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**The Impact of Artificial Intelligence on the Development of
Administrative Performance in Saudi Government Entities**

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Chapter 2: Literature Review and Previous Studies

2.1. Introduction

Artificial intelligence has moved from a specialized technical field to an important instrument of public-sector modernization. Government entities increasingly use machine learning, natural-language processing, predictive analytics, intelligent automation, and conversational systems to support internal operations, policy work, and public-service delivery. The expected administrative value of these technologies includes shorter processing times, better use of information, more consistent procedures, improved resource allocation, and more responsive interaction with beneficiaries. At the same time, public organizations must manage requirements that are less prominent in many private-sector applications, including legality, transparency, equality, accountability, data protection, and public trust (Wirtz et al., 2019; Zuiderwijk et al., 2021).

This chapter reviews the literature related to the impact of artificial intelligence on administrative performance in government organizations. It first explains the main concepts and the mechanisms through which AI may influence administrative work. It then presents previous international and Saudi studies, compares their methods and findings, and identifies the research gap addressed by the present study. The review is organized around the study variables: intelligent process automation, AI-supported decision-making, predictive analytics, and AI-enabled service delivery as dimensions of artificial intelligence; and operational efficiency, decision quality, service quality, and responsiveness as dimensions of administrative performance.

2.2. Conceptual Literature Review

2.2.1. Artificial Intelligence in Public Administration

Artificial intelligence can be understood as a group of computational methods that enable systems to generate outputs such as classifications, predictions, recommendations, decisions, or content from available data. In public administration, AI is not a single application. It includes rule-based systems, machine-learning models, language technologies, computer vision, robotic process automation, recommendation systems, and generative tools. These applications can support three broad government functions: internal management, policy-making, and service delivery (Berryhill et al., 2019; van Noordt & Misuraca, 2022).

The public-sector literature distinguishes between the technical availability of AI and its organizational assimilation. Technical availability refers to acquiring or developing an AI system, whereas assimilation means embedding it in routines, responsibilities, decisions, and performance processes. This distinction is important because a pilot application may demonstrate technical feasibility without producing sustained administrative improvement. Effective assimilation requires managers to allocate attention, data, staff, budgets, and governance responsibilities to the technology and to align its outputs with organizational priorities (Alshahrani et al., 2022).

The value of AI also depends on the degree of task structure. Highly repetitive and standardized tasks are more suitable for automation, while ambiguous tasks involving rights, exceptional circumstances, or competing public values require stronger human judgment. Therefore, responsible public-sector AI is generally designed as an augmentation mechanism that supports civil servants rather than as a complete substitute for accountable administrative discretion. Human review, clear escalation procedures, explainability, and the ability to correct erroneous outputs are central conditions for trustworthy use (Wirtz et al., 2020; OECD, 2024).

2.2.2. Administrative Performance in Government Entities

Administrative performance refers to the extent to which a government entity completes its managerial and service responsibilities efficiently, accurately, consistently, and responsively. Unlike financial performance in commercial organizations, public administrative performance must be evaluated in relation to both operational results and public values. Important indicators include the time required to complete procedures, employee productivity, the accuracy and timeliness of decisions, the quality and accessibility of services, coordination between departments, and the responsible use of public resources.

Operational efficiency concerns reducing unnecessary time, duplication, errors, and administrative costs while maintaining quality. Decision quality concerns the completeness, relevance, and timeliness of information used by managers, as well as the ability to compare alternatives and anticipate consequences. Service quality concerns reliability, convenience, clarity, continuity, and beneficiary satisfaction. Responsiveness concerns the ability of an entity to recognize needs, answer enquiries, adapt services, and resolve cases within an appropriate period. These dimensions are interrelated: faster processing without accuracy may reduce quality, while accurate decisions that are excessively delayed may reduce responsiveness.

Digital transformation studies in Saudi government organizations indicate that leadership support, employee skills, incentives, and transparent information practices are associated with stronger administrative outcomes. Alalwan (2018) linked second-generation e-government technologies with information transparency and employee satisfaction in Saudi government organizations. Saqqat (2024) found that senior-management support and organizational incentives were important for digital transformation in the Saudi Ministry of Health. Almarshad and Al-Matari (2025) also reported a positive relationship between several dimensions of technical skills and administrative performance efficiency. These findings show that technology contributes to performance through organizational and human capabilities rather than through acquisition alone.

