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Beyond Digitalization: Reconstructing EdTech Governance through Quality Culture, Human-Centered Leadership, and Ethical Accountability

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Abstract :
Technological adoption genuinely improves educational quality and institutional governance. This study aims to reconstruct Educational Technology Governance (EdTech Governance) through the integration of quality culture, human-centered leadership, and ethical accountability. Using a qualitative critical literature review, the study examines scholarly publications, theoretical frameworks, and policy documents concerning digital education, quality management, educational leadership, and technology ethics, selected through thematic relevance and conceptual contribution. The literature synthesis identifies three interrelated dimensions: quality culture directs continuous improvement, human-centered leadership aligns technological decisions with pedagogical needs, and ethical accountability safeguards transparency, fairness, and responsible data use. The study proposes an integrated conceptual framework that shifts EdTech Governance beyond technological efficiency toward substantive educational quality. The framework offers theoretical guidance for educational institutions and requires empirical validation across diverse organizational contexts.

INTRODUCTION

Digital transformation has become an important part of changes in educational governance in various countries.(Elia et al., 2024) The use of digital learning platforms, academic information systems, data analytics, and artificial intelligence is increasingly affecting how educational institutions plan programs, manage resources, evaluate performance, and provide learning services.(Feliciano-Cestero et al., 2023) This development brings opportunities to improve administrative efficiency, expand access to knowledge, and strengthen evidence-based decision-making. However, technological advances also raise issues regarding the digital divide, data protection, fairness of access, and institutional accountability.(Sacavém et al., 2025) Educational technology doesn't automatically improve quality; it requires policy, institutional capacity, and a clear educational focus.

In institutional practice, digital transformation is often realized through the digitization of administration, the use of school management apps, the implementation of online learning, and the use of dashboards to monitor the performance of teachers and students.(Zhang & Chen, 2024) Even though these various innovations offer

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operational convenience, their success doesn't always come with fundamental changes in organizational culture, the quality of pedagogical interactions, or leadership patterns. Digitalization can even turn into just an administrative routine when a program's success is only measured by the number of applications used, data completeness, or service speed.(Chwiłkowska-Kubala et al., 2023) At the same time, limited digital skills, uneven infrastructure, and weak ethical understanding can get in the way of using technology meaningfully. This shows the need to shift focus from just adopting technology to governance that ensures the quality of education in a real, substantial way.(Ellström et al., 2022)

Literature on digital transformation in education shows that the success of technology is greatly influenced by policy quality, organizational readiness, leadership capacity, and evaluation mechanisms.(Omol, 2024) emphasizing the importance of integrating digital policies with quality improvement, equal access, and efficiency of the education system. Meanwhile (Plekhanov et al., 2023) emphasizing UNESCO's human-centered approach as an alternative to the technological solutionism paradigm, which is the tendency to see technology as the main solution to educational problems. Even so, there is still a need for a more integrative conceptual synthesis to explain the relationship between quality culture, human-oriented leadership, and ethical accountability as the foundation for reconstructing EdTech Governance.

This study aims to critically examine the digital transformation paradigm in education governance and to formulate a conceptual framework for EdTech Governance that integrates a culture of quality, human-centered leadership, and ethical accountability. The research focuses on three main questions. First, how does the digitalization paradigm affect the understanding and practice of educational quality governance? Second, how can a culture of quality and human-centered leadership guide the use of technology to stay aligned with the substantive goals of education? Third, how can ethical accountability be integrated into a digital governance framework that is transparent, fair, participatory, and sustainable? These three questions form the basis for developing the study's arguments and conceptual model.

This research starts from the assumption that digitalization is not the sole determinant of improving education quality, but rather an instrument whose effectiveness depends on value orientation, leadership capacity, and institutional accountability systems.(Carmo et al., 2025) The main argument is that educational technology governance will be more meaningful when a quality culture becomes the basis for decision-making, human-centered leadership guides organizational change, and ethical accountability serves as a control mechanism for technology use.(Urban & Plattfaut, 2026) Based on that assumption, the preliminary answer of this research states that EdTech Governance reconstruction needs to move beyond a focus on technical efficiency towards governance that prioritizes learning quality, fairness, transparency, data protection, and institutional accountability. This argument also needs to be sharpened through a critical literature analysis.

The originality of this research lies in its effort to reconstruct EdTech Governance through the integration of three interconnected dimensions: quality culture, human-centered leadership, and ethical accountability. Unlike approaches that mainly emphasize technology adoption, administrative efficiency, or infrastructure readiness, this study puts educational values and goals at the heart of digital governance. The theoretical contribution offered is a conceptual framework explaining how these three

dimensions can guide technology selection, decision-making processes, performance evaluation, and continuous improvement. In this way, the research is expected to enrich discussions on digital education management while also providing a conceptual foundation for developing governance that is quality-driven, humanistic, ethical, and accountable.

