018) relies on IT Executive Committee and IT Council to make enterprise-wide strategic IT decisions and "prioritizes projects and IT investments."In The University of Manitoba (2018), IT Advisory Committee ensures the "effectiveness of IT Governance and its alignment with University-wide strategy and business priorities."The IT governance in North Carolina State University (2018) makes sure that the university's strategy "advances the university's academic/business missions, needs, and objectives." In Texas A&M University (2018), the IT governance ensures that "IT enables and supports the achievement of the University mission and business objectives."

11. IT Domain - IT Investment (Weill & Ross, 2004b)

The IT governance in the university makes decisions on the IT domain of IT investment. In the University of Washington in St. Louis (2018), IT Service Investment Board makes decisions on the IT "service costs, funding levels and support of strategic goals as outlined by the IT Strategy Board." In Emory University (2018), IT governance committees "approve project requests for initiatives that anticipate work that will be greater than 10 person-days or $20,000."In The University of Manitoba (2018), IT investments arise because of the legislative and regulatory changes, compliance and contractual requirements, and findings from the internal audits; and the IT governance committee approves the IT projects if the proposed solution is in excess of $20,000. The IT Advisory Committee reviews the "University-wide IT investments for alignment with institutional goals, evaluate benefits and risks, and make recommendations" (University of Manitoba, 2018).In University of California at Berkeley, IT governance appraises "the breadth and scope of the Berkeley's IT portfolio to prioritize appropriate investments in new capabilities to support the University's core missions and to realize efficiencies and cost savings in its business operations" (Conrad, 2014).

12. Sharing of Services and Lessons Learned (Grembergen& De Haes, 2005)

The IT governance in the university considers how to share the IT services and utilize the lessons learned from the prior IT initiatives. In Washington University in St. Louis (2018), IT governance answers questions on how to build and deliver the shared services effectively and efficiently and considers the common shared services used by the faculty, staff, and students, including the phone services, internet access, document storage, and email. In The University of Illinois System (2018), the Business Process Improvement Shared Service provides "support for initiatives seeking to improve customer service, free-up staff time, deliver services faster and/or reduce total cost. Support is provided through a pool of resources available for facilitation of targeted BPI engagements, methodology, and toolset for executing BPI engagements, and training on the concepts and techniques of process improvement initiatives."University of Cincinnati (2018) formed an IT governance committee as Shared Infrastructure to make decisions on the university's IT services, which are shared by multiple colleges and business units. The IT governance in The University of Rhode Island (2018) is formed as "an important step towards a shared service-managed delivery of IT for the University."

Characteristics of IT Governance Committee Structure

This section explores various characteristics of the IT governance committee structure in the university.

Intermediary Committee, such as IT Council

Universities have formed an intermediate committee between the executive committee and the lower level committees of teaching, research, administration, and IT infrastructure. Western Carolina University (2018) formed an intermediary committee, such as IT Council, which is a go-to committee in between the top level Executive

Council committee and the Teaching/Academic committee, Administrative and Core IT/Infrastructure committees. Virginia State University (2018) also formed the University Council committee between the Executive committee and the Teaching, Administrative and Core IT committee. The University Council committee provides the strategic guidance on university's IT priorities and the resource allocation. In University of Manitoba (2018), University Information Technology Advisory Council is formed as an intermediary committee, supported by five committees structured into portfolios that represent the university's faculty, student, research and administrative business needs. This committee recommends the IT investments to the top governance structure, which are formed of CIO and Vice President of Administration.

Student and Alumni Representation in IT Governance

A separate IT governance committee is formed to represent the IT needs of the students and to utilize IT for alumni outreach. Northwestern University (2018) voices the student experiences and alumni outreach needs by forming a Student Experience committee. Washington University in St. Louis (2018) has formed the Student Advisory group with similar intent in mind. In North Carolina State University (2018), the Student Senate committee is comprised of sixty-nine students, who represent each of the university's schools and colleges, including undergraduates, graduates, and non-degree students. In The University of Virginia(2018), the Student Information System Advisory Board provides institutional recommendations to support the evolution of the student information system. In Virginia State University (2018), Student Advisory Committee for Technology serves as a communication liaison between the student body and the technology leadership team solely to give input on technology innovations, enhancements, and improvements. Washington State University (2018) formed the Student Experience sub-committee to provide advice and guidance for the issues related to the student use of technology.

