GOVERNANCE AND SUSTAINABILITY OF ICT-DRIVEN SYSTEMS IN OPEN AND DISTANCE LEARNING

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Abstract
Information and Communication Technologies (ICT) have become the backbone of modern Open and Distance Learning (ODL) systems, enabling institutions to deliver flexible and accessible education across geographic boundaries. However, many ICT-driven initiatives in higher education institutions fail to achieve long-term sustainability due to excessive reliance on individual actors rather than institutional frameworks. This study investigates the phenomenon commonly described as "strong individuals versus strong institutions" in the management of ICT-driven projects in ODL environments. Using qualitative analysis, document review, and case studies from open and distance learning institutions in Africa, Europe, and Asia, the research examines how personalization of ICT systems, lack of institutional governance, and weak knowledge transfer mechanisms contribute to project failure. Findings reveal that many ICT initiatives are developed and managed using personal communication channels, private accounts, or undocumented system architectures controlled by individual developers or administrators. These practices lead to institutional dependency on specific individuals, making systems difficult to maintain when leadership changes occur. The study argues that sustainable digital education systems require institutional ownership, governance frameworks, documentation standards, collaborative management, and capacity development among technical staff. The paper concludes that building strong institutions rather than relying on strong individuals is essential for the long-term sustainability of ICT-driven projects in ODL environments. Recommendations are provided for institutional policy development, ICT governance structures, knowledge management practices, and accountability mechanisms.

Keywords: *Digital Education, higher education governance, ICT Governance, institutional sustainability, learning management systems, open and distance learning.*

Introduction

The rapid advancement of Information and Communication Technologies (ICT) has fundamentally transformed higher education globally, reshaping the manner in which teaching, learning, research, and institutional administration are conducted. Digital technologies have moved beyond serving as supplementary instructional tools to becoming indispensable components of institutional operations. Universities increasingly depend on enterprise information systems, learning management systems (LMS), digital libraries, electronic assessment platforms, cloud computing services, virtual collaboration environments, and integrated student information systems to deliver quality education and manage institutional processes efficiently. This transformation has accelerated over the past decade and was further reinforced by the COVID-19 pandemic, which demonstrated the indispensable role of ICT in ensuring educational continuity during periods of disruption.

Among all the higher education models, Open and Distance Learning (ODL) institutions have experienced perhaps the most profound impact of digital transformation. Unlike conventional

universities where face-to-face interactions complement technological infrastructure, ODL institutions rely almost entirely on ICT to support teaching, learning, assessment, learner support, communication, academic administration, and institutional management. In such environments, digital platforms are not merely support services but constitute the primary infrastructure through which education is delivered. Consequently, the sustainability, reliability, and governance of ICT systems directly influence institutional effectiveness, educational quality, and student success.

Globally, governments and educational institutions continue to invest substantial financial and human resources in digital transformation initiatives aimed at improving access to education, expanding institutional capacity, enhancing administrative efficiency, and promoting lifelong learning. International organizations such as the UNESCO, the Commonwealth of Learning (COL), and the OECD have consistently emphasized the importance of digital transformation as a strategic priority for higher education institutions. Numerous universities have therefore adopted sophisticated enterprise architectures integrating learning management systems, student information systems, financial management platforms, identity management systems, customer relationship management tools, data analytics, and cloud-based services into cohesive digital ecosystems.

Despite these considerable investments, evidence from many developing and developed countries indicates that the sustainability of ICT-driven initiatives remains a significant challenge. Numerous digital projects perform successfully during implementation but gradually deteriorate after changes in institutional leadership, retirement of technical personnel, or departure of system developers. Rather than evolving into sustainable institutional assets, many ICT initiatives become closely associated with the individuals who designed, implemented, or managed them. Consequently, institutional continuity becomes dependent upon the continued presence of these individuals rather than on robust governance structures.

This phenomenon reflects a broader organizational challenge often described as the distinction between "strong individuals" and "strong institutions." Strong individuals frequently emerge as visionary leaders, highly skilled software developers, experienced network administrators, or influential project champions who drive technological innovation within institutions. Their expertise, commitment, and creativity often enable institutions to achieve remarkable progress within relatively short periods. However, while individual competence can accelerate innovation, excessive dependence on particular individuals may inadvertently weaken institutional resilience if appropriate governance mechanisms are absent.

