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Conceptualizing AI Governance Through Organizational Learning: A Heuristic Framework for Higher Education

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Abstract

The rapid expansion of generative artificial intelligence (GenAI) in higher education has intensified concerns about ethics, accountability, academic integrity, privacy, transparency, bias, and governance. Existing approaches to AI governance emphasize compliance, procedural oversight, ethical safeguards, and risk mitigation. Although this provides an essential foundation for responsible AI use, these approaches offer limited theoretical explanation of how institutions develop and sustain governance capacity as AI technologies continue to evolve. This article draws on organizational learning theory and reconceptualizes AI governance as a system of organizational learning through which institutions generate organizational knowledge, integrate experience, revise governance practices, and adapt to technological, pedagogical, ethical, and organizational change. The article advances a conceptual framework that integrates scholarship on AI governance and organizational learning to explain how governance capacity develops through continuous organizational learning. The framework offers a theoretical foundation for strengthening institutional resilience, responsible innovation, and effective human–AI collaboration in higher education.

Keywords: artificial intelligence, GenAI governance, organizational learning, higher education, AI governance, institutional adaptation

1. Introduction

Generative artificial intelligence (GenAI) is reshaping higher education by transforming teaching, learning, research, and institutional administration. While earlier educational technologies primarily expanded access to information and communication, GenAI performs cognitive tasks such as content generation, data analysis, problem solving, decision support, and knowledge creation (Bearman et al., 2023; Zawacki-Richter et al., 2019). These capabilities have accelerated institutional adoption across instructional design, assessment, advising, student support, research, and administrative operations to personalize learning, improve educational quality, strengthen student success, and enhance institutional effectiveness (Crompton & Burke, 2023; Michel-Villarreal et al., 2023). As GenAI becomes increasingly embedded in core institutional functions, colleges and universities face mounting pressure to ensure that its

use advances educational objectives while safeguarding institutional integrity, public trust, and academic values (Wu et al., 2024).

The rapid diffusion of GenAI has intensified concerns regarding privacy, transparency, accountability, bias, intellectual property, and the appropriate role of AI in academic and administrative decision-making (Holmes et al., 2022; UNESCO, 2023; Williamson & Eynon, 2020). These concerns arise not only from the expanding use of AI across institutional functions but also from the distinctive characteristics of large language models. Unlike conventional information technologies, large language models rely on probabilistic reasoning rather than deterministic rules, producing outputs that may exhibit emergent behaviors and change over time through ongoing model development (Judge et al., 2025; National Institute of Standards and Technology [NIST], 2023; Reuel & Undheim, 2024). As a result, their outputs are often difficult to predict, explain, validate, and consistently govern. These characteristics expose the limitations of governance approaches designed for stable technologies and underscore the need for governance systems that support responsible innovation while preserving meaningful human judgment, ethical accountability, and institutional legitimacy (Wu et al., 2024).

In response to these challenges, AI governance scholarship has increasingly emphasized frameworks grounded in transparency, accountability, privacy, ethical oversight, and risk management. Among the most influential are the NIST AI Risk Management Framework and the Organisation for Economic Co-operation and Development (OECD) AI Principles, which have informed institutional policies, acceptable use guidelines, procurement practices, oversight mechanisms, and governance structures intended to promote trustworthy AI (Batoool et al., 2023; Judge et al., 2025; Jiang & Abdullah, 2026). More recently, scholars have argued that effective AI governance requires adaptive approaches characterized by flexibility, stakeholder participation, cross-sector collaboration, iterative learning, and continuous improvement as institutions respond to rapidly evolving technological capabilities and regulatory environments (Ansell & Gash, 2008; Folke et al., 2005; Reuel & Undheim, 2024; Şen et al., 2026). These developments have significantly advanced understanding of the principles, structures, and processes necessary for responsible AI governance. However, they provide comparatively limited theoretical explanation of the organizational learning processes through which institutions interpret implementation experience, integrate new knowledge, revise governance practices, and develop the capabilities required to govern AI effectively over time (Fjeld et al., 2020; Batoool et al., 2023).

