

Review Article

Research Trends and Policy Implications of Citizens' Perceptions of Digital Public Services in Indonesia: A Bibliometric Analysis

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Abstract: The increasing reliance on digital technologies in public administration has intensified the need to understand citizens' perceptions of digital public services as a determinant of successful digital governance. This study aims to analyze global research trends on citizens' perceptions of digital public services and to derive policy-relevant insights, with particular attention to the Indonesian context. A quantitative bibliometric approach was employed using 423 documents retrieved from the Scopus database covering the period 2015–2024. Data were analyzed using VOSviewer to map publication trends, country contributions, citation patterns, and thematic structures through keyword co-occurrence analysis. The findings reveal a consistent growth in scholarly output, with dominant contributions from the United States, the United Kingdom, and Indonesia. Thematic analysis identifies trust, transparency, service quality, risk perception, and perceived usefulness as central constructs shaping citizens' attitudes and adoption behavior. Trust emerges as the most influential factor, while perceived risks, particularly related to the Data Privacy Act, act as significant barriers. Additionally, perceived usefulness and service quality are found to positively influence user satisfaction and engagement. These results indicate that technological capability alone is insufficient without citizen-centered design and strong governance mechanisms. The study concludes that effective digital public service implementation requires integrated policy approaches that prioritize trust-building, risk mitigation, and tangible benefits. This research contributes to the literature by providing a systematic overview of the field and offering practical guidance for policymakers seeking to develop inclusive, responsive, and sustainable digital governance systems.

Keywords: Citizens' perceptions, Digital public services, e-Government, Bibliometric analysis, Public policy.



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1. Introduction

Public perceptions of digital government services have become an increasingly decisive factor shaping the trajectory of contemporary digital governance. As governments worldwide accelerate the adoption of digital technologies to improve service delivery, citizens are no longer passive recipients but active evaluators of these

systems. They assess not only the functional usability of digital platforms but also broader dimensions such as data security, perceived benefits, transparency, accessibility, and clarity of information (Camilleri, 2020; Lee & Shi, 2020; Pleger et al., 2021; Popescu et al., 2024; Quaye & Sneiders, 2020; Salmoria et al., 2021; Saurabh, 2021; Tomorri & Keco, 2023; Valle et al., 2022; Vidiasova & Cronemberger, 2020; Zichová, 2022). These multidimensional evaluations significantly influence citizens' willingness to adopt, trust in, and continued engagement with digital public services, thereby determining the overall effectiveness of e-government initiatives. In this context, public perception functions as both a diagnostic and predictive indicator of digital governance success. Positive perceptions tend to reflect alignment between service design and citizen expectations, while negative perceptions often reveal structural, technological, or institutional deficiencies. For instance, concerns regarding data privacy, cybersecurity risks, and potential misuse of personal information have emerged as critical barriers to adoption. Likewise, difficulties in navigating digital platforms, particularly among older populations and individuals with limited digital literacy, further constrain equitable access to government services (Avazov & Lee, 2022). Such challenges not only hinder service uptake but also risk exacerbating existing socio-economic inequalities, thereby widening the digital divide and undermining the inclusiveness of public service delivery (Puspasari et al., 2024).

Indonesia provides a particularly relevant context for examining these dynamics, given its rapid, large-scale digital transformation efforts. The government has introduced a wide range of digital platforms, including Dukcapil Online for civil registration, PeduliLindungi for public health monitoring, MyPertamina for energy distribution services, and LAPOR! as a citizen complaint and feedback system, alongside numerous regional digital initiatives. These platforms represent significant progress toward modernizing public administration and improving service accessibility. However, despite these advancements, levels of citizen participation and engagement remain uneven, indicating that technological provision alone is insufficient to guarantee widespread adoption. Existing literature highlights several persistent challenges affecting citizens' perceptions of digital services in Indonesia. These include concerns over personal data security, lack of user-friendly interfaces, inconsistent service performance, and limited system reliability (Altino et al., 2025; Rachmawati & Fitriyanti, 2021; Rokhman et al., 2023). Moreover, digital platforms often replicate the inefficiencies of traditional bureaucratic systems, such as slow response times, complex administrative procedures, and insufficient user guidance. These issues contribute to skepticism and distrust, ultimately weakening public confidence in government-led digital initiatives (Anggria Pratama et al., 2023; Aswar et al., 2023; Purnamasari et al., 2022). Consequently, the sustainability and long-term success of digital transformation efforts are closely tied to the extent to which these perception-related challenges are addressed (Nanang et al., 2019).

