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المجلة الأمريكية الدولية للعلوم الإنسانية والاجتماعية

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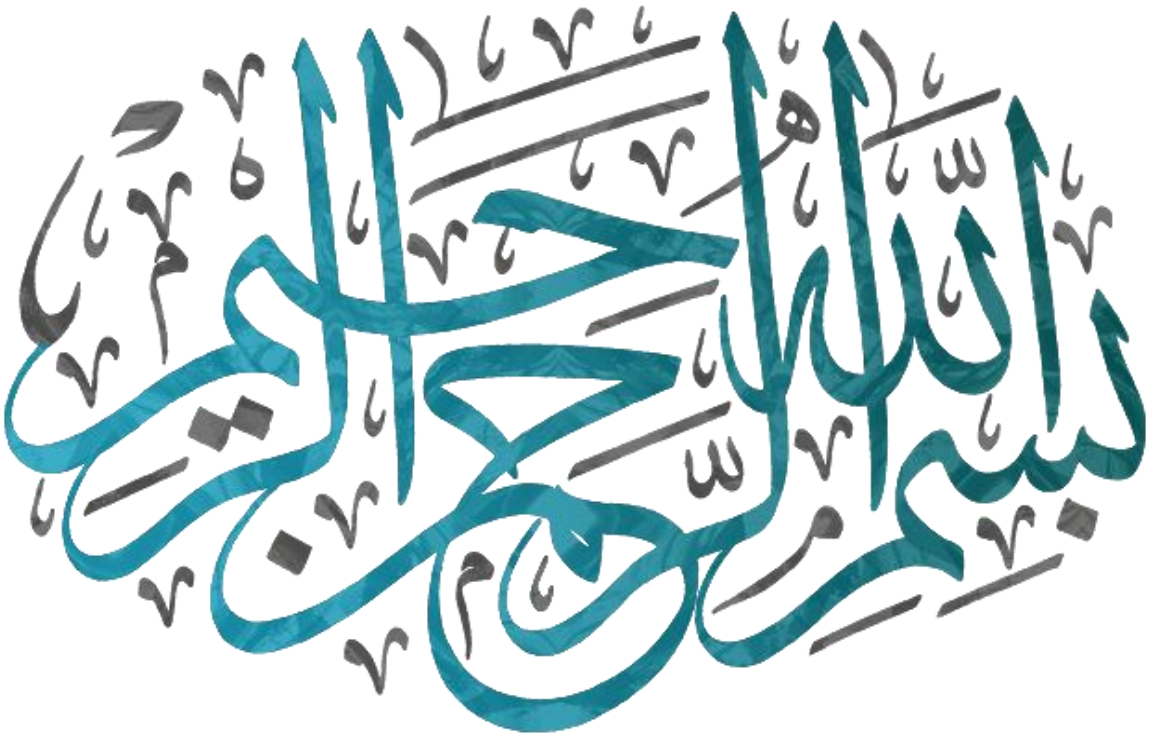
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تتألف هيئة تحرير المجلة الأمريكية الدولية للعلوم الإنسانية والاجتماعية من نخبة من العلماء والخبراء المتميزين من مختلف المؤسسات الأكاديمية الدولية. وتتولى الهيئة مسؤولية الحفاظ على جودة البحوث المنشورة وتقديم التوجيه الاستراتيجي لتطوير المجلة.

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كلمة العدد

بسم الله الرحمن الرحيم

يُشرفنا في هيئة تحرير "المجلة الأمريكية الدولية للتعليم العالي والتدريب" أن نضع بين أيديكم العدد السابع والعشرين (الجزء الأول)، الصادر في سياق متجدد من مساعينا الرامية إلى تعزيز جسور المعرفة الأكاديمية ونشر الرؤى العلمية المبتكرة.

إن هذا الإصدار يأتي ليؤكد على التزام المجلة الراسخ بأن تكون منصة عالمية تجمع النخب الأكاديمية والباحثين من مختلف أقطار العالم، حيث يضم هذا الجزء مجموعة من البحوث الرصينة التي خضعت لمعايير تحكيم دقيقة، تعكس عمق التفكير وتعدد المقاربات في مجالات التعليم العالي والتدريب المهني.

لقد سعينا من خلال هذه البحوث إلى تسليط الضوء على قضايا معاصرة، تدمج بين النظرية والتطبيق، وتستجيب للتحديات الراهنة التي تواجه المؤسسات التعليمية في ظل التحولات العالمية المتسارعة. إن مشاركة باحثين من جنسيات وخلفيات علمية متنوعة في هذا العدد هي شهادة حية على المكانة الدولية التي بلغتها المجلة، وعلى قدرتها على احتضان التنوع الفكري الذي يثري الحقل المعرفي.

ختاماً، نتوجه بخالص الشكر والتقدير لجميع الباحثين الذين ساهموا بنتاجهم الفكري في هذا العدد، ولأعضاء الهيئة العلمية والاستشارية الذين واصلوا جهودهم في مراجعة وتقييم الأعمال بكل تفانٍ. نتمنى أن تجدوا في صفحات هذا الجزء ما يغني معارفكم ويحفز نقاشاتكم الأكاديمية.

مع خالص التحيات،

2026/07/12 ديلاوير- الاولايات المتحدة الامريكية **هيئة تحرير المجلة**

الملاحظة القانونية

البحوث المنشورة في المجلة لا تعبر عن وجهة نظر المجلة ، بل عن رأي كاتبها.

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The Impact of Digital Governance as a Hidden Catalyst in Enhancing the Readiness of Iraqi Smart Universities: An Explanatory Model of the Role of Sustainability, Transparency, and Institutional Trust

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Abstract

Study Objective: This study aimed to investigate the impact of digital governance as a hidden driver in enhancing the readiness of Iraqi smart universities through an explanatory model that examines the mediating role of sustainability, transparency, and institutional trust.

Study Methodology: The study adopted a quantitative approach within a deductive research framework for hypothesis development. A descriptive–analytical method was employed to analyze the data, given its suitability for examining the impact of digital governance on the readiness of Iraqi smart universities and for testing the mediating roles of transparency, institutional sustainability, and institutional trust in this relationship, The study was conducted across a number of Iraqi public universities and included academic and administrative leaders, faculty members, and employees in relevant administrative and technical units involved in implementing digital governance and digital transformation initiatives. This approach enabled the assessment of universities' readiness levels for transitioning toward smart universities. A simple random sample consisting of 143 respondents was selected from employees of the Iraqi universities included in the study.

Study Findings: The findings revealed that digital governance represents a hidden influential driver within the university environment. Its role extends beyond merely providing technological tools; rather, it functions as an organisational framework that guides digital transformation processes and contributes to developing the foundations of smart university readiness in Iraq. The results also demonstrated a positive relationship between digital governance and the readiness of Iraqi smart universities. However, its direct explanatory power was relatively limited, indicating that smart readiness is a multidimensional phenomenon influenced by additional organisational, technological, and human factors alongside digital governance. The regression model results showed that digital

governance significantly contributes to explaining smart university readiness when considered as an integrated construct. However, the individual dimensions of digital governance did not demonstrate statistically significant effects when examined separately, suggesting that the effectiveness of digital governance emerges through the integration of its dimensions rather than through any single dimension in isolation.

Study Recommendations: The study recommends that Iraqi universities adopt an integrated digital governance framework that emphasises the alignment of technology, administrative policies, and organisational structures as a foundation for developing smart universities capable of adapting to digital transformations. Furthermore, universities should enhance reliance on digital systems for decision-making by developing data analytics platforms and promoting evidence-based decision support mechanisms, given their critical role in improving smart readiness.

Keywords: Digital governance; smart university readiness; administrative process automation; digital decision-making systems; digital policy agility; institutional transparency; institutional sustainability; institutional trust; digital transformation.

أثر الحوكمة الرقمية كمحفز خفي في تعزيز جاهزية الجامعات الذكية العراقية: نموذج تفسيري لدور الاستدامة، والشفافية، والثقة المؤسسية

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الملخص:

هدف الدراسة :هدفت هذه الدراسة إلى بحث أثر الحوكمة الرقمية كمحرك خفي في تعزيز جاهزية الجامعات الذكية العراقية من خلال نموذج تفسيري يفحص الدور الوسيط لكل من الاستدامة، والشفافية، والثقة المؤسسية.

منهجية الدراسة :اعتمدت الدراسة على المنهج الكمي ضمن إطار بحثي استنتاجي لتطوير الفرضيات. كما تم استخدام المنهج الوصفي التحليلي لتحليل البيانات، نظراً لملاءمته لفحص أثر الحوكمة الرقمية على جاهزية الجامعات الذكية العراقية واختبار الأدوار الوسيطة للشفافية والاستدامة المؤسسية والثقة المؤسسية في هذه العلاقة. أجريت الدراسة في عدد من الجامعات الحكومية العراقية، وشملت القيادات الأكاديمية والإدارية، وأعضاء الهيئة التدريسية، والموظفين في الوحدات الإدارية والفنية ذات الصلة بتنفيذ مبادرات الحوكمة الرقمية والتحول الرقمي. مكن هذا النهج من تقييم مستويات جاهزية الجامعات للانتقال نحو الجامعات الذكية. تم اختيار عينة عشوائية بسيطة مكونة من 143 مشاركاً من موظفي الجامعات العراقية المشمولة بالدراسة.

نتائج الدراسة :كشفت النتائج أن الحوكمة الرقمية تمثل محركاً مؤثراً خفياً داخل البيئة الجامعية؛ إذ يتجاوز دورها مجرد توفير الأدوات التكنولوجية، بل تعمل كإطار تنظيمي يوجه عمليات التحول الرقمي ويساهم في تطوير أسس جاهزية الجامعات الذكية في العراق. كما أظهرت النتائج وجود علاقة إيجابية بين الحوكمة الرقمية وجاهزية الجامعات الذكية العراقية. ومع ذلك، كانت قدرتها التفسيرية المباشرة محدودة نسبياً، مما يشير إلى أن الجاهزية الذكية ظاهرة متعددة الأبعاد تتأثر بعوامل تنظيمية وتكنولوجية وبشرية إضافية إلى جانب الحوكمة الرقمية. وأظهرت نتائج نموذج الانحدار أن الحوكمة الرقمية تساهم بشكل كبير في تفسير جاهزية الجامعة الذكية عند النظر إليها كبناء متكامل. في حين لم تُظهر الأبعاد الفردية للحوكمة الرقمية تأثيرات ذات دلالة إحصائية عند فحصها بشكل منفصل، مما يشير إلى أن فاعلية الحوكمة الرقمية تبرز من خلال تكامل أبعادها وليس من خلال أي بُعد منفرد بمعزل عن الآخرين.

توصيات الدراسة :توصي الدراسة الجامعات العراقية بتبني إطار عمل متكامل للحوكمة الرقمية يؤكد على مواءمة التكنولوجيا، والسياسات الإدارية، والهياكل التنظيمية كأساس لتطوير جامعات ذكية قادرة على التكيف مع التحولات الرقمية. علاوة على ذلك، ينبغي على الجامعات تعزيز الاعتماد على الأنظمة الرقمية

في اتخاذ القرار من خلال تطوير منصات تحليل البيانات وتعزيز آليات دعم القرار القائمة على الأدلة، نظراً لدورها الحيوي في تحسين الجاهزية الذكية.

الكلمات المفتاحية :الحوكمة الرقمية؛ جاهزية الجامعة الذكية؛ أتمتة العمليات الإدارية؛ أنظمة صنع القرار الرقمي؛ مرونة السياسات الرقمية؛ الشفافية المؤسسية؛ الاستدامة المؤسسية؛ الثقة المؤسسية؛ التحول الرقمي.

Introduction:

Digital governance has become one of the central concepts in reshaping modern governance paradigms and developing the operational mechanisms of contemporary organisations, particularly higher education institutions that face increasing challenges associated with organisational complexity, accelerated technological transformations, and the need to build more agile institutions capable of responding effectively to environmental changes. In this context, the adoption of digital governance in Iraqi universities represents a strategic direction that can contribute to addressing various institutional deficiencies by improving the quality of university services, enhancing decision-making processes, and strengthening stakeholder engagement, thereby supporting the transition toward smarter and more sustainable institutional models. Digital governance systems have received considerable attention in international literature as effective mechanisms for addressing challenges associated with bureaucracy and limited efficiency in traditional governance practices (Jasim et al., 2024: 214).

Digital governance extends beyond the mere conversion of paper-based procedures into electronic processes; rather, it constitutes an independent governance paradigm that reshapes organisational structures, value creation mechanisms, and value utilisation within institutions. The application of digital technologies in governance processes can range from supporting traditional mechanisms and enhancing their efficiency to achieving advanced levels of automation and comprehensive institutional process redesign (Hanisch et al., 2023: 4). Accordingly, the true value of digital governance does not lie solely in possessing technological infrastructure, but rather in its capacity to reconstruct institutional relationships and strengthen the principles of accountability, openness, and trust between organizations and their stakeholders.