Organizational learning theory provides a theoretical foundation for addressing this limitation by explaining how institutions acquire, interpret, integrate, and institutionalize knowledge to improve future action (Argyris & Schön, 1978; Crossan et al., 1999; Fiol & Lyles, 1985). Rather than viewing adaptation as a series of discrete responses to external change, organizational learning conceptualizes it as a continuous organizational capability through which experience informs decision-making, routines, and institutional practice. Although adaptive governance scholarship acknowledges the importance of learning, experimentation, and responsiveness, it has devoted comparatively little attention to the organizational learning processes through which governance capabilities emerge, evolve, and become embedded within institutions. This article addresses that theoretical gap by reconceptualizing AI governance as an organizational learning system that enables higher education institutions to continuously interpret emerging challenges, integrate new knowledge, adapt governance practices, and strengthen institutional capacity for the responsible use of AI.

Existing AI governance scholarship has largely conceptualized governance as a system of principles, policies, oversight mechanisms, and risk management practices. This article reconceptualizes AI governance as an

organizational learning capability through which institutions continuously generate knowledge, reinterpret experience, revise governance assumptions, and strengthen governance capacity over time.

Methodological Approach

This article adopts a theory-building conceptual research design to develop a heuristic framework that explains AI governance through the lens of organizational learning. Rather than testing hypotheses or evaluating governance practices empirically, it synthesizes established theoretical perspectives to explain how higher education institutions develop, adapt, and sustain AI governance capabilities as technologies, institutional contexts, and societal expectations evolve. Conceptual research is particularly appropriate when existing scholarship identifies important phenomena but offers limited theoretical explanation of the mechanisms that connect them, enabling the integration of existing knowledge into new explanatory frameworks (Jaakkola, 2020; Whetten, 1989). Although AI governance scholarship has advanced principles, ethical safeguards, accountability mechanisms, risk management approaches, and regulatory frameworks, it has devoted comparatively little attention to the organizational processes through which governance capabilities emerge, evolve, and become institutionalized. This article addresses that theoretical gap by integrating scholarship on AI governance, adaptive governance, and organizational learning.

Framework development followed an iterative process of theoretical synthesis. Scholarship on AI governance established the institutional challenges associated with transparency, accountability, ethics, privacy, risk management, and responsible AI adoption. Research on adaptive governance contributed concepts related to institutional flexibility, stakeholder participation, collaboration, experimentation, and continuous adaptation. Organizational learning theory supplied the explanatory mechanism by describing how organizations acquire, interpret, integrate, institutionalize, and apply knowledge to improve future action (Argyris & Schön, 1978; Crossan et al., 1999; Fiol & Lyles, 1985). Rather than treating these bodies of literature as separate theoretical traditions, the analysis examined their conceptual intersections to explain how organizational learning enables institutions to transform implementation experience into governance knowledge, revise governance practices, and strengthen AI governance capabilities over time.

Framework development followed an abductive process of conceptual integration in which recurring concepts, theoretical relationships, and explanatory patterns were identified across the literature and synthesized into a coherent model (Jaakkola, 2020). The analysis emphasized conceptual coherence and explanatory power rather than exhaustive literature coverage. Particular attention was given to identifying governance dimensions that recur across AI governance scholarship and examining how organizational learning explains their interdependence and continuous development. The resulting framework integrates seven interrelated dimensions of AI governance: AI adoption, governance mechanisms, stakeholder engagement, ethical oversight, feedback loops, knowledge integration, and governance adaptation. Organizational learning serves as the integrative mechanism connecting these dimensions into a dynamic governance capability.