Finance Representation in IT Governance

The finance department of the university is represented in the IT governance committee structure of the university. This unit helps in making the decisions on how to allocate university's funds and assets on the IT initiatives. In North Carolina State University (2018), the IT Strategic Advisory Committee is represented by the Treasurer's Office, Associate Vice Chancellor for Finance and Administration; and this committee prioritizes the IT investment requests received from the Teaching, Research, and IT infrastructure sub-committees. In Northwestern University (2018), the Executive Committee is represented by the Senior Vice President of Business and Finance; and in addition, Financials IT Committee is formed as an advisory committee on the IT investments. In Washington University in St. Louis (2018), the Administrative Committee has representation from the university's finance unit. In Emory University (2018) the finance subcommittee is formed to review and understand "the financial context for IT services and forwarding recommendations for project funding levels".

Human Resource Representation in IT Governance

The human resources department of the university is represented in the IT governance committee structure to make decisions on the use of IT to support the human resources and administrative functions. In Northwestern University (2018), Human Resources IT Committee is formed as an advisory committee to make decisions on the use of IT to sustain and improve human resource functions. In Washington University in St. Louis (2018), the Administrative Committee is represented by the university human resource, which prioritizes the new IT investments and strategies to develop the university's human resource. In The University of Virginia (2018), the Human Resources/Finance Senior Advisory Board is comprised of directors and data stewards to prioritize the major IT initiatives on human resources and finance. In Emory University (2018), Human Resources/Payroll subcommittee is formed to provide "oversight, authorization, and prioritization for operational and project work for PeopleSoft, Kronos Time & Attendance, and any current and future ancillary systems closely aligned or dependent upon" and this committee is also responsible for

approval of projects that utilize Library & Information Technology Services resources assigned to the technical support of human resources and ancillary systems.

Procurement Representation in IT Governance

The procurement division of university is represented in the IT governance committee structure to make decisions on IT procurement, contract negotiation, vendor management and purchasing of the IT product and services. Washington State University (2018) formed IT Procurement and Contracts sub-committee to identify the areas of IT expenditure where central contracts and agreements will be most beneficial to the university, to assist in the negotiation and operation of such arrangements, establish, manage and promote framework contracts/preferred supplier lists. In The University of Queensland (2018), the Associate Director of IT Governance is responsible for engaging closely with the vendors and driving the positive procurement outcomes.

Audit and Regulation Representation in IT Governance

The IT audit is represented in the university's IT governance committee structure and it ensures that the IT products and projects comply with the university and industry standards and regulations. In the University of Alberta (2018), the IT Enterprise Committee is formed to make strategic decisions and it ensures that the university's IT decisions comply with the audit requirements, drives the compliance with external and internally established regulations and standards on information security, privacy and risk management, and maintains the disposition of university's IT assets, including the digital records. In University of Pennsylvania (2018) the IT audit is used for managing the risk and compliance services, assessing the effectiveness of the new IT requests made to the IT governance committee, determining the software licensing compliance, evaluating the network security, privacy, data integrity, keeping up with the industry best practices, and applicable laws and regulations, and assessing the compliance with the Health Insurance Portability and Accountability Act (HIPAA) Security Rule, and the Health Information Technology for Economic and Clinical Health (HITECH) Act. In Western Illinois University (2018), the legal counsel and regulation are represented in the IT Governance Council, which is the top level IT governance body. In The University of Alabama at Tuscaloosa (2018), the Executive Steering Committee is represented by the university's legal counsel and advises on the legal, compliance and audit implications on the IT projects initiated by the university.