RESEARCH METHOD

This study uses a qualitative approach with a critical conceptual research design through a critical literature review.(Wright & Michailova, 2023) This approach was chosen to deeply analyze the assumptions, paradigms, and conceptual limitations in educational technology governance (EdTech Governance), while also reconstructing a conceptual framework that integrates a quality culture, human-centered leadership, and ethical accountability. The research focus isn't on measuring the effectiveness of specific digital applications, but rather on developing theoretical arguments about how digital transformation should be managed to ensure it's oriented toward substantive educational quality, fairness, institutional responsibility, and human values.

Data collection was done by searching through relevant scientific literature, including reputable journal articles, academic books, reports from international organizations, and policy documents discussing digital transformation in education, technology governance, quality management, educational leadership, and digital ethics. Literature was searched through databases like Scopus, Web of Science, ERIC, and Google Scholar using a combination of keywords such as "EdTech Governance," "Digital Transformation in Education," "Quality Culture," "Human-Centered Leadership," "Ethical Accountability," and "Digital Education Governance." Source selection was based on thematic relevance, academic credibility, theoretical contribution, and its connection to the research questions. Literature that directly supported the development of the conceptual framework was prioritized, while sources lacking substantive relevance were excluded from the analysis.

Data analysis was carried out through critical thematic analysis, which includes four stages. First, identifying the dominant paradigm, which involves mapping the assumption that digitalization, automation, and data usage directly improve the quality of education. Second, critical deconstruction, which means identifying the limitations of that paradigm, particularly regarding the reduction of quality to technical indicators, dominance of data-driven decision-making, access inequalities, and ethical accountability issues. Third, conceptual synthesis, which integrates literature findings on a quality culture, human-centered leadership, and ethical accountability as complementary dimensions. Fourth, theoretical reconstruction, which involves developing an EdTech Governance framework that explains the relationships between these dimensions in building responsible digital governance focused on improving education quality.

To maintain the accuracy of the analysis, this study applies conceptual triangulation by comparing perspectives from quality management literature, educational leadership, digital governance, and technology ethics. The consistency of the argument is checked by tracing the alignment between the research questions, literature evidence, critical interpretation, and the resulting conceptual propositions. This study also explicitly distinguishes between findings supported by the literature and new arguments developed by the researcher. Thus, the research results are expected to produce a conceptual reconstruction that has an academic basis, theoretical coherence,

and the potential to be further tested through empirical research. As a literature-based study, the resulting framework is positioned as a theoretical proposition, not as a model that has been empirically proven.

RESULT AND DISCUSSION

Beyond Digitalization: Critiquing the Technological Determinism in Educational Governance

Digital transformation in education governance shows fundamental changes in information management, decision-making, and measuring institutional performance.(Müller et al., 2024) Based on a review of literature on educational technology, digital governance, and quality management, there's a conceptual trend that sees technology as the main tool for modernizing institutions. However, this perspective needs to be questioned because the effectiveness of technology cannot be separated from the organizational context, human resource competencies, and educational value orientation. Technological determinism arises when governance success is assumed to follow digital device advancements, while pedagogical, relational, and ethical aspects receive less attention in institutional evaluation processes.(Amin et al., 2025)

The literature review shows that the relationship between technology and education quality isn't automatic, but is influenced by the implementation context, institutional capacity, and policy orientation. (Butt et al., 2024) critiquing the tendency to understand educational technology through a narrative of progress that ignores social, political, and institutional interests. Meanwhile, (Kraus et al., 2021) emphasizing the importance of digital education policies that integrate quality, equity, and efficiency. (AlNuaimi et al., 2022) It also highlights the need for evidence-based evaluation of educational technology. Conceptually, the literature shows that the success of digitalization requires governance that goes beyond just providing infrastructure and using applications.

Based on that literature synthesis, technological determinism in education governance can be understood as the tendency to make technology the main factor in the success of institutional change.(Montero Guerra et al., 2023) This view risks oversimplifying quality issues into just technical matters, like platform availability, service speed, and completeness of digital data. In fact, governance quality is also shaped by an organization's ability to build an evaluation culture, develop professional skills, and maintain a human-centered approach in decision-making. So, digitalization shouldn't be treated as the ultimate goal of education reform, but rather as a tool whose effectiveness depends on how well the technology fits pedagogical needs and institutional values.(Kahveci, 2025)