In this context, (Milakovich, 2012, p. 18) argues that the shift toward delivering government services through online platforms emerged as a response to efforts to transform the concept of the "information superhighway" into a practical reality. However, this transition encountered several constraints, including bureaucratic barriers, limited public trust, political restrictions, and concerns related to privacy and resource availability. These challenges demonstrate that the success of digital transformation depends not only on technological advancement but also on the existence of an institutional environment capable of fostering trust, ensuring transparency, and promoting the sustainable use of resources. Consequently, digital governance has evolved into a comprehensive framework that integrates digital technologies with sound administrative practices to enhance service efficiency, strengthen stakeholder participation, reinforce the principles of integrity and transparency, and mitigate corruption.

Digital governance is widely recognised as a contemporary approach for generating a range of organisational benefits, including reducing operational costs, facilitating access to public services, improving organisational performance, enhancing transparency, and increasing institutional responsiveness

to citizens' and stakeholders' needs. The literature further suggests that information and communication technologies (ICTs) can improve resource utilisation and enhance service quality. Nevertheless, some critical perspectives argue that the realisation of these benefits depends largely on an organisation's level of digital readiness and its capacity to effectively manage the digital transformation process. In this regard, (Harun, 2026, p. 4) defines digital governance as the systematic use of digital technologies, data infrastructures, and electronic platforms by government institutions to deliver public services, manage internal operations, enhance institutional responsiveness, and strengthen the principles of accountability.

Building on this perspective, the implementation of digital governance in higher education institutions is closely associated with the concept of the smart university. The smart university represents one of the institutional outcomes of advanced digital transformation, where transformation extends beyond the integration of technology into educational and administrative processes to encompass the restructuring of the university's institutional model, thereby enhancing its capacity for innovation, adaptability, and long-term sustainability. The evolution of smart university readiness has paralleled the historical development of society, industry, and higher education across successive industrial revolutions. During the Industry 1.0 era, universities primarily adopted traditional educational models focused on classical disciplines. Industry 2.0 witnessed the emergence of modern universities characterised by the expansion of scientific disciplines and the strengthening of research activities. Industry 3.0 was marked by the massification of higher education and broader access to university education. In contrast, Industry 4.0 introduced a fundamental shift toward digital and entrepreneurial universities through the adoption of artificial intelligence (AI), big data analytics, the Internet of Things (IoT), and stronger university–industry integration. More recently, Industry 5.0 has encouraged universities to adopt more inclusive and human-centred models that combine advanced technologies with ethical values and sustainability principles while emphasising lifelong learning, equity, and inclusiveness. This evolution reinforces the concept of the smart university as an innovative, resilient, and socially integrated institution capable of responding to the demands of the digital society (Okumuş et al., 2026, p. 6).

From this perspective, the smart university can be regarded as a natural extension of digital governance, as digital governance provides the organisational and technological foundation that enables higher education institutions to transition from conventional operating models toward intelligent, data-driven, and digitally integrated universities. According to Mbombo and Cavus 2021, p. 14), the global diffusion of concepts such as smart cities, smart businesses, and smart homes has paved the way for viewing higher education institutions as environments capable of evolving into smart ecosystems. Consequently, the concept of the smart university has emerged as one of the contemporary trends in higher education,

particularly in developing countries, where it is defined as an educational institution that integrates advanced digital technologies, including the Internet of Things and smart devices, into its organisational systems and operational processes to improve institutional performance and achieve its strategic objectives.

Within this context, the smart university constitutes a comprehensive institutional framework that extends beyond the mere adoption of advanced technologies. Rather, it reflects the institution's ability to reorganise its resources and operational processes in ways that enhance operational efficiency and institutional sustainability. (Fawareh and Alotti, 2026) argue that smart universities integrate advanced technologies to improve educational quality, streamline administrative processes, and promote sustainability. The implementation of intelligent systems contributes to establishing an interconnected and efficient learning environment that supports active learning while improving operational performance, particularly in universities that rely on digital infrastructures and smart energy systems. The study further emphasises the importance of collaboration between faculty members and students in ensuring the successful transition toward smart universities, while highlighting the need to address challenges related to standardisation and scalability. These findings suggest that smart university readiness is determined not only by technological capabilities but also by the institution's capacity to establish a collaborative, transparent, and sustainable governance system.

Similarly,. (Jawwad et al, 2024, p. 1163) explain that the concept of the smart university encompasses two primary dimensions. The first is the conceptual dimension, which originates from the smart city paradigm and focuses on developing a smart campus equipped with advanced educational environments such as smart classrooms, smart libraries, intelligent parking systems, and smart laboratories. Such infrastructure contributes to enhancing educational quality, improving university management efficiency, and supporting environmental sustainability. The second dimension relates to educational and societal outcomes. In this regard, the smart university is not limited to upgrading digital infrastructure and technological capabilities but also seeks to develop graduates equipped with the knowledge and competencies required to compete in contemporary society, thereby ensuring the continuity and future viability of the smart university model. Accordingly, effective digital governance systems are essential for managing these transformations, ensuring the responsible use of digital technologies, and balancing innovation and operational efficiency with ethical and societal considerations.

The rapid acceleration of digital transformation, particularly following the COVID-19 pandemic, has significantly increased global interest in the smart university concept. The pandemic demonstrated the importance of resilient digital infrastructures capable of sustaining universities' educational and administrative functions through online and distance learning modalities. Conversely,

conventional universities encountered substantial challenges due to their dependence on face-to-face instructional models, prompting many higher education institutions to accelerate digital transformation initiatives and develop more intelligent and adaptive institutional capabilities. Nevertheless, achieving smart university readiness requires more than the mere availability of digital technologies. It also depends on complementary institutional factors that ensure the effectiveness of digital transformation, most notably institutional transparency, sustainability, and institutional trust, all of which constitute fundamental pillars for successful digital governance and the realisation of smart university objectives.

In this regard, institutional transparency represents one of the key mechanisms linking digital governance with smart university readiness. Digital transformation enables universities to improve information flows, strengthen disclosure practices, and facilitate stakeholder access to information concerning institutional performance and decision-making. According to (Al-Subaie, 2010, p. 18), transparency within organisations promotes greater openness in information management by enabling employees and stakeholders to access institutional decisions, understand their rationale, and participate in their evaluation. Such practices strengthen the right to information, increase awareness of administrative procedures and available alternatives, facilitate institutional performance assessment, and reinforce accountability and democratic governance in line with the principles of open government. Similarly, (Wang, 2023, p. 1) identifies institutional transparency as a fundamental principle of good governance, emphasising clear and accurate disclosure of both financial and non-financial information to enable stakeholders to evaluate organisational performance and make informed decisions. Within this framework, sustainability accounting and sustainability reporting contribute significantly to institutional transparency by providing reliable information regarding economic, environmental, and social performance, thereby enhancing accountability, strengthening stakeholder trust, and reinforcing institutional sustainability.

Institutional transparency is closely intertwined with institutional sustainability because smart universities seek not only technological transformation but also the establishment of institutional models capable of generating long-term economic, social, and environmental value (Ningsih et al, 2026, p. 96) argue that sustainability reporting constitutes an essential mechanism for demonstrating accountability and transparency within organisations, including higher education institutions. These reports have become an important means through which universities communicate their commitment to sustainability principles and disclose their sustainability performance. Furthermore, universities bear ethical and societal responsibilities in advancing the Sustainable Development Goals (SDGs) by integrating environmental, social, and governance (ESG) considerations into their institutional strategies, thereby strengthening their contribution to balanced and sustainable development.

According to Minhas et al. (2026, p. 2), the sustainability literature in higher education remains relatively underdeveloped due to the multidimensional nature of sustainability and the diversity of its interpretations across academic disciplines. Sustainability encompasses environmental dimensions concerned with preserving natural resources and ecosystems for future generations; economic dimensions focused on achieving long-term growth without depleting resources or harming the environment; social dimensions emphasising equity, inclusion, and societal well-being; and cultural dimensions related to preserving heritage and societal values throughout development processes. At the institutional level, sustainability is operationalised through the integration of environmental, social, and governance (ESG) principles into organisational strategies, providing a holistic framework that promotes balance, resilience, and continuity. Consequently, sustainability represents a critical component of the smart university model because it ensures that digital transformation serves not as an isolated technological objective but as a strategic means of creating sustainable institutional value.

In addition, the effectiveness of digital governance, transparency, and sustainability is strongly influenced by institutional trust, which constitutes a fundamental prerequisite for successful transformation toward smart universities. Regardless of their level of technological sophistication, digital systems require an institutional environment that enjoys the confidence of faculty members, students, and other stakeholders. Trust serves as the foundation for the acceptance of digital systems, meaningful engagement with digital services, and the effective utilisation of their outcomes. According to Kanas et al. (2026, p. 88), institutional trust refers to the levels of public and organisational confidence that individuals develop toward institutions and formal governance systems. Such trust is shaped not only by broader societal factors but also by individuals' direct experiences and the quality of their interactions with institutional processes.

From this perspective, institutional trust can be understood as a cumulative outcome that develops throughout successive stages of interaction between individuals and the institution. It is influenced by prior experiences before engaging with the institution, the quality of institutional procedures during service delivery, perceptions of fairness and procedural transparency, and subsequent experiences related to institutional communication and organisational climate. Accordingly, strengthening institutional trust within smart universities depends on the capacity of digital governance to provide transparent information, ensure the sustainable management of institutional resources, and promote higher levels of accountability, reliability, and organisational credibility.

Based on the foregoing discussion, the relationship between digital governance and smart university readiness extends well beyond a purely technological association; rather, it constitutes an integrated institutional relationship shaped by interconnected organisational and value-based dimensions. Digital governance functions as an underlying institutional mechanism that reshapes universities'

capabilities by enhancing transparency, promoting sustainability, and strengthening institutional trust. Collectively, these interrelated dimensions improve the readiness of Iraqi universities to transition toward the smart university model. Therefore, examining the influence of digital governance on smart university readiness through the mediating roles of institutional transparency, sustainability, and institutional trust provides a more comprehensive theoretical framework for understanding the requirements of smart university transformation within the Iraqi higher education context.

Research problem: The research problem stems from the need to understand how digital governance contributes to enhancing the readiness of Iraqi smart universities amid the rapid digital transformation occurring in the higher education sector and the accompanying organisational, administrative, and technological challenges. Although digital governance has increasingly attracted scholarly attention as a strategic approach to improving institutional performance, Arab and Iraqi studies examining its influence on smart university readiness remain limited, particularly those investigating the underlying mechanisms through which the effects of digital governance are translated into enhanced institutional readiness.

Moreover, a significant research gap exists regarding the limited empirical evidence on the mediating roles of institutional transparency, institutional sustainability, and institutional trust in explaining the relationship between digital governance and the readiness of Iraqi universities to become smart universities. This gap highlights the need to develop a comprehensive explanatory model that clarifies the nature of these relationships while providing a robust theoretical and empirical foundation to support Iraqi universities in strengthening their readiness for transformation toward the smart university model.

Research Questions

1. What is the current level of digital governance implementation in Iraqi universities?
2. What is the current level of readiness of Iraqi universities to transform into smart universities?
3. What is the effect of digital governance on the readiness of Iraqi universities for smart university transformation?
4. Does institutional transparency mediate the relationship between digital governance and the readiness of Iraqi universities to become smart universities?
5. Does institutional sustainability mediate the relationship between digital governance and the readiness of Iraqi universities to become smart universities?
6. Does institutional trust mediate the relationship between digital governance and the readiness of Iraqi universities to become smart universities?
7. To what extent does the proposed explanatory model, incorporating institutional transparency, institutional sustainability, and institutional trust, explain the effect of digital governance on the readiness of Iraqi universities for smart university transformation?

Research Objectives

1. To assess the level of digital governance implementation in Iraqi universities.
2. To measure the readiness of Iraqi universities for transformation into smart universities.
3. To examine the effect of digital governance on the readiness of Iraqi universities for smart university transformation.
4. To investigate the relationship between digital governance and the readiness of Iraqi universities to become smart universities.
5. To examine the mediating role of institutional transparency in the relationship between digital governance and the readiness of Iraqi universities for smart university transformation.
6. To examine the mediating role of institutional sustainability in the relationship between digital governance and the readiness of Iraqi universities for smart university transformation.
7. To examine the mediating role of institutional trust in the relationship between digital governance and the readiness of Iraqi universities for smart university transformation.
8. To develop an explanatory model that clarifies the mechanism through which digital governance influences the readiness of Iraqi universities for smart university transformation through the mediating roles of institutional transparency, institutional sustainability, and institutional trust.
9. To provide practical recommendations for decision-makers in Iraqi universities aimed at strengthening the implementation of digital governance and promoting institutional transparency, institutional sustainability, and institutional trust, thereby enhancing universities' readiness for transformation into smart universities.

