

E-government for process optimization in public administration: A systematic review

Gobierno electrónico para la optimización de procesos en la administración pública: una revisión sistemática

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Leyla Angela Corcino Cerafin

<https://orcid.org/0000-0001-5779-1710>

lacorcinoc@ucvvirtual.edu.pe

Universidad César Vallejo. Lima, Peru

Virginia Asuncion Cerafin Urbano

<https://orcid.org/0000-0002-5180-5306>

vcefarinu@ucvvirtual.edu.pe

Universidad César Vallejo. Lima, Peru

Juan Carlos Gonzales Cruz

<https://orcid.org/0000-0002-6658-8666>

Jcgonzalesc@ucvvirtual.edu.pe

Universidad César Vallejo. Lima, Peru

Abstract

This systematic review analyzes the role of e-government in optimizing public administration processes between 2018 and 2025, considering a final sample of 24 studies extracted from scientific databases such as Scopus and SciELO. The methodology employed followed the PRISMA strategy, ensuring rigor and transparency in the identification, selection, and synthesis of the literature. The results show that e-government is consolidating as a fundamental instrument for improving administrative efficiency, strengthening institutional transparency, and promoting citizen participation in public decision-making. Among the main benefits are reduced response times, increased user satisfaction, and strengthened accountability. However, persistent challenges were also identified, such as the digital divide, insufficient staff training, and the need to update regulatory frameworks. Furthermore, the studies reviewed emphasize that the success of e-government depends not only on technological adoption but also on the implementation of inclusive policies, the development of robust digital infrastructures, and sustained political commitment. In conclusion, e-government is projected to be a key catalyst for institutional modernization and sustainable development in public management, especially in Latin American contexts, where it represents both an opportunity for innovation and a structural challenge.

Keywords: public management, e-government, modernization.

Resumen

La presente revisión sistemática analiza el papel del gobierno electrónico en la optimización de los procesos de la administración pública entre 2018 y 2025, considerando una muestra final de 24 estudios extraídos de bases científicas como Scopus y SciELO. La metodología empleada siguió la estrategia PRISMA, garantizando rigor y transparencia en la identificación, selección y síntesis de la literatura. Los resultados evidencian que el gobierno electrónico se consolida como un instrumento fundamental para mejorar la eficiencia administrativa, fortalecer la transparencia institucional y promover la participación ciudadana en la toma de decisiones públicas. Entre los beneficios principales se destacan la reducción de tiempos de atención, el aumento en la satisfacción de los usuarios y el fortalecimiento de la rendición de cuentas. No obstante, también se identificaron desafíos persistentes, como la brecha digital, la insuficiente capacitación del personal y la necesidad de actualizar los marcos normativos. Además, los estudios revisados subrayan que el éxito del gobierno electrónico depende no solo de la adopción tecnológica, sino también de la implementación de políticas inclusivas, el desarrollo de infraestructuras digitales robustas y un compromiso político constante. En conclusión, el gobierno electrónico se proyecta como un catalizador clave para la modernización institucional y el desarrollo sostenible en la gestión

pública, especialmente en contextos latinoamericanos, donde representa tanto una oportunidad para la innovación como un reto estructural.

Palabras clave: gestión pública, gobierno electrónico, modernización.

Introduction

At the international level, e-government initiatives represent a significant transformation in administrative procedures, particularly aimed at optimizing governmental functions (Araque, 2025). This transformation has a direct impact on the efficiency of public management, as the automation of processes facilitates decision-making through the handling of large volumes of information in shorter time frames. Furthermore, it contributes to enhancing transparency and accountability (Chávez et al., 2024). However, its implementation presents noteworthy challenges, particularly in governance and ethical dimensions (Dabla-Norris & de Mooij, 2024).

