Digital Leadership as a Mediating Variable in the Relationship Between Artificial Intelligence and Institutional Excellence in Government Institutions

Dr. Mohammed Khamis Alshamsi[1], Dr. Mohamed Manea Almansoori[2], Dr. Rashed Saeed Almansoori[3]

[1,2,3] Lecturer, Emirates Academy for Identity and Citizenship, Abu Dhabi, UAE

Abstract

Institutions in the public sector worldwide are increasingly required to modernize their service delivery and AI is increasingly recognized as a strategic tool for institutional excellence. However, the mechanisms and boundary conditions through which AI can contribute to excellence are not yet sufficiently understood. This study used an explanatory sequential mixed-methods design to investigate the extent to which digital leadership mediates the relationship between AI capability and institutional excellence in government institutions and to explore whether AI governance moderates this relationship. The quantitative part of the study used survey data from 314 middle- and senior-level managers. PLS-SEM with 5,000-resample bootstrapping was used to analyze the data. The qualitative part of the study consisted of semi-structured interviews with 20 senior executives, chief digital officers and digital transformation specialists. The interview data were used to interpret and enrich the quantitative results. Objective performance indicators (processing time, automation rate, citizen satisfaction, cost per transaction) were gathered from 24 institutions to provide cross validation with the self-reported survey data. The results show that AI had a significant positive effect on digital leadership (= 0.512, p < .001) and institutional excellence (= 0.276, p < .01), that digital leadership positively influences institutional excellence (= 0.487, p < .001) and partially mediates the effect of AI on institutional excellence (indirect effect = 0.249, VAF = 47.4%), and that AI governance had a significant positive moderating effect on the relationship between digital leadership and institutional excellence (interaction term = 0.187, p < .01), i.e. High AI governance strengthened the impact of digital leadership on institutional excellence. Interview responses and objective indicators corroborated and complemented the quantitative findings. The entire model explained 54.1% of institutional excellence. The study provides insights for public sector decision-makers on how to pair AI investments with development of digital leadership and on implementation of effective AI governance.

Keywords: Artificial Intelligence; Digital Leadership; Institutional Excellence; AI Governance; Government Institutions; PLS-SEM.

1. Introduction

Across the world, public administration is currently at a unprecedented level of digital transformation due to citizens expectations, financial pressure, and intelligent technologies which are now capable of making decision which previously would required human knowledge (Zuiderwijk, Chen, & Salem, 2021). AI has moved from a developing technology to a central feature of governance. It aids with prediction and automation tasks, as well as being utilised for the provision of virtual assistants, and informing policy and evidence based government (Madan & Ashok, 2022). AI use in government is monitored on a routine basis by global organizations. The recent reports from the OECD for instance state that around two thirds of OECD governments are considering AI with a view to becoming more efficient, but, still have limited capability in the area of integrated government supervision of these processes (OECD, 2023). Furthermore, not only do the recently updated OECD AI principles promote accountability, transparency and human- centred oversight as necessary conditions for trustworthy public sector AI (OECD, 2024) but the worlds first standard on AI management systems ISO/IEC 42001:2023 is available for organisations to create and implement AI governance (International Organization for Standardization [ISO], 2023).

Nonetheless, transforming AI capability to a desired performance outcome for organizations cannot be taken as a given, neither does this come as straightforward. The studies conducted, in developed and developing economies using a cross- sectional method, showed that the resulting AI performance of investing in it depended on the human and organisational context of the technology itself (Mikalef, Lemmer, Schaefer, Ylinen, Fjrtoft, Torvatn, & Niehaves, 2023; Thanh & Cong, 2026). It is leader's who influence AI adoption and transformational ability to become successful, more than other influences, due to the importance of Leaders' being able to understand, champion, implement and institutionalise technologies within their organizations for anything beyond pilot project status (Benitez, Arenas, Castillo, & Esteves, 2022; op 't Roodt, Bracht, van Dick, & Hernandez Bark, 2025). In addition, leadership has become identified as more integral with research emerging showing leaders with formal AI management and governance mechanisms may be better placed to harness digital leadership into organisation's resilience and high performance outcome (Shatila, 2026).

Therefore, it has been established that leadership will play a significant role during this era of transformation as has been previously explored in digital transformation discourse with the creation and establishment of the construct 'digital leadership', "a distinct set of leadership practices, abilities and strategic positioning that are integral in guiding organisation at time of technologically enabled changes" (Salamzadeh, Vardarlier, & Teoh, 2023). However, with regard to the relationship of leadership to AI and AI governance to institutional excellence, this research has a relatively limited empirical basis in the government context, although with institutions seeking ever higher quality of service from stakeholders through their strategy, people, and leadership resources, institutional excellence has emerged as the ultimate goal in government reform and quality award processes (EFQM, 2020; Kaizen Consulting, 2026).

This research responds to these gaps in two principal ways. Firstly, this study hypothesizes and tests a moderated mediation model in which the effect of AI on institutional excellence is mediated by digital leadership, and moderated by the impact of AI governance on the relationship between digital leadership and institutional excellence. Secondly, this study employs an explanatory sequential mixed methods design (Fetters & Tajima, 2022) that uses the initial survey results to explain and expand through qualitative interviews and the inclusion of objective performance indicators, thereby moving beyond solely reliance on perceptual data. Four specific research objectives are investigated: (1) to quantitatively test direct, mediated, and moderated effects of AI, digital leadership, AI governance and institutional excellence; (2) to explain qualitatively how government senior leaders practice and perceive these phenomena; (3) to triangulate survey and interview findings with objective organizational performance indicators; and (4) to produce integrated findings and policy recommendations. The remaining paper is organized as follows: Section 2 review literature and hypothesis development, section 3 describe methodology, section 4 present quantitative, qualitative and combined results, section 5 discussed the findings and sections 6-8 provide policy implications, limitation and conclusion.

2. Literature Review and Hypotheses Development

2.1 Artificial Intelligence in Government Institutions

AI in the public sector relates to the organization's ability to acquire, integrate and exploit technologies that emulate human cognitive capabilities such as pattern identification, forecasting, and autonomous decision-making (Mikalef & Gupta, 2021). Unlike in the private sector, government organizations are governed by laws, transparency, and accountability principles, public-value orientation, as well as regulatory frameworks which inform their approach to AI implementation (Fatima et al., 2022). Reviews of AI in public governance applications reveal three major categories of usage: process automation, decision-support tools and analytics, and citizen-interface tools (Madan & Ashok, 2022; Zuiderwijk et al., 2021). From the evidence of United Arab Emirates, AI capability combines with dynamic organizational capability to determine government performance and innovation (Almheiri et al., 2024), and that in Vietnam AI capability stimulates organizational performance directly through automated work processes and generating new insights (Thanh & Cong, 2026).