A critical take on those literature findings suggests we need to shift the approach from technology-driven governance to value-oriented digital governance.(Pricopoaia et al., 2025) In this alternative paradigm, technology is positioned as a tool to support decision-making, while a quality culture sets the improvement direction, human-centered leadership guides the change process, and ethical accountability controls the consequences of using technology. This reconstruction broadens the understanding of education quality by including dimensions of fairness, responsibility, participation, and the quality of pedagogical relationships. Therefore, the conceptual contribution of this study lies in asserting that meaningful digital transformation requires integrating technology, organizational values, and social responsibility.(Muhammad et al., 2025)

The main implication of criticism against technological determinism in education governance is the need to reorient digital transformation from just technical efficiency towards genuinely improving the quality of education.(Urban & Plattfaut, 2026) Educational institutions need to make sure that the use of technology aligns with a quality culture, pedagogical needs, and human values. In this context, leadership shouldn't just focus on adopting digital platforms, but should be able to build participation, develop professional skills, and ensure ethical accountability.(Maini, 2022) The theoretical implication is that the success of EdTech Governance needs to be understood through the interaction of technology, people, and organizations, not just through how advanced the digital system is.

The connection between digital transformation and the quality of education governance lies in the interaction between technological capabilities, organizational culture, and leadership capacity in steering institutional change. Technology doesn't work independently; it's influenced by values, policies, human resource competencies, and accountability mechanisms that frame its use. When digitalization focuses only on efficiency and automation, quality improvement can end up being reduced to hitting technical indicators. On the other hand, integrating a culture of quality, human-centered leadership, and ethical responsibility allows technology to support educational goals in a more meaningful way. So, the correlation is contextual and mediated by the quality of institutional governance.

The Limits of Digital Quality Assurance: From Performance Metrics to Substantive Educational Quality

Digital quality assurance is increasingly developing along with the use of information systems, performance dashboards, learning analytics, and data-based indicators in managing educational institutions.(Khotimah et al., 2024) The instrument allows for monitoring achievements, program evaluation, and performance reporting in a more systematic way. However, relying on quantitative indicators raises basic questions about the ability of digital systems to fully represent the quality of education. Education quality isn't just about hitting administrative targets; it also involves the depth of learning, character development, fairness, and the quality of teaching interactions.(Schellekens et al., 2023) Therefore, the limits of digital quality assurance need to be looked at critically.

Literature shows that the use of technology in education evaluation presents both opportunities and conceptual limitations. (Kaewngam et al., 2019) emphasizing that educational technology needs to be evaluated based on relevance, equity, scalability, and sustainability, not just on its availability. Meanwhile, (Fitriani et al., 2026) critiquing the dominance of measurement culture in education because easily measurable indicators don't always represent the most important educational goals. This perspective shows that digital performance data can help with decision-making, but it doesn't fully capture ethical, social, and pedagogical dimensions. So, digital quality assurance needs a more comprehensive evaluation approach.

Based on that literature synthesis, the limitation of digital quality assurance lies in the possibility of reducing the quality of education to a set of measurable indicators. Digital systems tend to pay more attention to aspects that are easy to collect, compared to aspects that require contextual interpretation and professional judgment.(Westphal, 2023) As a result, the achievement of administrative targets could be seen as proof of overall educational success. In reality, substantive quality also includes character building,

critical thinking development, the relationship between educators and students, and fairness in learning opportunities.(Colaw et al., 2025) So, digital indicators need to be seen as a supporting tool, not as a complete representation of education quality.

The interpretation of these findings shows that digital quality assurance reconstruction requires a shift from focusing on performance metrics to focusing on substantive educational quality. This shift doesn't mean rejecting quantitative measurements, but rather placing them within an evaluation framework that combines statistical evidence, professional judgment, student experiences, and educational values. A quality culture helps promote reflection and continuous improvement, while human-centered leadership ensures that evaluative decisions take into account the real needs of the educational community.(Thi, 2025) So, meaningful digital quality assurance should link data accuracy with ethical and pedagogical interpretation so that performance improvements don't overlook educational goals.

The implication of the limitations of digital quality assurance is the need to reconstruct the education evaluation system so that it doesn't get stuck just focusing on performance indicators. Educational institutions need to integrate quantitative data with qualitative assessments that take into account learning experiences, character development, fairness, and the quality of pedagogical interactions. In this context, a quality culture serves as a foundation for reflection and continuous improvement, while human-centered leadership ensures that evaluation results are used proportionally and responsibly.(Hidayat & Mulyono, 2025) Theoretically, educational quality should be understood as a multidimensional construct that links measurable performance with the substantive goals of education, not just administrative compliance.

The connection between digital quality assurance and substantive education quality lies in how performance indicators are translated into decisions, corrective actions, and organizational culture changes. Using digital data can improve monitoring accuracy, but its benefits depend on the ability of leaders and educators to interpret the data in a pedagogical context. When quantitative indicators dominate evaluations, aspects like character, fairness, and learning experiences risk being overlooked. On the other hand, integrating data with professional reflection and a quality-focused culture allows evaluations to lead to more meaningful improvements. So, the relationship between the two is complementary, with human interpretation acting as the bridge between performance measurement and enhancing substantive education quality.