2.2.3. AI Capabilities and Their Expected Administrative Effects

Intelligent process automation uses AI and workflow technologies to classify documents, extract information, route transactions, identify missing requirements, and complete standardized steps. In government entities, automation may reduce processing time, improve consistency, and release employees from repetitive work. Al-Mushayt (2019) proposed an AI-enabled e-government architecture intended to reduce processing time and cost while improving citizen satisfaction. However, automation may reproduce inefficient procedures if processes are not redesigned before implementation.

AI-supported decision-making includes dashboards, classification models, recommendation systems, and analytical tools that organize large volumes of administrative information. These applications can help managers identify patterns, prioritize cases, compare options, and monitor indicators. Their effect on performance depends on data quality and on managers' ability to understand, question, and appropriately use the outputs. Alshahrani et al. (2022) identified misalignment between AI and management decision-making as one of the major challenges facing AI assimilation in Saudi public-sector organizations.

Predictive analytics estimates future demand, risk, workload, maintenance requirements, or service needs by learning from historical data. It may improve staffing, budgeting, scheduling, and preventive intervention. The OECD (2024) identifies forecasting, event detection, personalization, recognition, and optimization among the principal tasks performed by public-sector AI. Predictive systems can therefore increase responsiveness when their forecasts are timely and operationally connected to administrative planning.

AI-enabled service delivery includes chatbots, virtual assistants, intelligent search, automated case management, and personalized information services. Such tools can extend service availability and reduce waiting times, but their success depends on public trust, language quality, accessibility, and reliable transfer to human staff. Aoki (2020) showed that public trust in government chatbots varies according to the service area and the communicated purpose of the system. Gesk and Leyer (2022) similarly found that citizen acceptance differs across public-service contexts and that reasons against AI strongly influence acceptance.

2.2.4. Organizational Readiness and Responsible AI

AI capability is a socio-technical capability composed of data, infrastructure, technical resources, managerial knowledge, employee skills, coordination mechanisms, and governance arrangements. Mikalef et al. (2023) demonstrated that AI capabilities in public organizations influence performance indirectly through organizational activities such as process automation and cognitive insight generation. This finding suggests that government entities should not measure AI maturity only by the number of systems implemented; they should examine whether the necessary resources are integrated and whether the systems change work in productive ways.

Implementation studies emphasize that AI creates both affordances and constraints. Maragno et al. (2023) found that technological, organizational, and environmental factors are deeply interrelated during public-sector AI implementation. Data availability may enable analytical insight but may also create privacy and interoperability constraints. External vendors may provide specialized expertise but may create dependency or reduce organizational understanding. Strong leadership may accelerate implementation but may also encourage premature scaling if evaluation and employee participation are weak.

Responsible AI governance is particularly important because government decisions may affect access to benefits, licenses, employment, healthcare, education, and other rights. Wirtz et al. (2020) identified risks including opacity, discrimination, privacy violations, security threats, and unclear accountability. The OECD (2024) therefore recommends combining enabling conditions, such as data, infrastructure, skills, and partnerships, with guardrails, such as standards, oversight, monitoring, and human-centered controls. The desired impacts are productivity, responsiveness, and accountability rather than technological adoption for its own sake.

2.2.5. The Saudi Government Context

Saudi Arabia provides a significant setting for examining AI and administrative performance because digital government and data-driven modernization are central to Saudi Vision 2030 and the National Transformation Program. Government entities are expected to improve institutional effectiveness, enhance beneficiary experience, integrate services, and develop digital capabilities. The Digital Government Policy links technology adoption with broader government modernization, data governance, shared platforms, and beneficiary-centered service design (Digital Government Authority [DGA], 2022; Saudi Vision 2030, n.d.).

The Saudi context also includes specific organizational and linguistic considerations. Arabic-language data and services require high-quality language processing and locally appropriate training data. Government entities must coordinate across institutional boundaries while protecting sensitive information. Alshahrani et al. (2022) found five major challenges in three Saudi public-sector organizations: misalignment between AI and managerial decision-making, linguistic and national-cultural tensions, infrastructure development, data integrity and sharing, and ethical and governance concerns. These factors make Saudi public organizations a valuable context for studying how AI capabilities translate into measurable administrative outcomes.