2.2 Digital Leadership: Concept and Dimensions

Digital leadership is characterized by a leader's ability to employ technology for restructuring of organizational form, processes, values, skills, and strategy toward creating a competitive advantage (Benitez et al., 2022). Leader digital competence has been operationalized to refer to an individual's ability to choose, encourage, and utilize technological devices and new media in the work context (op 't Roodt et al., 2025), supported by evidence in multiple samples. Digital leadership across various contexts encompass business models, strategies, systems, skills and platforms simultaneously (Salamzadeh et al., 2023).

2.3 Institutional Excellence in the Public Sector

Institutional excellence is defined as an organization's sustained ability to achieve and maintain superior results in leadership, strategy, management of people, partnerships and resources, processes and results delivered to stakeholders (EFQM, 2020). Excellence frameworks such as the EFQM Model and its national and sectoral adaptations are extensively employed for comparative assessment and benchmarking in the public sector, notably among Gulf and European countries which apply them to government bodies (e.g. Ministries, municipalities, agencies) through their national excellence award programs (Kaizen Consulting, 2026).

2.4 Theoretical Foundation

This research builds mainly upon the Dynamic Capabilities Theory (Teece, 2018) of the firm, which argues that in dynamic markets, organizational performance depends on the extent to which resources can be integrated, reconfigured, and deployed in response to new and evolving competitive conditions. Artificial Intelligence can be understood as a technology resource, whereas digital leadership is a management capability that directs the deployment and redeployment of AI for generating organizational excellence, assisted by the AI governance mechanism for accountability and risk mitigation. The study's perspective is therefore informed by Dynamic Capabilities Theory as an explanatory theory for both the mediating role of digital leadership and the moderating role of AI governance in the context of AI's impact on public organizations.

The study also builds upon the Resource-Based View (RBV) of the firm, considering AI capability a key organizational resource. AI is a valuable capability when leveraged with management's unique resources and capabilities to achieve competitive and institutional advantage.

2.5 Artificial Intelligence, Digital Leadership, and Institutional Excellence

It has been recognized that AI capability impacts positively the performance of public organizations. In particular, evidence from public organizations demonstrates that the utilization of AI capability helps to improve performance of organization through automating of workflow and generation of new insights (Thanh & Cong, 2026; Mikalef et al., 2023). Thus, we propose:

H1: Artificial Intelligence has a significant positive effect on institutional excellence in government institutions.

AI can also create changes in the demand for leadership, by requiring leaders to have new skills that allow them to interpret the outcomes from AI, manage the algorithm accountability, and deal with employees experiencing new jobs and roles (Dennehy et al., 2023; op 't Roodt et al., 2025). Hence:

H2: Artificial Intelligence has a significant positive effect on digital leadership in government institutions.

In addition, research indicates that leadership style can enhance various outcomes. In particular, digital leadership is associated with higher organizational performance. It can positively influence innovation performance by augmenting platform-digitization capabilities (Benitez et al., 2022) and affect overall organizational performance directly and indirectly through the enhancement of digital organizational culture (Priyamedha et al., 2025). Accordingly, we hypothesized:

H3: Digital leadership has a significant positive effect on institutional excellence in government institutions.

The combination of H1, H2, and H3 leads us to believe there is a partial mediating effect in which AI enhances the organizational excellence partially via the effects it has on the development of digital leadership capabilities, as has been proposed within the broader literature that technologies seldom achieve their full performance potential without the appropriate leadership engagement and utilization (Mikalef & Gupta, 2021). Therefore:

H4: Digital leadership significantly mediates the relationship between Artificial Intelligence and institutional excellence in government institutions.

2.6 AI Governance as a Boundary Condition: The Moderating Role

Though digital leadership is intended to translate AI capability into institutional excellence, the success of this translation is likely to be heterogeneous across different organizations. AI governance-which represents "the organization's structures, policies, and processes for the ethical review of AI applications, accountability and risk management, human oversight and regulatory compliance" (Shatila, 2026)-has more recently been identified as a critical contingency factor for digital leadership and AI strategy. Based on international guidelines such as the OECD's Framework for Trustworthy AI in Government-which is organized into enablers, guardrails and engagement mechanisms (OECD, 2023)-as well as the ISO/IEC 42001:2023 AI management-system standard (ISO, 2023), the institutional framework of AI governance establishes the necessary risk controls, legitimacy, and institutional trust that permit leadership interventions to be safely implemented at scale, as opposed to curtailed by ethical, legal, or reputational risk. Digital leaders may shy away from full implementation or find their AI-enabled initiatives to be derailed by the breakdown of accountability when AI governance is lacking, which is to

say that digital leadership fails to produce excellence outcomes. However, the higher the quality of governance, the more efficiently digital leadership should translate into institutional excellence. We thus formulate:

H5: AI governance moderates the relationship between digital leadership and institutional excellence, so that this relationship becomes stronger with higher AI governance.

2.7 Conceptual Framework

The moderating mediation conceptual model that we test in this study appears in Figure 1. The figure conceptualizes artificial intelligence as the exogenous construct, digital leadership as the endogenous mediator construct, institutional excellence as the endogenous outcome construct, and AI governance as a moderator on the direct link from digital leadership to institutional excellence (the b-path in the mediated-mediated process). Our model therefore conceptualizes a partially moderated mediation (i.e., AI → Digital Leadership →Institutional Excellence). It includes the mediated path (AI → Digital Leadership → Institutional Excellence), the direct path (AI → Institutional Excellence) and a direct effect of digital leadership on institutional excellence.