Project Management Office (PMO) Role in IT Governance

The PMO of the university is found to play a role in the university's IT governance by assisting the IT governance committees with the project intake process and by answering questions related to the project portfolio and project management discipline. In Cornell University (2018), PMO is the receiver of all new IT project requests and the Statements of Need, and PMO helps improve the project charter by including the executive summary of the proposed project, names of the sponsor(s) and stakeholders, requested timeline, benefits, risks, integration complexity, costs and ownership responsibility, explanation of why a solution is needed if a similar one exists, estimating funding and the funding source. Once a project charter has been approved, the PMO further works with the project stakeholders, unit project managers, business analysts, and subject matter experts to provide a detailed analysis of functionality, scope, resourcing, cost/benefit, and risk/benefit. Based on this, there will be a go/no-go decision, after sponsors and stakeholders review the discovery findings. In Southern Methodist University (2018), PMO assists in coordinating the IT governance efforts, IT project portfolio, and provides data support for decision-making to functional, strategic, and executive councils. In Old Dominion University (2018), an IT project requester submits a project request to the PMO; and PMO initiates an analysis process, reviews the request for completeness and forwards the preliminary evaluation to the Project Review Team under the university's IT and project governance. In Creighton University (2018), the PMO includes the IT PMO Director, project managers and analysts, who in turn assist the individuals and departments in navigating the university's IT governance process. In University of Manitoba (2018), IT governance is supported and

administered by the PMO, represented by the IT Director, Planning and Governance, and the PMO ensures proper classification and handling of requests, supports the committees, and otherwise administers the governance processes.

Project Specific Committee

Universities form project or product specific IT governance sub-committees to make decisions on a particular product or a project. In The University of Virginia (2018), the Identity and Access Management Steering Committee approves decisions and resolves issues associated with the access control, and the Office 365 Steering Committee approves decisions and resolves issues associated with the Microsoft Office 365. In Missouri State University at Springfield (2018), the Blackboard Steering Committee provides leadership on the continued development of the campus course management system. This working group represents faculty and support staff who have experienced Blackboard users with the primary focus on the ongoing review and recommendations regarding Blackboard. Oregon State University at Corvallis (2018) also formed the Blackboard Steering Committee to ensure that the strategic alignment of the university's learning management system meets the campus needs and establishes a repeatable process to gather, evaluate and prioritize requests for features and functionality in Blackboard. The evaluation criteria are based on the impact to the students, instructors, and data, as well as potential legal, technical, Family Educational Rights and Privacy Act (FERPA) and disability access issues. Appalachian State University at Boone (2018) has also formed the Learning Management System Advisory Committee to aid with the IT decisions on the university's learning management system.

Task Force

Universities form temporary task forces under the umbrella of IT governance to make IT decisions on a project request. In the University of Texas at Austin (2018), task forces can be appointed by any of the existing IT governance committees on an as-needed basis to investigate issues and explore different IT solutions. In the University of Rochester(2018), the Data Security Task Force was established to develop the policy and procedure, oversee the deployment of technology, assess risk, and recommend strategies for risk mitigation. Task force is also formed to make strategic decisions. In Metropolitan State University (2018), Technology Strategic Planning Taskforce was formed to create the IT strategic plan with a set of core themes, such as the customer service, service reliability, and infrastructure and technology initiatives. In California State University at San Bernardino (2018), the task forces are created on the as-needed basis for a set time frame by the IT governance executive committee to investigate issues and explore different IT solutions. In Washington State University in St. Louis (2018), Research Computing sub-committee is formed to identify the application domains representing existing and emerging areas of academic and research strength, and to recommend how to deploy, sustain, and re-capitalize a modern research computing infrastructure.