Research Gap

The research gap arises from the practical challenges confronting Iraqi universities in their digital transformation journey toward the smart university model. Despite ongoing efforts to modernise higher education, many Iraqi universities continue to exhibit considerable variation in the level of digital governance implementation, which, in turn, affects their readiness to meet the demands of the digital educational environment and rapidly evolving technological advancements. Furthermore, the limited integration of digital practices into administrative processes and institutional decision-making, together with insufficient alignment between organisational and technological dimensions, constrains universities' capacity to achieve sustainable institutional transformation.

Although digital governance has attracted increasing attention within the higher education and public administration literature, Arab and Iraqi empirical studies examining its influence on smart university readiness remain scarce. In particular, there is a lack of research investigating the underlying mechanisms through which digital governance enhances universities' readiness for smart transformation.

Moreover, few studies have examined the simultaneous mediating roles of institutional transparency, institutional sustainability, and institutional trust within a comprehensive conceptual framework. Most previous studies have either focused on higher education contexts outside Iraq or investigated these variables independently, thereby limiting the applicability and generalizability of their findings to the Iraqi higher education context.

Accordingly, this study seeks to address these theoretical and empirical gaps by developing and empirically validating a comprehensive explanatory model that elucidates how digital governance enhances the readiness of Iraqi universities for transformation into smart universities through the mediating roles of institutional transparency, institutional sustainability, and institutional trust.

Literature review:

1.1 Digital Governance:

Governance represents a fundamental pillar for the success of any organised entity, as it provides the framework through which decision-making processes, policy formulation, resource allocation, and implementation monitoring are systematically managed. It is defined as an integrated system of institutions, mechanisms, rules, and processes that regulates the distribution of authority and responsibilities while ensuring transparency, accountability, and efficiency in managing resources and achieving institutional objectives. The application of governance is not limited to the governmental sector; rather, it extends to private sector organisations, non-profit institutions, and various economic and social sectors, contributing to institutional stability, sustainable development, and the protection of stakeholders' interests (Rashid, 2026, p. 254).

Within this context, the emergence of digital technologies has significantly transformed governance practices and mechanisms. Digital governance has experienced rapid development in public service delivery approaches through the utilisation of digital technologies to enhance the efficiency and effectiveness of governmental operations, promote transparency and accountability, and increase citizens' participation in decision-making processes and access to public services. The transition from traditional paper-based procedures to electronic systems has contributed to simplifying administrative processes, reducing time and costs, and improving the quality of public services. Consequently, digital governance has become a central component of digital transformation programs in many countries. However, achieving effective digital governance requires the adoption of integrated digital policies, regulatory frameworks, and technological infrastructures that ensure service sustainability, strengthen institutional trust, and support economic and social development through the provision of more efficient and accessible public services (Andaya et al., 2025, pp. 90–98).

Furthermore, the success of digital governance cannot be attributed solely to the availability of digital infrastructure or electronic applications. Rather, it requires a comprehensive system that integrates technological enablers, organisational capabilities, and institutional integration mechanisms. The developed C7I Model

indicates that interoperability among digital systems, along with coordination and collaboration among institutions, represents two fundamental dimensions for achieving institutional integration and ensuring the sustainability of digital transformation. Building upon Indrajit's model, the C7I framework highlights that digital governance effectiveness depends on the interaction between technological capabilities and organisational arrangements rather than on technology alone (Prabowo et al., 2026, p. 1216).

The C7I Model conceptualises the components of digital governance through three interconnected layers. The first layer consists of the fundamental enablers, including digital infrastructure, financial resources, and the legislative and regulatory framework required to support digital transformation. The second layer involves operational capabilities, such as digital content development, capacity building, and the design of service delivery interfaces that facilitate interaction with beneficiaries. The third layer focuses on institutional integration mechanisms, which ensure system interoperability, data exchange, workflow standardisation, and coordination among different entities. Together, these components contribute to enhancing organisational efficiency, improving service quality, and achieving institutional sustainability (Prabowo et al., 2026, p. 1216). Accordingly, the C7I Model provides a more comprehensive perspective for understanding digital governance compared with traditional approaches, as it considers institutional integration a strategic prerequisite for successful digital transformation rather than merely a technical aspect of implementation. From this perspective, digital governance can be viewed as a multidimensional institutional framework that combines technological capabilities, organisational readiness, and regulatory structures to achieve effective, sustainable, and integrated digital transformation. Figure (1) presents the Government Digital Transformation Model (C7I Model).

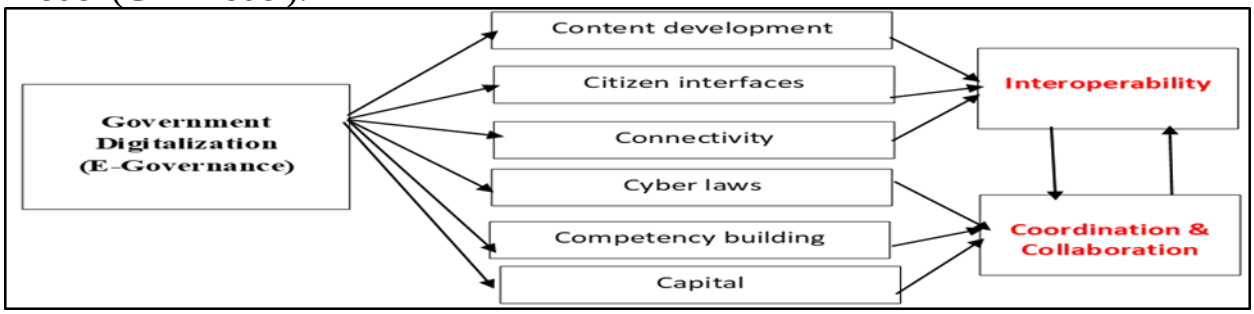

Figure 1 Government Digitalisation Model (Model C7I)

Source: Prabowo, M. R., Maryani, D., & Wargadinata, E. (2026). Digital Governance Transformation in Regional Government: A Multi-Dimensional Framework for Enhancing Public Service Delivery in Central Kalimantan Province, Indonesia. Architecture Image Studies, 7(1), 1208-1222.

Based on the above, the first main hypothesis of the study can be formulated as follows:

Main Hypothesis 1 (H1):

There is a statistically significant positive effect of digital governance, with its dimensions (the level of administrative process automation, reliance on digital systems in decision-making, and flexibility of digital policies), on the readiness of Iraqi smart universities.

Sub-Hypotheses:

H1-1: There is a statistically significant positive effect of the level of administrative process automation on the readiness of Iraqi smart universities.

H1-2: There is a statistically significant positive effect of reliance on digital systems in decision-making on the readiness of Iraqi smart universities.

H1-3: There is a statistically significant positive effect of digital policy flexibility on the readiness of Iraqi smart universities.

2.1 Institutional Transparency

Institutional transparency is considered one of the fundamental pillars for enhancing organisational performance efficiency, as it contributes to providing clear and systematic information related to administrative procedures and organisational decisions, thereby enabling performance monitoring and evaluation based on objective criteria. Transparency also plays a significant role in reducing manifestations of administrative bias and arbitrary practices by strengthening the clarity of rules and procedures. This, in turn, supports mutual trust between institutions and society and facilitates citizens' access to public services while improving their understanding of rights and responsibilities. Furthermore, transparency provides effective channels for receiving feedback and suggestions, which enhances organisations' capacity for organisational learning and continuous performance improvement (Riyadh et al., 2023, pp. 4–5).

Conversely, limited levels of transparency within institutions may result in subjective interpretations of regulations and legislation and the emergence of administrative practices based on individual discretion. Such conditions create organisational barriers that hinder workflow efficiency and negatively affect the performance of public institutions (Al-Kilani & Skajha, 2000, p. 60; Agu et al., 2024, p. 4). In this regard, providing access to information related to public policies, decision-making mechanisms, and resource management represents a fundamental requirement for strengthening institutional integrity, reducing opportunities for corruption, and consolidating the principles of accountability and public trust. However, achieving these objectives depends on the existence of a supportive organisational and legislative environment that encourages disclosure and institutional openness (Cifuentes-Fauram, 2025, p. 2).

In recent decades, transparency has emerged as a prominent administrative concept receiving increasing attention at both national and international levels due to its role in reducing ambiguity and uncertainty within public and private organisations. Transparency extends beyond the mere dissemination of information; rather, it represents an integrated system aimed at ensuring procedural clarity, providing access to relevant organisational data, and enhancing

stakeholders' ability to understand institutional decisions and monitor their implementation. Moreover, transparency contributes to reducing administrative corruption by limiting opportunities for subjective interpretations of legal and regulatory provisions, which may sometimes be exploited to generate practices that undermine institutional performance or conflict with principles of good governance (Al-Kilani & Skajha, 2000, p. 60).

The level of transparency implementation within institutions can be assessed through a set of organisational and procedural indicators reflecting their commitment to disclosure and openness principles. These indicators include the clarity of documents related to institutional objectives, programs, and strategic plans, as well as their accessibility to relevant stakeholders. They also involve providing accurate information regarding organisational structures, financial budgets, available resources, and internal operational mechanisms. In addition, transparency indicators include enabling the public to access and participate in discussions related to plans and public policies, providing clear information on service access procedures, adopting institutional disclosure policies, and publishing organisational data, including allowing attendance at public meetings when appropriate (Musleh, 2013, p. 50).

Despite the critical role of transparency in improving institutional performance, its implementation faces several organisational and administrative challenges that may limit its effectiveness. Among the most prominent challenges is the difficulty of establishing priorities due to the multiplicity and overlapping nature of institutional objectives, which may weaken the capacity for systematic policy implementation. Furthermore, continued reliance on traditional procedures and rigid bureaucratic structures represents a significant obstacle to enhancing transparency. Additional challenges include weak coordination among administrative units, duplication of responsibilities, and irregular updating of data and information. These factors negatively affect institutional integration and constrain organisations' ability to implement transparency principles effectively and sustainably (Al-Sheikh, 1997):

Based on the above discussion, the second main hypothesis of the study can be formulated as follows:

Main Hypothesis 2 (H2):

There is a statistically significant positive effect of digital governance on institutional transparency.

Sub-Hypotheses:

H2-1: There is a statistically significant positive effect of digital governance on digital procedures.

H2-2: There is a statistically significant positive effect of digital governance on ease of access to information.

H2-3: There is a statistically significant positive effect of digital governance on the fairness of adopted standards.

3.1 Institutional Sustainability

Sustainability has become a central global priority amid the increasing environmental and social challenges confronting societies and institutions alike. This growing attention has been reflected in the Sustainable Development Goals (SDGs), which emphasise the necessity of strengthening cooperation and integration among governments, institutions, and communities to achieve inclusive and balanced development. Within this context, institutional sustainability has emerged as a strategic approach for addressing escalating global challenges, extending beyond the traditional concept of corporate social responsibility to encompass the integration of environmental, economic, and social dimensions. Institutional sustainability is not limited to ensuring long-term growth; rather, it involves responsible resource management, reducing negative impacts on the environment and society, and enhancing organisations' capacity for adaptation and continuity. Through the adoption of responsible environmental and social practices, institutions can strengthen their organisational legitimacy, reinforce relationships with stakeholders, and achieve higher levels of sustainable performance within increasingly dynamic and complex environments (Wang et al., 2026, p. 2).

Institutional sustainability has increasingly become a strategic priority for organisations as they seek to adopt organisational practices and standards that support sustainable development principles and enhance their environmental and social responsibilities. Nevertheless, many organisations continue to encounter challenges in translating sustainability orientations into effective practices and tangible outcomes. This challenge is partly attributed to limited employee participation and engagement in organisational sustainability initiatives. Employee involvement represents a critical factor in the success of sustainability programs due to the direct influence of individual behaviours and daily workplace practices on achieving sustainability objectives. Accordingly, research attention has increasingly focused on understanding employees' sustainable behaviours and exploring organisational mechanisms that encourage their engagement and enable their effective contribution to the transition toward more sustainable institutions (Kirchner-Krath et al., 2026, p. 514).

Furthermore, sustainable institutional performance has become a prominent topic in contemporary management research; however, defining its components and measuring its levels continue to present theoretical and practical challenges due to the diversity of approaches associated with the concept of sustainability and its dimensions. Sustainable performance is generally conceptualised through three interconnected dimensions: the economic dimension, the environmental dimension, and the social dimension. These dimensions are influenced to varying degrees by governance systems and organisational practices adopted within institutions. Existing literature indicates that sustainability-related disclosure and monitoring requirements may encourage some organisations to adopt symbolic or superficial practices that do not necessarily reflect genuine improvements in environmental and social performance. Conversely, organisational and

technological innovations represent essential pathways for enhancing sustainability performance, as digital capabilities, service innovation, stakeholder pressures, and green management practices contribute to the development of green innovation, strengthening organisations' ability to improve sustainable performance and generate long-term value (Sang et al., 2026, p. 3).

Based on the preceding discussion, the third main hypothesis of the study can be formulated as follows:

Main Hypothesis 3 (H3):

There is a statistically significant positive effect of digital governance on institutional sustainability.

Sub-Hypotheses:

H3-1: There is a statistically significant positive effect of digital governance on resource-use efficiency.