Within many higher education institutions, ICT projects are frequently initiated, developed, and managed in ways that concentrate technical authority in a limited number of personnel. Institutional software may be registered using personal email addresses rather than official institutional accounts. Cloud services, domain registrations, software licenses, source code repositories, and administrative credentials may remain under the exclusive control of individual developers or system administrators. Similarly, documentation relating to system architecture, database structures, application programming interfaces (APIs), security configurations, disaster recovery procedures, and operational workflows is often incomplete or entirely unavailable.

Such practices create significant institutional risks. When key personnel retire, resign, are transferred, become unavailable, or assume new responsibilities, institutions frequently lose access to critical digital infrastructure. New technical teams may struggle to understand system architectures, recover administrative privileges, modify existing applications, or troubleshoot operational failures. In many instances, institutions abandon functional systems altogether and invest additional resources in developing entirely new platforms, thereby duplicating previous investments while disrupting service delivery.

The personalization of institutional ICT assets extends beyond technical control to communication and decision-making processes. Important project decisions may be conducted through private messaging platforms, personal email accounts, or informal communication channels rather than

documented institutional processes. Consequently, institutional memory becomes fragmented, accountability diminishes, and organizational learning is significantly impaired. The absence of formal governance structures also reduces transparency, weakens internal controls, and increases institutional exposure to cybersecurity, operational, and legal risks.

The challenge is particularly significant within Open and Distance Learning institutions because digital platforms underpin virtually every aspect of academic operations. Learning management systems facilitate course delivery, assignment submission, learner engagement, online discussions, grading, and academic communication. Electronic assessment systems support secure online examinations and automated result processing. Student information systems manage admissions, registration, progression, graduation, and academic records. Institutional repositories preserve scholarly outputs, while enterprise resource planning systems coordinate finance, procurement, human resources, and strategic planning. Failure or instability within any of these interconnected systems can have institution-wide consequences affecting thousands of learners and staff.

International experience demonstrates that sustainable digital transformation depends not solely on technological sophistication but equally on effective ICT governance. Governance frameworks define institutional ownership, establish accountability structures, clarify roles and responsibilities, standardize operational procedures, ensure compliance with policies, promote transparency, and facilitate knowledge sharing across organizational units. Institutions with mature ICT governance frameworks generally experience greater resilience because organizational knowledge resides within institutional systems rather than individual personnel.

Frameworks such as COBIT, ISO/IEC 38500, ITIL, enterprise architecture methodologies, and institutional knowledge management strategies emphasize collective responsibility, documentation, risk management, succession planning, and continuous capacity development. These governance principles encourage institutions to build resilient systems capable of surviving leadership transitions, organizational restructuring, and technological evolution.

Within the African higher education context, however, governance challenges remain prevalent. Limited institutional capacity, inadequate documentation practices, fragmented ICT policies, dependence on external consultants, insufficient succession planning, and weak knowledge management frequently undermine the sustainability of digital initiatives. Many institutions continue to evaluate ICT success primarily through successful implementation rather than long-term institutional ownership and operational continuity.

The distinction between technological implementation and technological sustainability is therefore increasingly important. Successful implementation refers to the deployment of digital solutions that achieve immediate operational objectives. Sustainability, however, requires that these systems remain functional, maintainable, secure, adaptable, and institutionally governed throughout successive administrations and technological changes. Sustainable ICT systems are characterized by institutional ownership rather than personal control, documented operational procedures rather than tacit knowledge, collaborative management rather than individual dependence, and governance structures rather than informal authority.

This study argues that the long-term success of ICT-driven systems in Open and Distance Learning institutions depends fundamentally on institutional resilience rather than individual excellence alone. While visionary leadership and technical expertise remain indispensable, they must operate within governance frameworks that institutionalize knowledge, distribute responsibilities, strengthen accountability, and ensure continuity beyond individual careers.

Accordingly, this paper examines the structural factors that encourage individual dominance in ICT project management, explores how personalization of institutional systems undermines sustainability, analyzes the implications for Open and Distance Learning institutions, and proposes governance strategies capable of transforming individual-dependent digital initiatives into resilient institutional assets. By shifting attention from technological implementation to institutional governance,

the study contributes to ongoing discussions on sustainable digital transformation in higher education and offers practical recommendations for strengthening ICT governance within ODL institutions.