Strategic versus Operational Need

IT governance in university makes the distinction between the strategic and operational needs, supported by the IT initiatives. In Washington University in St. Louis (2018), IT Council recommends IT principles and needs; and a separate IT Leaders Committee recommends the IT strategy. In The University of Texas at Austin (2018), and the North Carolina State University(2018) the IT governance committees have strategic, operational and technical focus. In the University of Utah at Salt Lake City (2018), the Strategic Information Technology Committee is formed to raise, hear, and discuss IT issues affecting multiple areas of the university community and makes recommendations to the university's executive leadership team for a final decision. In Texas A&M University (2018) the Strategic IT Committee is the direct input body to the Executive IT Council and advises and executes decisions on IT strategies, investments, operations, priorities and services. In Washington State University (2018), IT Strategic Advisory Committee is the middle layer between the IT Executive Board, and the teaching, research, administration, committees; and also

forms ad-hoc task forces for strategic planning. In Virginia State University (2018), the IT governance is divided into operational, strategic and executive tiers.

Discussions

This section is a general discussion on the explorations made on the IT governance drives and the committee structure in university.

High Adoption of IT Governance in University

A search on the university websites indicates that a majority of the universities in the USA have now formed IT governance. The presence of IT governance is also found in the universities outside of the USA; although this article primarily focused on the universities in the USA. The appendix contains a rich set of list of the universities from the USA, which have formed IT governance. The IT needs in the universities are increasing to meet the strategic, operations, regulation and compliance requirements. The universities face the constraints of limited budget, limited resource, and conflicting priorities. Universities have formed IT governance as the accountability and decision making structure to decide which IT project(s) to select, and how to allocate the limited IT funds and resources.
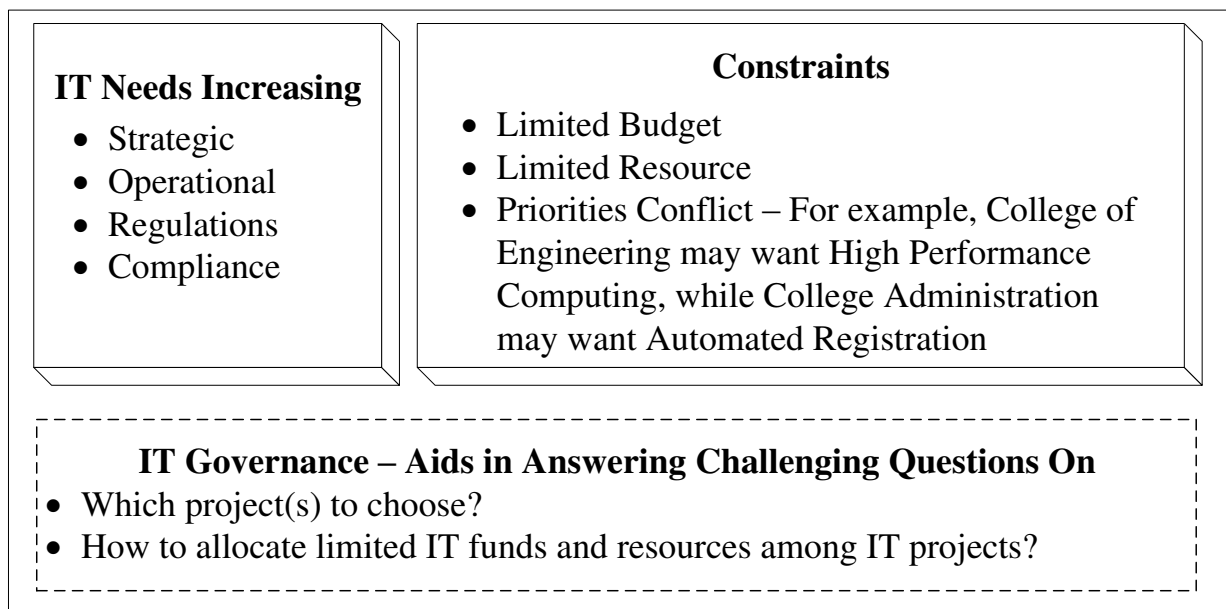
IT Needs Increasing
- Strategic
- Operational
- Regulations
- Compliance

Constraints
- Limited Budget
- Limited Resource
- Priorities Conflict – For example, College of Engineering may want High Performance Computing, while College Administration may want Automated Registration

IT Governance – Aids in Answering Challenging Questions On
- Which project(s) to choose?
- How to allocate limited IT funds and resources among IT projects?