H3-2: There is a statistically significant positive effect of digital governance on technological adaptability.

H3-3: There is a statistically significant positive effect of digital governance on institutional performance continuity.

4.1 Institutional Trust

Institutional trust represents one of the fundamental factors influencing individuals' acceptance of emerging technologies, as it contributes to reducing perceived risks and uncertainty associated with the use of digital systems. Trust is considered a multidimensional concept; institution-based trust refers to individuals' perceptions of an institution's ability to provide a secure and reliable environment that facilitates information exchange and digital transactions. Institutional trust is grounded in a set of structural assurances provided by organisations, including regulatory frameworks, policies, and technological procedures that enhance security and reliability. These assurances encompass institutional aspects related to systems, regulations, and organisational standards, as well as technological aspects associated with information security, data protection, and the reliability of digital services. Accordingly, institutional trust represents a critical determinant of successful digital transformation initiatives due to its role in strengthening users' willingness to adopt intelligent systems and engage with them continuously (Frank et al., 2026, p. 2208).

Institutional trust also represents one of the intangible resources that support the successful implementation of smart systems, as it constitutes the foundation upon which institutions build societal acceptance and confidence toward emerging technologies. Transparency and fairness in governance practices are among the essential factors contributing to the development of such trust, whereas ambiguity or bias in institutional procedures and decision-making processes may undermine trust even when advanced and effective technologies are available. From this perspective, individuals' evaluations of modern technologies are not limited to their technical characteristics; rather, they also involve assessments of the clarity, fairness, and legitimacy of the governance mechanisms associated with these

technologies. Therefore, successful transformation toward smart environments depends not only on technological advancement but also on institutions' ability to establish and strengthen trust through transparent and inclusive institutional practices that support stakeholder participation and reinforce perceptions of fairness and reliability (Bakhtiar & Mohd Amin, 2026, p. 6).

Based on the preceding discussion, the fourth main hypothesis of the study can be formulated as follows:

Main Hypothesis 4 (H4):

There is a statistically significant positive effect of digital governance on institutional trust.

Sub-Hypotheses:

H4-1: There is a statistically significant positive effect of digital governance on the level of trust in digital decisions.

H4-2: There is a statistically significant positive effect of digital governance on the acceptance of smart systems.

H4-3: There is a statistically significant positive effect of digital governance on the perception of organisational justice.

5.1 Smart Universities

The concepts of smart universities, smart education, digital universities, electronic universities, and technology-driven universities have become central themes receiving increasing attention within the strategies of educational institutions seeking to strengthen their institutional identity and enhance their academic reputation. In the educational context, the concept of "smartness" refers to the utilisation of technology and its rapid advancements to redesign educational environments and improve their outcomes. Within this framework, the concept of the smart campus represents a contemporary approach aimed at providing advanced educational and administrative services characterised by dynamism and proactivity for students, faculty members, and university staff through the adoption of emerging technologies, particularly Internet of Things (IoT) technologies. Such integration contributes to developing a more efficient university environment capable of responding effectively to changing needs and expectations (Luckyardi et al., 2023, p. 188).

The rapid advancement of digital learning technologies has significantly reshaped the higher education environment, where smart classrooms have become one of the fundamental components of smart universities due to their ability to provide interactive and flexible learning environments that support self-directed learning, collaboration, and adaptation to students' diverse needs and learning preferences. Furthermore, the integration of smart devices, educational software, and e-learning platforms contributes to improving the quality of educational processes, strengthening interaction between students and faculty members, and developing creative thinking skills, problem-solving abilities, and independent learning competencies (Yu et al., 2021; Uskov et al., 2018; Adipat & Chotikapanich, 2024, pp. 30).

In this context, the transition from traditional education models toward digital education has become one of the fundamental foundations for developing smart universities, particularly following the COVID-19 pandemic, which demonstrated the strategic importance of e-learning in ensuring educational continuity and enabling institutions to adapt to unexpected circumstances. Achieving transformation toward the smart university model requires the development of integrated administrative and technological strategies based on innovation, digital competency enhancement, and the advancement of smart management systems. These elements collectively support institutional performance efficiency and strengthen universities' capacity to adapt to future transformations and respond effectively to emerging challenges (Farrah & Al-Bakry, 2020; Moneim, 2020).

The smart university ecosystem consists of a set of interconnected components that interact to facilitate digital transformation and enhance institutional performance efficiency. These components can be summarised as follows (Nguyen & Nguyen-Dinh, 2024, pp. 668–669):

Smart University: Represents a comprehensive institutional transformation model based on information and communication technologies (ICTs) to enhance administrative, educational, research, and service-related processes while achieving higher levels of quality and efficiency in university performance.

Smart Learning Environment: Refers to a learning environment supported by digital and intelligent technologies that can adapt to learners' needs through analysing their behavioural patterns and performance levels, and providing appropriate educational support at the right time and place.

Smart Education: Represents a student-centred educational system based on interdisciplinary integration and the alignment of educational institutions with labour market requirements through the utilisation of smart technologies and tools to enhance educational quality and effectiveness.

Smart Campus: Represents an integrated ecosystem that combines e-learning, digital collaboration, sustainability practices, smart facility management, healthcare and security services, as well as digital governance applications, to improve beneficiaries' experiences and enhance the efficiency of university resource management.

Smart Teacher: Refers to an educational orientation focused on empowering faculty members to utilise technology in teaching and assessment processes through the provision of intelligent tools and continuous training programs that contribute to developing teaching competencies and improving academic performance.

Smart Classroom: Represents an advanced educational environment that relies on smart technologies to improve educational content delivery, facilitate access to knowledge resources, and enhance interaction among the elements of the educational process, thereby supporting modern learning approaches.

The fifth main hypothesis (Mediation Hypotheses) can be formulated as follows:

Main Hypothesis 5 (H5):
Institutional transparency, institutional sustainability, and institutional trust play statistically significant mediating roles in the relationship between digital governance and the readiness of Iraqi smart universities.
Sub-Hypotheses:
H5-1: Institutional transparency plays a statistically significant mediating role in the relationship between digital governance and the readiness of Iraqi smart universities.
H5-2: Institutional sustainability plays a statistically significant mediating role in the relationship between digital governance and the readiness of Iraqi smart universities.
H5-3: Institutional trust plays a statistically significant mediating role in the relationship between digital governance and the readiness of Iraqi smart universities.
Based on the aforementioned hypotheses, the conceptual model of the study was developed to illustrate the relationships among the main study variables: digital governance and smart university readiness, while highlighting the mediating roles of institutional transparency, institutional sustainability, and institutional trust.
The independent variable is digital governance, measured through the following dimensions:
(The level of administrative process automation, Reliance on digital systems in decision-making, Flexibility of digital policies).
The dependent variable is the readiness of Iraqi smart universities:
The mediating variables include:
Institutional Transparency, measured through: (Digital procedures, Ease of access to information, Fairness of adopted standards).
Institutional Sustainability, measured through: (Resource-use efficiency, Technological adaptability, Institutional performance continuity).
Institutional Trust, measured through: (The level of trust in digital decisions, Acceptance of smart systems, Perception of organisational justice).

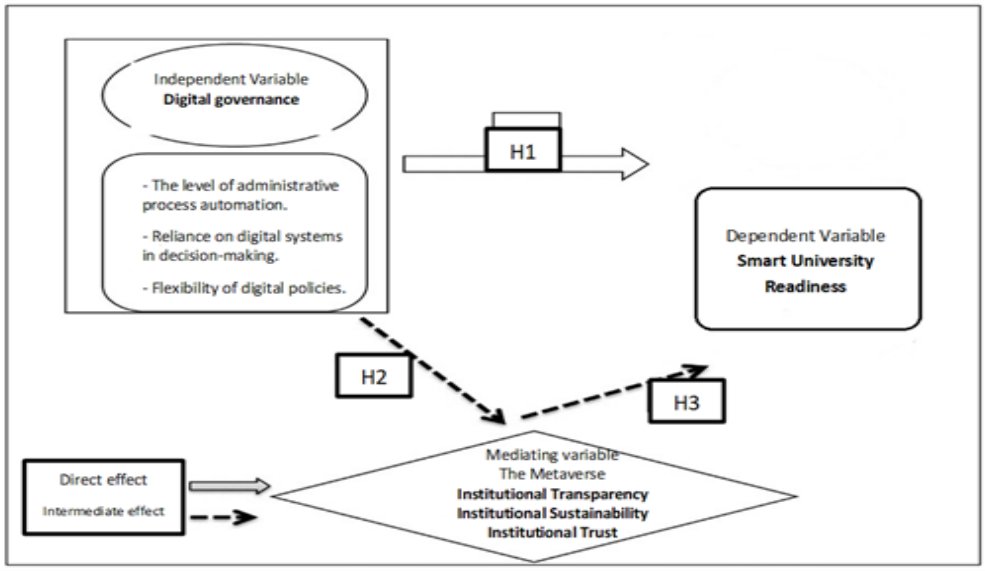

Figure (2) shows the applied conceptual model.
Source: Prepared by the researcher based on previous studies.

2. Research Methodology

2.1 Methodological Design of the Study

This study adopted a methodological design encompassing the research design, study setting, study population, sample, data collection instruments, and statistical analysis techniques. The methodology was developed in alignment with the objectives of the study and its main variables, including digital governance, smart university readiness, institutional transparency, institutional sustainability, and institutional trust.

2.2 Research Design

The study employed a quantitative approach within a deductive research framework to develop and test hypotheses. A descriptive–analytical method was utilised for data analysis due to its suitability for examining the effect of digital governance on the readiness of Iraqi smart universities and testing the mediating roles of institutional transparency, institutional sustainability, and institutional trust in this relationship.

2.3 Study Setting

The study was conducted in a number of Iraqi public universities and involved academic and administrative leaders, faculty members, and employees working in administrative and technical units related to digital governance implementation and digital transformation initiatives. This setting enabled the assessment of universities' readiness for transformation into smart universities.

2.4 Study Population

The study population consisted of employees working in Iraqi public universities, including university leaders, college deans, heads of academic departments, faculty members, and employees in administrative and information technology units who are directly involved in implementing digital governance and managing university operations.

2.5 Study Sample

A simple random sample was selected from employees of the Iraqi universities included in the study. The final sample consisted of 143 respondents.

2.6 Inclusion Criteria

The inclusion criteria comprised:

- Employees in Iraqi universities who have direct or indirect involvement in digital governance implementation.
- Academic and administrative leaders, faculty members, and employees in administrative and technical units.
- Participants who voluntarily agreed to participate during the data collection period.

2.7 Exclusion Criteria

The exclusion criteria included:

- Employees who are not involved in administrative or digital activities within the university.
- Employees who were on extended leave during the data collection period or those who did not complete the questionnaire.

2.8 Data Collection Instruments

A questionnaire was used as the primary data collection instrument. The questionnaire consisted of six sections:

Section 1: Demographic Information

This section included demographic characteristics such as gender, job title, and nature of work.

Section 2: Digital Governance Scale

This section measured the level of digital governance implementation through three dimensions:

- The level of administrative process automation.
- Reliance on digital systems in decision-making.
- Flexibility of digital policies.

Section 3: Institutional Transparency Scale. This section measured:

- Clarity of digital procedures.
- Ease of access to information.
- Fairness of adopted standards.

Section 4: Institutional Sustainability Scale

This section measured:

- Resource-use efficiency.
- Technological adaptability.
- Institutional performance continuity.

Section 5: Institutional Trust Scale

This section measured:

- The level of trust in digital decisions.
- Acceptance of smart systems.
- Perception of organisational justice.

Section 6: Smart University Readiness Scale

This section assessed the level of Iraqi universities' readiness for transformation into smart universities through a set of items reflecting technological, organisational, and human readiness dimensions.

2.9 Administrative Procedures

Official approvals were obtained from university administrations, colleges, and relevant administrative units before commencing data collection, particularly from, , and.

2.10 Preparatory Phase

The preparatory phase included reviewing relevant literature and previous studies, selecting appropriate measurement scales, translating and adapting questionnaire items to the Iraqi context when necessary, and presenting the questionnaire to a group of experts to ensure face validity.

2.11 Ethical Considerations

The study adhered to research ethics principles by explaining the purpose of the study to participants, ensuring the confidentiality of collected information, and confirming that data would only be used for scientific research purposes. Participants were also granted the right to withdraw from the study at any stage without any consequences.

2.12 Data Collection

Questionnaires were distributed electronically and in paper format according to the nature and circumstances of each university. Completing each questionnaire required approximately 10–12 minutes, and data were collected during the designated study period.

2.13 Statistical Analysis Techniques

To achieve the study objectives and test its hypotheses, the following statistical techniques were employed:

- Descriptive statistics, including frequencies, percentages, means, and standard deviations.
- Validity and reliability tests, using Cronbach's Alpha coefficient.
- Hypothesis testing, using multiple regression analysis through SPSS version 21 and AMOS version 21.
- Mediation analysis, conducted by examining direct and indirect effects to assess the mediating roles of institutional transparency, institutional sustainability, and institutional trust.