From a theoretical perspective, the importance of citizens' perceptions can be understood through frameworks such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which emphasize perceived usefulness, ease of use, and trust as key determinants of technology adoption. In the context of digital governance, these factors are further intertwined with institutional elements such as transparency, accountability, and public value creation. Therefore, understanding how citizens perceive digital public services is essential not only for improving service design but also for strengthening democratic governance, enhancing civic engagement, and fostering trust in public institutions. Despite the growing body of research on digital government services, the literature remains fragmented and often context-specific. Many studies focus on individual applications, sectors, or local case studies, limiting the ability to derive comprehensive insights into broader research trends and global patterns. This fragmentation creates a significant gap in understanding how scholarly discourse on citizens' perceptions has evolved over time, how key themes are interconnected, and how such insights can inform evidence-based policymaking (Jayashree & Priya, 2020; Meiranto et al., 2024). Furthermore, there is a lack of systematic approaches to synthesize existing knowledge and identify emerging research directions within this field.

Bibliometric analysis offers a robust methodological approach to address this gap. By systematically mapping publication trends, citation networks, and thematic clusters, bibliometric techniques enable researchers to uncover the intellectual structure of a research field and identify dominant and emerging topics (Choi et al., 2016). This approach not only facilitates a deeper understanding of the evolution of scholarly discourse but also provides policymakers with valuable insights for designing more effective and responsive digital governance strategies. Given Indonesia's ongoing digital reforms and the critical role of public perception in shaping policy outcomes, there is an urgent need for research that integrates global academic perspectives with local policy considerations. Aligning digital service development with citizens' expectations requires evidence-based policy design, continuous stakeholder engagement, and a commitment to inclusive and user-centered innovation. Insights from global research trends can help governments anticipate challenges, adopt best practices, and enhance the legitimacy and effectiveness of digital public services (Sholeha et al., 2025). Accordingly, this study aims to:

- (1) analyze global research trends concerning citizens' perceptions of digital public services; and
- (2) identify policy insights derived from these trends to strengthen the implementation and sustainability of digital public services, particularly within the Indonesian context.

2. Literature Review

Public perception has emerged as a central construct in evaluating government performance, particularly in the context of digital public services. It reflects citizens' collective judgments regarding the effectiveness, reliability, and responsiveness of government initiatives. As such, public perception functions as a critical proxy for both trust and satisfaction, two foundational elements underpinning successful governance. Positive perceptions typically indicate alignment between public expectations and actual service delivery, whereas negative perceptions reveal discrepancies that require policy and managerial attention (Chan et al., 2025). Consequently, perception-based evaluations provide valuable feedback mechanisms that enable governments to continuously refine and improve digital service provision. From a governance perspective, the growing importance of public perception has driven a shift from traditional top-down administrative approaches toward more citizen-centric, participatory models of service design. Contemporary digital governance increasingly emphasizes co-creation, where citizens are not merely users but active contributors in shaping public services. When digital platforms are perceived as relevant, accessible, and reliable, they enhance citizens' confidence in government institutions, reinforcing perceptions of transparency, accountability, and responsiveness (Francey & Mettler, 2022). These perceptions, in turn, strengthen institutional legitimacy and foster sustained engagement with digital services (Fadrial et al., 2024).

