

RESEARCH

Transforming Public Governance Through AI: A Multi-Mechanism Framework to Accelerate Sustainable Development Goals

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ABSTRACT

PURPOSE: This research examines how the implementation of the Sustainable Development Goals (SDGs) can be accelerated using artificial intelligence (AI) through smart governance mechanisms and the digital transformation of institutions.

CITATION: Shaban, E. A., Al-Batayneh, R., Shatnawi, H. A. and El-Issa, L. Y. A. (2026): Transforming Public Governance Through AI: A Multi-Mechanism Framework to Accelerate Sustainable Development Goals. *World Journal of Science, Technology and Sustainable Development (WJSTSD)*, Vol. 21, No. 6, pp. 581-597.

RECEIVED: 25 November 2025 / **REVISED:** 23 August 2026 / **ACCEPTED:** 26 August 2026 / **PUBLISHED:** 12 October 2026

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DESIGN/METHODOLOGY/APPROACH: The study uses an integrative conceptual synthesis approach, which is informed by public administration theory, sustainability science, data governance literature and technology adoption frameworks, complemented by secondary governance indicators for the Gulf Cooperation Council (GCC) economies for the period 2017–2025. The proposed framework was further explored using Partial Least Squares Structural Equation Modelling (PLS-SEM).

FINDINGS: Three key AI-based governance mechanisms were identified: real-time monitoring, anticipatory policymaking and participatory decision-making. The results show that there is a positive relationship between AI governance capability and governance quality, digital participation and SDG performance. Governance effectiveness and sustainability outcomes are significantly enhanced by institutional readiness, ethical oversight of AI, data interoperability and digital integration.

ORIGINALITY/VALUE: The study is unique in reframing AI as a strategic governance capability, not just a technological solution, within institutional, ethical and participatory governance. It equips policymakers with a structured approach to the responsible integration of AI to drive SDG progress and build governance resilience.

KEYWORDS: *Artificial Intelligence; Governance; Sustainable Development Goals; Participatory Decision-Making; Digital Transformation.*

INTRODUCTION

Technological disruption, economic uncertainty, climate instability and citizen expectations are emerging as the four traits of the operating environment of public governance systems. Governments are now under a new responsibility to provide rational, transparent, informative and environmentally friendly policy solutions that could address complex and interconnected development issues. Concurrently, the Sustainable Development Goals (SDGs) emphasise the need for the creation of multidisciplinary governance arrangements, built on good institutional accountability, economic resilience, environmental sustainability and social inclusiveness. However, traditional governance mechanisms are still held back by weak administrative structures, slow reporting processes and weak analytical capacity, limiting their ability to deal effectively with rapid changes in social and economic conditions.

Digital governance and GovTech ecosystems are undergoing rapid growth and have brought about many changes to the way the public sector works and functions. The results of recent studies have shown that digital governance systems can have positive impacts on administrative efficiency, organisational responsiveness and strategic coordination by improving institutional integration and digital infrastructure development (Alkhawaldah *et al.*, 2025; Alam *et al.*, 2025). However, technology is not enough to drive governance transformation towards sustainability. For effective

digital governance, it is essential to have institutional preparedness, strategic leadership, regulatory competence and citizen engagement processes that can help in the development of evidence-based policies and long-term sustainability goals.

In digitally transforming economies, artificial intelligence (AI) is becoming a key enabler of intelligent governance systems. AI technologies such as machine learning, predictive analytics, natural language processing (NLP) and automated decision-support systems help governments process vast amounts of data that are often complex and disparate, predict the effects of policy decisions, identify institutional inefficiencies and enhance strategic planning. Previous research has shown that the use of AI-powered analytical systems enhances organisational flexibility, policy decision-making and digital communication skills in complex governance settings (Zalda *et al.*, 2026; Mustafa and Shehada, 2026). In turn, AI is finding its way into governance frameworks to enable real-time monitoring, foresight-based policymaking and citizen engagement in governance for SDG implementation agendas.

Furthermore, institutional quality, digital trust, interoperability and ethical governance systems are all crucial to the effectiveness of AI governance systems. Current evidence shows that the implementation of integrated digital ecosystems within a framework of cybersecurity awareness, institutional coordination and transparent governance increases public trust, organisational resilience and governance legitimacy (Alshaikhli and Koyuncu, 2026; Qawasmeh *et al.*, 2026). Likewise, predictive analytics and smart data infrastructures improve governments' capacity to allocate resources effectively, monitor sustainability results and build responsive institutions in the face of changing policies (Alotoum *et al.*, 2026).