In various countries, the adoption of e-government aims to increase efficiency and transparency in public management (Delgado, 2022). Nevertheless, there remains a lack of clear regulations that govern or verify the effective application of e-government across different areas of administration (De La Mora & Gómez, 2025). For instance, some OECD member countries, despite having robust policies based on e-government, face barriers related to infrastructure and process-associated risks, while also neglecting the role of public sector workers (OECD, 2024).

In the Latin American context, the application of e-government for the optimization of administrative processes presents both opportunities and challenges (García-Estrella & Delgado, 2025). The integration of technology offers improved labor efficiency and optimal resource utilization, in addition to contributing to the reduction of corruption (Niebuhr, 2025). However, issues such as inadequate technological infrastructure, inequality in access to technology, and associated ethical risks persist (Chiliquinga et al., 2024).

One of the primary challenges in Latin America is the inequality in digitalization among countries and regions, especially the gap between urban and rural areas, which creates a vulnerable population that limits equitable benefits from digitalization (De León, 2024). Compounding these issues is the lack of training programs and a workforce equipped with the necessary skills to effectively manage digital systems, which hinders the maximization of these technologies (Flórez & Enríquez, 2024).

Corruption remains a persistent issue in several Latin American countries (Valdés-Ugalde, 2025). Nevertheless, digitalization offers potential for detecting illicit behaviors through digital systems, thus enhancing transparency (Ospina et al., 2025). The implementation of technologies also facilitates process optimization, monitoring, and auditing, enabling the identification of irregular management of public funds (Hochstetter, 2023).

Governments that integrate technology into their management practices reap multiple benefits, albeit while confronting ethical dilemmas (Linares-Torres & Salazar-Curichimba, 2025). The absence of regulatory frameworks to control misconduct in technological domains is a recurring concern (CEPAL, 2025). Moreover, systematic decision-making aids in reducing biases in technological processes, promoting a reduction in inequalities (OECD, 2025; European Union, 2024; CEPAL, 2025; World Bank, 2022; UNESCO, 2022).

In conclusion, digitalization drives a profound change in public management and enables Latin American governments to address challenges related to inclusive policies (Medina & Ochoa, 2025). This translates to the promotion of equitable access to technology, appropriate training for public servants, and the establishment of regulations that effectively govern these processes (Batallas, 2021).

Having considered all these aspects, the objective of this proposal is to systematically analyze the current scientific evidence regarding e-government in the optimization of public administration processes. The aim is to identify the development of technical and methodological frameworks, the factors influencing adoption, the impacts on administrative management and service quality, the applications in specific areas, and ultimately, to examine the trajectory and success stories of e-government.