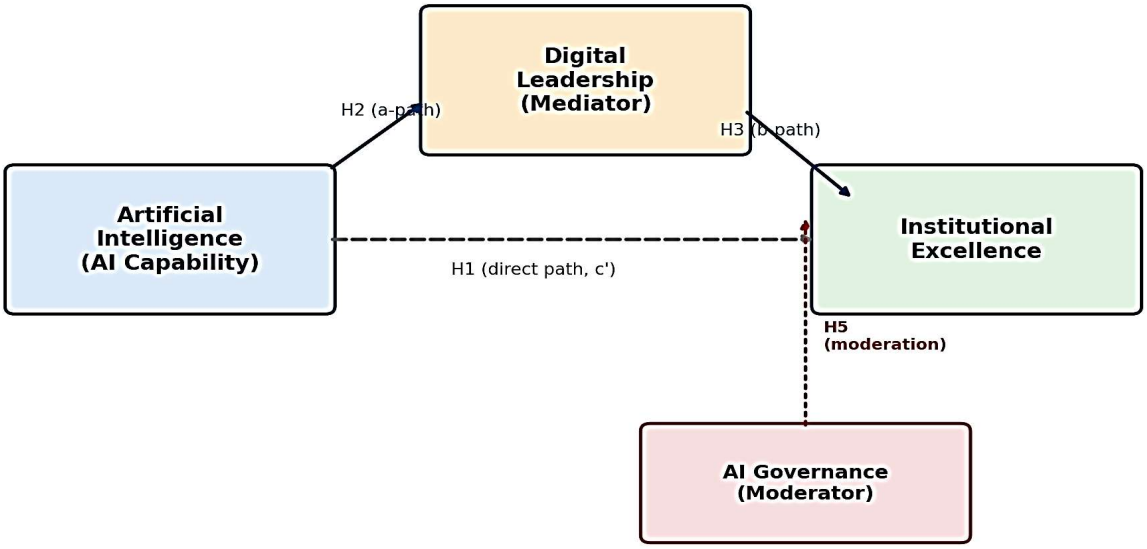

Figure 1. Conceptual Research Model with Moderated Mediation

3. Methodology

3.1 Research Design and Approach

The research design followed an explanatory sequential mixed-methods approach that combine quantitative and qualitative approaches to shed light on the contribution of Artificial Intelligence to the excellence of governmental organizations (Fetters & Tajima, 2022). In the first phase, a quantitative survey was utilized to test structural and moderated mediation relationships via Partial Least Squares Structural Equation Modeling (PLS-SEM). Semi-structured interviews were conducted in the second phase with senior government officials and digital transformation leaders to clarify, validate and augment the quantitative findings. Objective data (e.g., AI adoption levels, digital transformation indicators from official organizational reports) were also collected to triangulate the perceptions of the surveyed managers and lessen any restrictions relating to the collection of merely perceptual data (see Figure 2 for the sequential design).

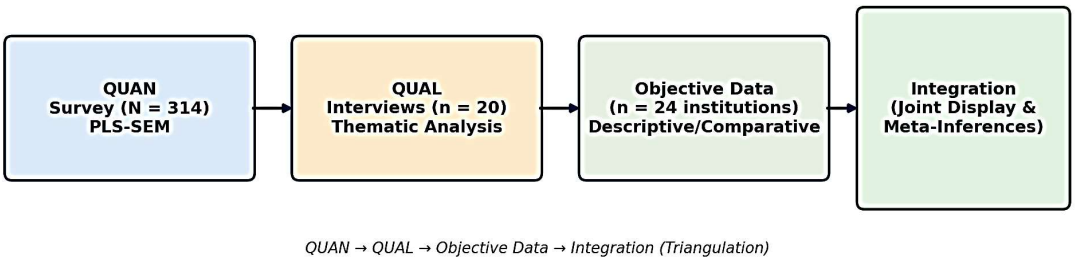

Figure 2. Explanatory Sequential Mixed-Methods Design

3.2 Population, Sample, and Setting

The quantitative part was addressed to middle- and senior-level public managers employed in ministries, municipalities and authorities who implemented the AI enabled systems. In this regard, 314 valid questionnaires were included for the data analysis, which represented the effective response rate (74.8%) out of a stratified random sample of 420 eligible public managers.

Regarding the qualitative part of the study, 20 high-level executives, chief digital officers (CDOs), AI program managers and digital transformation specialists were chosen on the basis of purposive sampling to provide rich information and in-depth insights into AI implementation practices, digital leadership styles, AI governance and institutional excellence. To obtain representation across different levels (central ministries, local government and independent agencies), this sampling approach was also used. The interviews were continued until the point of data saturation occurred.

Additionally, secondary organizational data were gathered from 24 participant government institutions that had AI implementation reports, digital transformation performance indicators, service delivery, operational efficiency indicators and institutional excellence assessment reports available. These data allowed the comparative analysis of the objective organizational indicators before and after the AI implementation. The objective organizational performance indicators were obtained from official reports submitted by the institutions themselves, namely, official annual reports, institutional digital transformation dashboards, service quality and performance reports, and internal operational reports managed and used by government institutions. The selection was also conditioned to the use of indicators measuring a similar notion that are standardized through government reporting and collected over comparable pre- and post-AI implementation periods.

3.3 Measures and Research Instruments

Data were collected using four complementary instruments. First, a self-administered questionnaire was used to measure the latent variables through pre-validated Likert-type (seven-point) scales. Artificial Intelligence capability was measured by the scale developed by Mikalef and Gupta (2021). Digital leadership was assessed using a previously validated scale by op ‘t Roodt et al. (2025). Institutional excellence was evaluated with items derived from the EFQM Model (EFQM, 2020). Following the current trends in the digital era and to contribute with a higher level of novelty and timeliness of the study, we incorporated AI governance as a moderating variable; it was measured by items capturing the aspects of governance structures, ethical principles, accountability, compliance, risk management, and human supervision (based on the OECD Framework for Trustworthy AI in Government [OECD, 2023, 2024] and the ISO/IEC 42001:2023 Artificial Intelligence Management System [ISO, 2023]). Second, the semi-structured interview protocol focused on gathering information about how government executives approach the implementation of AI initiatives, govern AI systems, foster digital leadership, and ultimately deliver on institutional excellence. Third, documents (e.g., organizational reports, strategy documents on AI, institutional excellence reports, digital transformation dashboards, and operational performance reports) were analyzed through document analysis. Fourth, objective organizational performance indicators (e.g., digital service processing time, citizen satisfaction, automation rate, cost-per-transaction) were used as a proxy of overall organizational performance.

3.4 Data Collection Procedure

The study involved a sequential data collection process across three stages. The first stage entailed distributing an online survey questionnaire among the selected participants. Two reminders were sent at two-week intervals. Second, to gain deeper insights into digital leadership, AI implementation, and governance, interviews were conducted with high-level executives and key IT/digital transformation personnel across the sampled organizations. These semi-structured interviews (approximately 45–60 min long, either virtually or in person, recorded audio with consent) were conducted with those in charge of AI implementations. Third, organizations provided the secondary data, including internal performance measures and project-related documentation. Integrating the results from these data sources enhances methodologically the study's validity and reliability while minimizing the common method bias. Before conducting data analysis, a careful validation of organizational data indicators (i.e., completeness and comparability) was undertaken. We developed a specific data extraction protocol in order to collect equivalent data (processing time, automation rate, citizen satisfaction and cost-per-transaction) from all institutions. Whenever we detected heterogeneity in how some indicators were reported, we harmonized data based on general governmental reporting standards prior to analysis.

3.5 Data Analysis Strategy

We analyzed quantitative data using SmartPLS 4 to examine the measurement and structural models, to test mediation and moderation effects and to estimate the predictive ability of the proposed model in line with two-step PLS-SEM guidelines (Hair & Alamer, 2022; Sarstedt, Hair, & Ringle, 2022). Direct, indirect and interaction (moderation) effects were tested by applying a bootstrapping procedure with 5,000 resamples and mediation was examined by applying the variance-accounted-for (VAF) method along with the confidence intervals derived from bootstrapping (Cheah, Nitzl, Roldn, Cepeda-Carrin, & Gudergan, 2021). Thematic analysis was performed for the qualitative data from the interviews to identify themes relating to AI adoption, AI governance, digital leadership and institutional excellence.