Figure 4. IT governance in university aids answering challenging questions

Typical IT Governance Committee Structure

A typical IT governance committee structure in university is formed of executive committee at the top to make the final IT decision on the major IT efforts across the campus. Intermediate committees are formed under the executive committee. Separate committees are formed to support teaching, research, administrative functions and the core IT infrastructure and services. Large research universities form a separate committee to support research, while that may not be present in a smaller teaching-focused university. Variations are found with the formation of additional committees and subcommittees to support the Executive Committee and the teaching, research, administration and core IT committees. Temporary task forces are formed to asses an IT request, which in turn reports the findings and recommendations to the IT governance committee(s).
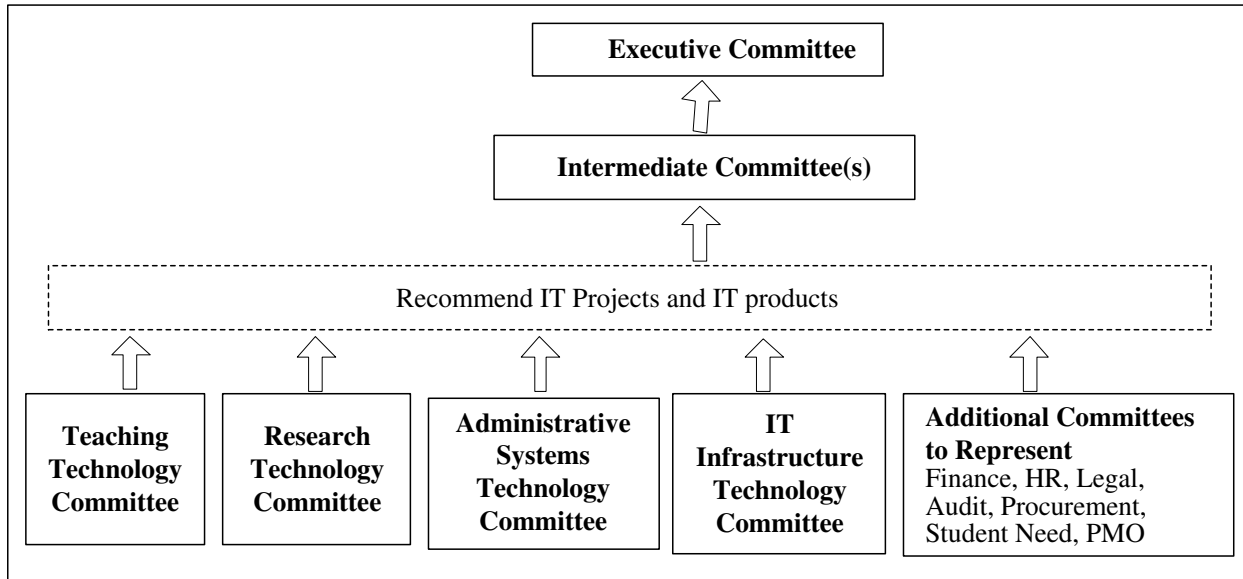
Figure 5. Typical IT governance committee structure in university

Size of University and IT Governance Committee Structure

Both the small and large universities have the IT need to support and enhance the teaching, research, administrative functions, and to ensure the security of the data and information. However, a large university does these things in a larger scale by involving a higher number of stakeholders with the input and decision rights and caters to a higher number of end-users. Larger university exhibits a more complex IT governance committee structure than a small university. Based on the universities researched, Table 2 in appendix lists the approximate number of IT governance committees formed in those universities. The larger university typically forms a higher number of IT governance committees than a smaller university.