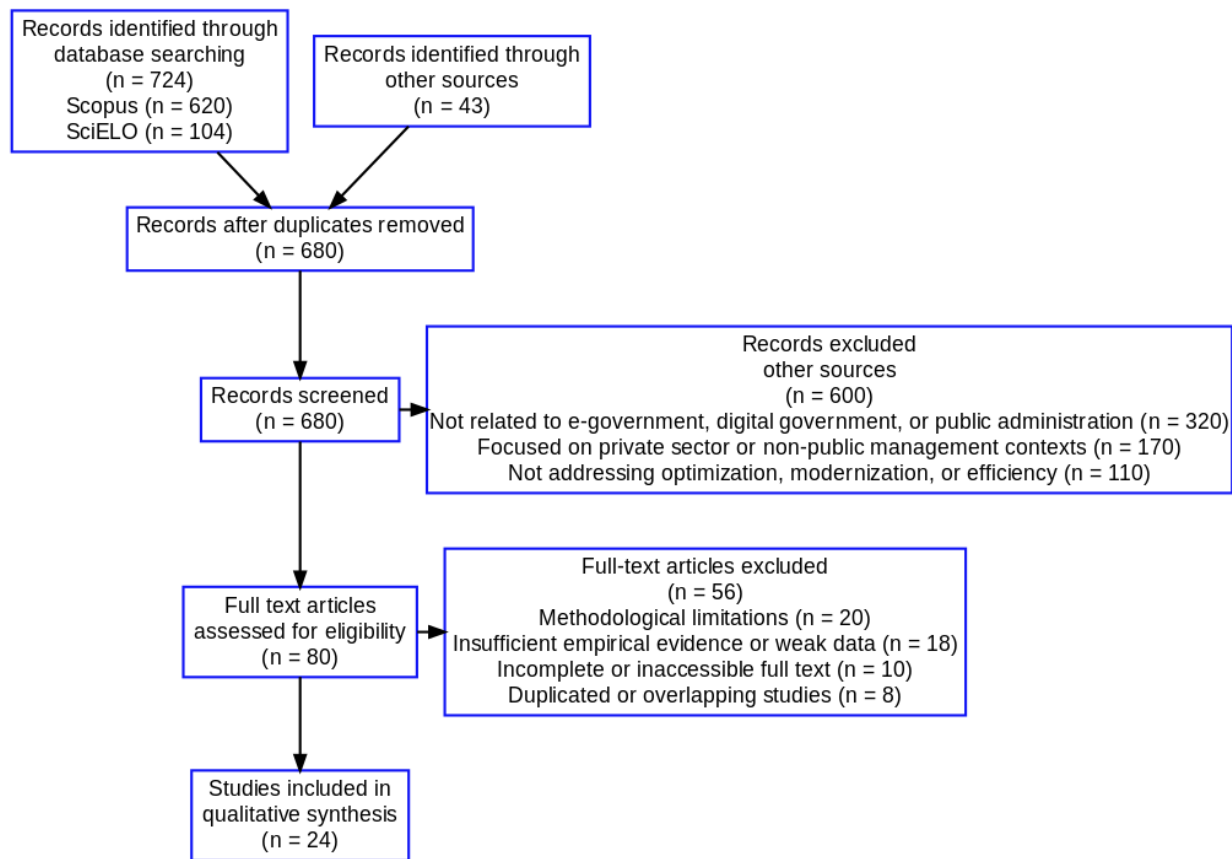
Methodology

The methodology employed in this review is based on the PRISMA strategy, which provides a structured and rigorous framework for developing systematic studies (López et al., 2025). This approach enables researchers to conduct transparent and replicable procedures, encompassing various phases from the identification of reliable sources to the selection and analysis of data (Montero et al., 2024).

These procedures ensure that the studies adhere to indicators characteristic of the scientific method, consolidating reliable data that contribute academic value. Information was primarily collected from scientific databases such as Scopus, utilizing combinations of relevant terms. Additionally, manual searches were

conducted in specialized texts related to the topic. Following the selection of scientific articles, their content was summarized, and the methodologies extracted, establishing a direct connection with the proposed objectives (Posso et al., 2025). A representative flowchart illustrates the systematic search process:

Figure 1
PRISMA flow diagram corresponding to the process of identification, selection, and inclusion of the studies analyzed.



Note. Content generated from <https://hollyhartman.shinyapps.io/PRISMAFlowDiagram/>

To achieve the final set of 24 studies, the inclusion criteria were as follows:

- Publication period: Between 2018 and 2025 to ensure recent and relevant literature.
- Document type: Peer-reviewed scientific articles, systematic reviews, empirical studies, case studies, and bibliometric analyses.
- Language: Publications in Spanish and English, as they are the most accessible and pertinent.
- Thematic scope: Research addressing e-government, digital governance, electronic administration, or e-government.
- Focus: Studies specifically related to process optimization, administrative modernization, efficiency, transparency, accountability, technological innovation, or public management.
- Access: Full texts available in recognized databases such as Scopus and SciELO, along with complementary manual searches.

In contrast, the exclusion criteria included:

- Studies published before 2018.

- Documents lacking peer review (essays, technical notes, opinions).
- Works related to sectors outside public administration (e.g., private sector, private education, industries).
- Publications mentioning e-government without links to optimization or modernization processes.
- Articles with restricted access, abstracts without full text, or duplicates.