Two independent researchers coded the transcripts and reached consensus through discussion about coding differences, resulting in 89% inter-coder reliability.

We analyzed the objective organizational performance metrics with descriptive and comparative statistics (e.g., paired-samples t-tests of pre- and post-AI-implementation values) and integrated this data along with the qualitative data through methodological triangulation and the development of a joint display matrix (Fetters & Tajima, 2022). A mixed-methods design such as this, utilizing perceptions, qualitative interviews and objective performance data, yields more robust results than a solely cross-sectional survey.

4. Results

4.1 Quantitative Phase: Respondent Profile

Table 1 presents the characteristics of the 314 respondents by demographics and institutional attributes. There was relatively even gender balance in the sample, with male participants constituting 58.3% and female participants constituting 41.7%. The sample was fairly well balanced across organizational types, with respondents from local and municipal governments constituting the majority (41.1%), followed by central ministries (37.6%) and independent public authorities (21.3%). The majority of respondents possessed at least a master's degree (66.2%) and the majority of respondents had in excess of five years' experience in a managerial role (81.2%).

Table 1. Demographic Profile of Survey Respondents (N = 314)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	183	58.3
	Female	131	41.7
Age	Under 35 years	58	18.5
	35–44 years	121	38.5
Managerial Experience	45–54 years	94	29.9
	55 years and above	41	13.1
	Less than 5 years	59	18.8

Characteristic	Category	Frequency (n)	Percentage (%)
Institution Type	5–10 years	107	34.1
	11–15 years	86	27.4
	More than 15 years	62	19.7
	Central Ministry	118	37.6
	Municipality / Local Government	129	41.1
	Independent Public Authority	67	21.3
Education Level	Bachelor's Degree	156	49.7
	Master's Degree	127	40.4
	Doctorate	31	9.9

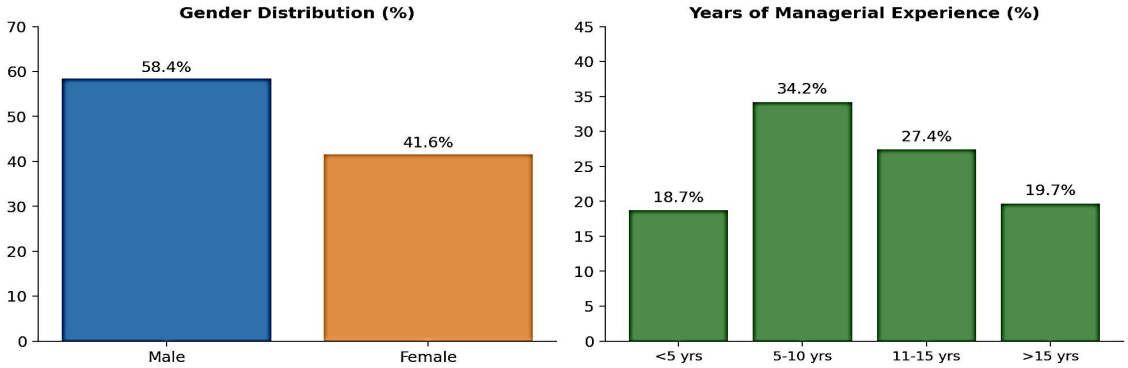

Figure 3. Demographic Profile of Survey Respondents

4.2 Descriptive Statistics

Table 2 displays the descriptive statistics for the four major constructs, and the newly included AI Governance moderator. For all the constructs, mean scores are located above the scale mid-point, skewness and kurtosis values are all well within the +/-1.0 limit suggested to describe roughly normal data, characteristic for survey-based social science data.

Table 2. Descriptive Statistics of Study Constructs

Construct	No. of Items	Mean	SD	Skewness	Kurtosis
Artificial Intelligence	12	5.14	0.92	-0.41	0.28
Digital Leadership	10	5.02	0.88	-0.35	0.19
AI Governance	9	5.08	0.90	-0.31	0.22
Institutional Excellence	14	4.96	0.85	-0.29	0.14

Items measured on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

4.3 Measurement Model Assessment

Reliability and convergent validity was examined first. According to Table 3, Cronbach's alpha coefficients for the constructs were between 0.897 and 0.934, while composite reliability scores were between 0.916 and 0.943, both of which exceeded the 0.70 standard value (Hair & Alamer, 2022). In terms of convergent validity, Average Variance Extracted (AVE) values were between 0.564 and 0.601, which were higher than the threshold value of 0.50 for all four constructs, including AI Governance.

Table 3. Reliability and Convergent Validity

Construct	No. of Items	Cronbach's Alpha (α)	Composite Reliability (CR)	AVE
Artificial Intelligence	12	0.912	0.927	0.583
Digital Leadership	10	0.897	0.916	0.564
AI Governance	9	0.905	0.921	0.571
Institutional Excellence	14	0.934	0.943	0.601

All values meet or exceed recommended thresholds (α > 0.70; CR > 0.70; AVE > 0.50).

Discriminant validity was evaluated via the Fornell -Larcker criterion. Table 4 indicated that for each construct, the square root of AVE is larger than their inter correlations with the other three constructs, satisfying the discriminant validity requirement. This finding was supported by Heterotrait-Monotrait (HTMT) ratio (varying between 0.402 and 0.628) for construct pairs that were well below the conservative 0.85 cutoff point (Cheah et al., 2021).

Table 4. Fornell–Larcker Criterion for Discriminant Validity

Construct	1. AI	2. Digital Leadership	3. AI Governance	4. Institutional Excellence
1. Artificial Intelligence (AI)	0.764			
2. Digital Leadership	0.512	0.751		
3. AI Governance	0.398	0.455	0.756	
4. Institutional Excellence	0.489	0.487	0.462	0.775

Diagonal values represent the square root of AVE for each construct.

4.4 Structural Model, Hypothesis Testing, and Moderation Analysis

We then estimated the structural model by performing a bootstrap analysis with 5,000 resamples. Table 5 and Figure 4 demonstrate that all three direct hypothesized effects were confirmed. First, the direct effect of Artificial Intelligence on Institutional Excellence was significant and positive (= 0.276, t=5.308, p<.001), which supports H1. Third, the effect of Artificial Intelligence on Digital Leadership was strong and positive (= 0.512, t=10.667, p<.001), supporting H2. Third, the direct effect of Digital Leadership on Institutional Excellence was significant and positive (= 0.487, t=8.855, p<.001), supporting H3.

Table 5. Structural Path Estimates and Hypothesis Testing Results

Hypothesis	Path	β (Std.)	SE	t-value	p-value	Decision
H1	AI ⟶ Institutional Excellence (direct)	0.276	0.052	5.308	< .001	Supported
H2	AI ⟶ Digital Leadership	0.512	0.048	10.667	< .001	Supported
H3	Digital Leadership ⟶ Institutional Excellence	0.487	0.055	8.855	< .001	Supported

Bootstrapping based on 5,000 subsamples; two-tailed test.