2.3. Previous Studies

2.3.1. International Studies

Wirtz, Weyerer, and Geyer (2019)

Wirtz et al. (2019) reviewed the application areas and challenges of artificial intelligence in the public sector. The study organized fragmented literature into a framework that identified ten application areas and associated public-sector use cases. It concluded that AI can create value through information processing, automation, service interaction, and decision support, while also generating challenges related to law, ethics, security, data, and organizational capacity. The study is relevant because it provides a broad classification of AI uses, but it is mainly conceptual and does not empirically measure administrative performance.

de Sousa, de Melo, Bermejo, Farias, and Gomes (2019)

De Sousa et al. (2019) conducted a systematic literature review using the PRISMA approach. From 1,682 initially identified studies, 59 articles met the review criteria. The authors

found that interest in public-sector AI was increasing, that artificial neural networks were frequently used, and that general public services, economic affairs, and environmental protection were prominent application areas. The study proposed a research framework linking AI techniques, government functions, public value, policy, and ethics. Its major implication is that technical solutions must be accompanied by institutional policies and public debate. The study also highlighted the limited empirical evidence on organizational outcomes.

Berryhill, Heang, Clogher, and McBride (2019)

Berryhill et al. (2019) provided an OECD review of artificial intelligence and its use in the public sector. The report explained major AI techniques, documented government use cases, and examined opportunities and risks for public officials. It emphasized that AI can improve policy design, internal operations, and citizen services, but that governments need data access, appropriate skills, ethical governance, procurement capability, and experimentation. The report contributes practical evidence and terminology, although it does not test a statistical relationship between AI and administrative performance.

Aoki (2020)

Aoki (2020) used an experimental online survey in Japan to examine public trust in AI chatbots used to answer government enquiries. The study collected 8,000 responses and compared trust across different service areas and communicated purposes. Trust was lower for sensitive enquiries such as parental support than for more standardized enquiries such as waste separation. Communicating citizen-oriented purposes, including consistent response quality and timeliness, produced a modest improvement in trust. This study demonstrates that service context and communication influence the acceptance of AI-enabled service delivery.

Zuiderwijk, Chen, and Salem (2021)

Zuiderwijk et al. (2021) systematically reviewed 26 studies on the implications of AI for public governance. They found that the literature was dominated by exploratory, conceptual, qualitative, and practice-driven research. The authors recommended more public-sector-focused, empirical, explanatory, and multidisciplinary studies, particularly studies that distinguish between specific forms of AI and measure performance, implementation, risks, governance modes, and scaling effects. The present research responds directly to this recommendation by examining

defined AI capabilities and measurable administrative-performance dimensions in Saudi government entities.

van Noordt and Misuraca (2022)

Van Noordt and Misuraca (2022) analyzed a landscape of approximately 250 public-sector AI cases across the European Union. They found that AI was used most often to improve public-service delivery, followed by internal management, while direct support for policy decision-making was less common. Applications included information provision, recruitment support, cybersecurity, financial management, and predictive maintenance. The study showed the breadth of practical uses but also concluded that evidence about the actual impact and public value of AI remained limited. This limitation supports the need for performance-focused empirical research.

Gesk and Leyer (2022)

Gesk and Leyer (2022) conducted policy-capturing experiments with 329 participants to examine when and why citizens accept AI in public services. The study compared six representative service scenarios. Participants were generally more willing to accept AI in standardized general services than in services requiring human sensitivity or discretion. Reasons against AI were particularly influential. The findings indicate that successful AI-enabled service delivery depends not only on technical performance but also on perceptions of appropriateness, trust, and the nature of the administrative task.

Mikalef, Lemmer, Schaefer, Ylinen, Fjørtoft, Torvatn, Gupta, and Niehaves (2023)

Mikalef et al. (2023) surveyed 168 municipalities in Norway, Germany, and Finland and analyzed the data using structural equation modeling. The study developed a multidimensional concept of AI capability and examined its effect on process automation, cognitive insight generation, cognitive engagement, and organizational performance. AI capabilities had positive effects on the three organizational activities. Process automation and cognitive insight generation were positively related to performance, whereas cognitive engagement showed a negative performance relationship in the tested model. The findings demonstrate that AI affects performance indirectly and that different AI-enabled activities can produce different outcomes.