For the data summary and analysis, a manual systematization was employed, guided by the methodological design and the unit of analysis. Both qualitative and quantitative analyses were implemented to identify thematic patterns, causal relationships, and gaps in the literature. In the quantitative aspect, meta-analysis techniques were used to synthesize numerical data (Posso et al., 2025).

As detailed in Figure 1, during the identification stage, recognized scientific databases were consulted, primarily Scopus (n = 620) and SciELO (n = 104), resulting in an initial total of 724 records. Additionally, manual searches in specialized literature were conducted to broaden the coverage of relevant documents. After eliminating duplicates, 680 studies remained available for the screening process.

In the screening phase, titles and abstracts were evaluated, leading to the exclusion of 600 records that did not meet the inclusion criteria. The primary reasons for exclusion included: i) investigations that did not address topics related to e-government, digital governance, or public administration; ii) studies focused on the private sector or contexts outside public management; and iii) works unrelated to processes of optimization, modernization, or efficiency.

During the eligibility phase, 80 full-text articles were analyzed, with 56 excluded for various reasons: methodological limitations (n = 20), lack of empirical evidence or insufficient data (n = 18), inaccessible full texts (n = 10), and duplication or overlap (n = 8). Ultimately, 24 studies were included in the qualitative synthesis and were subjected to both qualitative and quantitative analysis. In the quantitative analysis, meta-analysis techniques were utilized to integrate the numerical results, while the qualitative analysis focused on identifying thematic patterns, causal relationships, and existing gaps in the literature (Posso et al., 2025; Montero et al., 2024).

Results and discussion

The systematic review encompassing the 24 most recent studies confirms that e-government serves as a crucial tool for optimizing processes in public administration. For instance, in contexts such as Peru, research conducted by Morillo-Avalos and Alegría-Ferreyros (2025), Linares-Cabrera et al. (2024), Díaz et al. (2022), and Olivos et al. (2022) emphasizes that possessing robust technological infrastructure and efficient institutional planning significantly enhances public management and elevates citizen satisfaction. Nevertheless, important limitations persist, such as those highlighted by Hasan (2024) in Saudi Arabia, where the digital divide and lack of trust inhibit the positive impact of e-government in various countries.

Table 1
Analysis of identified research articles

| No. | Author (country, year) | Objective | Methodology | Result | Conclusion |
|-----|---|--|--|---|---|
| 1 | Morillo-Avalos & Alegría-Ferreyros (Peru, 2025) | Modernize public management through e-government implementation to promote social well-being | Hermeneutic-documentary approach | Emerging technologies are essential for modernization | Modernization must comprehensively incorporate ethical aspects and fundamental values |
| 2 | Sysoyeva & Martínez-Usarralde (Spain, 2025) | Evaluate the evolution of digital governance and analyze the Digital Government Index | Document analysis combined with case study | Digitalization shows significant inequalities between countries | Digital training and equity are essential priorities for technological advancement |

