

AI-Powered Digital Transformation of Government Human Resource Management: A Bibliometric and Systematic Literature Review

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Abstract

Recent developments in modern artificial intelligence (AI) have driven profound changes in public sector human resource management systems, offering remarkable opportunities alongside intricate challenges. Governments across the globe are progressively integrating AI tools to modernize HR operations, enhance workforce planning, and respond to evolving socio-economic demands. This research utilizes the PRISMA framework for systematic literature review to explore the role of AI in transforming government HR practices. By analyzing 47 peer-reviewed articles published from 2019 to 2023, the study identifies five central themes: ethical and governance models for AI in public administration; AI's influence on HR functions and organizational behavior; implementation barriers and potential benefits; AI applications in digital governance and policy formulation; and innovations in HR technologies driven by big data. The findings highlight critical success factors such as strong data infrastructure, structured employee training initiatives, and well-defined ethical standards. Key challenges identified include concerns around data privacy, biased algorithms, workforce adaptation, and wider societal implications like employment shifts and changing competency needs. The study underscores the importance of: (1) adaptive regulatory frameworks that support innovation while safeguarding public interest; (2) robust data governance strategies to manage confidentiality and cybersecurity risks; (3) tailored training programs aimed at improving AI understanding among government staff; and (4) collaborative efforts across sectors to promote ethical AI adoption and mitigate socio-economic disruptions.

Keywords: artificial intelligence, government, human resource management, digital transformation, ethics and morality.

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1 Introduction

In the context of a swiftly changing digital landscape, modern public sector entities are encountering increasing pressure to adopt technological advancements (Brunetti et al., 2020). The integration of digital technologies into government human resource management has emerged as a critical strategy for improving efficiency, refining service delivery, and tackling complex organizational issues (Pūraitė et al., 2020). Within this framework, artificial intelligence (AI), as a pivotal

component of digital transformation, introduces both novel opportunities and significant challenges for the management of public sector human resources (Peixoto et al., 2024).

Despite increasing practical relevance, scholarly investigation of AI incorporation within governmental HRM contexts remains insufficiently developed. While private sector AI applications in organizational management have attracted considerable academic attention and demonstrated significant outcomes (Alvarenga et al., 2020), public sector digitalization research exhibits comparative limitations, creating theoretical and practical understanding constraints regarding governmental HRM transformation (Murugesan et al., 2023; Vrontis et al., 2022). This research gap is particularly significant given the unique constraints and requirements that differentiate public sector HRM from its private sector counterpart.

Government HRM faces distinctive challenges that create a complex environment for AI integration. Public sector organizations operate within rigid bureaucratic structures and regulatory frameworks that often result in procedural complexity and decision-making delays. According to Berman et al. (2021), civil service rules, collective bargaining agreements, and legislative mandates create multiple constraints in personnel management that private organizations do not encounter. These structural limitations are compounded by technological infrastructure challenges, with Budhwar et al. (2022) noting that government HRM departments frequently struggle with legacy systems and data fragmentation. Additionally, public sector organizations face mounting difficulties in attracting and retaining talent with digital competencies, with compensation gaps between public and private sectors for technology roles often exceeding 30-40% in many jurisdictions (Böhmer & Schinnenburg, 2023). These challenges are further exacerbated by heightened ethical scrutiny and accountability requirements in public sector decision-making, particularly regarding algorithmic systems that may impact hiring, promotion, or performance evaluation (Walkowiak, 2023).

The digitization of government HRM also faces a series of ethical and social issues beyond operational challenges. These include potential bias and discrimination in AI algorithms (Walkowiak, 2023), and the possible displacement of traditional job positions due to digitization (Murugesan et al., 2023). These issues require joint efforts from government departments and researchers to develop corresponding policies and measures to ensure that digitization brings more benefits and well-being to government institutions and society (Palumbo et al., 2022).

Several notable studies have contributed to our understanding of AI in public sector contexts, though none have comprehensively addressed the specific intersection of AI and government HRM. Sun and Medaglia (2019) mapped challenges of AI implementation in public healthcare but limited their focus to one sector. Wirtz et al. (2019) examined AI applications in the public sector broadly but provided limited attention to HRM specifically. Sousa et al. (2019) developed a research agenda for AI in the public sector without systematic review of HRM applications. More recently, Chowdhury et al. (2023) proposed an AI capability framework for HRM that was primarily theoretical with limited empirical synthesis from government contexts, while Budhwar et al. (2023) examined HRM in the age of generative AI with a focus predominantly on private sector applications.

The purpose of this study is to provide a comprehensive overview of the developments, challenges, and opportunities for the integration of AI into government HRM over the past five years, with a focus on trends in the application of AI in government and public sector HRM between 2019 and 2023. Through in-depth analysis of the development of this period, it aims to reveal the impact of AI technology on HRM in government departments, and explore how government departments can better cope with the challenges and opportunities of HRM in the context of digital transformation. This paper will first review the application of AI in government

HRM in the past five years, and then analyze the impact of digital transformation on government HRM. Next, the study will explore AI-driven changes in government HRM, discuss in detail the ethical issues and risks mentioned in the article, and summarize possible challenges and coping strategies. In addition, this study will summarize successful cases and best practices, and look forward to the future direction of AI in government HRM.

Research Questions:

Q1: How has AI adoption evolved within government and public sector HRM from 2019 to 2023? What are the key trends in the application of AI in government and public sector HRM from 2019 to 2023?

Q2: What are the impacts of AI technology on government HRM, and how can government departments effectively address the challenges and opportunities presented by HRM in the context of digital transformation?

This study makes significant theoretical and practical contributions to the field of innovation management. Theoretically, it advances understanding of digital transformation in the public sector by synthesizing diverse conceptual frameworks that have been applied to AI in government HRM and develops an integrated framework for understanding this complex phenomenon. From a practical standpoint, our findings provide government administrators and policymakers with evidence-based insights into successful implementation strategies, potential pitfalls, and best practices for AI integration in HRM.

2 Literature Review

2.1 Artificial intelligence

Artificial intelligence constitutes a computational discipline encompassing technological systems engineered to replicate cognitive processes typically requiring human intellect (Ghosh et al., 2018). Fundamental AI technologies comprise machine learning, deep learning, and natural language processing capabilities (Alqahtani et al., 2023). Machine learning empowers computational systems to acquire knowledge from datasets and generate decisions without explicit programming for particular tasks (Mahesh, 2020), whereas deep learning represents a specialized machine learning subset involving pattern recognition for managing complex information arrays (Dargan et al., 2020). Natural language processing facilitates computational understanding, interpretation, and generation of human communication, enabling intuitive user interactions (Khurana et al., 2023).

During the contemporary period, AI has become increasingly common in the public sector and is developing rapidly in many fields (Wirtz et al., 2019). Government departments around the world are also actively applying AI technology to support technological transformation in the public sector (Sun & Medaglia, 2019). The transformative potential of AI in the public sector is demonstrated by its ability to streamline operations, enhance decision-making processes, and improve service delivery across domains (Valle-Cruz & García-Contreras, 2023).