3. Results and Discussion:

3.1 Sample Description: The study sample consisted of 143 participants from employees working in Iraqi universities. The respondents were selected using a convenience sampling method to ensure adequate representation of the target groups relevant to the objectives of the study. Data were collected through a questionnaire comprising multiple sections designed to measure the study variables, including digital governance, smart university readiness, institutional transparency, institutional sustainability, and institutional trust.

The sample demonstrated diversity in terms of demographic characteristics, including gender, nature of work, and job position. This diversity enhances the ability to examine the relationships among the study variables and to test the proposed explanatory model:

1. Sample Distribution by Gender:

Table (1): Sample Distribution by Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	91	63.6	63.6	63.6
	female	52	36.4	36.4	100.0
	Total	143	100.0	100.0	

Source: SPSS V.21 Output

The results presented in the table indicate that the study sample consisted of 143 participants distributed according to gender. The number of male participants was 91, representing 63.6% of the total sample, while the number of female participants was 52, representing 36.4%. The distribution shows a relatively balanced representation of both genders, although the proportion of male participants was higher than that of females, reflecting the demographic characteristics of employees within the study population.

This diversity in sample characteristics provides a supportive basis for analysing participants' perceptions regarding the study variables, including digital governance, institutional transparency, institutional sustainability, institutional trust, and Iraqi smart university readiness. Accordingly, the sample composition enhances the potential applicability of the findings within the boundaries of the study population. Figure (2) illustrates these results.

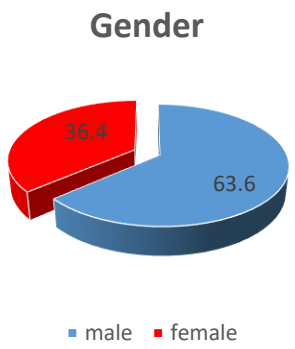

Figure (2): Sample Distribution by Gender

Source: SPSS V.21 Output

2. Sample Distribution by Job Title:

Table (2): Sample Distribution by Job Title

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Faculty Member	45	31.5	31.5	31.5
	Administrative Staff	5	3.5	3.5	35.0
	Administrative/Technical Unit Head	93	65.0	65.0	100.0
	Total	143	100.0	100.0	

Source: SPSS V.21 Output

The results of the table indicate that the study sample, consisting of 143 participants, was distributed according to job title into three main categories. The Administrative/Technical Unit Head category represented the largest proportion of the sample, with 93 participants accounting for 65.0% of the total sample. This was followed by the Faculty Member category, with 45 participants representing 31.5%, while the Administrative Staff category included 5 participants, representing 3.5%, which was the lowest proportion.

This distribution indicates that the majority of participants occupy administrative or technical positions directly related to managing institutional systems and procedures. This enhances the suitability of the sample for examining digital governance and smart university readiness, given that the study requires participants with knowledge of or involvement in digital transformation processes, resource management, and university information systems. Furthermore, the inclusion of faculty members provides an academic perspective regarding universities' readiness to adopt smart technologies, thereby supporting a more comprehensive analysis of the study variables. Figure (3) illustrates these results.

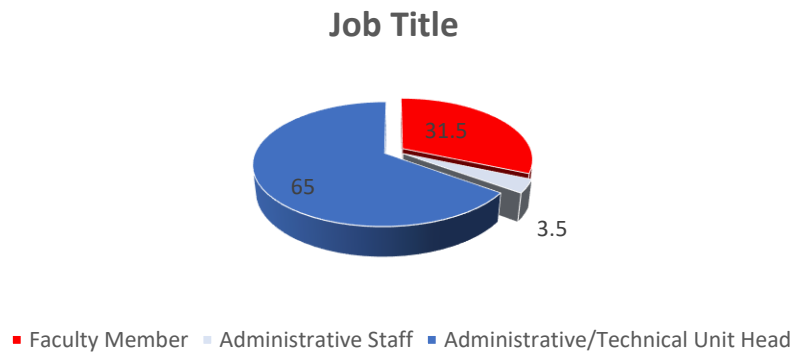

Figure (3): Sample Distribution by Job Title
Source: SPSS V.21 Output

3. Sample Distribution by Nature of Work:

Table (3): Sample Distribution by Nature of Work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Academic	19	13.3	13.3	13.3
	Administrative	16	11.2	11.2	24.5
	Technical	108	75.5	75.5	100.0
	Total	143	100.0	100.0	

Source: SPSS V.21 Output

The results of the table indicate that the study sample, consisting of 143 participants, was distributed according to the nature of work into three main categories. The Technical category ranked first, with 108 participants representing 75.5% of the total sample, followed by the Academic category with 19 participants representing 13.3%, and the Administrative category with 16 participants representing 11.2%.

This distribution indicates that the majority of the sample members belong to the technical field, which is consistent with the nature of the study topic related to digital governance and the readiness of Iraqi smart universities. Technical staff possess direct knowledge of digital infrastructure, electronic systems, and the requirements of digital transformation within university institutions. Furthermore, the participation of academic and administrative groups contributes to providing diverse perspectives regarding the role of digital governance in enhancing institutional readiness, thereby supporting the comprehensiveness of the study findings and their ability to explain the relationships among the main study variables. Figure (4) illustrates these results.

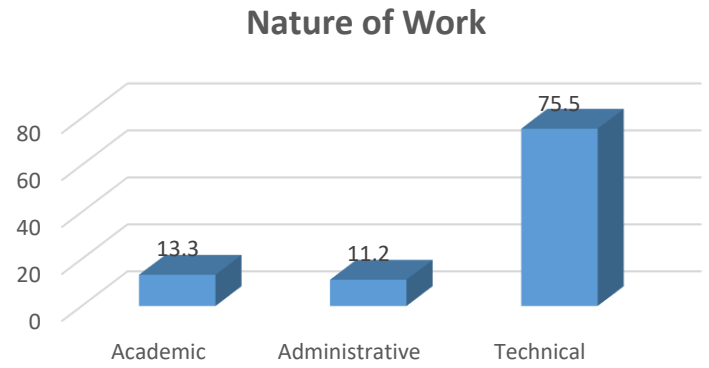

Figure (4): Sample Distribution by Job Title
Source: SPSS V.21 Output

3.2 Validity and Reliability of the Research Instruments

To ensure the reliability of the instruments used in the study, the internal consistency reliability test was conducted using Cronbach's Alpha coefficient, which is one of the most widely applied methods in social research based on questionnaires. This coefficient reflects the degree of consistency among the items of each measurement instrument and indicates the extent to which the items produce consistent results across the different dimensions of the scale (Bird, 2009).

Regarding validity analysis, the study assessed the extent to which the measurement instruments accurately measure the intended constructs without overlap with other dimensions. This was evaluated statistically using the square root of the Cronbach's Alpha value as an indicator of construct validity. Table (4) presents the results of this analysis, demonstrating the validity and suitability of the instruments for measuring the main variables of the study.

Table (4) Cronbach's coefficient for all axes individually and combined

Axis	Symbol	Number of phrases	Cronbach's alpha coefficient value	Validity Tests (Square Root of Cronbach's Alpha Coefficient)
Level of Administrative Process Automation	A1	4	.910	.954
Reliance on Digital Systems in Decision-Making	A2	4	.889	.943
Flexibility of Digital Policies	A3	4	.921	.960
Digital Governance	**A**	**12**	**.962**	**.981**
Digital Procedures	B1	3	.882	.939
Ease of Access to Information	B2	3	.724	.851
Fairness of Adopted Standards	B3	3	.689	.830
Institutional Transparency	**B**	**9**	**.685**	**.828**
Resource-Use Efficiency	C1	3	.708	.841
Technological Adaptability	C2	3	.727	.853
Institutional Performance Continuity	C3	3	.852	.923
Institutional Sustainability	**C**	**9**	**.767**	**.876**
Trust in Digital Decisions	D1	3	.660	.812
Acceptance of Smart Systems	D2	3	.917	.958
Perception of Organisational Justice	D3	3	.620	.787
Institutional Trust	**D**	**9**	**.643**	**.802**
Smart University Readiness	**E**	**8**	**.896**	**.947**
Full Survey	**ABCD**	**50**	**.918**	**.958**

Source: Results of statistical analysis using SPSS.

The results of the reliability test using Cronbach's Alpha coefficient indicate that all study variables demonstrate acceptable to high levels of internal consistency

among their items. The Cronbach's Alpha values for the research variables ranged between (0.620–0.962), which fall within the statistically acceptable thresholds in administrative and behavioural studies. Values exceeding (0.60) are generally considered indicators of acceptable reliability, while slightly lower values may be accepted for some dimensions containing a limited number of items, particularly in exploratory studies.

Regarding the independent variable Digital Governance (A), it was measured through three main dimensions: the level of administrative process automation (A1), reliance on digital systems in decision-making (A2), and flexibility of digital policies (A3). The overall Cronbach's Alpha coefficient for digital governance was (0.962), representing a very high level of internal consistency and indicating that the scale items reliably represent the concept of digital governance. The sub-dimensions also achieved high reliability values, with administrative process automation recording (0.910), reliance on digital systems in decision-making recording (0.889), and flexibility of digital policies recording (0.921). These results confirm the suitability of these dimensions for measuring digital governance within universities.

The first mediating variable, Institutional Transparency (B), was measured through three dimensions: digital procedures (B1), ease of access to information (B2), and fairness of adopted standards (B3). The overall Cronbach's Alpha coefficient for institutional transparency was (0.685), representing an acceptable level of reliability in social and administrative research, particularly considering that the scale consists of a limited number of items. The sub-dimensions demonstrated varying levels of reliability, where digital procedures recorded a high value of (0.882), while ease of access to information and fairness of adopted standards recorded (0.724) and (0.689), respectively. These results indicate an acceptable level of consistency among the items of these dimensions.

The second mediating variable, Institutional Sustainability (C), was measured through three dimensions: resource-use efficiency (C1), technological adaptability (C2), and institutional performance continuity (C3). The overall Cronbach's Alpha coefficient for this variable was 0.767, reflecting a good level of reliability. The sub-dimensions achieved acceptable reliability levels, with resource-use efficiency recording (0.708), technological adaptability recording (0.727), and institutional performance continuity achieving the highest value of (0.852), confirming its ability to represent the concept of institutional sustainability.

The third mediating variable, Institutional Trust (D), was measured through three dimensions: trust in digital decisions (D1), acceptance of smart systems (D2), and perception of organisational justice (D3). The overall Cronbach's Alpha coefficient for this variable was 0.643, which represents an acceptable level for scientific research purposes. The sub-dimensions showed varying reliability levels, with trust in digital decisions recording (0.660), acceptance of smart systems recording (0.917), and perception of organisational justice recording

(0.620). These results indicate that acceptance of smart systems demonstrates a high level of internal consistency, while the remaining dimensions remain within acceptable measurement limits.

Regarding the dependent variable, Iraqi Smart University Readiness (E), the Cronbach's Alpha coefficient reached (0.896), representing a high level of reliability. This confirms that the items of this scale possess strong internal consistency and are capable of reliably measuring universities' readiness for transformation toward the smart university model.

At the overall instrument level, the Cronbach's Alpha coefficient for the complete questionnaire, including all variables and dimensions, was 0.918. This very high value confirms that the research instrument possesses a high degree of reliability and is appropriate for data collection and testing the proposed research model.

Regarding validity assessment, the square root of the Cronbach's Alpha coefficient was used as an indicator of construct validity for the measurement scales. The obtained values ranged between (0.787–0.981), indicating a high level of validity in representing the theoretical constructs. Digital governance achieved the highest validity value (0.981), followed by Iraqi smart university readiness (0.947), while the remaining variables achieved acceptable values, confirming the suitability of the scales for examining relationships among the study variables.

Based on these findings, it can be concluded that the research measurement scales demonstrate appropriate levels of reliability and validity, allowing their application in the subsequent stages of statistical analysis to test the proposed structural model and examine the effect of digital governance on Iraqi smart university readiness, while analysing the mediating roles of institutional transparency, institutional sustainability, and institutional trust.