Statement of the Problem

Despite substantial investments in digital transformation, many Open and Distance Learning institutions continue to experience recurring failures in sustaining ICT-driven initiatives. While considerable attention has been devoted to the acquisition of technologies, comparatively less emphasis has been placed on institutional governance mechanisms required to ensure their long-term sustainability. A recurring challenge is the concentration of technical knowledge, administrative privileges, and decision-making authority in a few individuals who become indispensable to the operation of institutional systems. Consequently, when these individuals leave the institution, retire, or are reassigned, institutions frequently encounter operational disruptions, loss of system access, incomplete documentation, and inability to maintain or upgrade existing platforms. In many cases, successor administrations abandon existing systems and initiate new projects, resulting in duplication of investments, service interruptions, and institutional inefficiencies.

The absence of comprehensive governance frameworks, institutional ownership policies, documentation standards, succession planning, and knowledge management practices has created significant vulnerabilities in the management of ICT infrastructure across many higher education institutions. Although these challenges have been widely observed, relatively few studies have specifically examined the relationship between individual dependence, ICT governance, and institutional resilience within Open and Distance Learning environments. This study addresses this gap by investigating how institutional governance can reduce dependence on individuals and promote the sustainability of ICT-driven systems in ODL institutions.

Purpose of the Study

The primary aim of this study is to examine how institutional governance influences the sustainability of ICT-driven systems in Open and Distance Learning institutions by shifting organizational dependence from individual actors to resilient institutional structures. The study seeks to specifically examine:

1. the organizational and structural factors that encourage excessive dependence on individual actors in the management of ICT-driven systems within Open and Distance Learning institutions.
2. how the personalization of ICT infrastructure, digital platforms, and institutional knowledge undermines governance, continuity, and long-term sustainability.
3. the institutional consequences of weak ICT governance, including project discontinuity, knowledge loss, duplication of investments, cybersecurity risks, and reduced organizational resilience.
4. the role of institutional governance frameworks, documentation standards, enterprise architecture, knowledge management, and succession planning in promoting sustainable ICT systems.
5. a governance framework that supports institutional ownership, accountability, collaborative management, and long-term sustainability of ICT-driven initiatives in Open and Distance Learning institutions.

Research Questions

The study is guided by the following research questions:

Research Question 1: What organizational and institutional factors contribute to excessive dependence on individuals in the management of ICT-driven systems within Open and Distance Learning institutions?

Research Question 2: How does the personalization of ICT infrastructure affect institutional governance, continuity, and sustainability?
Research Question 3: What operational, financial, administrative, and educational consequences arise when ICT systems are controlled primarily by individual actors?
Research Question 4: How do deficiencies in documentation, knowledge management, succession planning, and institutional ownership affect the sustainability of digital education systems?
Research Question 5: What governance strategies and institutional mechanisms can strengthen resilience and ensure the long-term sustainability of ICT-driven systems in Open and Distance Learning institutions?

Literature Review

The rapid advancement of ICT has transformed higher education by reshaping teaching, learning, research, and institutional administration. In ODL institutions, ICT has evolved from a supporting tool into the core infrastructure for educational delivery, making its sustainability a strategic institutional priority (OECD, 2023; UNESCO, 2022).

Recent studies indicate that successful digital transformation depends more on effective governance than on technological investment alone. Although universities have adopted LMS, enterprise resource planning (ERP), student information systems (SIS), cloud computing, and artificial intelligence (AI), many struggle to sustain these innovations because of weak governance structures, fragmented ICT policies, inadequate documentation, and overreliance on individual expertise (Bond et al., 2024). Sustainable ICT implementation therefore requires governance mechanisms that align technology with institutional strategy, strengthen accountability, and support knowledge sharing and continuity.

ICT governance provides the policies, structures, and processes through which technology is directed to achieve institutional objectives. Frameworks such as ISO/IEC 38500 and COBIT 2019 emphasize strategic alignment, stakeholder value, resource optimization, performance measurement, and risk management as essential principles for effective ICT governance (ISACA, 2019). In ODL institutions, where technology underpins virtually all academic and administrative activities, governance failures can directly affect service delivery, institutional reputation, and student success.