Then, Mediation was analyzed (H4). As can be seen in Table 6, the indirect effect of AI on Institutional Excellence through Digital Leadership was significant and positive (= 0.249, t = 6.917, 95% CI [0.181, 0.322]). The Variance Accounted For (VAF) was 47.4%, which suggests that partial mediation exists (the range of partial mediation was 20%-80%; Cheah et al., 2021). Therefore, H4 was supported.

Table 6. Mediation Analysis: Indirect Effect of AI on Institutional Excellence via Digital Leadership

Path	Indirect Effect (β)	Boot SE	t-value	95% CI (Bootstrapped)	VAF (%)	Mediation Type
AI ⟶ Digital Leadership ⟶ Institutional Excellence	0.249	0.036	6.917	[0.181, 0.322]	47.4	Partial Mediation

VAF = Variance Accounted For; bootstrapped 95% confidence interval not containing zero indicates significant mediation.

Lastly, the moderating effect of AI Governance on the relationship between Digital Leadership and Institutional Excellence (H5) was assessed via a product-indicator interaction term, as displayed in Table 7, and found to be positive and significant (= 0.187, t = 3.224, p < .01). Entry of the interaction term accounted for a small to medium increase (f = 0.061; Table 8) in variance of Institutional Excellence. As evident from simple slope analysis (Figure 5) there was a markedly stronger positive Digital Leadership-Institutional Excellence relationship under high AI Governance (= 0.612, t = 12.000, p < .001) versus low AI Governance (= 0.352, t = 7.652, p < .001). H5 was supported.AI Governance moderates and thereby substantially bolsters the link between digital leadership and institutional excellence.

Table 7. Moderation Analysis: Interaction and Simple-Slope Effects of AI Governance

Effect / Slope	β (Std.)	SE	t-value	p-value	95% CI
Digital Leadership × AI Governance → Institutional Excellence (interaction)	0.187	0.058	3.224	< .01	[0.073, 0.301]
Simple slope: Digital Leadership → Institutional Excellence at Low AI Governance (-1 SD)	0.352	0.046	7.652	< .001	[0.262, 0.442]
Simple slope: Digital Leadership → Institutional Excellence at High AI Governance (+1 SD)	0.612	0.051	12.000	< .001	[0.512, 0.712]

Simple slopes computed at ±1 SD of the mean-centered AI Governance construct.

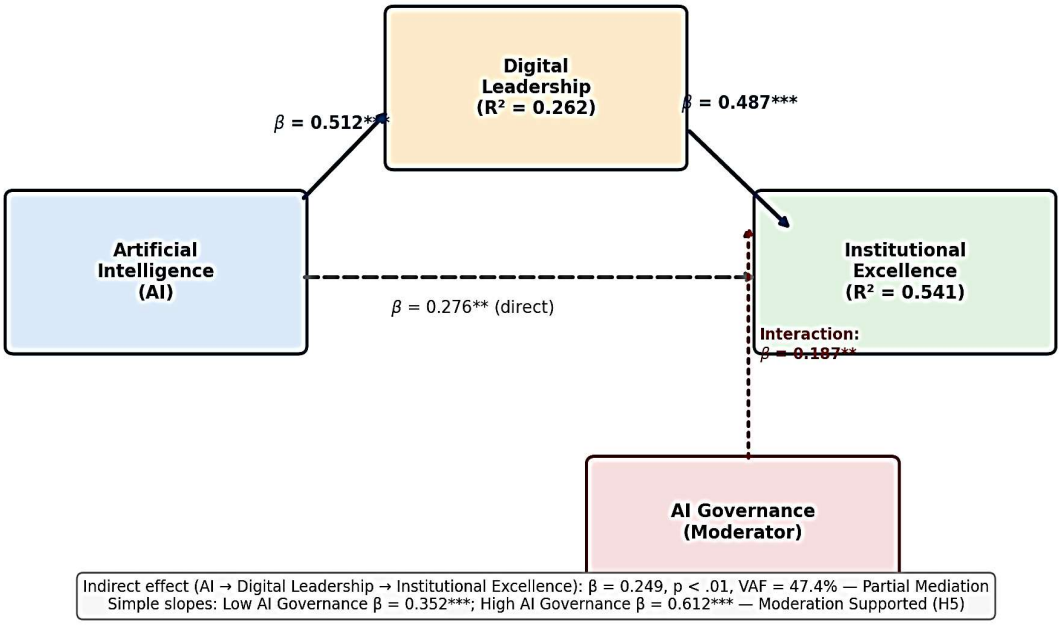

Figure 4. Structural Model with Standardized Path Coefficients and AI Governance Moderation

Adding the moderator and the interaction term the model accounted for 26.2% of the variance in Digital Leadership (R = 0.262) and 54.1% of the variance in Institutional Excellence (R = 0.541) higher than the non-moderated model with both models considering AI Governance added variance in the dependent variables. Total model fit was calculated via the calculation of SRMR, dULS, dG and NFI (Table 8); all indices were found within acceptable values demonstrating a good fit for the suggested moderated-mediation model.

4.5 Qualitative Phase: Thematic Analysis

The qualitative phase consisted of n=20 and the participant profile is summarized in Table 9. Interviews were conducted until saturation of theme had occurred, with this approximately at interview sixteen. The remaining four interviews did not contribute new themes.

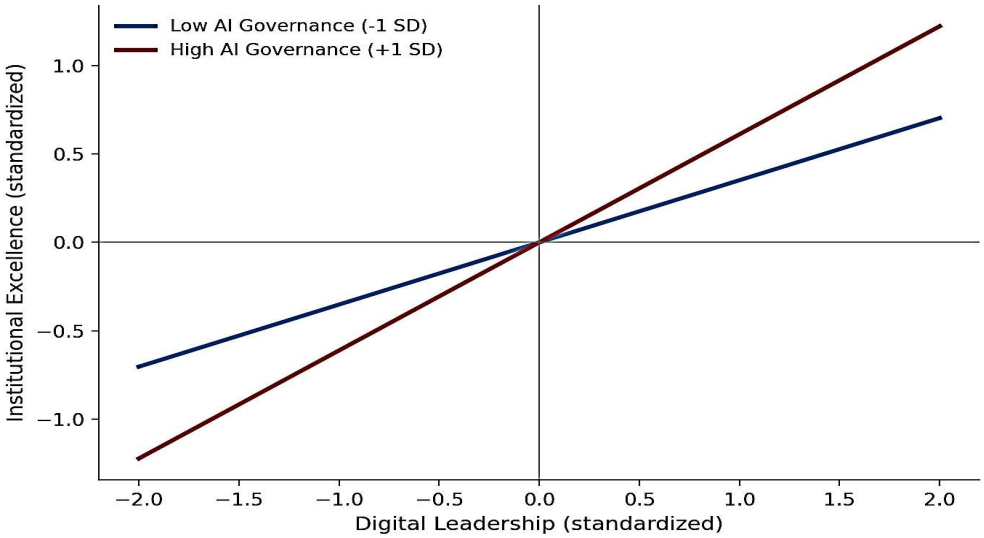

Figure 5. Interaction Effect of AI Governance on the Digital Leadership → Institutional Excellence Relationship