3.3 Descriptive Statistics

Descriptive statistical measures, including the mean, standard error, and standard deviation, were used to describe and analyse the participants' responses (Sekaran & Bougie, 2016). Table (5) presents the descriptive statistics for the study model variables, reflecting the distribution and variability of the data across the study sample:

Table (5) Description of the Sample Response

	Symbol	N	Mean	Std. Deviation	Sig. (2-tailed)
Level of Administrative Process Automation	A1	143	3.66	.989	.000
Reliance on Digital Systems in Decision-Making	A2	143	3.73	.936	.000
Flexibility of Digital Policies	A3	143	3.46	.996	.000

Digital Governance	**A**	143	3.62	.925	.000
Digital Procedures	B1	143	3.52	1.085	.000
Ease of Access to Information	B2	143	4.21	.537	.000
Fairness of Adopted Standards	B3	143	4.06	.469	.000
Institutional Transparency	**B**	143	3.93	.417	.000
Resource-Use Efficiency	C1	143	3.82	.653	.000
Technological Adaptability	C2	143	3.62	.774	.000
Institutional Performance Continuity	C3	143	3.40	.867	.000
Institutional Sustainability	**C**	143	3.61	.548	.000
Trust in Digital Decisions	D1	143	3.68	.684	.000
Acceptance of Smart Systems	D2	143	3.97	.430	.000
Perception of Organisational Justice	D3	143	3.79	.694	.000
Institutional Trust	**D**	143	3.81	.424	.000
Smart University Readiness	**E**	143	3.72	.703	.000

Source: SPSS V21 output

The results indicate that all statistical significance values reached (0.000), which are lower than the adopted significance level (0.05). This demonstrates the existence of statistically significant differences between the calculated means and the neutral value of the measurement scale. Accordingly, the findings confirm that the respondents have a clear perception of the availability levels of the study variables, and that these variables represent actual phenomena within the Iraqi university environment under investigation.

Regarding the independent variable, digital governance (A), the overall mean score reached (3.62) with a standard deviation of (0.925), indicating a relatively high level of implementing digital governance practices in universities. The dimension of reliance on digital systems in decision-making (A2) ranked first, with a mean score of (3.73) and a standard deviation of (0.936), reflecting a clear orientation toward utilising digital tools and systems to support administrative decision-making. This was followed by the dimension of administrative process

automation (A1), with a mean score of (3.66), whereas the dimension of digital policy flexibility (A3) recorded the lowest mean among the digital governance dimensions, reaching (3.46). This may indicate the need for further development of digital policies to make them more responsive to technological changes.

Concerning the first mediating variable, institutional transparency (B), it achieved the highest mean among the study variables, reaching (3.93) with a standard deviation of (0.417), indicating a high level of respondents' perception of transparency practices within universities. The dimension of ease of access to information (B2) ranked first with a high mean score of (4.21) and a low standard deviation of (0.537), reflecting the relative availability of channels for accessing digital information. The dimension of fairness of adopted standards (B3) also recorded a high mean score of (4.06), while the dimension of digital procedures (B1) achieved a mean score of (3.52), suggesting that the development of digital procedures remains an area requiring further enhancement compared with information accessibility and fairness of standards.

With regard to the second mediating variable, institutional sustainability (C), the overall mean score reached (3.61) with a standard deviation of (0.548), indicating an acceptable level of attention toward institutional sustainability practices. The dimension of resource-use efficiency (C1) achieved the highest mean score of (3.82), reflecting respondents' awareness of the importance of efficient resource utilisation within the university environment. Meanwhile, technological adaptability (C2) recorded a mean score of (3.62), and institutional performance continuity (C3) achieved the lowest mean score of (3.40). This suggests the existence of potential challenges related to maintaining performance continuity and sustaining institutional readiness amid rapid technological changes.

Regarding the third mediating variable, institutional trust (D), the overall mean score reached (3.81) with a standard deviation of (0.424), reflecting a high level of trust among respondents toward digital transformation and smart systems. The dimension of acceptance of smart systems (D2) ranked first with a mean score of (3.97), followed by perception of organisational justice (D3) with a mean score of (3.79), and then trust in digital decisions (D1) with a mean score of (3.68). These findings indicate a good level of acceptance of digital systems, while emphasising the importance of strengthening confidence in decisions generated through these systems.

Regarding the dependent variable, Iraqi smart university readiness (E), the mean score reached (3.72) with a standard deviation of (0.703), indicating that the perceived level of readiness for transformation toward the smart university model was relatively high. This reflects the existence of organisational and technological capabilities that support universities' adoption of smart applications and digital transformation initiatives, while further improvements remain possible in areas related to sustainability and digital governance to achieve higher levels of readiness.

Overall, the findings reveal that all model variables achieved mean scores above the midpoint of the Likert scale, indicating positive perceptions among respondents regarding the status of digital governance, transparency, sustainability, and institutional trust, as well as their contribution to Iraqi smart university readiness. The acceptable standard deviation values further indicate a reasonable level of consistency among respondents' answers, supporting the suitability of these data for subsequent analyses aimed at testing the causal and mediating relationships among the study variables.

3.4 Hypothesis Testing:

3.4 Results of Hypothesis Testing

The First Main Hypothesis

H1: There is a statistically significant positive effect of digital governance, through its dimensions (level of administrative process automation, reliance on digital systems in decision-making, and flexibility of digital policies), on Iraqi smart university readiness.

Sub-hypotheses:

H1-1: There is a statistically significant positive effect of the level of administrative process automation on Iraqi smart university readiness.

H1-2: There is a statistically significant positive effect of reliance on digital systems in decision-making on Iraqi smart university readiness.

H1-3: There is a statistically significant positive effect of digital policy flexibility on Iraqi smart university readiness.

The researchers employed multiple regression analysis to examine the relationship, and the results were as follows:

Table 6. Summary of the Regression Model between the Dimensions of Digital Governance and Iraqi Smart University Readiness

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.243[a]	.059	.039	.689
a. Predictors: (Constant), A3, A1, A2				

Source: SPSS V21 output

The results indicate that the multiple correlation coefficient (R) reached 0.243, reflecting a positive relationship between the dimensions of digital governance and Iraqi smart university readiness. However, the strength of this relationship falls within the range of a weak correlation according to the correlation coefficient interpretation criterion adopted in this study.

The coefficient of determination ($R^2 = 0.059$) indicates that the dimensions of digital governance explain 5.9% of the variance in Iraqi smart university readiness, while the remaining variance is attributable to other factors and variables beyond the scope of the proposed model. Furthermore, the adjusted coefficient of determination (Adjusted $R^2 = 0.039$) shows that, after accounting

for the number of independent variables included in the model, its explanatory power is 3.9%.

These preliminary findings suggest that digital governance contributes to explaining a portion of Iraqi smart university readiness; however, additional factors are likely to influence the level of readiness. Therefore, a more comprehensive interpretation of the model requires examining the results of the model significance test and the regression coefficients of the individual dimensions included in the analysis.

Table 7. Analysis of Variance (ANOVA) for the Regression Model Between the Dimensions of Digital Governance and Iraqi Smart University Readiness

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.128	3	1.376	2.898	.037[b]
	Residual	65.988	139	.475		
	Total	70.116	142			
a. Dependent Variable: E						
b. Predictors: (Constant), A3, A1, A2						

Source: SPSS V21 output

The results indicate that the F-value reached 2.898, while the statistical significance level (Sig.) was 0.037, which is below the adopted significance threshold of 0.05. This indicates that the regression model is statistically significant and that the independent variables, represented by the dimensions of digital governance, jointly contribute to explaining a portion of the variation in Iraqi smart university readiness.

Furthermore, the Regression Sum of Squares (4.128) compared with the Residual Sum of Squares (65.988) indicates that the model explains part of the variance in the dependent variable, while the remaining variance is attributable to other factors not included in the model.

These findings suggest that incorporating the dimensions of digital governance—administrative process automation, reliance on digital systems in decision-making, and digital policy flexibility—into the model for explaining Iraqi smart university readiness is statistically appropriate. Accordingly, the analysis can proceed to the examination of the regression coefficients for each dimension to determine the nature and magnitude of the effect of each independent variable on Iraqi smart university readiness.

Table 8. Standardised and Unstandardised Regression Coefficients for the Effect of the Dimensions of Digital Governance on Iraqi Smart University Readiness

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	(Constant)	3.017	.247		12.216	.000
	A1	.120	.108	.169	1.113	.267
	A2	.203	.160	.271	1.269	.207
	A3	-.143	.159	-.203	-.899	.370
a. Dependent Variable: E						

Source: SPSS V21 output

The results indicate that the constant (intercept) coefficient reached 3.017, with a statistical significance level of 0.000, suggesting that a baseline level of Iraqi smart university readiness exists even in the absence of the digital governance dimensions included in the regression model.

Regarding the dimensions of digital governance, the dimension of administrative process automation (A1) exhibited a positive unstandardized regression coefficient (B = 0.120) and a standardised coefficient (Beta = 0.169), indicating a positive effect on Iraqi smart university readiness. However, the magnitude of this effect was relatively limited based on the standardised beta coefficient.

Similarly, the dimension of reliance on digital systems in decision-making (A2) demonstrated a positive effect, with an unstandardized coefficient of B = 0.203 and a standardised coefficient of Beta = 0.271, representing the strongest relative effect among the digital governance dimensions included in the model. This finding suggests that greater reliance on digital systems in decision-making contributes more substantially than the other dimensions to explaining smart university readiness.

In contrast, the dimension of digital policy flexibility (A3) produced a negative regression coefficient (B = −0.143) and a standardised coefficient (Beta = −0.203), indicating an inverse relationship within the regression model. In other words, according to the sample data, higher levels of digital policy flexibility were not associated with increased smart university readiness.

However, the statistical significance values for the three dimensions were 0.267 for administrative process automation, 0.207 for reliance on digital systems in decision-making, and 0.370 for digital policy flexibility. Since all of these values exceed the adopted significance level of 0.05, the individual effects of these dimensions are not statistically significant within the model. These findings indicate that the contribution of digital governance to Iraqi smart university readiness is evident only when its dimensions are considered collectively, whereas the magnitude and direction of each dimension vary when examined separately.

Accordingly, the regression analysis demonstrates that the overall model is statistically significant (F = 2.898, Sig. = 0.037), indicating that the dimensions of digital governance jointly contribute to explaining variation in Iraqi smart university readiness. Nevertheless, the regression coefficients reveal that none of the individual dimensions exerted a statistically significant effect, as their significance values exceeded the 0.05 threshold (0.267 for administrative process

automation, 0.207 for reliance on digital systems in decision-making, and 0.370 for digital policy flexibility).

Therefore, the findings indicate that digital governance exerts a limited overall effect on Iraqi smart university readiness within the proposed model; however, this effect does not remain statistically significant when each dimension is tested individually. Consequently, the first hypothesis is not fully supported, and its original formulation, which proposed a statistically significant positive effect of the dimensions of digital governance on Iraqi smart university readiness, is rejected.

The Second Main Hypothesis

H2: Digital governance has a statistically significant positive effect on institutional transparency.

Sub-hypotheses

H2-1: Digital governance has a statistically significant positive effect on digital procedures.

H2-2: Digital governance has a statistically significant positive effect on ease of access to information.

H2-3: Digital governance has a statistically significant positive effect on the fairness of adopted standards.

Table 9. Summary of the Regression Model between the Dimensions of Digital Governance and Institutional Transparency

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.624[a]	.389	.376	.329
a. Predictors: (Constant), A3, A1, A2				

Source: SPSS V21 output

The results indicate that the multiple correlation coefficient (R) reached 0.624, reflecting a positive relationship between digital governance and institutional transparency. This relationship is considered within the acceptable level of correlation according to the correlation coefficient interpretation criterion adopted in the study.

The coefficient of determination (R^2) reached 0.389, indicating that the dimensions of digital governance explain 38.9% of the variance in institutional transparency, while the remaining percentage is attributed to other factors not included in the model. The adjusted coefficient of determination (Adjusted R^2) reached 0.376, indicating that the explanatory power of the model, after considering the number of independent variables, was 37.6%.

These findings indicate that digital governance represents an important factor in explaining the level of institutional transparency within universities. Enhancing administrative process automation, reliance on digital systems in decision-

making, and flexibility of digital policies is associated with higher levels of practices related to digital procedures, information accessibility, and fairness of adopted standards.

Accordingly, the regression model demonstrates an appropriate explanatory capacity in clarifying the relationship between digital governance and institutional transparency. Therefore, further analysis of the model significance test and the effect coefficients of the digital governance dimensions is required to determine the contribution and influence of each dimension.

Table 10. Analysis of Variance (ANOVA) for the Regression Model between the Dimensions of Digital Governance and Institutional Transparency

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.589	3	3.196	29.474	.000[b]
	Residual	15.073	139	.108		
	Total	24.662	142			
a. Dependent Variable: B						
b. Predictors: (Constant), A3, A1, A2						

Source: SPSS V21 output

The results indicate that the F-value reached 29.474, with a statistical significance level of Sig. = 0.000, which is lower than the adopted significance level of 0.05. This demonstrates that the regression model has a high level of statistical significance and that the dimensions of digital governance collectively contribute significantly to explaining the variations in institutional transparency.

Furthermore, the Regression Sum of Squares value of 9.589, compared with the Residual Sum of Squares value of 15.073, indicates that the model has an appropriate explanatory capacity in describing the relationship between digital governance and institutional transparency.

These findings confirm that incorporating the dimensions of digital governance—namely, the level of administrative process automation, reliance on digital systems in decision-making, and flexibility of digital policies—into the institutional transparency explanatory model represents a statistically appropriate model. Therefore, the analysis proceeds to examine the regression coefficients to determine the nature, direction, and magnitude of the effect of each digital governance dimension on institutional transparency.