In the field of HRM, AI technology is revolutionizing traditional practices and processes. For example, machine learning algorithms optimize the hiring process by quickly identifying suitable candidates and predicting their job performance (Pessach et al., 2020). Deep learning technology analyzes employee satisfaction surveys and feedback to extract valuable insights that help enhance employee experience and engagement (Rane, 2023). Additionally, natural language processing supports the development of chatbots and virtual assistants that automatically respond to common

HR queries, thereby making HR services more efficient and accessible (Majumder & Mondal, 2021).

The integration of AI and HRM not only improves operational efficiency, but also facilitates data-driven decision-making and the development of personalized employee management strategies. As technology continues to advance, AI is expected to play an increasingly critical role in shaping the future of HR management practices, driving greater intelligence and automation.

2.2 Status and Challenges of Government HRM

Traditionally, government and public sector HRM have been known for their complex administrative processes, diverse workforces, and dedication to public service (Berman et al., 2021). Nevertheless, these sectors are now undergoing a significant transformation driven by the AI. Governments and public sector organizations increasingly embrace AI to optimize their HRM practices (Abdeldayem & Aldulaimi, 2020; Almarashda et al., 2021; Chilunjika et al., 2022). AI-driven HRM tools, including talent acquisition systems (Agnihotri et al., 2023), predictive analytics (Al Samman & Al Obaidly, 2024), employee engagement platforms (Malik et al., 2023), performance management systems (Rathnayake & Gunawardana, 2023), learning and development tools (Naim, 2023), and HR analytics dashboards (Varsha & Shree, 2023), are becoming integral components of government entities seeking to modernize their HR functions (Chowdhury et al., 2023; Pandey et al., 2023). Despite the solid foundation of current HRM practices in government and the public sector, they face various challenges, such as data fragmentation (Budhwar et al., 2022), process inefficiencies (Chowdhury et al., 2023), and delayed decision-making (Rodgers et al., 2023), hindering effective human capital management (Böhmer & Schinnenburg, 2023). To address these challenges, it is imperative for government and public sector organizations to adopt new technologies and methods to enhance their HRM practices and overcome the limitations of traditional approaches.

2.3 AI and HRM practices in Government

Public administration entities across global contexts are implementing artificial intelligence solutions to refine human capital management procedures, improve personnel optimization strategies, and enhance talent development processes. AI technologies are transforming traditional HR practices through task automation, recruitment precision improvement, and employee satisfaction enhancement. Administrative functions including résumé evaluation, interview processes, and routine inquiry management can now be effectively automated, diminishing departmental workloads while enabling strategic focus on personnel development and talent strategy formulation.

The advent of AI has profoundly transformed government HRM in the past five years, as advancements in AI technologies continue to reshape modern HRM practices (Budhwar et al., 2023). Government and public sector organizations worldwide are leveraging AI to optimize HRM processes, enhance workforce optimization and streamline talent management (Chowdhury et al., 2023). AI is revolutionizing HRM practices by automating repetitive tasks (Vrontis et al., 2022), improving talent recruitment accuracy (Achchab & Tamsamani, 2022), and boosting employee satisfaction and engagement (Mer & Srivastava, 2023). Human resource tasks such as resume screening, conducting interviews, and handling routine inquiries can now be efficiently automated (Uma et al., 2023), reducing the workload on HR departments and enabling them to focus on strategic initiatives such as employee development and talent strategy planning (Aftab & Khalid, 2024).

In terms of talent recruitment, AI-based solutions can more accurately match candidates and job requirements by analyzing many resumes and job descriptions. The application of this

technology not only improves the efficiency of the recruitment process, but also improves new hire performance and retention by ensuring a good match between candidates and positions (Allal-Chérif et al., 2021). In addition, talent management methods based on data analysis enable HR departments to use historical data and predictive models to identify potential needs and risks for employee development, to plan training and development plans in advance to support employee career growth and performance improvement.

Another key application of AI technology is in the performance management process, where machine learning algorithms can analyze employee performance data and identify performance trends and areas for improvement. This not only makes the performance evaluation process more objective and fairer, but also provides data support for formulating personalized development plans and interventions (Ramachandran et al., 2022). So, the application of AI in government HRM brings innovation and improvement to traditional human resource practices. Through these applications, AI technology is helping government agencies build more efficient, flexible and humane HRM systems (Budhwar et al., 2023).

3 Methodology

3.1 Search Algorithm

The research implemented a systematic literature exploration utilizing two distinguished scholarly databases: Scopus and Web of Science. The investigation concentrated on publications within a five-year timeframe, encompassing 2019-2023. To ensure content accuracy reflecting cutting-edge research and maintaining highest field standards in AI-driven governmental HRM digital transformation, journals categorized as Q1 within the Scimago Journal Ranking framework were selected.

The deliberate concentration on Q1 journals in this systematic review was motivated by several methodological considerations. Primarily, these high-ranking journals employ rigorous peer-review processes that ensure methodological integrity and substantial theoretical contributions, thereby providing quality assurance for the foundation of our analysis (Rojon et al., 2021). Furthermore, Q1 publications typically demonstrate higher citation metrics and exert considerable influence in shaping research trajectories within their respective domains. Given the expansive and rapidly evolving nature of literature on artificial intelligence technologies, prioritizing Q1 journals facilitated a more precisely targeted examination of high-impact scholarly contributions, rather than pursuing breadth at the expense of substantive depth. Additionally, publications in these premier journals generally exhibit more robust theoretical underpinnings, which was essential for the theoretical synthesis this study sought to develop. While acknowledging that this methodological choice may exclude potentially relevant research published in lower-tiered journals or alternative sources, it ensures that the findings and implications derived from this review are predicated upon methodologically rigorous and influential scholarship in the field.

The search query was meticulously crafted to encompass a wide range of articles relevant to the integration of AI into HRM practices within government and public sector contexts. To ensure a comprehensive retrieval of pertinent studies, this study employed the following search algorithm: First, this study used a combination of Boolean operators, including "OR" and "AND" to merge key terms, ensuring that articles meeting the criteria were identified.

The first component of the search algorithm aimed to capture articles related to AI and its various forms, such as machine learning and automated intelligence. This study used a comprehensive list of keywords to cover the spectrum of AI-related topics, including "artificial intelligence," "AI," "conversational agent," "chatbot," "machine learning," "machine intelligence,"

"automated intelligence," "collective intelligence," "collaborative intelligence," "smart device," "Internet of Things," "conversational agent," "chatbot*," "machine*," "robot*," "automated service interaction," and "computer*." This study included terms related to data mining and Big Data to encompass the broader data-driven AI applications. The second component of this search algorithm focused on HRM and its digital transformation. This study included a comprehensive set of keywords to capture the various facets of digital HRM, including "Digital HRM," "electronic-HRM," "AI and HRM," "Industry 4.0 and HRM," "Society 5.0 and HRM," "Digital Technologies and HRM," "Human-robot interaction," "artificial intelligence application," "HR Technology," "HR Automation," "Talent Management," "HR Analytics," "HR Transformation," and "human capital analytics." The third component of the search strategy targeted government and public sector contexts. This study included terms such as "Government," "Public Sector," "Civil Service," and "Public Administration" to ensure that articles relevant to the review were within the appropriate domains. The final search algorithm used is as follows:

("artificial intelligence" OR "AI" OR "conversational agent" OR "chatbot" OR "machine learning" OR "machine intelligence" OR "automated intelligence" OR "collective intelligence" OR "collaborative intelligence" OR "smart device" OR "Internet of Things" OR "conversational agent" OR "chatbot*" OR "machine*" OR "robot*" OR "automated service interaction" OR "computer*" OR "data mining" OR "Big Data") AND ("Digital HRM" OR "electronic-HRM" OR "AI and HRM" OR "Industry 4.0 and HRM" OR "Society 5.0 and HRM" OR "Digital Technologies and HRM" OR "Human-robot interaction" OR "artificial intelligence application" OR "HR Technology" OR "HR Automation" OR "Talent Management" OR "HR Analytics" OR "HR Transformation" OR "human capital analytics") AND ("Government" OR "Public Sector" OR "Civil Service" OR "Public Administration") *(In titles, abstracts or key words)*

3.2 Article Selection Process

The aim of this study is to gain insight into how AI is driving the digital transformation of HRM in government between 2019 and 2023. According to the study objectives, the researchers retrieved a total of 477 articles from two databases. Following established systematic review guidelines (Page et al., 2021), we conducted a rigorous screening process (detailed in Appendix A). Through fine-grained preliminary review of titles and abstracts, 85 articles were retained after initial screening. Full-text evaluation yielded 35 articles meeting all inclusion criteria, with an additional 12 articles identified through reference checking, resulting in a final sample of 47 articles for analysis.

The full text of these articles was then carefully evaluated and screened according to the specific inclusion criteria set for this study, and 35 articles were ultimately identified that met the needs of the study (Van Spall et al., 2007). In addition, when conducting a comprehensive study of this research topic, there may be potential limitations such as database access restrictions or human negligence that prevent the search results from fully covering all relevant literature (Fink, 2019). Therefore, the researchers went further, through in-depth reading and information coding of the selected articles, and by checking the in-text citations and references of the selected articles (Haraldstad & Christophersen, 2015), the researchers successfully identified and supplemented another 12 articles from the selected articles, which were missed in the initial search, making the total number of articles for data analysis reach 47.

Adopting such a rigorous methodology can provide a solid and comprehensive analysis foundation for the application and theoretical exploration of government HRM in the process of AI digital transformation. To visualize the literature screening process, the researchers created PRISMA in Figure 1, detailing each step from the initial literature search to the final selection of articles.

3.3 Content Analysis Approach

The content analysis of the selected articles employed a systematic, theory-driven methodology to identify salient themes and patterns within the literature corpus. The analytical process encompassed multiple sequential phases that facilitated a comprehensive examination of the textual data. Initially, a preliminary coding framework was established based on the guiding research questions and exploratory reading of the literature, providing a foundational structure for subsequent analysis. This framework was conceptualized to capture the theoretical dimensions relevant to artificial intelligence applications in governmental human resource management contexts.

Subsequently, all forty-seven articles were subjected to rigorous analytical scrutiny utilizing NVivo 14.0 qualitative data analysis software. Each scholarly contribution was systematically examined and coded according to both the preliminary framework and emergent thematic elements that manifested during the analytical process. This methodological approach involved the identification and extraction of pertinent textual segments, which were then categorized within appropriate thematic classifications to facilitate pattern recognition and conceptual development.

The final analytical phase consisted of theme refinement and theoretical elaboration through an iterative process of constant comparison. The preliminary codes underwent systematic consolidation, expansion, and refinement, ultimately yielding the five principal thematic constructs presented in the results section. This recursive analytical procedure involved multiple cycles of critical review and scholarly discourse among members of the research team to ensure conceptual coherence and theoretical robustness. Comprehensive documentation regarding the specific coding protocols, thematic development methodology, and inter-coder reliability metrics is provided in Appendix A for methodological transparency and replicability considerations.

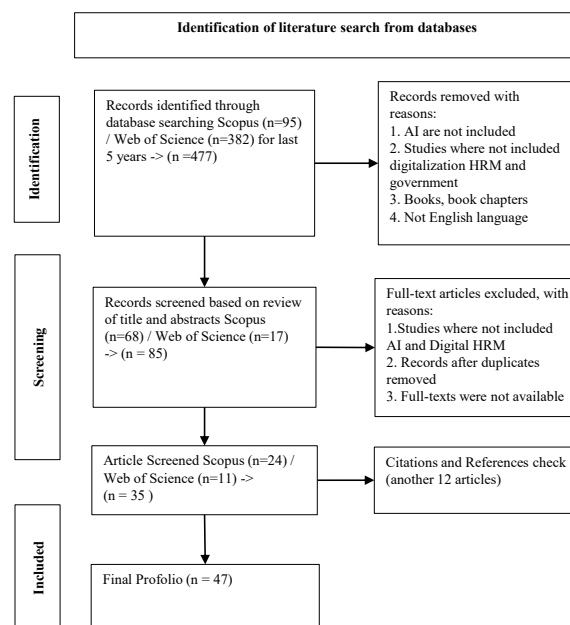


Figure 1. Screening flow chart

Source: Summarized by authors from Excel and NVivo software.

4 Results

4.1 Bibliometric analysis

Investigation outcomes are distributed throughout 18 distinct scholarly publications, encompassing diverse disciplinary areas including human resource management, public administration, information technology, and innovation studies. This methodologically rigorous approach establishes a comprehensive analytical foundation for both practical implementation and theoretical investigation of governmental HRM amid AI-driven digital evolution. Table 1 illustrates the list of journals where all included articles are featured, with the *Government Information Quarterly* having the highest adoption with 16 articles, followed by *Human Resource Management Review* with 5 articles. Other journals each adopt fewer than three articles, indicating a diverse range of sources for the research.

Table 1. List of journals and the frequencies of articles published.

No.	Journal name	No. of articles
1	Government Information Quarterly	16
2	Human Resource Management Review	5
3	International Journal of Information Management	3
4	Public Policy and Administration	3
5	International Journal of Public Administration	3
6	Technological Forecasting and Social Change	3
7	Social Science Computer Review	2
8	Journal of Business Research	2
9	Public Administration Review	1
10	Public Management Review	1
11	Asia Pacific Journal of Human Resources	1
12	Business Horizons	1
13	Journal of Innovation and Knowledge	1
14	Public Personnel Management	1
15	Human Resource Management Journal	1
16	International Review of Administrative Sciences	1
17	Public Administration	1
18	Management Research Review	1

Source: Summarized by authors from Excel software.

Table 2 shows the ten most influential articles in the field of AI research in government digital HRM, based on citation analysis. This study uses the total number of journal citations and the average annual number of citations as indicators to determine the most influential articles. The article with the highest total citations and annual average citations is Duan et al. (2019), published in the *International Information Management* journal, which discusses the application and interaction of AI in human decision-making. Figure 2 shows the 10 most productive journals publishing citations on AI in government digital HRM, along with each journal's latest H-index and number of citations received on the Scimago journal ranking website. According to the results, the *Journal of Business Research* (236) has the highest H-index among the top 10 journals, followed by the journal of *Public Administration Review* (163) and the journal of *Technological Forecasting and Social Change* (155).

Table 2. Ten most influential papers.

Authors	Total Citations	Citations/year
(Duan et al., 2019)	1781	356
(Wirtz et al., 2019)	681	136
(Sun & Medaglia, 2019)	593	119
(Borges et al., 2021)	458	153
(Sousa et al., 2019)	325	65
(Zuiderwijk et al., 2021)	273	91
(Pencheva et al., 2020)	242	61
(Chowdhury et al., 2023)	209	209
(Desouza et al., 2020)	204	51
(Andrews, 2019)	179	36

Source: Summarized by authors from Excel software.