Closely related to this transformation is the concept of digital participation, which encompasses activities such as e-reporting, online consultations, feedback mechanisms, and other forms of civic engagement facilitated by digital platforms. The extent and quality of such participation are strongly influenced by citizens' perceptions of government systems. Positive user experiences characterized by ease of use, responsiveness, and perceived value encourage citizens to engage more actively in governance processes, thereby enhancing democratic participation within digital environments (Valle et al., 2022). Conversely, negative experiences may discourage participation and weaken the broader goals of digital democracy. A substantial body of literature has examined various dimensions of citizens' perceptions of digital public services. One prominent stream of research focuses on the use and evaluation of digital applications, including city management systems and smart governance platforms (Annis et al., 2021; Lee & Shi, 2020; Popescu et al., 2024; Salmoria et al., 2021; Saurabh, 2021; Zichová, 2022). These studies highlight usability, interface design, accessibility, and system performance as key determinants of user satisfaction. Another stream of research investigates the drivers and barriers to adoption, emphasizing variables such as perceived usefulness, ease of use, social influence, facilitating conditions, and digital literacy (Aswar et al., 2023; Buzulukova & Sarkisian, 2020; Egorov et al., 2025; Ilieva et al., 2024; Meiranto et al., 2024; Nanang et al., 2019; Othman et al., 2025). These factors are often grounded in established theoretical frameworks, including the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which explain how individuals form intentions to adopt and use digital systems.

In addition, a growing body of research has explored the role of trust, perceived risk, and system reliability in shaping citizens' perceptions. Trust is widely recognized as a fundamental determinant of digital service adoption, particularly in contexts where concerns about data privacy, cybersecurity, and government accountability are prevalent. Perceived risks, such as fears of data misuse, system failures, or lack of transparency, can significantly undermine public confidence and discourage engagement with digital platforms. Conversely, when governments demonstrate strong data protection measures, transparent processes, and consistent service quality, they can enhance trust and foster positive perceptions. Despite these advances, the existing literature exhibits several limitations. First, much of the research remains fragmented and context-specific, focusing on individual applications, sectors, or geographic settings. While such studies provide valuable localized insights, they often fail to capture broader patterns and interconnections across different contexts. Second, there is a relative lack of integration between empirical findings and policy-oriented analysis, limiting the practical applicability of research outcomes. Third, only a limited number of studies adopt a systematic, quantitative approach to mapping the field's intellectual structure, which is necessary to identify dominant themes, emerging trends, and knowledge gaps.

Bibliometric analysis offers a powerful methodological tool to address these limitations. By systematically analyzing large volumes of scholarly publications, bibliometric techniques enable researchers to identify patterns in authorship, citation networks, keyword co-occurrence, and thematic clusters. This approach facilitates a comprehensive understanding of how research on citizens' perceptions of digital public services has evolved over time and across regions. Furthermore, bibliometric analysis provides robust evidence base for policymakers by highlighting key areas of focus, influential studies, and emerging directions within the field (Wedayanti et al., 2024, 2025). Nevertheless, there remains a notable scarcity of bibliometric studies specifically dedicated to citizens' perceptions of digital public services, particularly in developing country contexts such as Indonesia. Given the rapid pace of digital transformation and the increasing reliance on technology-mediated service delivery, a systematic synthesis of existing knowledge is essential to inform effective policymaking. Understanding global research trends can help governments anticipate challenges, adopt best practices, and design policies that are responsive to citizens' needs and expectations.

In light of these gaps, this study seeks to contribute to the literature by conducting a comprehensive bibliometric analysis of global research on citizens' perceptions of digital public services. By mapping publication trends, thematic

developments, and conceptual structures, this study aims to generate actionable policy insights that can support the design and implementation of more inclusive, reliable, and citizen-centered digital governance systems.