Table 8. Global Model Fit Indices and Interaction Effect Size

Fit Index	Estimated Model Value	Recommended Threshold	Assessment
SRMR	0.058	< 0.08	Acceptable
d_ULS	1.812	< 95% CI of saturated model	Acceptable
d_G	0.671	< 95% CI of saturated model	Acceptable
NFI	0.901	> 0.90 (desirable)	Acceptable
f^2 (interaction effect on Institutional Excellence)	0.061	Small-to-medium (Cohen, 1988 convention)	Meaningful

SRMR = Standardized Root Mean Square Residual; NFI = Normed Fit Index.

Table 9. Qualitative Interview Participant Profile (n = 20)

Role	n	Institution Type	Avg. Experience (yrs)	Interview Mode	Avg. Duration (min)
Senior Executive / Director-General	6	Central Ministry / Authority	17.4	In-person	54
Chief Digital Officer	5	Ministry / Municipality	12.8	Virtual	51
AI Project Manager	5	Municipality / Authority	9.6	Virtual	47
Digital Transformation Specialist	4	Mixed	8.1	In-person / Virtual	49

Thematic analysis of the interview transcripts revealed five key themes, as summarized in Table 10. They closely correlate with and provide further clarification to the quantitative analysis: leaders cited the experience of implementing AI as both a personal and institutional trigger to acquiring the digital-leadership skills required (confirming H2); confident and authoritative application of AI leadership-driven initiatives and strategies

stemmed from the existence of appropriate AI governance structures (confirming H5); a clear, observable gain in trust and service efficiency was derived from the use of automation (confirming H1/H3); and in clear terms, leadership acted as the necessary vehicle that transform the capabilities of AI into organizational success (confirming H4). A strong counter-theme that regularly surfaced relates to legal.

Theme 1 One senior executive explained:

"Artificial Intelligence fundamentally changed the way we lead. Instead of relying solely on experience, we now make decisions supported by predictive analytics and real-time digital information."

Theme 2 Another participant stated:

"Without clear AI governance policies, leaders hesitate to fully implement AI initiatives because accountability remains unclear."

Theme 3 One digital transformation manager commented:

"Automation significantly reduced repetitive administrative work, allowing employees to focus on higher-value activities and improving citizen satisfaction."

Theme 4 A chief digital officer observed:

"Technology alone never delivers excellence. Leadership is what transforms AI tools into organizational performance."

Theme 5 One participant noted:

"Legacy systems remain one of our biggest obstacles. Even with advanced AI technologies, outdated infrastructure limits implementation."

Table 10. Summary of Qualitative Themes from Thematic Analysis

Theme	Illustrative Description	Supports
AI as a Catalyst for Leadership Transformation	Executives described how deploying AI systems forced them to acquire new digital competencies, reframe decision routines, and actively champion technology adoption among staff.	H2
Governance as the Backbone of Trustworthy AI Leadership	Participants with mature governance structures (clear accountability, ethics review, risk protocols) reported greater confidence in scaling AI-enabled leadership initiatives, whereas those without such structures described hesitation and delayed rollouts.	H5
From Process Automation to Institutional Culture Change	Leaders linked automation and analytics directly to visible gains in service quality, transparency, and stakeholder trust, consistent with direct AI-to-excellence effects.	H1 / H3
Leadership as the Bridge Between Technology and Excellence	Several respondents explicitly stated that AI tools alone did not generate results until leadership actively integrated them into strategy, culture, and performance-management routines.	H4 (mediation)
Persistent Barriers: Legacy Systems, Skill Gaps, and Regulatory Ambiguity	Participants noted that outdated IT infrastructure, uneven digital literacy among staff, and unclear regulatory guidance remain obstacles even where leadership commitment is strong.	Contextual nuance / limitation

Source: Thematic analysis of 20 semi-structured interviews; inter-coder agreement = 89%.

4.6 Objective Organizational Performance Indicators

Additional triangulating evidence of the self-report survey and interview data came from using objective indicators of organizational performance for 24 of the organizations for which both a pre- and post-AI implementation report was available. Table 11 shows that on all four of the performance indicators there were significant changes after AI was implemented; service processing time went down by an average of 3.7 days, the

citizen satisfaction index increased by 11.2 index points, the process automation rate increased by 34.6 percentage points, and the cost per transaction index declined by 23.7 index points ($p < .001$ for all measures).

Table 11. Objective Organizational Performance Indicators: Pre- vs. Post-AI Implementation

Indicator	Pre-AI Implementation (Mean)	Post-AI Implementation (Mean)	Mean Change	t-value	p-value
Average service processing time (days)	7.8	4.1	-3.7	9.42	< .001
Citizen satisfaction index (0–100)	68.4	79.6	+11.2	6.85	< .001
Process automation rate (%)	24.1	58.7	+34.6	11.20	< .001
Cost per transaction (index, base = 100)	100.0	76.3	-23.7	7.94	< .001

n = 24 institutions with available pre/post organizational reports (paired-samples t-test).

4.7 Integration of Quantitative, Qualitative, and Objective Findings

Table 12-Joint display with quantitative, qualitative, and objective findings for each hypothesis using a standard mixed-methods integration process (Fetters & Tajima, 2022). The three data strands converged to produce the well-triangulated, single meta-inference regarding AI capability, which, across all five hypotheses, leads to a direct dividend in the form of excellence, an indirect dividend flowing via digital leadership, and an even larger dividend of the leadership pathway being mediated by strong AI governance processes.

Table 12. Joint Display: Integration of Quantitative, Qualitative, and Objective Findings

Research Question / Hypothesis	Quantitative Result (QUAN)	Qualitative Theme (QUAL)	Objective Indicator	Meta-Inference
H1: AI → Institutional Excellence	β = 0.276, p < .001 (direct effect)	From Process Automation to Institutional Culture Change	Processing time ↓ 3.7 days; automation rate ↑ 34.6 pts	AI delivers a direct, corroborated excellence dividend beyond leadership pathways
H2: AI → Digital Leadership	β = 0.512, p < .001	AI as a Catalyst for Leadership Transformation	Adoption of governance/reporting dashboards accompanying AI rollout	AI adoption actively reshapes leadership competencies, not merely technology use
H4: Mediation via Digital Leadership	Indirect effect = 0.249, VAF = 47.4% (partial mediation)	Leadership as the Bridge Between Technology and Excellence	Citizen satisfaction gains concentrated in institutions with visible leadership engagement	Leadership meaningfully channels roughly half of AI's total effect on excellence
H5: AI Governance moderation	Interaction β = 0.187, p < .01; slopes 0.352 (low) vs. 0.612 (high)	Governance as the Backbone of	Institutions with ISO 42001-aligned governance reported	Governance structures amplify, and

Research Question / Hypothesis	Quantitative Result (QUAN)	Qualitative Theme (QUAL)	Objective Indicator	Meta-Inference
		Trustworthy AI Leadership	faster, larger post-AI gains	their absence constrains, leadership's translation into excellence

Joint display constructed following mixed-methods integration guidance (Fetters & Tajima, 2022).