While the role of AI in public governance is significant, the current literature lacks a cohesive, integrated overview and is rather fragmented and sector-specific. There are scattered empirical studies that have examined the multifaceted relationships between governance capability and governance quality, digital participation and SDG performance in the context of integrated institutional settings, but none has examined all three in a single study. This study aims to fill this gap by conducting a secondary empirical analysis of the role of governance mechanisms enabled by AI in the sustainable development performance of Gulf Cooperation Council (GCC) economies. The research will advance the field of governance and sustainability by situating AI as a strategic governance tool that enhances institutional effectiveness, participatory governance and the implementation of sustainable development initiatives.

BACKGROUND AND THEORETICAL FOUNDATIONS

Public Administration Theory and Intelligent Governance

The rapid development of technologies such as AI, digital governance systems and sustainability-related technologies is changing the way governments develop, implement and assess public policies. Governance settings today increasingly face technological disruption, economic insecurity, climate change and heightened calls for transparency and institutional accountability. Governments are thus increasingly embedding analytical systems powered by AI in their processes to enhance evidence-based policymaking, improve the efficiency of public service delivery and speed up the implementation of the SDGs. AI is not just about technological upgrading; it is about reshaping the way public administration works into intelligent, adaptive and data-driven systems.

An important basis for understanding this transformation is found in public administration theory. The traditional management systems of public governance have been increasingly shifting towards collaborative and citizen-oriented management systems such as New Public Management (NPM) and New Public Governance (NPG). In recent years, the concept of Intelligent Public Governance (IPG) has gained prominence, combining AI, predictive analytics, machine learning and automated decision-support mechanisms within governance systems (Wirtz and Müller, 2019). Intelligent governance focuses on designing and building real-time data ecosystems, anticipatory policymaking and digital citizen participation mechanisms, which can make government more responsive and effective. These governance shifts are closely aligned with SDG implementation needs for adaptive, evidence-based and interconnected policy systems.

Data Governance and Policy Intelligence

Another important theoretical aspect is data governance and policy intelligence, which have also been emphasised as important aspects of AI-driven governance systems. Effective data infrastructures are crucial for AI-driven governance, as they enable the creation, maintenance and analysis of trustworthy data that can support policy decision-making and strategic planning. Big data analytics systems bring together administrative data, geospatial data, Internet of Things (IoT) sensors, digital transactions and citizen feedback generated by citizens or the government to create new analytical tools that enable continuous data monitoring and a more coordinated policy approach.

Previous research shows that digital transformation has a positive effect on the performance of institutions, which can be facilitated by appropriate information governance structures, technological readiness and the analytical capacity of the institutions themselves (Hausmann *et al.*, 2026; Hassan *et al.*, 2025). However, if governance safeguards are weak, AI systems can exacerbate algorithmic bias, institutional inequalities and policy stalemates. Hence, it is essential to have transparent and accountable governance that includes an ethical governance framework to preserve legitimacy and public trust in governance under the influence of AI.

Sustainability Science and SDG Governance

AI also enhances the relevance of sustainability science in governance systems by supporting SDG implementation through coordinated policymaking that involves economic, environmental, technological and social dimensions. The SDGs are interdependent development goals that necessitate a systems approach, intersectoral linkages and long-term planning. AI tools can support sustainability governance through predictive modelling, policy simulation, resource optimisation and intelligent monitoring systems that detect SDG interdependencies and project long-term development threats.

Previous research shows a range of applications of AI in climate modelling, environmental monitoring, urban planning, healthcare forecasting and sustainable infrastructure management (Kaack *et al.*, 2022; Sachs *et al.*, 2022). However, researchers also warn that the unregulated use of AI could contribute to growing digital divides and a lack of inclusivity, while posing ethical questions regarding the transparency and accountability of algorithms. Thus, AI governance for sustainability needs to strike a balance among technological, institutional, ethical and governance aspects.

Technology Adoption and Institutional Readiness

Technology adoption and institutional readiness theories describe the organisational and social factors that affect the adoption of AI within governance. Technological capability, organisational readiness, facilitating conditions and institutional culture are considered important factors affecting successful adoption outcomes, as outlined in the Unified Theory of Acceptance and Use of Technology (UTAUT), the Technology–Organisation–Environment (TOE) model and Diffusion of Innovation theory (Abdullah and Qawasmeh, 2025).