Maragno, Tangi, Gastaldi, and Benedetti (2023)

Maragno et al. (2023) used a case-study and abductive approach to examine factors affecting AI implementation in public-sector organizations. The researchers combined the

Technology-Organization-Environment framework with Technology Affordances and Constraints Theory. They concluded that implementation is shaped by interrelated technological, organizational, and environmental conditions and that AI-specific characteristics create both opportunities and restrictions. The study is important to the present research because it explains why similar technologies may lead to different administrative results across entities depending on readiness, data, skills, leadership, and external conditions.

Mergel, Dickinson, Stenvall, and Gasco (2023)

Mergel et al. (2023) reviewed actual approaches and challenges associated with implementing AI in public administration and developed a public-management research agenda. They argued that the field needs stronger methodological designs, clearer theoretical explanations, and closer attention to how managers implement AI policies in practice. Their work highlights the roles of leadership, organizational change, professional capability, and implementation processes. The study supports the present project's emphasis on administrative outcomes and on the organizational conditions that allow AI to create value.

OECD (2024)

The OECD (2024) analyzed 71 public-sector AI use cases from 31 member and accession countries and proposed a preliminary framework for trustworthy government AI. The report classified AI tasks such as recognition, event detection, forecasting, personalization, interaction support, optimization, reasoning, and content generation. It linked these tasks to internal operations, policy-making, service delivery, and oversight, and identified productivity, responsiveness, and accountability as desired impacts. The framework emphasizes enablers, guardrails, and stakeholder engagement. It provides a strong basis for selecting the performance dimensions used in the current study.

2.3.2. Saudi and Saudi-Related Studies

Alalwan (2018)

Alalwan (2018) examined the relationship between second-generation e-government technology, information transparency, and employee satisfaction with the administrative process in Saudi government organizations. Using a descriptive-analytical approach, the study reported a continuing need to expand modern e-government tools and linked their use with improved transparency and employee attitudes toward administrative processes. Although the study

preceded the recent expansion of AI, it provides evidence that advanced digital technologies can influence internal administrative conditions and employee experience in Saudi government entities.

Al-Mushayt (2019)

Al-Mushayt (2019) proposed a framework for automating e-government services through artificial intelligence. The work included management of government information resources, deep-learning models for service automation, and a smart e-government platform architecture. The proposed approach aimed to minimize processing time, reduce costs, and improve citizen satisfaction. The study is directly relevant to intelligent process automation and AI-enabled service delivery, but its contribution is primarily technical and architectural rather than an empirical assessment of administrative performance in operating government entities.

Alshahrani, Dennehy, and Mäntymäki (2022)

Alshahrani et al. (2022) conducted case studies in three Saudi public-sector organizations and interpreted the findings through the attention-based view of organizations. Five challenges emerged: misalignment between AI and managerial decision-making, linguistic and national-cultural tensions, AI infrastructure development, data integrity and sharing, and ethical and governance concerns. The study found that the way organizational attention is focused, situated, and structurally distributed can accelerate or constrain AI assimilation. It is the closest prior study to the present context, but it focuses on assimilation challenges rather than quantitatively measuring the effect of specific AI capabilities on administrative performance.

Saqqat (2024)

Saqqat (2024) investigated digital transformation in the Saudi Ministry of Health using a descriptive-analytical approach and a questionnaire administered to 52 employees. The results indicated that senior management provided support for digital-transformation efforts and emphasized the importance of a dedicated budget and an effective incentive system for human resources. The study shows that management support and employee motivation are necessary for technology-enabled improvement. However, it examines digital transformation broadly rather than distinguishing AI capabilities or their specific effect on administrative outcomes.