5. Discussion

Overall, the integrated findings provide compelling, triangulated evidence for a moderated-mediation model in which digital leadership is the critical link through which AI translates to institutional excellence in government, and AI governance influences the strength of that link. We discuss four key findings below.

First, the substantial direct effect of AI on institutional excellence (H1)-supported by qualitative themes regarding AI-driven institutional culture change and objective gains in processing speed and automation rates-replicates and extends previous research that AI capability independently enhances public sector organizational performance (Thanh & Cong, 2026; Mikalef et al., 2023).

Second, the strong effect of AI on digital leadership (H2)-echoed in interview statements about AI as a driver of leadership transformation-aligns with assertions that AI adoption is less about technology deployment and more about leadership capability development (op 't Roodt et al., 2025).

Third, the partial mediation found in H4 (VAF = 47.4%), bolstered by qualitative insights portraying leadership as the connection between technology and excellence, suggests digital leadership channels about half of the overall influence of AI on institutional excellence. This is consistent with capability-based theorizing that value accrues when technologies are coordinated by enabling organizational capabilities (Mikalef & Gupta, 2021; Benitez et al., 2022).

Fourth, and perhaps most novel, the significant moderating effect of AI governance (H5) highlights that the relationship between digital leadership and institutional excellence is significantly stronger in institutions with robust governance frameworks-encompassing ethics, accountability, risk management, and regulatory compliance. This extends the recent findings of the moderating role of AI governance on the translation of AI strategy and digital leadership to strategic resilience in private-sector organizations (Shatila, 2026) into government settings, and is reflected in the comments of leaders in governance-mature organizations about their increased confidence in scaling AI initiatives. This finding also resonates with international guidance emphasizing governance, guardrails, and engagement as enablers of trustworthy AI in government (OECD, 2023, 2024), and is in line with the systematic approach to risk management prescribed in ISO/IEC 42001:2023 (ISO, 2023).

In sum, the convergent evidence-quantitative, qualitative, and objective-as synthesized in the joint display (Table 12)-points to the need for government institutions seeking to leverage AI for institutional excellence to consider technology adoption, digital leadership development, and governance-structure building as three intrinsically linked and essential, mutually co-required investments rather than as discrete initiatives.

6. Theoretical and Practical Implications

6.1 Theoretical Implications

Our study offers three contributions to the AI-capability and digital-leadership literatures. First, we empirically support a partial-mediation relationship between AI and institutional excellence through digital leadership in the government context, extending applications of the Resource-Based View to the public sector (Mikalef & Gupta, 2021). Second, we contribute AI governance as a theoretically relevant and empirically potent moderator of the leadership–excellence relationship, expanding upon private-sector moderated models (Shatila, 2026) into

government institutions. Third, through the use of an explanatory sequential mixed-methods design combined with the triangulation of objective performance indicators, the study addresses recent calls for more stringent evidence from public-sector digital-transformation studies beyond a single-source, cross-sectional survey approach (Fetters & Tajima, 2022).

6.2 Practical Implications

Our findings have practical implications for public policymakers and executives, who should develop integrated AI-investment strategies that also address digital-leadership development and establish effective AI governance mechanisms that are aligned with international frameworks, such as the OECD's enablers-guardrails-engagement model (OECD, 2023) and the ISO/IEC 42001:2023 AI management-system standard (ISO, 2023). Furthermore, governmental agencies that manage institutional-excellence awards may consider incorporating measures of digital-leadership capabilities and AI-governance maturity directly into their award criteria, given the proven moderating effect of governance on translating leadership into better outcomes.

7. Limitations and Future Research Directions

Although the explanatory sequential mixed-methods design with objective-indicator triangulation mitigates the potential methodological limitations of purely cross-sectional surveys, our study is not without its shortcomings. Firstly, because the qualitative and objective-data phases followed, and sought to explain, the quantitative phase, the overall design remains cross-sectional in nature, as all survey and interview data were collected within a single time period. Ideally, longitudinal designs could enable the examination of how digital leadership, AI governance, and institutional excellence evolve together over time as an institution matures in its AI use. Secondly, the relatively small, though thematically rich, qualitative sample (n=20) was derived from a single national setting; greater generalizability could be achieved by studying organizations in diverse governance settings and cultures. Third, objective performance indicators were available for only 24 of the 314 organizations, raising the possibility that these organizations might not be representative of the larger sample. Fourth, potential other moderating or mediating variables could be examined to enhance our model of AI, leadership, and institutional excellence, including such factors as organizational culture, employee digital literacy, and citizen-facing trust.

Despite the efforts made to standardize data and employ triangulation to strengthen validity, the objective organizational indicators were not obtained from a nationally standardized government performance database, making their comparability subject to institutional reporting differences. Further research could use nationally representative, standardized governmental performance data or longitudinal administrative records.

8. Conclusion

The study investigates whether digital leadership mediates the relationship between Artificial Intelligence (AI) and institutional excellence in government institutions and if AI governance plays a moderating role in this relationship. An explanatory sequential mixed-methods design, incorporating a survey with 314 participants, twenty interviews with key stakeholders, and the objective performance data of 24 government institutions, were employed. Combined analyses of these data demonstrate that Artificial Intelligence has a positive significant direct influence on institutional excellence, significantly improves digital leadership and the latter is a positive significant mediator (partial) for the impact of AI on institutional excellence. Crucially, AI governance positively and significantly mediates the digital leadership-institutional excellence relationship thereby facilitating significant improvements in leadership's ability to translate to excellence under strong governance conditions. The findings based ontriangulation from multiple sources confirm that successful implementation of digital leadership and development of institutional excellence in government organizations is only achievable if accompanied by concerted efforts to build AI capacity and install effective AI governance. Thus, government organizations, policymakers andexcellence award institutionsshould considerAI capability, digital leadership and robust AI governance as inter-dependent co-requisites for developing institutional excellence.