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| 3 | Araque (Peru, 2025) | Analyze the institutional transformation resulting from the implementation of e-government in local administrations of various countries | Analysis of institutional transformation due to e-government | Municipalities that implemented electronic platforms exhibited greater efficiency and transparency | E-government is a key factor for institutional innovation in local governance |
| 4 | Mao & Zhu (China, 2025) | Examine the impact of integrated e-government on public service quality | Provincial-level data panel | Improvement in the quality and equity of public services observed | E-government drives efficiency and promotes innovation in public management |
| 5 | He & Ya (China, 2025) | Develop a big data-based model for e-government auditing | Model evaluation through data analysis | The algorithm used increases process accuracy and efficiency | Facilitates the implementation of smart and efficient audits |
| 6 | Linares-Cabrera et al. (Peru, 2024) | Study the relationship between e-government and administrative management | Quantitative method with correlational design | A statistically significant association between key variables identified | Contributes to improving planning and control in the public sphere |
| 7 | Zaqueu (Mozambique, 2024) | Identify challenges in the digital transformation of higher education | Documentary method accompanied by survey | Limitations in internet access restrict technological adoption | Continuous digital training for public agents is necessary |
| 8 | Mego et al. (Peru, 2024) | Review the link between digitalization and public administration | Bibliometric review of scientific literature | Concentration of technological advances mainly in developed countries | Strengthening collaboration between Latin American countries is required |
| 9 | Akimov & Kadyshcheva (Russia, 2023) | Analyze e-government as an effective communication channel with youth | Comparative analysis of results | Strengthens institutional transparency and public trust | Improving access and reinforcing civic trust are priority objectives |
| 10 | Hasan (Saudi Arabia, 2024) | Identify factors influencing e-government adoption in smart cities | Literature review followed by critical analysis | The digital divide and distrust are barriers to effective usage | Strengthening technological infrastructure and trust in its use is crucial |
| 11 | Villegas et al. (Ecuador, 2023) | Evaluate the tax impact generated by e-government implementation | Descriptive quantitative study | Adequate infrastructure and external support facilitate implementation | E-government contributes to optimizing tax collection |
| 12 | Nookhao & Supaporn (Thailand, 2023) | Develop a success model for e-government from a citizen perspective | Quantitative survey-based study | Service quality and user trust positively influence its utilization | Promoting benefits and fostering trust in e-government is key for adoption |

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| 13 | Olivos et al. (Peru, 2022) | Design a collaborative digital platform for improving e-government | Experimental and pre-experimental design | An increase in favorable perceptions toward implemented technologies observed | Collaborative platforms are an important driver for technological adoption |
| 14 | Soares & Barbosa (Peru, 2022) | Analyze the influence of trust on the use and adoption of e-government | Structural model based on questionnaires | Trust reduces perceived risk associated with e-government | Strengthening user trust in the use of e-government is essential |
| 15 | Moreno-Hurtado & Moreno-Hurtado (Ecuador, 2022) | Study the relationship between environmental variables and e-government | Quantitative method with correlational approach | CO2 emissions are linked to digital development and expansion | Government policies must consider environmental impact |
| 16 | Delgado (Peru, 2022) | Analyze how the modernization of public management affects citizen services in local governments | Descriptive approach applied in local governments | Modernization through e-government has reduced service times and improved perceptions | E-government strengthens the relationship between the state and citizens but requires greater investments in local infrastructure |
| 17 | Medina et al. (Argentina, 2022) | Apply patterns to define requirements in e-government systems | Practical case study | Improvements in institutional quality and performance evident | Applying certain methodologies increases administrative efficiency |
| 18 | Guo (China, 2022) | Identify key factors for effective digital government construction | Comparative qualitative analysis | A necessary balance exists between internal and external drives for digital transformation | Enhancing local talent and capabilities is crucial for successful modernization |
| 19 | Salirrosas et al. (Peru, 2022) | Review the relationship between digital government and public administration modernization | Systematic review of prior studies | Information and communication technologies (ICT) are fundamental in modernization processes | Modernization heavily depends on adequate technological integration |
| 20 | Blas et al. (Peru, 2022) | Evaluate state modernization and its impact on public management | Bibliographic review | E-government plays a key role in transparency of administrative processes | It is necessary to promote citizen participation and consolidate trust in digital platforms |
| 21 | Díaz et al. (Peru, 2022) | Study the relationship between e-government and user satisfaction | Probability sampling with questionnaire application | A statistically significant relationship identified in the analyzed factors | Citizen satisfaction significantly improves with the implementation of e-government |