3. Materials and Methods

This study employs a quantitative bibliometric research design to systematically examine global scholarly trends related to citizens' perceptions of digital public services. Bibliometric analysis is particularly appropriate for achieving the study's objectives, as it enables the identification of publication patterns, thematic developments, and intellectual structures within a large body of academic literature. By synthesizing existing research in a structured manner, this approach provides an evidence-based foundation for understanding how the field has evolved and how its insights can inform policy formulation. The data for this study were retrieved from the Scopus database, which is known for its comprehensive coverage of high-quality, peer-reviewed international publications. A structured search was conducted in July 2025, focusing on documents published between 2015 and 2025, a period that reflects the rapid expansion of digital governance worldwide. The search strategy combined keywords related to citizens' evaluations and digital government services, including "citizen perception," "digital public services," "e-government," and "government digital services." To ensure inclusiveness, no restrictions were applied with respect to subject area, document type, or geographical location. The initial search yielded 423 documents, which were subsequently screened for relevance to the study's objectives using title, abstract, and keyword assessments.

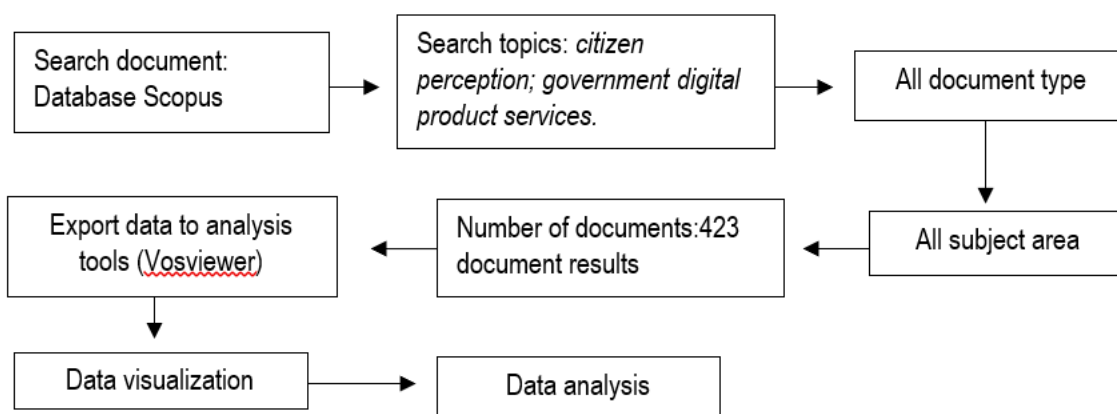


Figure 1. Data analysis process

Figure 1 illustrates the overall data analysis process. The bibliometric analysis was conducted using VOSviewer to map relationships across authors, institutions, keywords, citation networks, and thematic clusters. This approach enabled a comprehensive visualization of research developments and conceptual structures within the field. Following data collection, all records were exported and processed using VOSviewer, a widely recognized bibliometric software tool designed for mapping and visualizing scientific knowledge structures. The analysis focused on several key dimensions, including co-authorship networks to examine collaboration patterns among researchers and institutions, keyword co-occurrence to identify dominant themes and conceptual relationships, and citation-based analyses to determine influential publications and intellectual linkages within the field.

These techniques allow for a multidimensional exploration of the research landscape, facilitating the identification of both established areas of inquiry and emerging topics. The analytical procedure was conducted in several stages to ensure methodological rigor. First, data cleaning and standardization were performed to eliminate duplicate records and harmonize inconsistencies in author names, keywords, and institutional affiliations. Second, descriptive analysis was undertaken to examine trends in publication output over time, as well as the geographical distribution and citation performance of the selected documents. Third, network visualization and thematic mapping were performed using VOSviewer to generate clusters of related keywords, which were subsequently interpreted to uncover the field's conceptual structure. Finally, the identified trends and themes were systematically analyzed to derive policy-relevant insights, thereby linking the bibliometric findings to the study's objective of informing digital governance strategies.