Reference

Almheiri, H. M., Ahmad, S. Z., Bakar, A. R. A., & Khalid, K. (2024). Artificial intelligence capabilities, dynamic capabilities and organizational creativity: contributing factors to the United Arab Emirates Government's organizational performance. Journal of Modelling in Management, 19(3), 953–979. https://doi.org/10.1108/JM2-11-2022-0272

Benitez, J., Arenas, A., Castillo, A., & Esteves, J. (2022). Impact of digital leadership capability on innovation performance: The role of platform digitization capability. Information & Management, 59(2), 103590. https://doi.org/10.1016/j.im.2021.103590

Cheah, J.-H., Nitzl, C., Roldán, J. L., Cepeda-Carrión, G., & Gudergan, S. P. (2021). A primer on the conditional mediation analysis in PLS-SEM. SmartPLS Documentation on Mediation Analysis. https://www.smartpls.com/documentation/algorithms-and-techniques/mediation/

Chowdhury, S., Dey, P., Joel-Edgar, S., Bhattacharya, S., Rodriguez-Espindola, O., Abadie, A., & Truong, L. (2023). Unlocking the value of artificial intelligence in human resource management through AI capability framework. Human Resource Management Review, 33(1), 100899. https://doi.org/10.1016/j.hrmr.2022.100899

Dennehy, D., Griva, A., Pouloudi, N., Dwivedi, Y. K., Mäntymäki, M., & Pappas, I. O. (2023). Artificial intelligence (AI) and information systems: perspectives to responsible AI. Information Systems Frontiers, 25(1), 1–7. https://doi.org/10.1007/s10796-022-10365-3

EFQM. (2020). The EFQM Model 2020. European Foundation for Quality Management. https://efqm.org/the-efqm-model/

Fatima, S., Desouza, K. C., Dawson, G. S., & Denford, J. S. (2022). Interpreting national artificial intelligence plans: a screening approach for aspirations and reality. Economic Analysis and Policy, 75, 378–388. https://doi.org/10.1016/j.eap.2022.06.015

Fetters, M. D., & Tajima, C. (2022). Joint displays of integrated data collection in mixed methods research. Journal of Mixed Methods Research, 16(4), 391–398. https://doi.org/10.1177/16094069221104564

Government Accountability Office [GAO]. (2025). Artificial Intelligence: Federal Efforts Guided by Requirements and Advisory Groups (GAO-25-107933). U.S. Government Accountability Office. https://files.gao.gov/reports/GAO-25-107933/index.html

U.S. General Services Administration, IT Modernization Centers of Excellence. (2023). Artificial Intelligence. https://coe.gsa.gov/coe/artificial-intelligence.html

Hair, J. F., & Alamer, A. (2022). Partial least squares structural equation modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. Research Methods in Applied Linguistics, 1(3), 100027. https://doi.org/10.1016/j.rmal.2022.100027

International Organization for Standardization [ISO]. (2023). ISO/IEC 42001:2023 — Information technology — Artificial intelligence — Management system. https://www.iso.org/standard/42001

Kaizen Consulting. (2026). The framework of institutional excellence. https://kaizen.sa/en/the-framework-of-institutional-excellence/

Khera, S. N., et al. (2022). Adoption of AI-enabled tools in social development organizations in India: An extension of UTAUT model. Frontiers in Psychology, 13, 893691. https://doi.org/10.3389/fpsyg.2022.893691

Madan, R., & Ashok, M. (2022). AI adoption and diffusion in public administration: a systematic literature review and future research agenda. Government Information Quarterly, 39, 101774. https://doi.org/10.1016/j.giq.2022.101774

Mikalef, P., & Gupta, M. (2021). Artificial intelligence capability: conceptualization, measurement calibration, and empirical study on its impact on organizational creativity and firm performance. Information & Management, 58(3), 103434. https://doi.org/10.1016/j.im.2021.103434

Mikalef, P., Lemmer, K., Schaefer, C., Ylinen, M., Fjørtoft, S. O., Torvatn, H. Y., & Niehaves, B. (2023). Examining how AI capabilities can foster organizational performance in public organizations. Government Information Quarterly, 40(2), 101797. https://doi.org/10.1016/j.giq.2022.101797

OECD. (2023). Governing with artificial intelligence: How AI is accelerating the digital government journey. OECD Publishing. https://www.oecd.org/en/publications/governing-with-artificial-intelligence_795de142-en/full-report/how-artificial-intelligence-is-accelerating-the-digital-government-journey_d9552dc7.html

OECD. (2024). OECD AI Principles. OECD.AI Policy Observatory. https://oecd.ai/en/ai-principles

op 't Roodt, H., Bracht, E. M., van Dick, R., & Hernandez Bark, A. S. (2025). Navigating through the digital workplace: Measuring leader digital competence. Journal of Business and Psychology, 40(1), 179–205. https://doi.org/10.1007/s10869-024-09947-6

Priyamedha, A. A. H., Supartha, I. W. G., Dewi, I. G. A. M., & Riana, I. G. (2025). Mediate of digital organizational culture: Digital leadership on organizational performance. World Journal of Advanced Research and Reviews, 25(2), 1072–1084. https://doi.org/10.30574/wjarr.2025.25.2.0241

Salamzadeh, Y., Vardarlier, P., & Teoh, A. P. (2023). Editorial: Digital leadership: Competencies, business models, systems, strategies and platforms. Frontiers in Psychology, 14, 1137894. https://doi.org/10.3389/fpsyg.2023.1137894

Sarstedt, M., Hair, J. F., & Ringle, C. M. (2022). Progress in partial least squares structural equation modeling use in marketing research in the last decade. Psychology & Marketing, 39(5), 1035–1064. https://doi.org/10.1002/mar.21640

Shatila, K. (2026). From artificial intelligence strategy to strategic resilience: the roles of digital leadership, AI governance, and organizational agility. Strategy & Leadership, ahead-of-print. https://doi.org/10.1108/SL-01-2026-0020

Thanh, N. H., & Cong, B. T. (2026). Harnessing artificial intelligence (AI) for enhanced organizational performance in public sectors. Humanities and Social Sciences Communications, 13, 305. https://doi.org/10.1057/s41599-026-06571-y

Van Noordt, C., & Tangi, L. (2023). The dynamics of AI capability and its influence on public value creation of AI within public administration. Government Information Quarterly, 40(4), 101860. https://doi.org/10.1016/j.giq.2023.101860

Wang, C., Teo, T. S. H., Dwivedi, Y., & Janssen, M. (2021). Mobile services use and citizen satisfaction in government: integrating social benefits and uses and gratifications theory. Information Technology & People, 34(4), 1313–1337. https://doi.org/10.1108/ITP-02-2020-0097

Yigitcanlar, T., Agdas, D., & Degirmenci, K. (2023). Artificial intelligence in local governments: perceptions of city managers on prospects, constraints and choices. AI & Society, 38, 1135–1150. https://doi.org/10.1007/s00146-022-01450-x

Zuiderwijk, A., Chen, Y.-C., & Salem, F. (2021). Implications of the use of artificial intelligence in public governance: a systematic literature review and a research agenda. Government Information Quarterly, 38, 101577. https://doi.org/10.1016/j.giq.2021.101577