Table 11. Regression Coefficients for the Effect of the Dimensions of Digital Governance on Institutional Transparency

Coefficients[a]				
Model	Unstandardized Coefficients	Standardized	t	Sig.

				Coefficients		
		B	Std. Error	Beta		
1	(Constant)	3.276	.118		27.757	.000
	A1	.097	.051	.229	1.879	.062
	A2	-.311	.077	-.698	-4.063	.000
	A3	.422	.076	1.009	5.549	.000
a. Dependent Variable: B						

Source: SPSS V21 output

The results indicate that the constant coefficient reached 3.276 with a statistical significance level of 0.000, reflecting the existence of a baseline level of institutional transparency when the dimensions of digital governance are held constant.

Regarding the dimensions of digital governance, the dimension of administrative process automation (A1) showed a positive effect, with an unstandardized regression coefficient of B = 0.097 and a standardised coefficient of Beta = 0.229, indicating a positive relationship between administrative process automation and institutional transparency. However, the statistical significance value was 0.062, which is slightly higher than the adopted significance level of 0.05, indicating that the effect of this dimension did not reach statistical significance within the model.

The dimension of reliance on digital systems in decision-making (A2) demonstrated a negative effect, with an unstandardized coefficient of B = −0.311 and a standardised coefficient of Beta = −0.698, with a statistical significance value of 0.000. This indicates a statistically significant effect, but the relationship between this dimension and institutional transparency was inverse within the regression model. In other words, increased reliance on digital systems in decision-making was associated with a decrease in institutional transparency according to the responses of the study participants.

The dimension of digital policy flexibility (A3) recorded a positive effect, with an unstandardized coefficient of B = 0.422 and a high standardised coefficient of Beta = 1.009, with a statistical significance level of 0.000. This indicates a positive and statistically significant effect of this dimension on institutional transparency. It also represents the strongest influencing dimension within the model, suggesting that increasing the flexibility of digital policies contributes to enhancing institutional transparency.

Overall, the findings demonstrate that the effects of digital governance dimensions on institutional transparency vary depending on the specific dimension. Digital policy flexibility showed the strongest contribution, while administrative process automation did not demonstrate a statistically significant effect. Meanwhile, reliance on digital systems in decision-making had a

statistically significant effect but in a negative direction, reflecting the different nature of each dimension's contribution to explaining institutional transparency.
Accordingly, given that the overall digital governance model was statistically significant, and that one of its dimensions had a significant positive contribution toward enhancing institutional transparency, the second hypothesis is partially supported statistically. The results confirm the existence of an effect of digital governance on institutional transparency, while the direction and magnitude of influence differ among its sub-dimensions.

The Third Main Hypothesis

H3: Digital governance has a statistically significant positive effect on institutional sustainability.

Sub-hypotheses

H3-1: Digital governance has a statistically significant positive effect on resource-use efficiency.

H3-2: Digital governance has a statistically significant positive effect on technological adaptability.

H3-3: Digital governance has a statistically significant positive effect on institutional performance continuity.

Table 12. Summary of the Regression Model between the Dimensions of Digital Governance and Institutional Sustainability

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.676[a]	.457	.446	.408
a. Predictors: (Constant), A3, A1, A2				

Source: SPSS V21 output

The results indicate that the multiple correlation coefficient (R) reached 0.676, reflecting a positive relationship between digital governance and institutional sustainability. This relationship falls within the acceptable correlation level according to the correlation coefficient interpretation criterion adopted in the study, approaching a good level of correlation.
The coefficient of determination (R^2) reached 0.457, indicating that the dimensions of digital governance explain 45.7% of the variance in institutional sustainability, while the remaining variance is attributed to other factors not included in the model. The adjusted coefficient of determination (Adjusted R^2) reached 0.446, indicating that the explanatory power of the model, after considering the number of independent variables, was 44.6%.
These findings indicate that digital governance represents one of the influential factors in enhancing institutional sustainability through its potential role in supporting resource-use efficiency, strengthening technological adaptability, and achieving continuity of institutional performance. The results also demonstrate

that the regression model has an appropriate explanatory capacity, which requires further analysis of the model significance and regression coefficients to determine the nature of the effect of each digital governance dimension on institutional sustainability.

Table 13. Analysis of Variance (ANOVA) for the Regression Model between the Dimensions of Digital Governance and Institutional Sustainability

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.495	3	6.498	39.029	.000[b]
	Residual	23.143	139	.166		
	Total	42.638	142			
a. Dependent Variable: C						
b. Predictors: (Constant), A3, A1, A2						

Source: SPSS V21 output

The results indicate that the F-value reached 39.029, with a statistical significance level of Sig. = 0.000, which is lower than the adopted significance level of 0.05. This indicates that the regression model has a high level of statistical significance and that the dimensions of digital governance collectively contribute significantly to explaining the variations in institutional sustainability.

Furthermore, the Regression Sum of Squares value of 19.495, compared with the Residual Sum of Squares value of 23.143, demonstrates that the model has an appropriate capacity to explain the relationship between digital governance and institutional sustainability.

These findings indicate that the dimensions of digital governance—namely, the level of administrative process automation, reliance on digital systems in decision-making, and flexibility of digital policies—represent important explanatory variables in the institutional sustainability model. This confirms the statistical adequacy of the model and highlights the need to analyse the regression coefficients of each dimension to determine the direction and strength of the effect of each digital governance dimension on institutional sustainability.

Table 14. Regression Coefficients for the Effect of the Dimensions of Digital Governance on Institutional Sustainability

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	(Constant)	2.229	.146		15.243	.000
	A1	.218	.064	.393	3.415	.001
	A2	-.014	.095	-.025	-.151	.880
	A3	.185	.094	.336	1.964	.052
a. Dependent Variable: C						

Source: SPSS V21 output

The results indicate that the constant coefficient reached 2.229 with a statistical significance level of 0.000, indicating the existence of a baseline level of institutional sustainability when the other dimensions of digital governance are held constant.

Regarding the dimension of administrative process automation (A1), it demonstrated a positive effect with an unstandardized regression coefficient of B = 0.218 and a standardised coefficient of Beta = 0.393, with a statistical significance level of Sig. = 0.001. This indicates a positive and statistically significant effect of this dimension on institutional sustainability, suggesting that increasing the level of administrative process automation is associated with improved institutional sustainability.

The dimension of reliance on digital systems in decision-making (A2) recorded a regression coefficient of B = −0.014 and a standardised coefficient of Beta = −0.025, with a significance level of Sig. = 0.880. This indicates that the effect of this dimension was weak and statistically insignificant within the regression model.

Regarding the dimension of digital policy flexibility (A3), it showed a positive effect with an unstandardized coefficient of B = 0.185 and a standardised coefficient of Beta = 0.336. However, the statistical significance level was Sig. = 0.052, which is slightly higher than the adopted significance level of 0.05. This indicates that the effect of this dimension was close to statistical significance but did not achieve the required level within the model.

Overall, the regression coefficient results demonstrate that administrative process automation represents the most influential dimension of digital governance on institutional sustainability. Meanwhile, reliance on digital systems in decision-making did not show a statistically significant effect, and the effect of digital policy flexibility was positive but did not reach the adopted level of statistical significance.

The Fourth Main Hypothesis

H4: Digital governance has a statistically significant positive effect on institutional trust.

Sub-hypotheses

H4-1: Digital governance has a statistically significant positive effect on the level of trust in digital decisions.

H4-2: Digital governance has a statistically significant positive effect on the acceptance of smart systems.

H4-3: Digital governance has a statistically significant positive effect on the perception of organizational justice.

Table 15. Summary of the Regression Model between the Dimensions of Digital Governance and Institutional Trust

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.517[a]	.268	.252	.367
a. Predictors: (Constant), A3, A1, A2				

Source: SPSS V21 output

The results indicate that the multiple correlation coefficient (R) reached 0.517, reflecting a positive relationship between digital governance and institutional trust. However, the strength of this relationship falls within the weak correlation range according to the correlation coefficient interpretation criterion adopted in the study.

The coefficient of determination (R^2) reached 0.268, indicating that the dimensions of digital governance explain 26.8% of the variance in institutional trust, while the remaining variance is attributed to other factors not included in the model. The adjusted coefficient of determination (Adjusted R^2) reached 0.252, indicating that the explanatory power of the model, after considering the number of independent variables, was 25.2%.

These findings indicate that digital governance contributes to explaining part of the level of institutional trust within universities through its potential influence on strengthening trust in digital decisions, supporting the acceptance of smart systems, and enhancing the perception of organisational justice. The results also demonstrate that the model has an acceptable explanatory capacity, which requires further examination of the model significance and regression coefficients to determine the nature and direction of the effect of each digital governance dimension on institutional trust.

Table 16. Analysis of Variance (ANOVA) for the Regression Model between the Dimensions of Digital Governance and Institutional Trust

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.838	3	2.279	16.939	.000[b]
	Residual	18.704	139	.135		
	Total	25.541	142			
a. Dependent Variable: D						
b. Predictors: (Constant), A3, A1, A2						

Source: SPSS V21 output

The results indicate that the F-value reached 16.939, with a statistical significance level of Sig. = 0.000, which is lower than the adopted significance level of 0.05. This indicates that the regression model is statistically significant and that the dimensions of digital governance collectively contribute significantly to explaining the variations in institutional trust.

Furthermore, the Regression Sum of Squares value of 6.838, compared with the Residual Sum of Squares value of 18.704, demonstrates that the model has an appropriate explanatory capacity in describing the relationship between digital governance and institutional trust.

These findings indicate that incorporating the dimensions of digital governance—namely, the level of administrative process automation, reliance on digital systems in decision-making, and flexibility of digital policies—into the institutional trust explanatory model represents a statistically appropriate model. Therefore, the analysis proceeds to examine the regression coefficients to determine the direction and strength of the effect of each digital governance dimension on building institutional trust.

Table 17. Regression Coefficients for the Effect of the Dimensions of Digital Governance on Institutional Trust

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.199	.131		24.332	.000
	A1	.150	.057	.350	2.617	.010
	A2	-.234	.085	-.517	-2.749	.007
	A3	.271	.085	.637	3.201	.002
a. Dependent Variable: D						

Source: SPSS V21 output

The results indicate that the constant coefficient reached 3.199 with a statistical significance level of 0.000, indicating the existence of a baseline level of institutional trust when the other dimensions of digital governance are held constant.

Regarding the dimension of administrative process automation (A1), it demonstrated a positive effect with an unstandardized regression coefficient of B = 0.150 and a standardised coefficient of Beta = 0.350, with a statistical significance level of Sig. = 0.010. This indicates a positive and statistically significant effect of this dimension on institutional trust, meaning that increasing

the level of administrative process automation is associated with higher levels of trust in digital systems and practices within the university.

The dimension of reliance on digital systems in decision-making (A2) showed a negative effect, with an unstandardized regression coefficient of B = −0.234 and a standardised coefficient of Beta = −0.517, with a statistical significance level of Sig. = 0.007. This indicates a statistically significant effect; however, the direction of the relationship was inverse within the regression model. This suggests that reliance on digital systems in decision-making was not associated with increased institutional trust according to the sample data; rather, it appeared with a negative direction when the other dimensions of digital governance were included in the model.

Regarding the dimension of digital policy flexibility (A3), it recorded a positive effect with an unstandardized coefficient of B = 0.271 and a standardised coefficient of Beta = 0.637, with a statistical significance level of Sig. = 0.002. This indicates a positive and statistically significant effect of this dimension on institutional trust. It also represents one of the strongest influencing dimensions within the model, as increasing digital policy flexibility contributes to enhancing employees' trust in digital systems and related institutional orientations.

Overall, the regression coefficient results demonstrate that the dimensions of digital governance play an important role in explaining institutional trust. A positive and statistically significant effect was found for both administrative process automation and digital policy flexibility, while reliance on digital systems in decision-making showed a statistically significant effect but in a negative direction. This reflects the different nature of the contribution of each sub-dimension in shaping the level of institutional trust.

The Fifth Main Hypothesis

H5: Institutional transparency, institutional sustainability, and institutional trust play a statistically significant mediating role in the relationship between digital governance and Iraqi smart university readiness.

Sub-hypotheses

H5-1: Institutional transparency plays a statistically significant mediating role in the relationship between digital governance and Iraqi smart university readiness.

H5-2: Institutional sustainability plays a statistically significant mediating role in the relationship between digital governance and Iraqi smart university readiness.

H5-3: Institutional trust plays a statistically significant mediating role in the relationship between digital governance and Iraqi smart university readiness.