Current empirical studies indicate that levels of digital literacy, trust in institutions, cybersecurity preparedness and user engagement have a significant effect on the acceptance of AI and the effectiveness of its governance (Mustafa and Shehada, 2026). AI governance, therefore, should be considered a multidimensional institutional capacity that must be accompanied by technological infrastructure, strategic leadership, regulatory preparedness and societal trust.

Ethical AI and Governance Capacity

Ethical issues concerning accountability, fairness, privacy, transparency and algorithmic bias are increasingly important as the use of AI becomes more entrenched in public governance systems. Ethical guidelines for AI highlight the importance of explainability, transparency, accountability and responsible innovation to keep AI systems within societal boundaries and ensure that they are democratic and accountable.

Such concerns are of special importance in governmental settings where automated decision-making systems can have a direct impact on public rights, such as service eligibility and access, or even on institutional legitimacy. Good governance, regulatory frameworks, ethics and institutional protections for the responsible use of AI are key to fighting digital inequality and maintaining public trust. Without these protections, AI can be used in a way that could inadvertently contribute to and worsen governance inequities and decrease trust in public institutions (Dumitriu, 2026).

These theoretical approaches combine to create a theoretical framework for AI governance as an institutional system of intelligent governance, sustainability science, ethical AI, policy intelligence and digital participation mechanisms. This integrated perspective provides a theory that can then be explored empirically to gain insight into the links between AI governance capability, digital participation, governance quality and SDG performance in GCC economies.

RESEARCH METHODS

The study is quantitative secondary-data research with a secondary-data design to investigate the role of AI-based public governance mechanisms in improving SDG performance in GCC economies. This study focuses on Saudi Arabia, the United Arab Emirates (UAE), Qatar, Kuwait, Bahrain and Oman, as these countries have high levels of digital governance and AI transformation programmes and are moving towards sustainable development and smart public administration.

The study relies on secondary panel data from 2017 to 2025 obtained from sources such as the World Bank Global Findex Database, Worldwide Governance Indicators (WGI), GovTech Maturity Index (GTMI), United Nations SDG Database and United Nations E-Government Development Index (EGDI). These databases were selected based on their reliability, international comparability and wide use in governance and sustainability research (Dumitriu, 2026; United Nations, 2025).

The governance capability related to AI was gauged through indicators of digital public services, GovTech readiness, online government systems and citizen digital engagement. Government effectiveness, regulatory quality, rule of law and government accountability were recorded from WGI datasets and used to evaluate governance quality. Digital participation was defined by mobile wallet adoption, the use of digital payments, online transaction behaviour and financial inclusion indicators obtained from the Global Findex database. Institutional sustainability, innovation capability and governance effectiveness indicators related to the SDGs were used to measure sustainable development performance.

This study uses Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS 4 to analyse the proposed relationships. The study's multiple latent constructs, mediation mechanisms and predictive relationships are appropriate for governance-based and exploratory models, making PLS-SEM an appropriate method (Hair *et al.*, 2022).

Structural Model Equation:

$$SDGP = \beta_0 + \beta_1 AIGC + \beta_2 GQ + \beta_3 DP + \varepsilon$$

Where:

- SDGP = Sustainable Development Goals Performance
- AIGC = AI-Enabled Governance Capability
- GQ = Governance Quality
- DP = Digital Participation
- ε = Error term

The analytical process included descriptive statistics, reliability and validity assessment, structural model evaluation, and bootstrapping procedures to test direct and indirect effects. As the study relies entirely on publicly available secondary datasets, ethical approval and informed consent were not required.

RESULTS

Using secondary international data, the descriptive analysis was conducted on AI-enabled governance capacity, governance quality, digital participation and SDG performance for the period 2017 to 2025 across GCC economies. The results showed moderate regional differences, as the UAE and Saudi Arabia had higher scores for digital governance readiness, institutional quality and SDG performance indicators.

Table 1: Descriptive Statistics

Construct	Mean	SD	Minimum	Maximum
AI-Enabled Governance Capability	0.781	0.113	0.542	0.931
Governance Quality	0.744	0.097	0.521	0.903
Digital Participation	0.706	0.121	0.438	0.914
SDG Performance	0.758	0.105	0.563	0.918

Source: Authors’ compilation based on international secondary governance and SDG datasets (2017–2025).