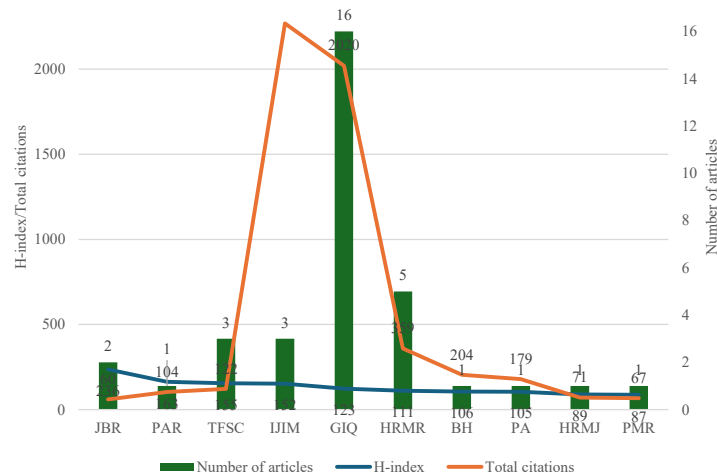


Figure 2. Ten most productive journals

Notes: Full abbreviation of the journal name is as follows. JBR=Journal of Business Research; PAR=Public Administration Research; TFSC=Technological Forecasting and Social Change; IJIM=International Journal of Information Management; GIQ=Government Information Quarterly; HRMR=Human Resources Management Review; BH=Business Horizons; PA=Public Administration; HRMJ=Human Resource Management Journal; PMR=Public Management Review. The H-index is the most recent value obtained from the Scimago journal ranking search.

Source: Summarized by authors from Excel software.

Authors	Theory used	Content
Madan and Ashok (2023)	Technology-Organization-Environment (TOE)	Use the Technology-Organization-Environment (TOE) framework to explore technology adoption in different contexts.
Wirtz et al. (2020)	Regulatory theory & Normative regulatory theory	To examine the role of government regulation in addressing challenges related to AI and explored the framework of AI governance in public administration.
Chowdhury et al. (2023)	Resource-Based View (RBV) & Knowledge-Based View (KBV)	To identify the organizational resources necessary for the successful adoption of AI in HRM.

Source: Summarized by authors from NVivo software.

4.2 Approach analysis

In the selected 47 articles, a wide array of research methods is employed to comprehensively investigate the impact of AI on government HRM. Qualitative analysis methods are utilized in some articles to delve into this impact through systematic interpretation and analysis of texts, cases, or other non-numeric data. On the other hand, empirical research methods are employed in another subset of articles to test hypotheses or answer specific research questions by collecting and analyzing actual data, utilizing techniques such as surveys, experiments, observations, or literature reviews. Additionally, conceptual articles aim to explore theoretical frameworks or conceptual connections between AI and government HRM, while review articles critically analyze existing information on AI in public sector HRM, exploring various issues, challenges, or trends and offering recommendations for future research or practice. Case studies also feature, providing detailed insights into the application and impact of AI in specific government HRM contexts by studying individual cases in detail. Figure 4 below illustrates the distribution of these diverse methodological approaches, comprising 12 empirical studies, 5 qualitative studies, 8 concept papers, 7 case studies, and 14 review articles. Together, these articles collectively contribute to advancing researchers' understanding of the application progress and research trends of AI in the digital transformation of government HRM.

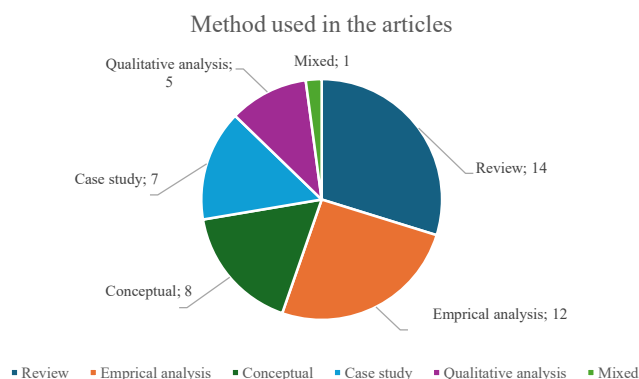


Figure 4. Method used in the selected papers
Source: Summarized by authors from Excel software.

As part of the methodological analysis, this study examined whether the selected studies utilized any theoretical frameworks and, if so, how they incorporated these theories into their research. The analysis revealed that only seven of the 46 studies referred to specific theories. In these seven articles, multiple theoretical frameworks are seen to be used to explore the application and impact of AI in the public sector. First, Alshahrani et al. (2022) used the Attention-Based View (ABV) of organizations as well as the concept of positional attention to analyze the assimilation challenges of AI in public sector organizations and highlighted the relationship between organizational attention and AI assimilation. Second, Andrews (2019) used the public values theory to examine how public leaders address ethical and public values in governance and regulation in the age of algorithms and big data. Mikalef et al. (2022) and Neumann et al. (2022), in contrast, used the technology-organization-environment (TOE) framework to explore the factors that influence the success of public sector organizations in adopting AI. Madan and Ashok (2023) also used the Technology-Organization-Environment (TOE) framework as the main theoretical foundation in their study, which highlighted the importance of organizational and environmental contexts in technology adoption and diffusion. In addition, research has addressed the resource-based view of firms, which identifies contextual variables and absorptive capacity in the TOE framework as one of the key factors influencing AI adoption. In contrast, Wirtz et al. (2020) combined regulatory theory and normative regulatory theory to examine the role of government regulation in addressing challenges related to AI and explored the framework of AI governance in public management. In addition, Chowdhury et al. (2023) used a theoretical framework integrating the Resource-Based View (RBV) and Knowledge-Based View (KBV) in their study to identify the organizational resources necessary for the successful adoption of AI in HRM. These theoretical frameworks provide insights and methods for understanding and developing the application of AI in HRM in the public sector.

The researcher investigated the research objectives of selected articles published in different journals in the last five years. The collection process included utilizing various databases to gather relevant literature. Although 85 articles were initially searched, the focus was ultimately narrowed to 26 papers that specifically explored the impact of AI on government HRM over the past five years.

While the field of AI has grown in popularity, scholarly works that conduct in-depth research on its specific impact in digital HRM in government are still relatively scarce compared to broader AI research. Notably, based on the selection criteria for inclusion, all studies related to the impact of AI on digital government and HRM came from top-ranked journals, totaling 47 articles. The majority of these were found through reputable databases, with 35 articles found through Web of Science or Scopus. In addition, a further 12 papers were discovered by careful checking of in-text citations and cross-references, which highlights the unique insights gained through a comprehensive search approach across databases.

The review showed a wide variety of publications, with *Government Information Quarterly* and *Human Resource Management Review* standing out, receiving 16 and 5 citations, respectively. Other journals were cited less frequently, indicating the diversity of scholarly contributions. Most of the articles, notably, were on the topic of government administration, HRM, or public policy, such as those in the *Human Resource Management Review* and *Government Information Quarterly*. In addition, the analysis identified articles published in information science and management journals, e.g., *International Journal of Information Management*, *Technological Forecasting and Social Change*, *International Journal of Public Administration*, and *Public Administration Review*.