To ensure the validity and reliability of the findings, this study employs a transparent, replicable search strategy across a reputable database and established bibliometric techniques. Nevertheless, reliance on a single database may result in the exclusion of some relevant studies that are indexed elsewhere. Despite this limitation, Scopus is widely regarded as sufficiently comprehensive to capture the dominant trends in this research domain. Thus, the methodological approach employed in this study provides a robust framework for analyzing global research trends and generating evidence-based policy recommendations related to citizens' perceptions of digital public services.

4. Results

4.1. Research Trends: Number of Documents, Country Affiliations, and Citations

Publication trends in citizens' perceptions of digital public services were analyzed using data from the Scopus database. For this study, the dataset was limited to publications indexed between 2015 and 2024, reflecting a period of significant growth in digital governance initiatives worldwide. The analysis focuses on the annual progression of published documents to identify patterns in research development over time. In addition to temporal trends, the selected publications were further examined by country of affiliation and citation performance. This allows for a more comprehensive understanding of the geographical distribution of research contributions and the relative influence of existing studies within the field. By integrating these dimensions, the analysis provides insights into both the expansion of scholarly work and its impact on citizens' perceptions of government digital service products. The resulting trends in publication output, country contributions, and citation patterns are presented and discussed in the next sections.

Figure 2 illustrates the annual distribution of scholarly publications on citizens' perceptions of digital public services over the period 2015–2024. Overall, the trend demonstrates a clear upward trajectory, indicating a growing academic interest in this field, particularly in response to the rapid expansion of digital governance initiatives worldwide. At the beginning of the observed period, the number of publications was relatively modest, with 16 documents in 2015, followed by a gradual increase to 18 in 2016 and 22 in 2017. This early phase reflects the initial development of research attention toward digital public services, coinciding with the early adoption of e-government platforms in many countries. The upward movement continued in 2018 (26 publications), suggesting an increasing recognition of the importance of understanding citizen engagement with digital systems. However, a slight decline is observed in 2019 (20 publications), which may indicate a temporary shift in research focus or a transitional phase in the evolution of digital governance studies. Despite this dip, the number of publications rebounded in subsequent years, reaching 23 in 2020 and 24 in 2021. This recovery phase is particularly significant as it aligns with the global acceleration of digital transformation during the COVID-19 pandemic, when governments increasingly relied on digital platforms to deliver public services.