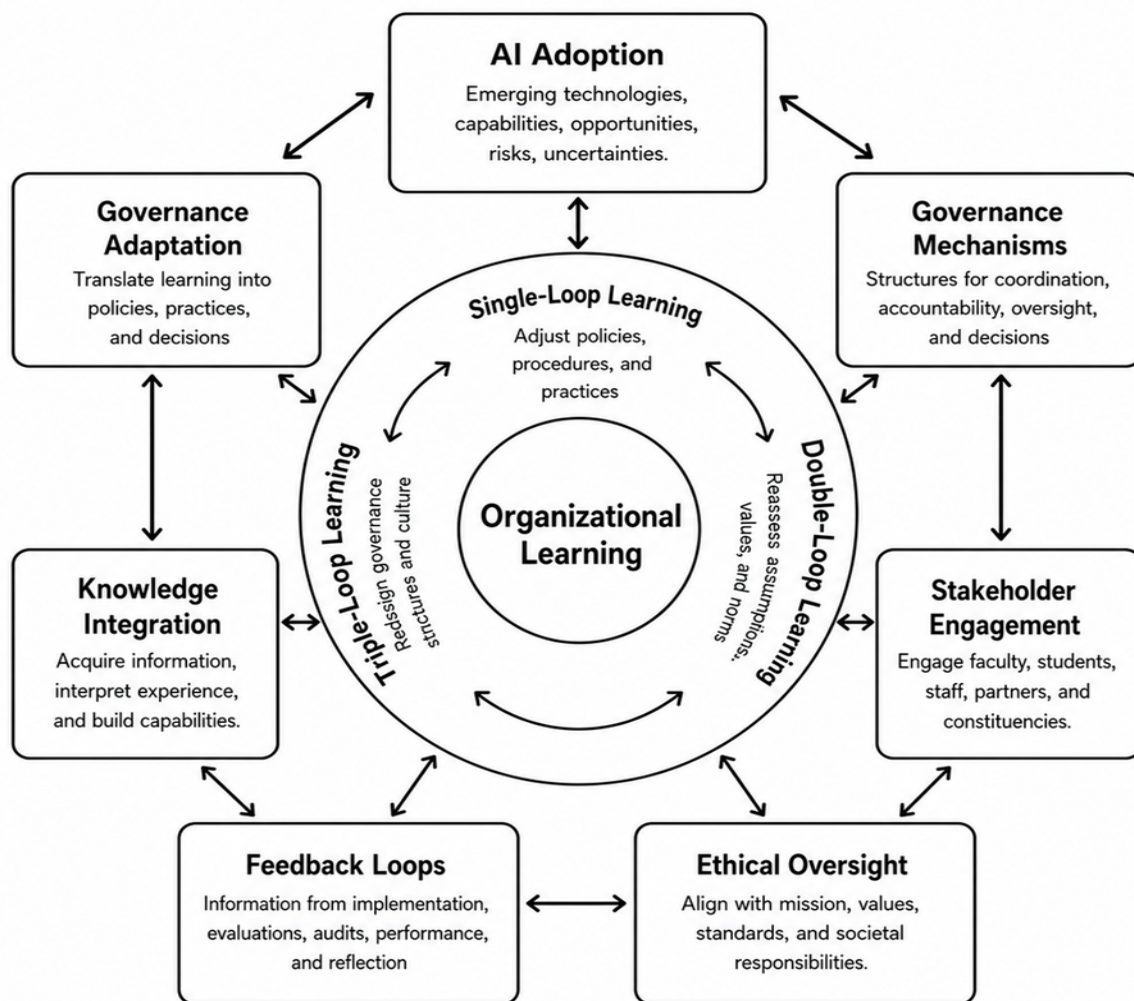
The proposed framework is intended as a heuristic model rather than a prescriptive governance framework or a validated causal model. Its purpose is to explain how organizational learning connects established governance concepts into an adaptive institutional capability that evolves through experience. The framework provides a theoretical foundation for future empirical research to operationalize its constructs, examine relationships among governance dimensions, and evaluate its applicability across diverse higher education contexts.