Table 1 shows the descriptive statistics of the study constructs (AI-enabled governance capability, governance quality, digital participation and SDG performance) for the period 2017–2025 in the context of GCC economies. The results show that the mean scores for each construct are relatively high, suggesting that the region is increasingly implementing digital governance systems and sustainable development efforts. The highest mean value was observed for AI-enabled governance capability, indicating a good amount of investment in governance infrastructure and digital public service development by governments. The standard deviation (SD) values show moderate differences among GCC countries, suggesting that differences exist among the sampled economies concerning institutional readiness, digital participation and governance maturity.

The reliability and validity of all the measurement constructs used in this study were within acceptable levels, as revealed by the assessment of the measurement model. The indicator loadings were greater than the recommended value of 0.70. Internal consistency reliability demonstrated Composite Reliability (CR) scores from 0.84 to 0.93, suggesting high reliability. The average variance extracted (AVE) values were all greater than the recommended value of 0.50, providing evidence of convergent validity. Also, the heterotrait–monotrait ratio (HTMT) was below 0.85, indicating good discriminant validity among the constructs. The Variance Inflation Factor (VIF) values were less than 3.3, suggesting that there were no multicollinearity issues (Hair *et al.*, 2022).

Table 2: Reliability and Validity Assessment

Construct	CR	AVE	HTMT	VIF
AI-Enabled Governance Capability	0.91	0.73	0.81	2.12
Governance Quality	0.89	0.69	0.79	2.04
Digital Participation	0.87	0.66	0.83	2.21
SDG Performance	0.93	0.76	0.82	2.18

Source: SmartPLS 4 output generated from secondary governance datasets.

The reliability and validity of the measurement model are shown in Table 2. All constructs included in the study have satisfactory psychometric properties, as confirmed by the results. Internal consistency reliability, measured by Composite Reliability (CR), was above the minimum acceptable value of 0.70, suggesting a generally high level of reliability for the items. The same applied to Average Variance Extracted (AVE) scores, which were greater than 0.50, indicating convergent validity. All HTMT values were below the recommended value of 0.85, which also demonstrated discriminant validity among the constructs. Furthermore, the VIF values were lower than 3.3, meaning that there was no serious multicollinearity problem; thus, the measurement model was appropriate for structural analysis via PLS-SEM.

The findings from the structural model showed that AI-supported governance capability had a positive and significant effect on governance quality ($\beta = 0.71$, $p < 0.001$). The results also showed that governance quality was positively associated with SDG performance ($\beta = 0.64$, $p < 0.001$), making governance an important enabler of SDG implementation. Digital participation also had a significant positive effect on SDG performance ($\beta = 0.53$, $p < 0.01$), suggesting that higher levels of mobile wallet adoption, digital payment use and online citizen engagement positively affect sustainable governance outcomes.

The mediation analysis results validated the partial mediation of the relationship between AI-enabled governance capability and SDG performance through governance quality and digital participation. The coefficient of determination (R^2) showed that the proposed model had a high degree of explanation, whereas the Q^2 value was positive, indicating that the structural model had solid predictive relevance. This finding reinforces the idea that AI-driven governance systems with good institutional quality and digital participation systems play an important role in speeding up SDG implementation in GCC economies.

Table 3: Structural Model Results

Path	β	t-value	p-value	Decision
AI Governance → Governance Quality	0.71	9.84	0	Supported
Governance Quality → SDG Performance	0.64	8.92	0	Supported
Digital Participation → SDG Performance	0.53	6.71	0.002	Supported
AI Governance → Digital Participation	0.59	7.15	0.001	Supported

Source: Structural model analysis generated using SmartPLS 4.

Explanation of Statistical Terms and Symbols

β = Beta coefficient (standardised regression coefficient)

t-value = t-statistic (or t-value)

p-value = Probability value (significance level)

The results of the hypothesis testing and the structural model are summarised in Table 3. The results show that AI governance capability has a significant and positive impact on governance quality and digital participation in GCC economies. Governance quality and digital participation also had significant positive effects on SDG performance, suggesting that better institutional effectiveness and citizen digital participation make a positive contribution to sustainable development. The significance levels and path coefficients confirm the robustness of the proposed model and the argument that AI-based governance systems positively affect public governance performance towards sustainability in the GCC region.

Table 4: Coefficient of Determination and Predictive Relevance

Construct	R ²	Q ²	Interpretation
Governance Quality	0.51	0.34	Moderate predictive accuracy
Digital Participation	0.47	0.29	Moderate predictive relevance
SDG Performance	0.68	0.42	Strong explanatory power

Source: Predictive relevance and explanatory power analysis generated using SmartPLS 4.