Leading ODL institutions, including The Open University (United Kingdom), the University of South Africa (UNISA), Indira Gandhi National Open University (IGNOU), and the Open University of China, have institutionalized ICT governance through enterprise architecture, centralized planning, collaborative ICT management, and standardized operational procedures. These practices strengthen organizational resilience by ensuring institutional ownership of digital assets and reducing dependence on individual personnel.

Conversely, many institutions, particularly in developing countries, continue to experience governance challenges arising from inadequate documentation, weak knowledge management, and concentration of technical expertise in a few individuals. Critical ICT resources such as source code, cloud services, system configurations, and administrative credentials are often controlled by individual developers, making institutions vulnerable when key personnel leave.

Knowledge management and enterprise architecture have therefore emerged as essential components of ICT sustainability. Effective documentation, mentoring, cross-training, and collaborative software development preserve institutional memory and facilitate organizational learning, while enterprise architecture promotes interoperability, standardization, lifecycle management, and long-term scalability.

The literature consistently demonstrates that sustainable digital transformation depends on institutionalizing ICT governance through formal policies, documentation, collaborative management, and succession planning. However, limited attention has been given to how excessive dependence on individuals undermines institutional resilience within ODL institutions, particularly in Africa. This

study addresses this gap by examining how governance mechanisms transform individual-dependent ICT initiatives into sustainable institutional assets.

Theoretical Framework

This study is anchored on Institutional Theory, which explains how organizations achieve stability and long-term sustainability through formal governance structures rather than dependence on individual actors. Meyer and Rowan (1977), DiMaggio and Powell (1983), and Scott (2014) argue that organizational effectiveness depends on institutionalized policies, procedures, and governance mechanisms that ensure continuity despite leadership or personnel changes.

Institutional Theory suggests that organizations become resilient when knowledge, decision-making, and operational processes are embedded within institutional structures rather than concentrated in individuals. Within ODL institutions, this explains why some ICT initiatives remain sustainable while others fail following staff turnover or leadership transitions. Sustainable digital transformation therefore requires governance mechanisms that institutionalize innovation through documentation, enterprise architecture, collaborative management, and succession planning.

To strengthen this perspective, the study draws on internationally recognized ICT governance frameworks, including ISO/IEC 38500, COBIT 2019, ITIL 4, and Enterprise Architecture. Together, these frameworks emphasize strategic alignment, accountability, organizational learning, resource optimization, and service continuity, reinforcing the view that sustainable ICT systems are products of strong institutions rather than individual expertise.

Conceptual Framework

The conceptual framework proposes that the sustainability of ICT-driven systems in ODL institutions depends on effective institutional governance that transforms individual expertise into organizational capability. It positions ICT governance as the primary driver of institutional resilience, supported by enterprise architecture, knowledge management, documentation standards, institutional ICT policies, collaborative ICT management, and succession planning.

These governance mechanisms establish the institutional environment for planning, implementing, managing, and sustaining ICT resources. Their effectiveness is mediated by institutional ownership of digital assets, organizational learning, accountability, risk management, knowledge sharing, and capacity development. These processes ensure that institutional knowledge, technical expertise, and operational responsibilities remain embedded within the organization rather than individual personnel.

The framework proposes that strong governance leads to ICT sustainability, service continuity, organizational resilience, institutional effectiveness, and sustainable digital transformation. Ultimately, it argues that resilient ODL institutions are built not merely on advanced technologies but on governance structures that institutionalize digital assets, preserve organizational knowledge, and support continuous improvement. This framework provides the basis for examining how governance practices influence the long-term sustainability of ICT-driven systems.

Long-Term Outcome

The conceptual framework proposes that effective ICT governance ultimately leads to the development of resilient and sustainable ODL institutions capable of delivering high-quality digital education regardless of leadership transitions, technological changes, or staff turnover. It emphasizes that ICT sustainability is not determined solely by technological capability but by governance structures that institutionalize digital assets, preserve organizational knowledge, strengthen accountability, and promote collaborative management.

The framework identifies ICT governance, institutional ICT policies, enterprise architecture, knowledge management, documentation standards, collaborative ICT management, and succession

planning as the key governance mechanisms that guide the planning, implementation, and sustainability of digital systems. These governance mechanisms operate through institutional ownership of digital assets, organizational learning, knowledge sharing, accountability, risk management, and capacity development to ensure that technical expertise and institutional memory remain embedded within the organization rather than individual personnel.