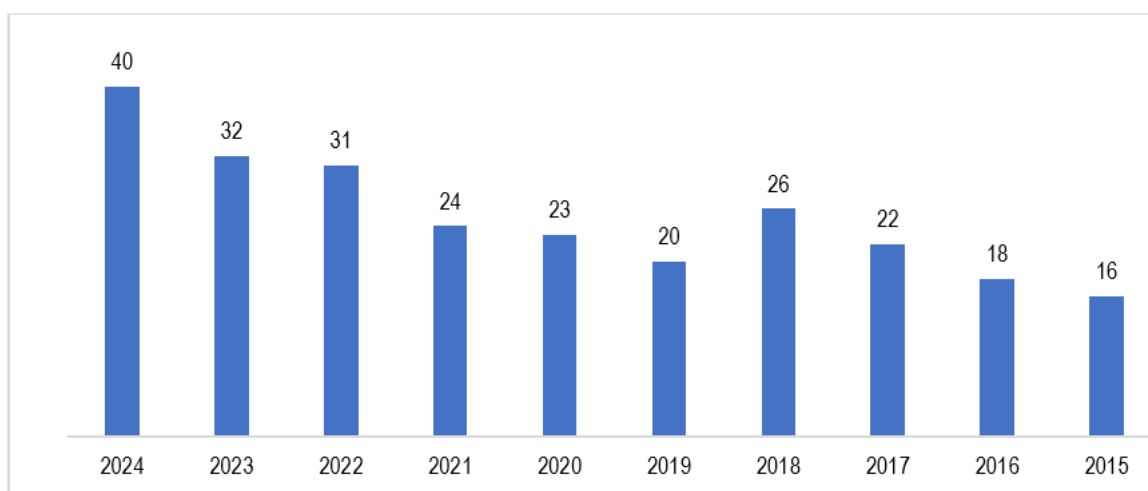


Figure 2. Number of Documents Published

A more pronounced growth is evident from 2022 onwards, with publications rising to 31 in 2022, 32 in 2023, and peaking at 40 in 2024. This sharp increase highlights the intensifying scholarly focus on citizens' perceptions as a critical factor in evaluating the effectiveness, inclusiveness, and sustainability of digital public services. The surge in recent years reflects not only the expansion of digital government initiatives but also the growing awareness that technological implementation must be accompanied by citizen acceptance, trust, and satisfaction. From a broader perspective, the trend depicted in Figure 2 suggests that research on citizens' perceptions of digital public services has transitioned from a nascent and exploratory stage (2015–2018) to a consolidation phase (2019–2021), and ultimately to a rapid growth and expansion phase (2022–2024). This progression indicates a maturing research field characterized by increasing theoretical sophistication and practical relevance. The consistent growth in publication output also underscores the importance of this topic within the global academic community. As digital governance becomes more embedded in public administration, understanding citizens' perceptions is no longer optional but essential for ensuring successful policy implementation. Consequently, the upward trend in publications provides a strong foundation for future research

and offers valuable insights for policymakers seeking to design more responsive, inclusive, and citizen-centered digital services (Wedayanti et al., 2025).

Figure 3 presents the distribution of scholarly publications on citizens' perceptions of digital public services by authors' country of affiliation. The findings reveal a geographically diverse yet uneven distribution of research contributions, highlighting both leading countries and emerging participants in this field. The United States emerges as the most dominant contributor, with 58 publications, reflecting its strong academic infrastructure, advanced digital governance systems, and sustained investment in e-government research. This leadership position indicates that research institutions in the United States have played a central role in shaping the global discourse on digital public services, particularly in areas such as trust, user experience, and public value. The United Kingdom ranks second among contributors with 38 publications, demonstrating a similarly strong commitment to digital governance research. The UK's position can be attributed to its well-established digital government strategies and emphasis on citizen-centered service delivery, which have encouraged extensive academic inquiry into public perceptions and service effectiveness.