Strong Adherence to the IT Governance Frameworks

The IT governance principles in university adhere closely to the three major IT governance frameworks, as discussed in this article. "The NC State IT governance model is based on the Weill and Ross Framework, which is defined as the decision rights and accountability framework to encourage desirable behavior in the use of IT" (North Carolina State University, 2018).In University of Alberta (2018), the key elements of the IT governance include strategic business alignment, value delivery, organizational structure, responsibility and control, accountability, risk management, and performance monitoring, which are also the key principles found in the three major IT governance frameworks. In The University of North Carolina at Chapel Hill(2018) the IT governance processes map very closely to the accountability and decision making the framework of Weill and Ross (2004b, pp. 1-55). In Washington University in St. Louis (2018), IT governance focuses on five key areas, which are strategic alignment, risk management, value delivery, performance measurement, and resource management, which are also the key areas of ITGI framework (2003).

Limitations of This Research

It was not possible to study all the universities because of the time limitation. The researcher chose a random sample of the large research universities and small teaching-focused universities. The number of universities researched was adequate to triangulate the evidence. The posterior findings supported the findings from the prior universities of similar characteristics.

This research made use of the publicly available information from the university websites. It is not known how current, accurate and up to date these pieces of information are. Never the less, the findings revealed similar information among multiple universities, using which the state of the IT governance in the university could be understood.

Future Research

The appendix provides a rich set of the list on the universities that have established IT governance, which could be further studied. Instead of relying on the publicly available information, case study research could be conducted, and additional information could be gathered by interviewing the university's IT governance participants and the stakeholders, reviewing the IT governance documents and artifacts and observing the execution of the IT governance guidelines. This will help better understand the health of the university's IT governance, its decision-making process, and its effectiveness.

The universities could be studied to understand to what extent the IT governance policies and procedures have adhered, how they are put into practice, how the IT project decisions are made under the IT governance committee structure, and if there is any gap between the IT governance guidelines and its execution. Additional research could be conducted on the success criteria of the IT governance and the quality of the IT decisions made under the IT governance in university.

Conclusion

The universities have acknowledged the importance of forming IT Governance. Both large and small universities have now formed IT governance. In the absence of IT governance, the universities faced a challenge in making the IT decisions. To aid with the IT decisions, the universities have now established IT governance. It is found that the IT governance guiding principles in the university closely conform to the prominent IT governance theoretical frameworks. Governance in the university is formed of the IT committees representing teaching, research, administration, core IT, executive committee and intermediary committees and ad-hoc task forces. The IT governance in the universities holds the committees accountable to make decisions in the respective areas. IT decisions are made on multiple IT domains. Considerations are made on the strategic alignment of the IT initiatives with the university objectives, value delivery of IT endeavors, IT risk, and performance and resource utilization.

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APPENDIX

The Table 1 in the appendix lists the IT governance committee names of a few of the universities studied in this article. The committee names are listed for strategic, teaching, research, administrative system and IT infrastructure. Additional committees and sub-committees were found in the IT governance committee structure, but they are not listed in Table1 of the appendix.