4.3 Content analysis

Before delving into detailed analysis of each theme, Figure 5 presents the overall research framework that emerged from this systematic review, illustrating the key themes and their interconnections in the field of AI-powered digital transformation of government HRM.

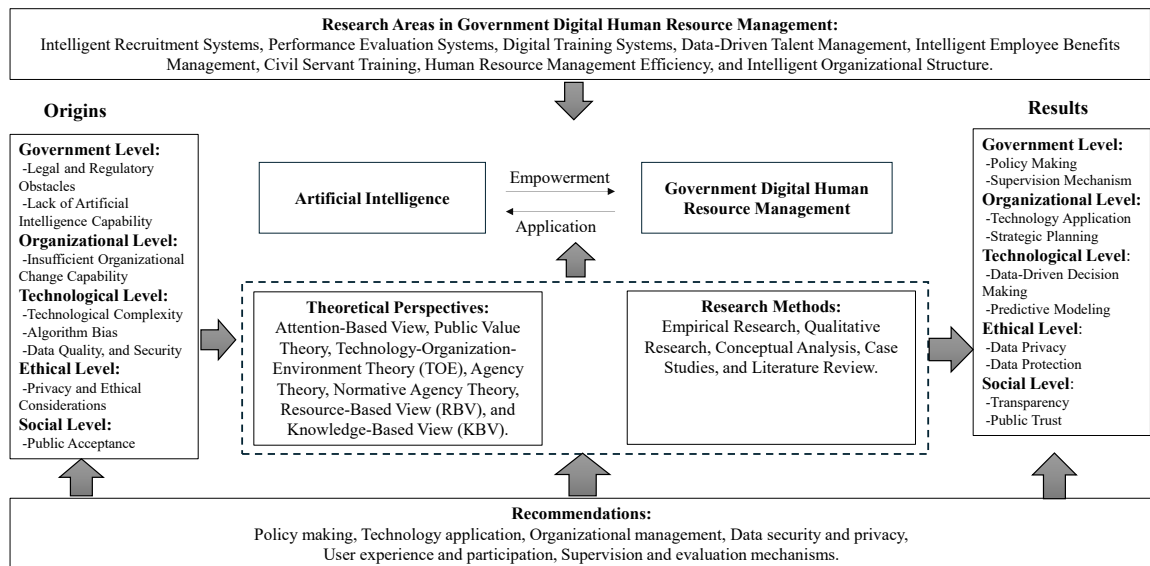


Figure 5. Research framework

Source: Summarized by authors from NVivo software.

The focus of this study is to explore the practice and development of digital HRM in government using AI. Through a collection of 47 relevant papers in the WOS and Scopus databases, these articles were next categorized into five main research themes: 1) AI-Public Sector Governance and Ethics, 2) AI-HRM and Organizational, Agency Impacts, 3) AI in the Public Sector Applications and Challenges, 4) AI-Digital Government and Policy Applications, and 5) Big Data and Technological transformation in HRM. Detailed coding and content analysis were conducted for these five themes using Nvivo 14.0 software, aiming to provide a comprehensive understanding of the status of AI applications and research trends in digital HRM in government.

4.3.1 AI-Public Sector Governance and Ethics

Concerning AI governance-related topics, scholarly investigations have predominantly emphasized governmental regulatory frameworks and administrative oversight of artificial intelligence applications, alongside public sector utilization of AI for governance purposes (Wirtz et al., 2020). Regulatory perspectives address AI-related challenges, including autonomous intelligent system governance, algorithmic accountability, privacy protection, and data security concerns (Van Noordt & Misuraca, 2022). They proposed regulatory approaches that incorporate normative elements, cooperation and representation, and stress the importance of balancing autonomy with human values (Wirtz et al., 2020). In terms of the use of AI for governance in the public sector, Van Noordt and Misuraca (2022) have focused on the role of AI in improving public service provision, internal management, and policy decision-making. Wirtz et al. (2021) pointed out the potential advantages of AI technology, such as process automation, data analysis and predictive analysis, while also paying attention to the challenges faced by AI applications, such as lack of transparency and data security issues. In addition, Sun and Medaglia (2019) proposed some governance

guidelines to address challenges in the application of AI in the public sector, including ethical considerations, privacy protection, training and support. These findings highlight the importance of government regulation and governance of AI, as well as the key issues and challenges that need to be considered when leveraging AI for governance.

The ethics of AI are important issues that the public sector needs to consider carefully when adopting this technology. A review of previous research shows that these issues involve multiple aspects, including but not limited to discrimination, transparency, privacy protection, job loss and economic inequality, autonomous decision-making, and the diversity of AI ethics. Kinder et al. (2023) found that the use of AI in public services may exacerbate unethical behavior such as discrimination. And a lack of transparency and explainability can lead to concerns about fairness and accountability (Campion et al., 2022). Furthermore, AI automation could lead to job losses and exacerbate existing inequalities, which requires careful consideration of its social impact (Sharma et al., 2022). At the same time, Merhi (2023) noted that autonomous decision-making by AI systems raises questions about accountability and the potential for unintended consequences. Therefore, policymakers and organizations should develop clear guidelines and regulations to enhance transparency and accountability to ensure the reasonable, responsible and ethical use of AI (Ruvalcaba-Gomez, 2023). In summary, previous research has provided important references and guidance for ethical considerations in the application of AI in the public sector, and the literature on this topic is summarized in Table 4 below.

Table 4. Literature related to AI ethics.

Theme	Content	References
Transparency and explainability	- Interpretability of the system's decision-making process is essential to ensure transparency; people's understanding of AI decision-making is key to ensuring fairness and accountability; lack of understanding of the decision-making process of AI systems may raise concerns about bias and discrimination.	(Campion et al., 2022; Chowdhury et al., 2023; Kinder et al., 2023; Wirtz et al., 2019)
Privacy and data protection	- Protecting the privacy of personal data is an indispensable consideration when using AI; data collection and use can lead to privacy violations, especially when unauthorized or without consent; privacy and data security protections need to be strengthened when using AI in the public sector.	(Campion et al., 2022; Chowdhury et al., 2023; Kinder et al., 2023; Wirtz et al., 2019)
Prejudice and discrimination	- AI systems may perpetuate bias and discrimination present in historical datasets, leading to the perpetuation of unfair treatment and social inequality; bias and discrimination may produce unfair outcomes in decision-making such as hiring, loan applications, and so on; bias in the training and design phases of algorithms may raise concerns about fairness and social justice.	(Campion et al., 2022; Chowdhury et al., 2023; Kinder et al., 2023; Wirtz et al., 2019)

Theme	Content	References
Autonomous decision-making	- Autonomous decision-making systems may produce unintended consequences that raise concerns about accountability and responsibility; Autonomous decision-making may cause humans to lose control over the behavior of the system, leading to unpredictable outcomes; Autonomous decision-making systems require strict regulation and accountability mechanisms.	(Campion et al., 2022; Chowdhury et al., 2023; Kinder et al., 2023; Sienkiewicz-Małyjurek, 2023; Wirtz et al., 2019; Wirtz et al., 2020)
Socioeconomic impact	- Automation of AI may lead to job loss and increased economic inequality; the adoption of AI in HRM may have an impact on the labor market; the socio-economic impact of AI requires in-depth research and careful consideration.	(Campion et al., 2022; Chowdhury et al., 2023; Kinder et al., 2023; Sienkiewicz-Małyjurek, 2023; Wirtz et al., 2019; Wirtz et al., 2020)