Conceptual Framework

Building on the preceding theoretical synthesis, the proposed framework conceptualizes AI governance as an organizational capability that develops through organizational learning. Rather than viewing governance as a collection of policies, oversight structures, or compliance mechanisms, the framework explains how institutions transform implementation experience into organizational knowledge that informs governance decisions, strengthens governance capability, and supports adaptation to technological, pedagogical, ethical, and organizational change. Organizational learning serves as the integrative mechanism through which governance capability develops, evolves, and is sustained (Argyris & Schön, 1978; Crossan et al., 1999; Fiol & Lyles, 1985).

The framework comprises seven interrelated dimensions that function as complementary governance capabilities rather than sequential stages of implementation. These dimensions recur consistently across contemporary AI governance scholarship and collectively represent the principal organizational capabilities through which institutions govern AI responsibly and adapt governance over time (Batool et al., 2023; Fjeld et al., 2020; Judge et al., 2025; Jiang & Abdullah, 2026; Reuel & Undheim, 2024). AI adoption generates organizational experience with emerging technologies. Governance mechanisms establish the institutional structures, policies, and decision processes that guide responsible implementation. Stakeholder engagement incorporates the perspectives of relevant external and internal stakeholders into governance deliberations. Ethical oversight ensures that governance decisions remain aligned with institutional values, professional responsibilities, and societal expectations. Feedback loops capture evidence from implementation and institutional practice. Knowledge integration synthesizes experience across governance activities into organizational knowledge that informs institutional decision-making. Governance adaptation applies this knowledge to refine policies, strengthen governance practices, and enhance institutional capability in response to emerging opportunities and challenges.

Figure 1 illustrates the proposed framework, with organizational learning positioned at its center as the integrative mechanism linking the seven governance dimensions. Rather than functioning independently, these dimensions continuously interact through organizational learning. Implementation experience, stakeholder deliberation, ethical oversight, and institutional feedback are collectively interpreted, integrated into organizational knowledge, and translated into revised governance practices. These revisions generate new implementation experiences that re-enter the learning process, creating a continuous cycle through which governance capability evolves over time.

Figure 1*AI Governance as an Organizational Learning System*

The framework conceptualizes AI governance as an iterative process rather than a linear sequence of activities. Governance capability emerges through continuous interaction among organizational actors, governance structures, and institutional learning processes. As AI technologies, institutional priorities, and external environments evolve, institutions accumulate implementation experience, reinterpret existing assumptions, strengthen governance mechanisms, and revise organizational routines. Governance capability therefore develops through learning and adaptation rather than through static administrative structures alone.

The framework further incorporates three complementary levels of organizational learning to explain how governance capability matures over time (Argyris & Schön, 1978, 1996). Single-loop learning supports incremental improvements to existing policies, procedures, and governance practices in response to operational experience. Double-loop learning examines and revises the assumptions, values, and institutional norms that shape governance decisions. Triple-loop learning evaluates the governance system itself by questioning how institutions learn, govern, and adapt in response to technological and organizational change. Together, these learning processes enable

institutions not only to improve governance practices but also to strengthen their capacity to govern AI under changing technological, organizational, and societal conditions.

The framework extends existing AI governance scholarship by explaining how governance capability develops rather than simply identifying the principles, structures, or mechanisms that support responsible AI. It integrates implementation experience, stakeholder engagement, ethical oversight, organizational knowledge, and governance adaptation within a single explanatory model that accounts for the continuous evolution of governance capability. As a heuristic framework, it provides a theoretical foundation for future empirical research to operationalize its constructs, examine relationships among governance dimensions, and evaluate how higher education institutions cultivate and sustain AI governance capability over time.

Discussion

AI governance in higher education must enable institutions to respond to rapid technological change without compromising accountability, transparency, or institutional responsibility. Existing governance frameworks establish important principles for ethical oversight, risk management, and trustworthy AI (National Institute of Standards and Technology [NIST], 2023; Organisation for Economic Co-operation and Development [OECD], 2024). However, they offer comparatively limited theoretical explanation of how institutions develop and sustain the capabilities required to govern AI as technologies, institutional priorities, and societal expectations continue to evolve.