Table 1. IT governance committee names

University Name (Source)	Strategic	Teaching Technology Committee	Research Technology Committee	Administrative Systems Technology Committee	Infrastructure Technology Committee
Research universities					
North Carolina State University (2018)	IT Strategic Advisory Committee	Academic Technology	Research Computing	Client and Application Support	Infrastructure
Northwestern University (2018)	IT Executive Committee, IT Council	Educational Technology Advisory Committee	Research Technology Advisory Committee	Administrative Systems Advisory Committee	Infrastructure Advisory Committee
Texas A&M University (2018)	Strategic IT Committee	Teaching and Transformational Learning Technologies Committee	Research and Innovative Technologies Committee	Enterprise Applications Committee	Architecture and Infrastructure Committee
The University of Texas at Austin (2018)	Strategic IT Accountability Board	Research and Educational Technology Committee		Business Services Committee	IT Architecture and Infrastructure Committee
The University of Utah (2018)	Strategic IT Committee	Teaching and Learning Portfolio Committee	None	None	IT Architecture and New Technology Committee
University of Manitoba (2018)	VP Admin and CIO	Student IT Experience Committee	Research Computing Advisory Committee	Administrative Services Committee	Enterprise IT Architecture Committee
Washington State University	IT Strategic Advisory Committee	Instructional Technology	Research Computing	Student Experience, IT Procurements and Contracts	Enterprise Applications, IT Infrastructure
Washington University in St. Louis (2018)	IT Executive Committee	Teaching and Learning Domain Committee	Research Information Systems Domain Committee	Administrative Domain Committee	Security and Privacy Domain Committee
Universities with less emphasis on research					
Appalachian State University (2018)	IT Executive Council	Teaching and Learning Spaces Advisory Group	None	Administrative Services	Information Security Advisory Council
Virginia State University (2018)	University Council	Academic Technology Steering Committee	None	Admin IT Steering Committee	IT Services Management Committee
Western Carolina University (2018)	Executive Council	Academic Technology Advisory Committee	None	Administrative Technology Advisory Committee	Infrastructure Technology Advisory Committee
Western Illinois University (2018)	Executive Committee	Instructional/ Scholarly Alliance	None	Administrative Alliance	Technical Alliance

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The Table 2 in the appendix lists the approximate number of IT governance committees found in the universities researched.

Table 2. IT Governance Committee Numbers

University Name (Source)	Approximate Number of IT Governance Committees
Larger University	
North Carolina State University (2018)	10
Northwestern University (2018)	6
Texas A&M University (2018)	8
The University of Texas at Austin (2018)	6
The University of Utah (2018)	8
University of Manitoba (2018)	5
Washington State University	16
Washington University in St. Louis (2018)	11
Smaller University	
Appalachian State University (2018)	4
Virginia State University (2018)	8
Western Carolina University (2018)	4
Western Illinois University (2018)	5

The Table 3 in the appendix lists the IT governance websites of multiple universities in the USA. The websites are arranged in an alphabetic order of the states of the USA. Because of the time constraint, the researcher did not search for the IT governance websites of all the universities in the USA. This table demonstrates that a good number of universities in the USA have already established IT governance.

Table 3. IT Governance Implementation in universities in the USA

US State	University	Source on ITGovernance (Retrieved.July, 2018)
Alabama	University of Alabama at Tuscaloosa	https://oit.ua.edu/about/it-advisory-management/
Alabama	Auburn University at Auburn	https://cws.auburn.edu/CIO/pm/governance
Alaska	University of Alaska at Anchorage	http://www.alaska.edu/oit/itgovernance/
Arizona	University of Arizona at Tempe	https://it.arizona.edu/it/about
Arizona	Arizona State University	https://provost.asu.edu/sites/default/files/page/2555/uto-strategic_plan_2014-2018.pdf
Arkansas	University of Arkansas at Little Rock	https://its.uark.edu/about/index.php
California	University of California at Berkeley	https://technology.berkeley.edu/governance
California	University of California at Santa Cruz	https://its.ucsc.edu/governance/index.html
California	University of California at Los Angeles	https://oit.ucla.edu/governance
Colorado	Colorado State	http://it.agsci.colostate.edu/