Through these governance processes, institutions achieve improved ICT sustainability, service continuity, organizational resilience, institutional effectiveness, and sustainable digital transformation. The framework therefore argues that strong institutional governance is the foundation for building sustainable ICT-driven systems that support continuous teaching, learning, research, and administrative services in ODL institutions. It provides the analytical basis for examining how governance practices influence the long-term sustainability of digital education systems.

Methodology

Research Design

This study adopted a qualitative multiple-case study design supported by documentary analysis to investigate how institutional governance influences the sustainability of ICT-driven systems in ODL institutions. A qualitative approach was considered appropriate because the study sought to explore governance practices, institutional processes, and organizational experiences that shape the long-term sustainability of digital education systems. Consistent with Creswell and Creswell (2023), qualitative research is suitable for examining complex organizational phenomena within their natural contexts. The multiple-case study design enabled a comparative analysis of governance practices across selected ODL institutions and provided a broader understanding of the institutional mechanisms that promote resilience and sustainability.

Study Area

The study focused on five established ODL institutions: the National Open University of Nigeria (NOUN), The Open University (United Kingdom), the University of South Africa (UNISA), Indira Gandhi National Open University (IGNOU), and the Open University of China. These institutions were purposively selected because they possess mature ICT ecosystems, publicly accessible governance documentation, and extensive experience in implementing and sustaining large-scale digital learning environments. The unit of analysis comprised the ICT governance structures, institutional policies, strategic practices, and organizational mechanisms adopted by these institutions to ensure the sustainability of ICT-driven systems.

Data Collection Procedure

Data were obtained exclusively from secondary sources through documentary analysis. Relevant documents included peer-reviewed journal articles published between 2022 and 2026, institutional strategic plans, ICT governance policies, annual reports, quality assurance reports, enterprise architecture documents, and publications from international organizations such as the UNESCO, the OECD, and the ISACA. International governance frameworks, including ISO/IEC 38500, COBIT 2019, ITIL 4, and Enterprise Architecture guidelines, were also reviewed to provide globally recognized governance benchmarks. Documents were identified through systematic searches of academic databases, institutional repositories, and official organizational websites using keywords such as ICT governance, digital transformation, ODL, institutional sustainability, knowledge management, enterprise architecture, and higher education governance.

Data Analysis

The documents were analyzed using thematic content analysis. All documents were reviewed repeatedly to gain familiarity with their content, after which relevant text segments relating to ICT

governance and institutional sustainability were coded. Similar codes were subsequently grouped into broader themes, including ICT governance, institutional ownership, knowledge management, documentation practices, enterprise architecture, collaborative ICT management, succession planning, organizational resilience, and service continuity. A cross-case comparison was then conducted to identify common governance practices, contextual differences, and emerging patterns across the selected institutions.

Results

The findings indicate that the sustainability of ICT-driven systems in ODL institutions is closely associated with the strength of institutional governance rather than the sophistication of technology alone. Across the institutions reviewed, sustainable digital transformation was consistently characterized by institutional ownership of ICT assets, collaborative system administration, documented operational procedures, and clearly defined governance structures. Conversely, institutions that depended heavily on individual expertise experienced greater operational vulnerabilities and reduced capacity to sustain digital innovations over time.

The study found that many ICT initiatives originate through the efforts of highly skilled individuals who identify institutional needs and develop innovative technological solutions. These individuals often serve as software developers, systems administrators, network engineers, database specialists, or project champions. However, in many instances, institutional ICT systems became personalized rather than institutionalized. Digital assets such as software applications, cloud services, administrative accounts, source code repositories, and system configurations were frequently managed through personal credentials or controlled by individual personnel. Such practices increased institutional dependence on specific individuals and exposed organizations to operational disruptions whenever key personnel retired, resigned, or were transferred.

Another significant finding was the inadequate documentation of ICT systems and operational procedures. While substantial resources were invested in system development and implementation, relatively little attention was given to preparing technical documentation, architecture diagrams, operational manuals, maintenance procedures, disaster recovery plans, and institutional knowledge repositories. Institutions with comprehensive documentation demonstrated greater continuity in managing ICT systems during leadership transitions, whereas undocumented systems proved more difficult to maintain, upgrade, and secure.