The researchers employed AMOS V.21 and supported the analysis using multiple regression analysis in SPSS V.21 to test the mediation hypotheses. The results were as follows:

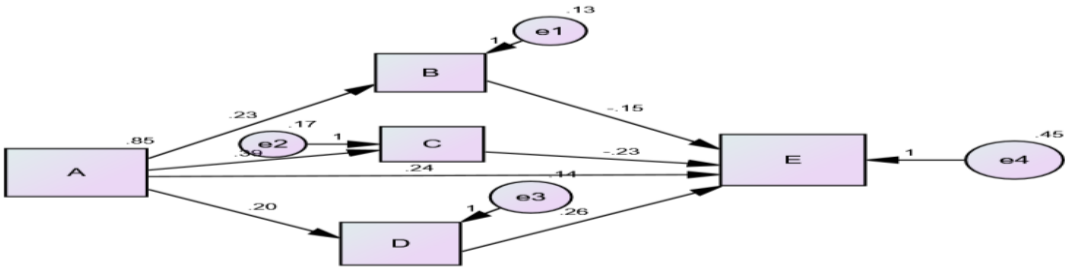

Figure 5. Mediation Test of the Relationship between Digital Governance and Enhancing Iraqi Smart University Readiness Through Institutional Transparency, Institutional Sustainability, and Institutional Trust

The analysis results revealed the following:

Table 18. Results of Direct Path Estimates in the Mediation Model

			Estimate	S.E.	C.R.	P	Label
B	<---	A	.234	.032	7.245	***	(A-B)
C	<---	A	.395	.037	10.640	***	(A-C)
D	<---	A	.204	.034	5.925	***	(A-D)
E	<---	B	-.151	.159	-.951	.342	(B-E)
E	<---	C	-.228	.139	-1.646	.100	(C-E)
E	<---	D	.258	.149	1.733	.083	(D-E)
E	<---	A	.239	.095	2.514	.012	(A-E)

Source: Output generated by AMOS V.21

The table presents the results of the direct path estimates among the variables of the study model. The findings indicate a statistically significant effect of digital governance on institutional transparency, institutional sustainability, and institutional trust, as the P-values were below the adopted significance level. This reflects that higher levels of digital governance implementation are associated with improvements in these institutional dimensions.

The results also demonstrate the existence of a statistically significant direct effect of digital governance on Iraqi smart university readiness. However, the mediating variables—namely, institutional transparency, institutional sustainability, and institutional trust—did not show statistically significant effects on smart university readiness within this model. Therefore, the results of the indirect effect analysis using the Bootstrap method are required to verify the nature and significance of the mediating roles of these variables.

Table 19. Standardised Path Coefficients in the Mediation Model

			Estimate
B	<---	A	.520
C	<---	A	.666
D	<---	A	.445
E	<---	B	-.089
E	<---	C	-.177
E	<---	D	.155
E	<---	A	.313

Source: Output generated by AMOS V.21

The table presents the standardised regression coefficients for the direct paths among the variables of the study model. The results indicate that the effect of digital governance on the mediating variables varied in magnitude, where its effect on institutional transparency reached (β = 0.520), on institutional sustainability reached (β = 0.666), and on institutional trust reached (β = 0.445). These results indicate the existence of positive effects of digital governance in enhancing these institutional dimensions

The table also shows that the effects of the mediating variables on Iraqi smart university readiness varied. The effect of institutional transparency was (β = −0.089), the effect of institutional sustainability was (β = −0.177), while the effect of institutional trust reached (β = 0.155).

Furthermore, the results indicate that the direct effect of digital governance on Iraqi smart university readiness reached (β = 0.313), reflecting the existence of a direct positive effect of digital governance in enhancing smart university readiness.

Table 20. Squared Multiple Correlations for the Variables of the Study Model

variable	symbol	Coefficient of determination (R^2)
Institutional Trust	D	.198
Institutional Sustainability	C	.444
Institutional Transparency	B	.270
Smart University Readiness	E	.090

Source: Output generated by AMOS V.21

The table presents the coefficient of determination (R^2) values for the dependent and mediating variables in the study model. The results indicate that digital governance explains 27% of the variance in institutional transparency, 44.4% of the variance in institutional sustainability, and 19.8% of the variance in institutional trust.

The table also shows that the overall model explains 9% of the variance in Iraqi smart university readiness. This percentage reflects the contribution of the independent and mediating variables included in the model in explaining the changes occurring in smart university readiness.

These findings indicate that the explanatory power of digital governance varies across the dimensions of the model. Its explanatory effect was higher for institutional sustainability compared with the other variables, whereas the explanatory capacity for smart university readiness was lower. This suggests that additional factors outside the current model may contribute to explaining the readiness of Iraqi smart universities.

Table 21. Multiple Regression Model Summary for Explaining Iraqi Smart University Readiness

Model Summary[b]									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.279[a]	.078	.051	.685	.078	2.904	4	138	.024
a. Predictors: (Constant), D, A, B, C									
b. Dependent Variable: E									

Source: SPSS V21 output

The table presents the results of the multiple regression model summary used to explain Iraqi smart university readiness through digital governance and the dimensions of the mediating variables (institutional transparency, institutional sustainability, and institutional trust). The results indicate that the correlation coefficient between the independent variables and the dependent variable reached (R = 0.279), while the coefficient of determination reached (R^2 = 0.078), meaning that the model explains 7.8% of the variance in Iraqi smart university readiness.

Furthermore, the change in the coefficient of determination was statistically significant, with (Sig. F Change = 0.024), indicating that the overall model has a statistically significant explanatory capacity.

Table 22. One-Way ANOVA Analysis for the Multiple Regression Model Explaining Iraqi Smart University Readiness

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.444	4	1.361	2.904	.024[b]
	Residual	64.672	138	.469		
	Total	70.116	142			
a. Dependent Variable: E						
b. Predictors: (Constant), D, A, B, C						

Source: SPSS V21 output

The table presents the results of testing the significance of the multiple regression model used to explain Iraqi smart university readiness through digital governance and the dimensions of the mediating variables (institutional transparency, institutional sustainability, and institutional trust).

The results indicate that the F-value reached (F = 2.904) with a statistical significance level of (Sig. = 0.024), which is lower than the adopted significance level (0.05). This indicates that the overall regression model is statistically significant and that the independent variables collectively contribute to explaining the variance in Iraqi smart university readiness.

Table 23. Multiple Regression Coefficients for Determining the Effect of Digital Governance and Mediating Variables on Iraqi Smart University Readiness

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.286	.615		5.345	.000	2.070	4.501
	A	.239	.084	.315	2.843	.005	.073	.406
	B	-.151	.198	-.090	-.763	.447	-.543	.241
	C	-.228	.170	-.178	-1.343	.181	-.564	.108
	D	.258	.172	.156	1.500	.136	-.082	.599
a. Dependent Variable: E								

Source: SPSS V21 output

The table presents the results of the multiple regression analysis examining the effect of digital governance and the three mediating variables on Iraqi smart university readiness. The findings indicate the existence of a positive and statistically significant effect of digital governance on smart university readiness, with a standardised effect coefficient of (β = 0.315) and a significance level of (Sig. = 0.005).

In contrast, the mediating variables—namely, institutional transparency, institutional sustainability, and institutional trust—did not demonstrate statistically significant direct effects on smart university readiness when included

alongside digital governance in the regression model, as their significance values exceeded the accepted level of (0.05).

These findings indicate that digital governance maintains a direct and significant effect on smart university readiness after incorporating the mediating variables into the multiple regression model. The results demonstrate that digital governance plays a central role in developing the foundations of smart university readiness, not only through direct technological practices but also as a governing framework that guides digital decisions and enhances the institution's capacity for smart transformation.

Conversely, the mediating dimensions represented by institutional transparency, institutional sustainability, and institutional trust did not achieve statistically significant direct effects on smart university readiness when entered into the model. This suggests that these institutional mechanisms did not demonstrate an independent mediating role in explaining the transmission of the effect of digital governance to smart university readiness within the current study data.

Accordingly, the findings reveal that digital governance functions as a hidden influential actor that extends beyond direct technological impacts, forming an organisational framework that supports the transition toward smart universities. However, the transmission of this effect through the channels of institutional transparency, sustainability, and trust did not reach a statistically significant level of mediation.

Therefore, the overall mediation hypothesis was not supported, while the direct role of digital governance in enhancing Iraqi smart university readiness was confirmed. This reflects the importance of digital governance as an underlying organisational force driving digital institutional transformation.

In conclusion, the results do not support the existence of a significant mediating role for institutional transparency, institutional sustainability, and institutional trust in the relationship between digital governance and Iraqi smart university readiness. However, they confirm the direct effect of digital governance as a hidden actor and a fundamental driver of smart university readiness.

4 Conclusions and Recommendations

4.1 Conclusions:

1. The findings of the study revealed that digital governance represents a hidden influential force within the university environment, as its role is not limited to providing technological tools but extends to functioning as an organisational framework that directs digital transformation processes and contributes to building the foundations of Iraqi smart university readiness.

2. The results demonstrated the existence of a positive relationship between digital governance and Iraqi smart university readiness; however, its direct explanatory power was relatively limited, indicating that smart readiness is a multidimensional phenomenon influenced by additional organisational, technological, and human factors alongside digital governance.

3. The regression model results indicated that digital governance contributes significantly to explaining smart university readiness when considered as an integrated construct. However, the individual effects of its sub-dimensions did not achieve statistical significance when examined separately, suggesting that the strength of digital governance emerges through the integration of its dimensions rather than through any single dimension independently.
4. The findings showed that reliance on digital systems in decision-making represents one of the most strongly associated dimensions of digital governance with smart readiness. This highlights the importance of utilising data and intelligent systems in supporting university decision-making processes and enhancing the capacity to transform toward the smart university model.
5. The results indicated that digital governance has a relatively high explanatory capacity in enhancing institutional transparency and institutional sustainability. This confirms that digital governance functions as a supportive organisational mechanism for improving procedural clarity, resource-use efficiency, and continuity of institutional performance.
6. The findings demonstrated that flexibility of digital policies and administrative process automation represent important dimensions in explaining certain institutional variables, particularly institutional sustainability and institutional trust. This indicates that the flexibility of digital systems and policies constitutes a fundamental factor in supporting institutional adaptability to the requirements of smart transformation.
7. The mediation analysis results revealed that institutional transparency, institutional sustainability, and institutional trust did not demonstrate statistically significant mediating roles in the relationship between digital governance and Iraqi smart university readiness, despite the clear effect of digital governance on these mediating variables.
8. This finding suggests that, within the current research model, digital governance operates primarily as a direct driving force of smart readiness rather than as an influence transmitted through mediating mechanisms. In other words, digital governance acts as a hidden force shaping the direction of institutional digital transformation.

4.2 Recommendations:

1. Iraqi universities should adopt an integrated digital governance framework that emphasises the integration of technology, administrative policies, and organisational structures as fundamental elements for building smart universities capable of adapting to digital transformations.
2. The reliance on digital systems in decision-making should be strengthened through the development of data analytics platforms and evidence-based decision-support systems, given the importance of this dimension in enhancing smart readiness.
3. Universities should develop more flexible digital policies that enable rapid responses to technological and organisational changes, while reviewing

procedures that may restrict the ability of academic institutions to achieve digital innovation.

4. Investment in administrative process automation should be increased by transforming traditional procedures into interconnected digital processes, thereby improving efficiency, reducing time and effort, and enhancing institutional sustainability.

5. Institutional trust in digital systems should be strengthened through the implementation of principles of security, fairness, and transparency in digital data management, thereby supporting the acceptance of digital transformation among employees and students.

6. Transparency, sustainability, and trust should not be considered automatic outcomes of digital governance. Instead, universities should develop independent programs and practices to enhance these dimensions and support their transition toward an integrated smart university model.

7. Specialised digital governance units should be established within universities to oversee the implementation of digital strategies and periodically assess the level of institutional readiness.

4.3 Future Directions

1. Future studies should investigate additional variables that may explain smart university readiness, such as digital organisational culture, digital leadership, institutional innovation, and digital human capabilities.

2. More sophisticated models should be tested to examine the indirect relationships between digital governance and smart readiness through new mediating or moderating variables.

Comparative studies should be conducted between Iraqi universities and universities in other educational contexts to identify the impact of variations in organisational and technological environments on the successful implementation of digital governance.

3. Future research should adopt longitudinal study designs to track the development of the impact of digital governance over time, rather than relying solely on cross-sectional approaches.

4. Further investigation is recommended into the role of artificial intelligence and big data analytics as supporting tools for digital governance and the development of smart universities.

5. The proposed model should be tested in sectors other than higher education to determine the extent to which the concept of digital governance as a hidden driver of institutional transformation can be generalised

4.4 Study Limitations

1. The study was limited to Iraqi universities, which may restrict the generalizability of the findings to higher education institutions in different contexts with varying organisational and technological systems.

2. The study relied on the descriptive-analytical approach and data collected through participants' responses, making the findings dependent on respondents' perceptions rather than actual operational measurements of digital readiness.
3. The current model focused on three mediating variables: institutional transparency, institutional sustainability, and institutional trust; however, other variables may exist that could further explain the relationship between digital governance and smart readiness.
4. The limited explanatory power of some readiness models indicates the presence of external factors not included in the current model, such as digital infrastructure, financial resources, and employees' digital skills.
5. The relationships among the study variables were examined within a specific time period; therefore, the findings may change in the future as digital technologies evolve and universities' adoption levels of smart transformation practices continue to develop.

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