The coefficient of determination (R²) and predictive relevance (Q²) of the endogenous constructs are shown in Table 4. The results show that AI governance capability explains 51% and 47% of the variation in governance quality and digital participation, respectively. In addition, the proposed model is able to explain 68% of the variance in SDG performance, highlighting its explanatory power when combined with governance quality. The positive Q² values further indicate good predictive relevance and model robustness in the PLS-SEM approach (Hair *et al.*, 2022).

Table 5: Effect Size Assessment (f^2)

Relationship	f^2	Effect Size
AI Governance → Governance Quality	0.41	Large
AI Governance → Digital Participation	0.36	Large
Governance Quality → SDG Performance	0.33	Moderate
Digital Participation → SDG Performance	0.28	Moderate

Source: Effect size assessment generated using SmartPLS 4.

The effect size (f^2) of the structural relationships contained in the proposed model is presented in Table 5. The results indicate that AI-driven governance capability has a significant impact on governance quality and digital participation, underscoring the importance of digital governance maturity and systems in enhancing institutional capacity-building and citizen participation. Furthermore, governance quality and digital participation also had a moderate impact on SDG performance, suggesting that institutional effectiveness and digital participation significantly drive sustainable governance outcomes in GCC economies.

DISCUSSION

The results of this study clearly show that the capacity to implement AI for governance purposes makes a significant contribution to enhancing governance quality, digital participation and SDG performance across GCC economies. The results show that AI is not only a technological solution but also an institutional governance capability that enhances transparency, responsiveness and sustainable policymaking. The positive correlation between AI-driven governance and governance quality suggests that the use of digital public systems, GovTech readiness and the delivery of online government services have a positive impact on the effectiveness and quality of governance in digitally transforming economies.

The results also highlight the need for real-time monitoring to enhance SDG implementation. AI-powered governance systems can help governments leverage administrative systems, digital financial systems, geospatial data and citizen-contributed data to continuously map these data onto governance frameworks that enhance policy responsiveness and evidence-based decision-making. This is consistent with earlier research stating that intelligent governance systems lead to more agile institutions and coordination between policies when technological changes and sustainability uncertainty prevail (Janssen and van der Voort, 2020). However, the effectiveness of these systems relies on data quality, interoperability, transparency and ethical governance protections.

Moreover, the impact of governance quality on SDG performance highlights the importance of institutional readiness and regulatory effectiveness in driving sustainable development. Countries that have more advanced digital governance systems and capabilities seem to be better prepared to link long-term sustainability plans to a national digital transformation agenda. The results are in line with previous governance and sustainability studies that highlight the need for close coordination, well-equipped institutions and policy integration towards digital transformation (Hassan *et al.*, 2025; Dumitriu, 2026).

The findings also indicate that digital participation has a positive impact on SDG performance in GCC economies. Greater mobile wallet adoption, digital inclusion, online transactions and citizen digital engagement lead to more inclusive governance environments and public participation. The finding aligns with the increasing importance of participatory governance and digital civic involvement for the successful implementation of SDG 16 targets concerning transparency, accountability and institutional trust. NLP and digital interaction platforms enable AI-based participatory systems to help governments better understand citizens' expectations and make policies more responsive (Mustafa and Shehada, 2026).

Lastly, the mediation findings reinforce the positive feedback between governance quality and digital participation in the relationship between AI-enabled governance and SDG performance. This means that, to achieve sustainable AI governance, institutions need to be structured and designed to be intertwined, ethical standards need to be upheld, digital technologies need to be ready and processes need to engage citizens. Overall, the study shows that responsible AI integration can greatly improve governance resilience, policy effectiveness and sustainable development implementation in GCC economies.

PRACTICAL AND POLICY IMPLICATIONS

The framework provides actionable recommendations to policymakers who may be interested in moving towards the integration of AI into governance systems for the SDGs. Governments must build interoperable data infrastructure and ensure that its architecture their secure and cloud-based to improve real-time monitoring and evidence-based governance. Moreover, institutional capacity-building, predictive analytics skills and cross-departmental coordination mechanisms are crucial to ensure that AI-generated insights are put into practice for sustainable policy interventions and governance improvements.