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4.3.2 AI-HRM and Organizational Impact

Scholarly investigations have concentrated on examining artificial intelligence implementation consequences within public institutional HRM frameworks. Studies demonstrate that AI technology applications enhance HRM process efficiency and productivity while optimizing organizational operations through automation and data-informed decision-making mechanisms (Mikalef et al., 2022). Minbaeva (2021) identified that the application of AI algorithms in talent acquisition, employee development, and training improved accuracy and personalization, enhanced the employee experience, and reduced HR professionals' workload. In addition, the application of AI raises several moral and ethical issues, such as privacy protection, bias, and fairness, that need to be responsibly addressed by organizations (Minbaeva, 2021). The previous study also pointed out that the successful development and implementation of AI technologies can bring tangible benefits to public administrations, including increased efficiency, enhanced decision-making processes, and improved quality of public services (Mikalef et al., 2022; Van Noordt & Misuraca, 2022). Conversely, Van Noordt and Tangi (2023) also indicated that acquiring AI competencies can be challenging and requires organizations to focus on competencies in technology development, internal skills training, and culture creation. In addition, the AI competency framework can help managers assess organizational readiness to adopt AI and guide decisions about practices and processes (Chowdhury et al., 2023). Hence, existing research demonstrated the importance of the application of AI technologies in HRM for organizations, as well as the ethical and technological challenges that need to be addressed in practice.

4.3.3 AI Adoption and Challenges in the Public Sector

Research on the adoption of AI in the public sector reveals that exploration of the field has focused on the drivers, benefits, challenges and barriers to AI adoption, as well as key policies and strategies for realizing the potential of AI. Based on the Technology, Organization, and Environment (TOE) framework, Madan and Ashok (2023) identified multiple factors affecting AI adoption, including leadership support, organizational culture, and resourcing within the organization, as well as technical factors such as the complexity and compatibility of the technology, and environmental factors such as the legal and regulatory frameworks, government policies, and public trust. The adoption of AI in public management is assumed to be able to provide significant benefits such as improving

government operations, optimizing job forecasting, and automating problem solving (Van Noordt & Tangi, 2023), but also faces challenges such as a lack of AI capabilities, challenges in implementing the technology, legal barriers, and insufficient capacity for the necessary organizational changes (Budhwar et al., 2023; Campion et al., 2022). Budhwar et al. (2023) stated that the benefits of AI go hand in hand with potential pitfalls, including increased efficiency and productivity, enhanced decision-making capabilities, cost savings and improved customer experience while also potentially raising ethical issues such as job loss, privacy and security concerns, and algorithmic bias. Additionally, the acceptance and adoption of AI is influenced by drivers and barriers, including drivers to improve the efficiency of HR management processes, hiring accuracy, and personalized employee support, as well as barriers such as concerns about job turnover, lack of technical understanding, and ethical and privacy issues (Minbaeva, 2021). Successful implementation of AI requires top management support, clear guidelines, an interdisciplinary approach, and public education (Chowdhury et al., 2023; Varma et al., 2023). Different stakeholders, such as government policymakers, hospital managers/physicians, and IT company managers, have different perspectives and concerns about the challenges of AI adoption (Alshahrani et al., 2022; Sun & Medaglia, 2019). These findings highlight the complexity of successful AI adoption in the public sector and point to the need for future research, especially in developing effective policies and strategies, enhancing organizational capabilities, and increasing the understanding and acceptance of AI technologies.

Table 5. Benefits and Challenges of AI Adoption in the Public Sector.

Category	Content	Literature Reference
Benefits	Improving government operations	(Van Noordt & Tangi, 2023)
	Optimizing predictions for job opportunities	(Van Noordt & Tangi, 2023)
	Automating problem resolution	(Van Noordt & Tangi, 2023)
	Increasing efficiency and productivity	(Borges et al., 2021; Budhwar et al., 2023)
	Enhancing decision-making capabilities	(Borges et al., 2021; Budhwar et al., 2023)
	Cost savings	(Borges et al., 2021; Budhwar et al., 2023)
Challenges	Improving customer experience	(Borges et al., 2021; Budhwar et al., 2023)
	Lack of AI capability	(Budhwar et al., 2023; Campion et al., 2022; Sienkiewicz-Małyjurek, 2023; Van Noordt & Tangi, 2023)
	Challenges in implementing technology	(Budhwar et al., 2023; Campion et al., 2022; Sienkiewicz-Małyjurek, 2023; Van Noordt & Tangi, 2023)
	Legal obstacles	(Budhwar et al., 2023; Campion et al., 2022; Sienkiewicz-Małyjurek, 2023; Van Noordt & Tangi, 2023)
	Insufficient organizational change capacity	(Budhwar et al., 2023; Campion et al., 2022; Sienkiewicz-Małyjurek, 2023; Van Noordt & Tangi, 2023)
	Job displacement	(Alshahrani et al., 2022; Budhwar et al., 2023; Johnson et al., 2022; Wirtz et al., 2020)
	Privacy and security concerns	(Alshahrani et al., 2022; Budhwar et al., 2023; Johnson et al., 2022; Wirtz et al., 2020)

Category	Content	Literature Reference
	Ethical issues such as algorithm bias	(Alshahrani et al., 2022; Budhwar et al., 2023; Johnson et al., 2022; Wirtz et al., 2020)
	Concerns about job loss	(Johnson et al., 2022; Minbaeva, 2021; Wirtz et al., 2021)
	Lack of understanding of technology	(Johnson et al., 2022; Minbaeva, 2021; Wirtz et al., 2021)
	Ethical and privacy issues	(Minbaeva, 2021; Sun & Medaglia, 2019; Wirtz et al., 2021)

Source: Generated by authors from NVivo software.

4.3.4 AI-Digital Government and Policy Applications

Through a literature review of AI applications within the public sector digital government and policy domains, the relevant literature shows that the adoption and implementation of AI technologies raises a range of policy, ethical and technological issues in the public sector, while at the same time offering new possibilities for improving the efficiency of service delivery and the quality of decision-making. First, the development of appropriate policies, regulations and frameworks is particularly important in the context of successful AI adoption in the public sector (Campion et al., 2022; Wirtz et al., 2021; Wirtz et al., 2020). Studies have emphasized the need to ensure transparency, fairness, and accountability in government applications of AI systems, while also pointing to the need to update legal frameworks to protect personal data and address ethical issues that may arise in AI implementation. Public organizations face several challenges in developing and deploying AI technologies, including insufficient technical expertise, data issues, social biases, and lack of strategic planning (Alshahrani et al., 2022; Sienkiewicz-Małyjurek, 2023; Van Noordt & Tangi, 2023). In addition, government incentives, regulatory support, and organizational innovation have been identified as key factors contributing to the development of AI capabilities in public organizations. AI provides valuable support to the policy decision-making process by providing data-driven insights and predictive modeling (Pencheva et al., 2020; Van Noordt & Misuraca, 2022). enabling the analysis of large amounts of data from a variety of sources, identifying patterns and trends, and predicting the potential impacts, thus helping policymakers to make more informed decisions. The application of AI technologies enhances the effectiveness, efficiency, and legitimacy of the decision-making process, contributing to rapid responses to societal problems and improving the accuracy of policy predictions (Kinder et al., 2023; Van Noordt & Misuraca, 2022). Local participation, customized solutions, building trust and transparency are key factors to increase the acceptance of AI systems in public services. Finally, research has also shown that policies to promote AI adoption have had different impacts in different countries (Gil-Garcia & Flores-Zúñiga, 2020; Ruvalcaba-Gomez & Cifuentes-Faura, 2023; Sousa et al., 2019). Countries such as India (Sharma et al., 2022) and the United States have been particularly active in the adoption of AI in the public sector, reflecting policy support for promoting AI adoption in these countries.