Almarshad and Al-Matari (2025)

Almarshad and Al-Matari (2025) examined the effect of technical skills on administrative performance efficiency among workers in Saudi Arabia. The study applied a descriptive-analytical design and structural equation modeling. Programs of educational organizations showed the strongest positive effect on administrative performance efficiency, followed by programs and systems and electronic configuration, while support and development did not have a significant effect. The findings support the inclusion of employee capability and training as conditions for obtaining performance value from AI and digital systems.

2.4. Comparative Analysis of Previous Studies

The previous studies agree that AI can improve government work through automation, analytical insight, forecasting, and service interaction. Reviews and international landscape studies consistently identify internal operations, service delivery, and decision support as major areas of application (Wirtz et al., 2019; de Sousa et al., 2019; van Noordt & Misuraca, 2022). Empirical evidence also indicates that process automation and cognitive insights can contribute to organizational performance when public organizations possess integrated AI capabilities (Mikalef et al., 2023).

The studies also agree that the relationship is not automatic. AI implementation depends on data quality, technical infrastructure, employee skills, managerial attention, process redesign, organizational coordination, and ethical governance. Case research shows that these factors are interdependent and can either enable or constrain implementation (Alshahrani et al., 2022; Maragno et al., 2023). Saudi digital-transformation research similarly emphasizes management support, employee development, transparency, and incentives (Alalwan, 2018; Saqqat, 2024; Almarshad & Al-Matari, 2025).

A third common theme is that public trust and human judgment remain important. AI acceptance differs according to the sensitivity and structure of the service, and communication about citizen benefits can influence trust (Aoki, 2020; Gesk & Leyer, 2022). Governance studies warn that efficiency gains should not be pursued at the expense of fairness, privacy, explainability, accountability, or legal responsibility (Wirtz et al., 2020; OECD, 2024). Therefore, administrative performance should be assessed together with responsible-use conditions.

Methodologically, the literature includes conceptual frameworks, systematic reviews, case studies, experiments, landscape analyses, and survey-based quantitative studies. Conceptual and review studies provide broad classifications but cannot establish the strength of relationships in a specific organization. Case studies provide contextual depth but have limited generalizability. Experiments explain trust and acceptance but do not directly measure internal administrative performance. The quantitative study by Mikalef et al. (2023) provides the clearest evidence of an AI capability-performance relationship, but it was conducted in European municipalities and may not represent Saudi national-government entities.

2.5. Research Gap and Contribution of the Current Study

The literature review identifies several gaps. First, much of the public-sector AI literature is conceptual, exploratory, or focused on use cases rather than measurable administrative outcomes. Second, studies often discuss AI as a general concept without separating the effects of intelligent process automation, AI-supported decision-making, predictive analytics, and AI-enabled service delivery. Third, studies that examine citizen trust or service acceptance do not necessarily evaluate internal efficiency, decision quality, or employee-supported administrative processes.

Fourth, Saudi studies provide valuable evidence on e-government, digital transformation, technical skills, and AI assimilation, but there remains limited quantitative research linking distinct AI capabilities with multiple dimensions of administrative performance in Saudi government entities. The Alshahrani et al. (2022) study explains the organizational challenges of AI assimilation in Saudi public organizations, yet it does not estimate the individual and collective performance effects of different AI applications. Other Saudi studies examine broader digital technologies or workforce skills rather than AI-specific capabilities.

The current study addresses these gaps by proposing and testing an integrated model in which four AI capabilities are independent variables and administrative performance is the dependent variable. It will evaluate operational efficiency, decision quality and timeliness, service quality, and responsiveness among administrative and supervisory employees in selected Saudi government entities in Riyadh. This approach contributes context-specific empirical evidence and helps identify which AI capabilities are most strongly associated with administrative improvement.

2.6. Chapter Summary

This chapter reviewed the concepts of artificial intelligence and administrative performance, explained the expected effects of major AI capabilities, and examined organizational readiness and responsible-governance conditions. Previous international research shows that AI can support process automation, cognitive insights, forecasting, and service delivery, but that its performance effects depend on organizational resources, task characteristics, public trust, and governance. Saudi research highlights the importance of managerial attention, infrastructure, data sharing, language and culture, employee skills, incentives, and digital-transformation support. The main unresolved issue is the limited empirical evidence on the effect of specific AI capabilities on administrative performance in Saudi government entities. The current study is designed to address that issue.

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