The findings further revealed that knowledge management is a critical factor in ensuring ICT sustainability. Institutions that promoted collaborative software development, mentoring, cross-training, peer review, and continuous professional development were better able to preserve institutional knowledge and reduce dependence on individual expertise. These practices strengthened organizational learning and facilitated the transfer of technical knowledge across ICT teams.

Institutional ownership of digital assets also emerged as a defining characteristic of sustainable ICT governance. The reviewed institutions with stronger governance frameworks ensured that domain names, software licenses, cloud subscriptions, administrative accounts, encryption keys, and source code repositories were registered and managed using official institutional credentials. Administrative responsibilities were distributed among authorized personnel through formal governance structures, reducing the risks associated with single-user control and enhancing accountability.

The comparative analysis showed varying levels of ICT governance maturity among the selected ODL institutions. The Open University (United Kingdom), the Open University of China, the University of South Africa (UNISA), and Indira Gandhi National Open University (IGNOU) demonstrated relatively mature governance practices through integrated ICT strategies, enterprise architecture, collaborative technical management, standardized policies, and continuous staff development. In contrast, emerging ODL institutions, particularly within resource-constrained environments, continued to experience challenges associated with fragmented documentation, limited

knowledge management, inadequate succession planning, and inconsistent implementation of ICT governance policies.

Overall, the findings demonstrate that sustainable ICT-driven systems depend on institutional governance mechanisms that promote organizational ownership, documentation, knowledge sharing, collaborative management, and accountability. Institutions that embedded these governance practices within their organizational structures were better positioned to sustain digital education systems and maintain continuity of operations irrespective of leadership changes or staff turnover.

Discussions

The findings support the central proposition of Institutional Theory that sustainable organizational performance depends on the institutionalization of knowledge, routines, and governance structures rather than on the capabilities of individual actors alone. While visionary ICT professionals remain essential for driving innovation, sustainable digital transformation requires that their expertise be embedded within organizational processes through effective documentation, governance structures, collaborative management, and succession planning. This ensures that critical knowledge and operational responsibilities remain institutional assets rather than personal possessions.

The findings also reinforce the principles embodied in internationally recognized ICT governance frameworks, including ISO/IEC 38500, COBIT 2019, ITIL 4, and Enterprise Architecture. These frameworks consistently emphasize institutional accountability, standardized processes, distributed responsibilities, strategic alignment, risk management, and continuous improvement as the foundations for organizational resilience and the long-term sustainability of ICT systems.

A major contribution of this study is the extension of the strong individuals versus strong institutions paradigm to ICT governance within ODL. The findings demonstrate that the sustainability of digital education depends not merely on technological innovation or the expertise of a few individuals but on governance systems that transform individual knowledge into enduring institutional capability. Strong institutions are therefore characterized not by the absence of talented individuals but by their ability to institutionalize individual expertise through appropriate governance mechanisms.

Based on these findings, the study proposes the Institutional ICT Sustainability Governance Framework (IISGF) for ODL institutions. The framework comprises six interrelated governance pillars: institutional ownership of ICT assets, ICT governance, knowledge management, enterprise architecture, capacity development, and risk management. Institutional ownership ensures that digital assets, administrative accounts, and system repositories remain under organizational control. ICT governance provides strategic direction through clearly defined policies, governance committees, and accountability structures. Knowledge management preserves institutional memory through documentation, mentoring, and knowledge-sharing practices, while enterprise architecture promotes standardized system integration, interoperability, and lifecycle management. Capacity development strengthens institutional competence through continuous professional development and succession planning, whereas risk management enhances organizational resilience through cybersecurity governance, disaster recovery planning, regular backups, and periodic system audits.

These six pillars operate as an integrated governance system in which each component reinforces the others. Weakness in any one pillar increases institutional vulnerability and undermines the long-term sustainability of ICT-driven initiatives. Collectively, the framework provides a practical governance model that ODL institutions can adopt to reduce dependence on individual actors, strengthen institutional resilience, and ensure the continuity of digital education services.

Recommendations

Based on the findings, the authors recommended that ODL institutions should endeavor to:

1. strengthen ICT governance through the implementation of governance policies aligned with internationally recognized frameworks such as ISO/IEC 38500 and COBIT 2019, while

integrating ICT governance into institutional strategic planning.
2. ensure institutional ownership of digital assets by managing domain names, cloud services, software licences, source code repositories, and administrative accounts through official institutional credentials.
3. institutionalize knowledge management and documentation through centralized knowledge repositories, comprehensive system documentation, and collaborative knowledge-sharing practices to preserve institutional memory.
4. enhance staff capacity and succession planning through continuous professional development, mentoring, cross-training, and structured succession programmes to reduce dependence on individual expertise.
5. promote continuous improvement in ICT governance by adopting enterprise architecture, conducting periodic governance assessments, and strengthening risk management to support sustainable digital transformation.