4.3.5 Big Data and Technological Transformation in HRM

In research on the technological transformation of AI in public sector HRM, academics have focused on how big data and AI can contribute to public sector transformation, the challenges faced, and the specific impact of these technological transformations on HRM practices. Pencheva et al. (2020) found that big data and AI technologies support public sector transformation by

improving the efficiency and effectiveness of public service delivery, supporting evidence-based decision making, and providing valuable insights for strategic decision making. In contrast, this transformation process also faces several challenges, including ensuring efficient and transparent service delivery, avoiding the harmful use of emerging technologies, and maintaining flexibility and scalability in data sharing and integration during implementation (Valle-Cruz & García-Contreras, 2023). Sharma et al. (2022) conducted the study in the context of Public Manufacturing Sector in India, where technology transformation is seen as a key strategy to enable digitization and leverage Industry 4.0 technologies (e.g., AI, Machine Learning, and Data Analytics) to improve the manufacturing process and increase productivity. Nevertheless, limitations in technological infrastructure, technical knowledge, and resources act as barriers to the implementation of AI. Further, Mikalef et al. (2023) stated that AI capabilities have a positive impact on the digital transformation of public organizations, including process automation, generation of cognitive insights, and enhanced cognitive engagement to improve organizational performance. At the same time, technological transformations provide clear benefits to the public sector by reducing work errors, increasing productivity, and improving employee well-being. Adopting the case of Jalisco, Mexico, Ruvalcaba-Gomez and Cifuentes-Faura (2023) discovered that advances in ICT underscore the importance of government technological development in the areas of digital government and AI, which are essential for modernization and administrative reform. In conclusion, the current study mainly shows that while Big Data and AI provide important tools to improve the efficiency of public services, support decision-making and promote organizational performance, the implementation of these technologies still needs to overcome multiple challenges including technical, organizational, and ethical aspects. Therefore, for the public sector, the development of appropriate strategies and policies, as well as the strengthening of cross-sectoral collaboration, are critical to achieving effective technological transformation and fully utilizing the potential of AI in HRM.

5 Discussion and Conclusion

5.1 Limitations

In conducting this research, the researchers made some limitations in their database selection, focusing primarily on Web of Science and Scopus, and restricting the search scope to articles published in Q1-tier journals. While this approach helps to focus on high-quality research, it may also introduce some problems. For example, it may overlook relevant studies in other databases or miss important findings published in journals with lower impact factors, thus introducing selection bias.

Furthermore, the literature search primarily relied on keyword searches. Although keywords were carefully selected, this method may still fail to capture all relevant studies. With the rapid development of AI technology and the continuous evolution of terminology, some valuable contributions may be missed, resulting in an incomplete sample and potentially affecting the representativeness of the findings.

Another point to note is that this study only focused on peer-reviewed journal articles and did not include conference papers. Conference papers often contain the latest discussions and cutting-edge ideas in the academic community, which are also valuable. Therefore, this selection may have caused the study to miss some important information.

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5.2 Implications

5.2.1 Academical implications

From a theoretical perspective, this study encompasses multiple themes, aiming to conduct in-depth content analysis. These themes include the role of AI in public sector governance and ethics, its impact on human resource management (HRM) and organizational structures, its practical applications and challenges in the public sector, its contributions to digital government and policymaking, and its broader implications for big data and advancements in HRM technologies.

First, this study integrates multiple theoretical perspectives to comprehensively explore the application and impact of AI in the public sector. Researchers utilize theories such as organizational attention theory, positional attention theory, and the Technology-Organization-Environment (TOE) framework, employing a multi-dimensional theoretical approach to analyze the dynamic relationship between AI and the public sector, revealing the underlying mechanisms and pathways. This approach not only provides theoretical guidance for the practical application of AI in the public sector, but also opens new research paradigms and directions for related theoretical studies.

Second, this study contributes to expanding the theoretical foundation of related disciplines. By integrating frameworks from organizational theory, public administration theory, and information systems theory, this research promotes interdisciplinary studies. The convergence of multiple theoretical perspectives enriches the academic field, deepening and expanding the scope of disciplinary development, and fostering interdisciplinary learning and innovation.

Finally, this study provides theoretical insights and guidance for practical applications in government agencies. By integrating and analyzing existing theoretical frameworks and empirical research findings, this study offers decision-making references and guiding principles for government departments. Utilizing various theoretical models helps government agencies better understand and address the challenges and opportunities brought by AI technologies in human resource management, thus providing theoretical support and practical guidance for government digital transformation.

5.2.2 Practical implications

This research reveals practical insights into the application of AI in digital human resource management (HRM) in the public sector, providing a roadmap for public institutions seeking to leverage AI technologies to enhance their HRM practices.

First, public sector entities should prioritize building and maintaining a solid data foundation. This includes data collection, storage, processing, and analysis capabilities, which are essential for fostering informed, data-driven decision-making and effectively leveraging AI technologies. Furthermore, the public sector should provide HR professionals with training and development programs focused on AI and big data analytics. These programs will enhance their ability to leverage AI across various HR functions, including talent acquisition, employee development, performance evaluation, and benefits administration.

Government entities within the public sector must also develop and enforce ethical guidelines for the use of AI. These guidelines should ensure that AI-driven decisions are transparent, understandable, and uphold principles of fairness and privacy. Establishing such ethical standards can enhance employee and public trust in AI technologies. Governments can further support decision-making by using AI and big data analytics to review historical data and predict trends, thereby informing HR policies and practices and improving the quality and efficiency of government decision-making.

However, the feasibility of implementing these recommendations varies significantly across governance systems. In centralized governance structures like Singapore or the UAE, implementing

standardized AI infrastructure and training programs may be more feasible, although there may be obstacles in meeting local needs. In contrast, federal systems like the United States or Germany rely on coordination across different levels of government, and policies may need to be tailored to varying local capabilities and priorities. Emerging and developing economies, on the other hand, may face unique challenges, such as inadequate technical infrastructure, budgetary constraints, and a lack of AI expertise. Therefore, a more gradual and focused approach is necessary, first addressing basic digital capabilities.

AI technologies also offer new avenues for human resource management to precisely target, attract, and retain talent. Public sector organizations should delve deeper into these technologies to enhance their talent management and employee development strategies, such as through personalized learning and development programs. The public sector should promote cross-departmental collaboration and collaboration with other public and private sector entities to exchange knowledge, experiences, and best practices and jointly address the challenges of AI implementation. Furthermore, it is crucial to regularly evaluate the effectiveness of AI applications in human resource management, assessing their impact on employee satisfaction, performance improvement, and cost efficiency, and to adjust AI implementation strategies based on these findings.