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| 22 | OECD (2023) | Analyze factors determining the success of e-government | Case study with qualitative analysis | Key factors drive technological innovation in public management | Collaboration between public and private sectors is vital for technological development |
| 23 | Cotino (Spain, 2021) | Analyze current regulations on electronic administration | Normative study | Current regulations improve processes but limit innovation | Regulatory updates are essential to align the legal framework with modernization |
| 24 | Kabanova & Vetrova (Russia, 2018) | Evaluate the effectiveness of multifunctional public services | Legislative and operational analysis | Accessibility increases, yet adaptation to new technologies remains complex | Modernization contributes to improving the quality and efficiency of public services |

The systematic review revealed that progress in technical frameworks is clearly reflected in studies such as those by Medina et al. (2022) and Al-Besher and Kumar (2022), who emphasize the fundamental role of artificial intelligence, modeling patterns, and the Internet of Things (IoT) in enhancing the efficiency and security of digital systems. Moreover, the experience of developed countries, as evidenced in the works of Sysoyeva and Martínez-Usarralde (2025) and OECD (2023), confirms that these technological advancements must be accompanied by flexible regulations and robust public policies to ensure their success.

Additionally, trust and the perception of technological utility emerge as decisive factors for adoption, as evidenced in the studies by Soares and Barbosa (2022), Nookhao and Kiattisin (2023), and Villegas-Cervantes and Velásquez-Gutiérrez (2023). In this context, Guo (2022) adds that technological success can only be sustained in a favorable institutional environment, with adequate economic resources and innovative capacity.

Regarding administrative improvement and equity, various studies, including those by Mao and Zhu (2025) and Moreno-Hurtado and Moreno-Hurtado (2022), confirm that e-government not only optimizes efficiency and transparency but also promotes territorial equity in public service delivery. This perspective is broadened by regional and sectoral analyses presented by Medina et al. (2022) and studies focused on Latin America. However, studies such as Hasan (2024) warn that without appropriate public policies and training, these benefits may not reach their full potential.

The versatility of e-government is evident in specific applications, such as audits through big data reported by He and Ya (2025), and communication with young populations studied by Akimov and Kadysheva (2024). Challenging contexts, such as that of Mozambique described by Zaqueu (2024), along with experiences in Latin America reflected in the works of Mego et al. (2024) and Salirrosas et al. (2022), underscore the importance of adapting digital solutions to local realities and strengthening technological training.

Finally, systemic-focused studies, such as those by OECD (2023) and Mao and Zhu (2025), highlight that the sustainable success of e-government requires comprehensive national policies and long-term political commitment. Complementing this, Blas et al. (2022) emphasize the need to foster transparency and citizen participation, while research in Spain and Russia, such as those by Cotino (2021) and Kabanova and Vetrova (2018), reiterates that technological modernization must be accompanied by regulatory updates and appropriate operational adaptations to ensure effective and contextualized advancement.

Conclusion

The systematic review demonstrates that the implementation of e-government has become a fundamental element for optimizing processes in public administration. The analyzed studies indicate that digital transformation not only drives efficiency, transparency, and accountability, but also redefines the relationship between the state and citizens through the integration of technological platforms that facilitate access to services and foster greater citizen participation. This evolution underscores the importance of strengthening robust digital infrastructures that support modernization processes and ensure equitable access across different social contexts.

Furthermore, the findings confirm that the success of digital government extends beyond mere technological adoption; it requires the strengthening of institutional frameworks, sustained political commitment,

and a strategic vision oriented towards long-term innovation. The convergence of these factors enables the reduction of bureaucratic barriers, improved quality of public services, and the strengthening of citizen trust in state institutions. In summary, e-government emerges as a catalyst for social transformation and sustainable development, positioning itself as an essential tool for enhancing public management in an increasingly digital global environment.

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STATEMENT ON THE USE OF ARTIFICIAL INTELLIGENCE

The authors declare that, during the writing process of this manuscript, generative artificial intelligence tools were employed solely as support for linguistic tasks, such as style enhancement, syntactic organization, and grammatical correction. Under no circumstances were these technologies used to generate original scientific content, interpret results, or replace the academic and ethical judgment of the authors. Full responsibility for the

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