Viewing AI governance through the lens of organizational learning shifts attention from governance structures and compliance mechanisms to the organizational processes through which governance capability develops. Adaptive governance emphasizes flexibility, stakeholder participation, collaboration, and responsiveness, yet it offers limited explanation of how these characteristics become embedded within institutional practice. Similarly, prevailing AI governance frameworks identify the principles, structures, and safeguards necessary for responsible AI but provide comparatively little insight into the organizational processes through which governance capability is acquired, refined, and sustained. The framework proposed in this article addresses this limitation by identifying organizational learning as the mechanism through which institutions transform implementation experience into organizational knowledge, integrate stakeholder perspectives, revise governance practices, and strengthen governance capability over time.

Whereas organizational learning theory has traditionally been applied to organizational adaptation, strategic renewal, knowledge management, and organizational change (Argyris & Schön, 1978; Crossan et al., 1999; Fiol & Lyles, 1985), this framework extends its application to AI governance. Rather than treating organizational learning as one element of governance, this framework positions organizational learning as the central theoretical mechanism through which AI governance capability emerges, develops, and adapts over time. Organizational learning is therefore conceptualized as the explanatory process that connects implementation experience, stakeholder engagement, ethical deliberation, feedback, knowledge integration, and governance adaptation into a dynamic institutional capability. Accordingly, the framework reconceptualizes AI governance not as a collection of principles, policies, or oversight mechanisms, but as an organizational capability that develops through continuous learning. In doing so, the article contributes not only to AI governance scholarship but also to organizational learning theory by identifying AI governance as an emerging domain through which organizational learning is enacted and institutionalized.

This perspective also has important implications for governance in higher education. Authority, expertise, and responsibility for AI are distributed across academic, administrative, technical, and legal domains, making effective governance inherently collaborative rather than exclusively hierarchical. Organizational learning explains how implementation experience, ethical deliberation, stakeholder engagement, and institutional feedback are interpreted collectively and translated into governance decisions. Governance capability therefore depends not only on formal policies and oversight structures but also on the institution's capacity to acquire, integrate, and apply knowledge across organizational boundaries.

The framework further suggests that AI governance should be understood as an institutional capability that evolves through learning rather than as a fixed administrative function. As generative AI becomes increasingly embedded in teaching, learning, research, and institutional operations, governance must balance innovation with human judgment, ethical accountability, and institutional legitimacy. This balance cannot be achieved solely through compliance with established policies because the technologies themselves continue to evolve. Institutions must therefore continually reinterpret experience, reassess governance assumptions, and refine governance practices in response to changing technological capabilities, organizational priorities, and societal expectations.

By positioning organizational learning as the explanatory mechanism underlying AI governance, this article extends existing governance scholarship beyond predominantly compliance- and risk-oriented perspectives. The proposed framework explains how governance capability develops through the interaction of implementation experience, stakeholder engagement, ethical oversight, feedback, knowledge integration, and governance adaptation. In doing so, it offers a theoretical foundation for future empirical research examining how colleges and universities cultivate, evaluate, and strengthen AI governance capability in increasingly complex technological environments.

Implications for Practice

The proposed framework suggests that effective AI governance depends as much on institutional learning as on formal governance structures. Consequently, institutions should evaluate governance not only by the existence of policies, oversight mechanisms, or regulatory compliance but also by their ability to acquire, integrate, and apply knowledge generated through AI implementation. Governance effectiveness therefore reflects an institution's capacity to learn from experience and continually refine its governance practices as technologies and institutional contexts evolve.

The framework also highlights shared governance as a strategic source of organizational intelligence. Because expertise related to AI is distributed across faculty, administrators, information technology professionals, librarians, legal counsel, students, and external partners, governance decisions benefit from structured processes that integrate diverse perspectives. Such collaboration strengthens institutional judgment, broadens consideration of ethical and operational issues, and improves an institution's capacity to respond to emerging technological and organizational challenges.