This cross-sector collaboration approach may be easier to achieve in governance environments with well-established public-private partnership frameworks, such as in the Nordic countries. However, in environments where such relationships have historically been limited, more careful policy development is required. Similarly, evaluation mechanisms must be adapted to different accountability frameworks and performance evaluation practices. Furthermore, the public sector must consider the potential impact of AI technologies on current job roles and establish appropriate training and support mechanisms to help employees adapt to technological changes, ensuring fairness and inclusion throughout the digital transformation process.

5.2.3 Policy implications

With the increasing integration of AI and government digital HRM systems, policymakers are confronted with an urgent need to build a responsible and ethical framework for the application of artificial intelligence. This requires the formulation of meticulous policies covering key areas such as data privacy, ethical guidelines for artificial intelligence, comprehensive employee training, and a sound regulatory framework. In addition, these policies must incorporate a mechanism for continuously assessing the impact of artificial intelligence to ensure compliance with ethical standards and that the implementation of the technology is consistent with overall ethical principles.

The feasibility of these policy approaches varies greatly in different governance environments. Jurisdictions that have established data protection frameworks (for example, the European Union, which has implemented the General Data Protection Regulation (GDPR)) have existing regulatory foundations that can be extended to the application of artificial intelligence in government human resource management, thereby enhancing the feasibility of implementation. In contrast, regions with underdeveloped data governance (commonly seen in parts of Africa, Southeast Asia and Latin America) face more fundamental challenges in establishing regulatory preconditions for ethical artificial intelligence deployments. Authoritarian and democratic governance environments also present different feasibility considerations - authoritarian systems may implement technological solutions more quickly, while democratic environments typically provide a stronger framework to address the ethical aspects of artificial intelligence through participatory governance mechanisms.

Paramount to this endeavor is the enhancement of AI competency among HRM professionals. This can be achieved through targeted training and professional development initiatives aimed

at bolstering their proficiency in AI applications and understanding of underlying technologies. Concurrently, there is a pressing need for governmental entities to cultivate a sophisticated data infrastructure that supports data-driven decision-making, capitalizing on AI-generated insights to refine HRM strategies.

The feasibility of implementing training measures largely depends on the existing professional development framework for civil servants and their digital literacy levels, which vary greatly in different governance contexts. High-capacity administrative systems with established digital government programs (such as South Korea and Estonia) can more easily incorporate the development of artificial intelligence capabilities into their existing structures, while fragmented or resource-constrained governance environments may require more fundamental capacity building.

Given the transformative potential of artificial intelligence in the labor market, policies must expand support for workforce retraining and skill enhancement, mitigate the disruptive impact of AI adoption, and leverage this technology to create job opportunities. In addition, promoting cross-departmental and cross-border cooperation is an important strategy for accelerating the adoption of artificial intelligence to address the multi-faceted challenges brought about by technological progress. By implementing these strategic policy recommendations, the government can ensure the ethical deployment of artificial intelligence in human resource management, maximize the potential of technology, enhance the effectiveness and efficiency of human resource management, safeguard employees' rights, and promote innovation and enhancement of public services.

5.3 Future research

The systematic review identifies several critical research gaps and promising directions for future inquiry into AI-powered digital transformation in government HRM. A notable deficiency lies in the theoretical foundations of existing studies, with only a limited number explicitly employing theoretical frameworks. Future research should focus on developing and empirically testing integrated models that draw upon perspectives from public administration, HRM, and information systems. Such integration would help address the theoretical fragmentation and enhance the understanding of AI adoption and governance mechanisms within the public sector.

Ethical concerns, particularly regarding algorithmic bias and discrimination, have been frequently highlighted in the literature. Nevertheless, empirical studies examining the manifestation and consequences of algorithmic bias in recruitment, performance evaluation, and promotion within government HRM remain scarce. It is necessary to explore how these biases influence decision-making and how existing legal frameworks, such as equal employment opportunity regulations, interact with AI applications in HRM.

Current research also lacks longitudinal studies that track the outcomes of AI implementation over time. Many existing works focus on anticipated benefits and challenges, but systematic investigations of long-term impacts—both intended and unintended—are limited. Longitudinal research designs would be instrumental in capturing the dynamic nature of AI integration and its implications for HRM in the public sector.

There is also a significant need for comparative, cross-national research that analyzes regulatory approaches to AI governance in government HRM. Diverse jurisdictions have adopted varying policies and frameworks, and comparative studies can offer valuable insights into the effectiveness of these approaches in balancing innovation, ethical principles, and public accountability.

Additionally, the development of AI competency frameworks tailored to public-sector HRM professionals remains an underexplored area. The increasing integration of AI into HRM practices necessitates the identification and validation of skill sets that address not only technical capabilities but also ethical, legal, and organizational requirements specific to government contexts.

Finally, further research is needed to examine how AI adoption in government HRM affects public trust, workforce diversity, and inclusion. While ethical concerns have been noted, limited attention has been paid to understanding citizen and employee trust in AI-based systems, or to evaluating the implications of these technologies for promoting equitable and inclusive workplaces. Addressing these dimensions will be essential for aligning AI innovations with the core values of public service and democratic governance.

5.4 Conclusion

The core of this research is to examine digital human resource management empowered by artificial intelligence in a government environment. Through a comprehensive analysis of 47 relevant academic publications in the WOS and Scopus databases, this study summarized the relevant insights and classified them into five major thematic areas. The first theme, "Artificial Intelligence - Public Sector Governance and Ethics", highlights the issues of transparency, accountability and fairness in artificial intelligence-driven human resource management practices. The second theme, "Artificial Intelligence - Human Resource Management and Organizational Impact", explores how AI tools are reshaping recruitment, training, performance evaluation, and workforce management. The third theme, "The Application and Challenges of Artificial Intelligence in the Public Sector", explores obstacles such as insufficient technological preparation, resistance to change, and institutional inertia. The fourth theme, "Artificial Intelligence - Digital Government and Policy Applications", highlights the role of artificial intelligence in achieving evidence-based decision-making and supporting digital governance reforms. Finally, the fifth theme, "Big Data and Technological Transformation of Human Resource Management", focuses on the integration of data analysis and emerging technologies to optimize the human resource management process. Through rigorous coding and content analysis of these five dimensions, this study provides a detailed understanding of the integration of artificial intelligence in government human resource management and points out the future research direction.

The analysis revealed several important findings. Firstly, the integration of artificial intelligence in government human resource management is developing rapidly, with a focus on ethical considerations, governance frameworks, and implementation challenges. Secondly, although artificial intelligence offers great potential for improving human resource management practices through automation and data-driven decision-making, organizations face significant challenges in terms of technological preparation, data security, and employee adaptation. Thirdly, the successful implementation of artificial intelligence requires a balanced approach that takes into account technical capabilities, organizational change management, and ethical implications.

This research has brought about numerous theoretical and practical advancements in this field. Theoretically, it integrates multiple analytical frameworks from the disciplines of public administration, information systems, and human resource management, providing a comprehensive understanding of the AI-driven transformation in the government human resource environment. In practice, this study provides policymakers and public sector managers with evidence-based insights to help them effectively implement artificial intelligence solutions and address related challenges. The research findings emphasize the need to establish a sound governance framework, ethical standards and capacity-building measures to support the successful application of artificial intelligence in government human resource management.

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