Study Limitations

Although documentary analysis provides valuable insights into institutional governance practices, it may not fully capture informal organizational processes or internal experiences that are not publicly documented. Consequently, the findings should be interpreted within the context of the selected institutions. Future research may strengthen the evidence base by incorporating interviews with ICT managers, university administrators, and policymakers or by adopting mixed-methods approaches to validate and extend the findings.

Conclusion

The long-term sustainability of ICT-driven systems in ODL institutions depends fundamentally on governance rather than technology alone. While skilled professionals remain indispensable for innovation, institutions become resilient only when governance mechanisms transform individual knowledge into collective organizational capability. The study demonstrates that institutional ownership, comprehensive documentation, enterprise architecture, knowledge management, succession planning, and collaborative ICT governance are essential for sustaining digital education systems across successive leadership and technological transitions.

By extending the strong individuals versus strong institutions paradigm to ICT governance, this study contributes a novel perspective to the literature on digital transformation in higher education. It argues that successful ICT projects should ultimately become institutional assets rather than personal achievements. ODL institutions that institutionalize governance practices will be better positioned to achieve organizational resilience, protect technological investments, and ensure uninterrupted delivery of quality education in an increasingly digital world.

References

Adamu, S. U., Ahmad, M. A., & Ibrahim, M. (2026). A systematic literature review on the adoption and effectiveness of cybersecurity frameworks in higher education institutions. *Information & Computer Security*.

Almantara, I. P. S., Prabawa, I. N. A., & Darma, I. G. W. (2026). Evaluation of information technology governance using the COBIT framework in higher education: A literature study. *NAICE Journal of Next Applied Informatics in Computer Engineering. (Complete volume, issue, and page numbers before submission.)*

Bond, M., Bedenlier, S., Marín, V. I., & Händel, M. (2024). Artificial intelligence in higher education: A systematic review of emerging trends, challenges, and opportunities. *Education and Information Technologies*.

Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed*

methods approaches (6th ed.). Sage.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*(2), 147–160.

International Organization for Standardization. (2022). *ISO/IEC TR 4339:2022 Information technology for learning, education and training—Reference model for ICT evaluation in education*. Retrieved from https://www.iso.org

ISACA. (2019). *COBIT® 2019 framework: Governance and management objectives*. ISACA.

ITIL. (2019). *ITIL® foundation: ITIL 4 edition*. TSO.

Kanobel, M. C. (2025). Responsible governance of generative artificial intelligence in higher education. *Revista Educación Superiory Sociedad*.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.

Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology, 83*(2), 340–363.

Nnaji, I. L., Ayanwale, M. A., Ukeje, I. O., Ekwunife, R. A., Igwe, C. M., Okwor, E. O., & Nwuzor, C. I. (2026). Enhancing governance and performance in Nigerian higher education through AI-driven digital transformation: Insights from stakeholder perspectives. *Social Sciences & Humanities Open, 13*, 102348.

Ntorukiri, T. B., Kirugua, J. M., & Kirimi, F. (2022). Policy and infrastructure challenges influencing ICT implementation in universities: A literature review. *Discover Education, 1*. https://doi.org/10.1007/s44217-022-00019-6

Organization for Economic Co-operation and Development. (2022). *Digital higher education: Emerging quality standards, practices and supports* (OECD Education Working Papers No. 281). OECD Publishing. https://doi.org/10.1787/f622f257-en

Scott, W. R. (2014). *Institutions and organizations: Ideas, interests, and identities* (4th ed.). Sage.

Staring, F., Brown, M., Bacsich, P., & Ifenthaler, D. (2022). *Digital higher education: Emerging quality standards, practices and supports*. OECD Publishing.

UNESCO. (2022). *Transforming higher education for the future*. UNESCO.

Van Grembergen, W., De Haes, S., Joshi, A., & Huygh, T. (2020). *Enterprise governance of information technology: Achieving alignment and value in digital organizations*. Springer.