Organizational learning further depends on institutional processes that systematically capture, interpret, and apply implementation experience. Cross-functional governance committees, periodic policy reviews, stakeholder consultation, governance dashboards, and regular evaluation of AI-supported academic and administrative practices provide opportunities to transform operational experience into organizational knowledge. These mechanisms enable

governance practices to evolve in response to technological advances, institutional priorities, and changing regulatory expectations rather than relying on periodic policy revisions alone.

The framework also positions AI literacy as an essential governance capability rather than solely a professional development initiative. Faculty, staff, administrators, and students require sufficient understanding of AI to participate meaningfully in governance deliberations, critically evaluate AI-enabled decisions, and exercise informed professional judgment. Broad institutional AI literacy therefore strengthens governance by improving the quality of participation, oversight, and decision-making across the institution.

Finally, the framework suggests that institutional resilience depends on embedding organizational learning within governance itself. Institutions that routinely interpret implementation experience, integrate new knowledge, and reassess governance practices are better positioned to respond to continuing technological change while preserving institutional mission, educational quality, ethical accountability, public trust, and meaningful human oversight.

Limitations

The proposed framework has several limitations. As a theory-building conceptual model, it has not been empirically examined within higher education institutions and should therefore be regarded as an explanatory framework rather than a validated representation of AI governance. Its conceptual constructs and proposed relationships remain subject to empirical refinement and validation across institutional contexts.

The framework also reflects a synthesis of organizational learning, adaptive governance, and AI governance scholarship. Although these theoretical perspectives provide a coherent explanation of how governance capability develops, they do not capture the full diversity of institutional environments, governance arrangements, organizational cultures, or regulatory contexts that shape AI governance in practice. Consequently, the framework should be viewed as a heuristic for understanding governance capability rather than a universal model applicable to all institutions.

Future research should operationalize the framework's constructs, examine the relationships among its governance dimensions, and evaluate its explanatory value across diverse higher education settings. Comparative case studies, longitudinal research, and mixed-methods designs may be particularly valuable for examining how organizational learning influences the development, institutionalization, and evolution of AI governance capability over time.

Conclusions

Generative artificial intelligence is reshaping higher education in ways that require institutions to reconsider how AI governance is understood and enacted. Existing governance frameworks provide essential guidance for accountability, transparency, ethical oversight, and risk management, yet they offer comparatively little explanation of how institutions develop the capacity to govern AI as technologies and institutional environments evolve. This article addresses that limitation by identifying organizational learning as the mechanism through which AI governance capability develops, adapts, and is sustained. The proposed heuristic framework explains how implementation

experience, stakeholder engagement, ethical oversight, feedback, knowledge integration, and governance adaptation interact to strengthen institutional capability over time.

Viewing AI governance through the lens of organizational learning shifts attention from governance as a predominantly compliance-oriented function to governance as an institutional capability shaped through experience, reflection, and adaptation. This perspective suggests that effective governance depends not only on appropriate policies and oversight structures but also on an institution's ability to acquire, interpret, integrate, and apply knowledge as AI technologies continue to evolve. In higher education, where governance responsibilities are distributed across academic, administrative, technical, and legal domains, organizational learning provides the process through which diverse expertise is transformed into informed governance decisions.

The framework also offers a foundation for future scholarship by positioning organizational learning as a theoretical lens for understanding the evolution of AI governance in higher education. Future empirical research can examine how governance capability develops across institutional contexts, how organizational learning influences governance effectiveness, and how institutions cultivate the capacities required to govern increasingly complex AI technologies. As generative AI continues to reshape teaching, learning, research, and institutional operations, the long-term effectiveness of AI governance will depend not only on increasingly sophisticated regulatory frameworks but on institutions' ability to learn continuously, adapt responsibly, and govern in ways that sustain educational quality, institutional legitimacy, and public trust.

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Author Contributions

Muddassir Siddiqi conceived the idea, developed the theoretical framework, conducted the literature review, synthesized the literature, interpreted the findings, prepared the figures, and wrote, reviewed, and revised the manuscript. The author has read and approved the published version of the manuscript.

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Conflicts of Interest

The author declares no conflicts of interest.