It is important to note that the implementation of AI should be part of formal governance frameworks and national digital transformation policies and programmes, not just a technological upgrade. Policymakers should establish clear standards for data security, algorithmic transparency, ethical issues and citizen protection to build trust and democratic accountability. In addition, collaboration among governments, educational institutions and technology actors is key to promoting responsible innovation, creating more integrated governance and contributing to increased transparency, inclusiveness and sustainable development outcomes aligned with SDG targets.

LIMITATIONS AND FUTURE RESEARCH

Although this study yielded some interesting findings, there are some limitations that need to be considered. The research was conducted at the macro level using secondary data from international sources, which may not fully reflect the institutional contexts, political dynamics and cultural differences that impact the implementation of AI-driven governance at the country level. Second, the study focused on GCC economies; thus, the results may not be applicable to less technologically advanced or less digitally mature economies with other governance systems. Additionally, cross-country panel data might be less able to capture the complexity within the organisational and administrative structures of public governance systems relating to AI adoption.

The model could be expanded to include more sociopolitical, economic and technological factors that could play a moderating role in the relationship between AI-enabled governance and SDG performance in the future. Comparing developed and developing economies may provide an overarching understanding of institutional readiness and the digital transformation capabilities of economies. Moreover, longitudinal and mixed-methods research combining quantitative and qualitative data can be used to better understand the long-term impact of AI-driven policymaking systems on sustainability, ethics and governance.

CONCLUSIONS

The study explored the impact of AI governance capability on SDG performance in GCC economies. The results showed that AI governance systems have a positive impact on governance quality, digital participation and sustainability-oriented policy outcomes. The study validated that real-time monitoring, anticipatory governance and participatory decision-making are key governance mechanisms that empower institutions to be more responsive, transparent and evidence-based in their policymaking processes with the support of AI.

The results also underscored institutional preparedness, ethical monitoring, the use of digital platforms and institutional linkages as key elements to enhance the implementation of sustainable development. AI-based governance was identified as a key enabler to enhance institutional effectiveness and strengthen citizens' digital engagement, which promotes inclusive and resilient governance ecosystems in line with SDG priorities. Overall, the study shows that AI is not just a technological development but a strategic governance tool that can enhance transparency, sustainability and long-term outcomes of public-sector implementation if implemented in a responsible and well-regulated institutional context.

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BIOGRAPHY



Dr Eyad Abdullah Shaban holds a PhD in Strategic Management and brings over 20 years of distinguished experience in strategic planning, quality management, institutional development, human resources and excellence frameworks both in Jordan and internationally. Since 2013, he has served as Assistant to the President for Accreditation, Quality and Planning Affairs and Director of the HR and Institutional Development Unit at Al-Ahliyya Amman University, alongside his role as a faculty member in the Business School. An ISO 9001:2015-certified internal auditor, he actively contributes as an assessor and committee member for regional quality awards. He has published widely and authored a leading book on Total Quality Management.



Dr Rafat Al Batayneh is currently employed as an Associate Professor in the College of Business at the University of Buraimi, Sultanate of Oman. He completed his PhD in Finance in 2014 and worked in professorial capacities at different Universities for more than 12 years in Jordan and overseas. In the field of research, he has published and presented papers in international fora, including those indexed in Scopus and Web of Science, as well as served as an editor and reviewer in various international peer-reviewed journals. As an experienced academician, he has also supervised theses and dissertations, demonstrating his expertise in the field of finance.



Dr Hisham Ali Shatnawi is an Associate Professor of Business Administration at Ajloun National University, Jordan. He received his PhD in Business Administration from Jinan University, Lebanon, in 2012. Dr Shatnawi has over 25 years of academic and administrative experience in higher education institutions. His research interests include knowledge management, management information systems, digital marketing, sustainable organisational performance, AI, SDGs and human resource management. He has published several research articles in refereed international journals and actively participates in academic committees and quality assurance initiatives. Dr Shatnawi teaches undergraduate and postgraduate courses in management, marketing, strategic management and business administration.



Dr Lana Yasin Ahmad El-Issa is an Assistant Professor at Zarqa University, Jordan. She holds a PhD in Information and Communication Technology (Mobile Applications) from Al-Madinah International University, Malaysia, a Master's degree in Software Engineering from the University of Malaya and a Bachelor's degree in Computer Science from Mutah University, Jordan. Dr El-Issa has extensive teaching and research experience in Jordan and Malaysia. Her expertise includes mobile applications, software engineering and e-learning technologies. She has published in IEEE conferences and international journals, with research interests focusing on mobile learning adoption, mobile commerce, digital education, AI, the SDGs and technology-enhanced learning innovation.