	University at Fort Collins	
Colorado	University of Colorado at Boulder	http://www.colorado.edu/avcit/governance
Connecticut	University of Connecticut at Storrs	https://itcommunity.uconn.edu/#
Florida	University of Florida at Gainesville	https://it.ufl.edu/governance/
Florida	Florida State University at Tallahassee	https://its.fsu.edu/it-professionals
Georgia	University of Georgia at Athens	https://www.usg.edu/information_technology_services/it_handbook
Georgia	Georgia Institute of Technology at Atlanta	https://oit.gatech.edu/it-governance
Illinois	University of Illinois at Urbana-Champaign	http://itgov.illinois.edu/
Illinois	Western Illinois University	https://www.wiu.edu/university_technology/it_governance/council.php
Indiana	Purdue University	https://www.purdue.edu/cio/
Indiana	Indiana University at Bloomington	https://ovpueit.indiana.edu/about/strategic-plan/1-it-governance.html
Iowa	University of Iowa at Iowa City	https://oneit.uiowa.edu/governance
Iowa	Iowa State University at Ames	https://www.committees.iastate.edu/comm-info.php?id=164
Kentucky	University of Kentucky at Lexington	https://ukhealthcare.uky.edu/staff/information-technology
Maine	University of Maine at Orono	http://www.maine.edu/its/usit/message-from-the-cio/
Maryland	University of Maryland at College Park	https://it.umd.edu/governance
Massachusetts	University of Massachusetts at Amherst	https://www.umass.edu/it/policies/informationsecuritypolicy
Michigan	University of Michigan at Ann Arbor	http://cio.umich.edu/governance
Michigan	Michigan State University at East Lansing	https://tech.msu.edu/about/it-governance/
Minnesota	University of Minnesota at Minneapolis	https://it.umn.edu/community/resources-it-staff/itg
Mississippi	Mississippi State University at Starkville	https://www.its.msstate.edu/about/governance/
Missouri	University of Missouri at Columbia	Could not find
Montana	University of Montana at Missoula	https://www.umt.edu/it/about/governance/default.php
Nebraska	University of Nebraska at Lincoln	https://www.unl.edu/chancellor/topadmin/vc_staff/mark-askren
Nevada	University of Nevada at Reno	http://www.unr.edu/it
New Hampshire	University of New Hampshire at Durham	https://www.unh.edu/it/governance
New Jersey	New Jersey Institute of Technology at Newark	https://ist.njit.edu/mission-information-services-technology/
New Mexico	University of new Mexico at Albuquerque	http://cio.unm.edu/about-governance.html
New York	State University of New York at Albany	http://www.ctg.albany.edu/projects/itgov
North Carolina	University of North Carolina at Chapel Hill	http://its.unc.edu/office-of-the-cio/
North Carolina	University of North	http://itservices.uncc.edu/home/it-governance

	Carolina at Charlotte	
North Carolina	North Carolina State University at Raleigh	https://oit.ncsu.edu/governance-strategy/
North Carolina	Western Carolina University at Cullowhee	https://www.wcu.edu/learn/academic-services/it/aboutit/itgovprioritization/index.aspx
North Dakota	University of North Dakota at Grand Forks	https://www.ndsu.edu/its/blackboard_migration/
Ohio	Ohio University at Athens	https://www.ohio.edu/oit/governance/
Oregon	Oregon State University, Corvallis	https://is.oregonstate.edu/leadership/governance-advisory-groups/it-security-governance-committee
Pennsylvania	Pennsylvania State University at State College	https://rcci.psu.edu/
Rhode Island	University of Rhode Island at Kingston	http://web.uri.edu/amrc/information-technology-subcommittee-report/
South Carolina	University of South Carolina at Columbia	https://www.sc.edu/about/offices_and_divisions/division_of_information_technology/governance/index.php
Tennessee	University of Tennessee at Knoxville	http://tennessee.edu/systemfacultycouncil/docs/reports/UT_IT_report_%20August_2007.pdf
Texas	Texas A&M University	https://cio.tamu.edu/it-governance/index.php
Texas	University of Texas at Austin	https://cio.utexas.edu/itgovernance
Utah	University of Utah at Salt Lake City	https://it.utah.edu/cio/it-governance-overview.php
Virginia	University of Virginia at Charlottesville	https://cio.virginia.edu/it-governance
Virginia	Virginia State University	http://www.vsu.edu/techservices/it-services/it-goverance.php
Washington	University of Washington at Seattle	http://www.washington.edu/uwit/governance/
Washington	Washington State University	https://itgovernance.wsu.edu/
West Virginia	University of West Virginia at Morgantown	https://it.wvu.edu/policies-and-procedures
Wisconsin	University of Wisconsin at Madison	https://it.wisc.edu/it-community/governance/
Wyoming	University of Wyoming at Laramie	http://ets.wyo.gov/governance