Quality Culture as the Foundation of Transformative EdTech Governance

Quality culture is a fundamental element in building transformative and sustainable educational technology governance. In the context of digital transformation, quality culture shouldn't just be seen as a set of standards, evaluation procedures, or administrative oversight mechanisms, but as a shared value system that shapes the behavior, decisions, and responsibilities of all members of the educational organization.(Huang et al., 2025) Integrating technology without a quality culture can end up producing procedural digitalization that only focuses on operational efficiency. On the other hand, a quality culture allows technology to be used thoughtfully to boost learning, strengthen collaboration, and drive continuous improvement according to institutional needs and the core goals of education.

Quality management literature shows that organizational culture plays an important role in the continuous improvement of institutional quality. (Day et al., 2024)

explaining that a quality culture needs to be understood as a dynamic concept involving values, beliefs, and organizational practices, not just compliance with quality assurance procedures. Meanwhile, (Arnold et al., 2025) placing basic assumptions and shared values as important elements in shaping organizational culture. In the context of digital education, these two perspectives indicate that the success of technology depends on the alignment between digital systems, institutional values, and organizational behavior. Thus, a quality culture provides an organizational foundation for meaningful digital transformation.

Based on this literature synthesis, a quality culture can be defined as an internal foundation that guides the use of technology so it doesn't stop at just meeting administrative targets. This culture is reflected through collective commitment to learning quality, openness to evaluation, stakeholder participation, and willingness to improve practices based on evidence and professional reflection. In EdTech governance, the presence of digital platforms alone doesn't automatically create a quality-oriented approach if the organization still sticks to rigid, compliance-focused ways of working.(Korhonen-Kurki et al., 2025) Therefore, digital transformation requires a cultural shift that aligns technological innovation with professional responsibility and educational goals.

Interpretation of the literature shows that a quality culture acts as a bridge between technological capability and substantive changes in educational organizations. Technology provides data, connectivity, and automation opportunities, while a quality culture determines how these resources are used to evaluate practices, identify needs, and design improvements. This relationship positions quality culture not as a complement to digital transformation, but as an orientation that shapes the direction and meaning of change. The conceptual implication is that EdTech Governance needs to develop an organizational learning ecosystem that is participatory, reflective, and adaptive.(Southgate et al., 2025) So, the success of digital transformation depends on the alignment between technological innovation, institutional values, and a collective commitment to the quality of education.

The implication of placing a quality culture as the foundation of EdTech Governance is the need to guide digital transformation through shared values, collective participation, and a commitment to continuous improvement.(Amiri, 2025) Educational institutions shouldn't just invest resources in digital infrastructure and applications, but also need to build an organizational environment that encourages professional reflection, collaboration, and accountability for learning quality. Practically, a quality culture can serve as a basis for evaluating technology use based on its pedagogical relevance, accessibility, and institutional benefits. Theoretically, this approach emphasizes that the success of digital transformation depends on integrating technological capabilities with organizational values and behaviors.

The connection between a quality culture and EdTech Governance transformation lies in the role of organizational values in guiding the use of technology to improve education quality. Technology provides tools to manage data, speed up services, and support decision-making, while a quality culture sets the orientation, priorities, and standards for success in using it. Without a quality culture, digitalization risks becoming just an administrative activity focused on compliance and technical efficiency. On the other hand, a quality culture encourages using technology in a reflective, participatory, and sustainable way. So, the relationship between the two is complementary: technology

offers operational capacity, while a quality culture provides normative and organizational direction for meaningful digital transformation.

CONCLUSION

This study emphasizes that digital transformation in education shouldn't just be measured by tech sophistication and administrative efficiency, but should focus on genuinely improving the quality of education. Rebuilding EdTech Governance requires integrating a culture of quality for continuous improvement, human-centered leadership to guide change, and ethical accountability as a way to stay responsible. The main contribution of this study is developing a conceptual framework that connects these three dimensions in responsible digital governance. On a theoretical level, this research broadens the perspective of digital education management by putting values, people, and quality at the heart of tech transformation.

This research has some limitations because it relies on a critical literature review, so the conceptual framework developed hasn't been tested with empirical evidence in educational institutions with different characteristics. Additionally, variations in policy context, digital capacity, organizational culture, and resources can affect the implementation of the three proposed dimensions. Future research is recommended to use a multi-site case study approach or mixed methods to test the relationship between quality culture, human-centered leadership, and ethical accountability in EdTech Governance practice. Comparative research across institutions is also needed to evaluate the framework's relevance and to develop operational indicators for sustainable digital governance.

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