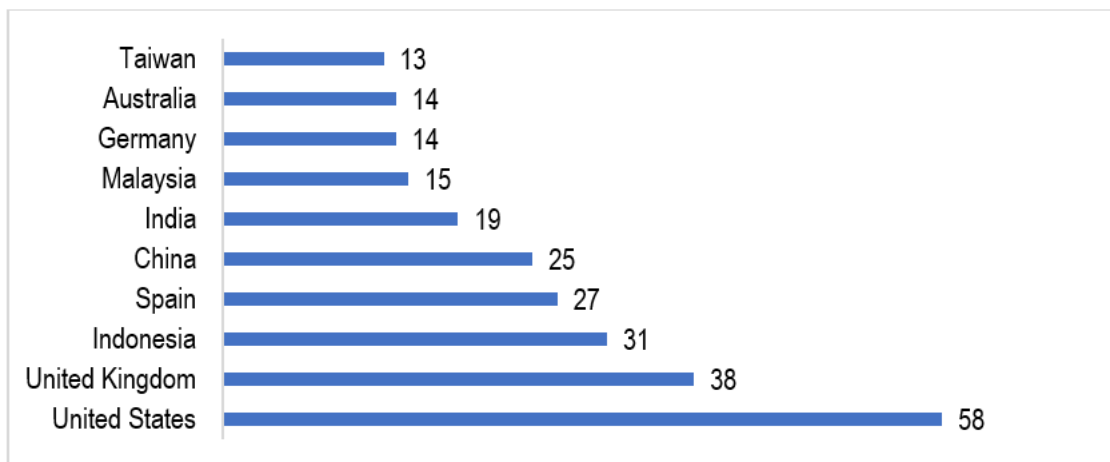


Figure 3. Number of Published Documents by Country Affiliation

Indonesia ranks third with 31 publications, indicating a significant and growing research interest within the national context. This position is particularly noteworthy given Indonesia's status as a developing country undergoing rapid digital transformation. The relatively high volume of publications reflects both the urgency of addressing challenges in digital service implementation and the increasing involvement of Indonesian scholars in global academic discussions. It also suggests that issues such as digital literacy, trust in government, and service accessibility are receiving substantial scholarly attention. Other notable contributors include Spain (27 publications) and China (25 publications), both of which demonstrate active engagement in this research area. Spain's contribution reflects its focus on smart governance and citizen participation within the European context, while China's involvement highlights its large-scale digital governance initiatives and interest in understanding public attitudes toward state-led digital platforms.

Although the number of publications is comparatively lower, countries such as India (19), Malaysia (15), Germany (14), Australia (14), and Taiwan (13) continue to play important roles in expanding the knowledge base. These countries contribute diverse perspectives shaped by their unique socio-economic conditions, governance structures, and levels of digital maturity. Their participation underscores the global relevance of studying citizens' perceptions, particularly as digital public services become increasingly widespread across both developed and developing regions. From a broader analytical perspective, the distribution of publications suggests several important patterns. First, research output tends to be concentrated in countries with strong research ecosystems and advanced digital infrastructures, indicating a link between technological development and academic productivity. Second, the presence of developing countries such as Indonesia and India among the leading contributors highlights the growing importance of contextual and localized studies, especially in regions where digital transformation presents both opportunities and challenges. Third, the diversity of contributing countries reflects an increasing trend toward international collaboration and knowledge exchange, which is essential for addressing complex issues related to digital governance.

In the context of this study, Indonesia's position as a leading contributor reinforces its relevance as a focal case for policy analysis. The country's diverse demographic characteristics, varying levels of digital literacy, and ongoing efforts to modernize public services make it an important setting for understanding how citizens perceive and interact with digital government platforms. However, the distribution also suggests that there is still room for greater collaboration between countries, particularly in sharing best practices and developing comparative insights. The result demonstrates that research on citizens' perceptions of digital public services is globally distributed but unevenly concentrated, with

leading contributions from developed nations and increasing participation from developing countries. This pattern highlights the need for continued international collaboration and more inclusive research efforts to ensure that digital governance policies are informed by diverse perspectives and experiences.

Table 1. Most Frequently Cited Publications

Document Title	Author(s) and (Year)	Citations
Measuring eGovernment success: A public value approach	Scott, M.; DeLone, W.; Golden, W. (2016)	157
Trustworthiness of digital government services: deriving a comprehensive theory through interpretive structural modelling	Janssen, M.; Rana, N. P.; Slade, E. L.; Dwivedi, Y. K. (2018)	142
Linking transparency to trust in government and voice	Porumbescu, G. (2017)	126
Improving service quality, accountability and transparency of local government: The intervening role of information technology governance	Sofyani, H.; Riyadh, H. A.; Fahlevi, H. (2020)	81
Privacy concerns and digital government: Exploring citizen willingness to adopt the COVIDSafe app	Lin, J.; Carter, L.; Liu, D. (2020)	77

Table 1 presents the most frequently cited publications within the dataset, highlighting the foundational studies that have significantly shaped scholarly discourse on citizens' perceptions of digital public services. Citation frequency serves as an important indicator of academic influence, reflecting the extent to which a study contributes to theoretical development, empirical understanding, and policy relevance in the field. The most highly cited publication is *"Measuring eGovernment Success: A Public Value Approach"* by Scott, DeLone, and Golden (2016), with 157 citations. This study is widely recognized for advancing the evaluation of e-government beyond technical performance by emphasizing the concept of public value. It argues that the success of digital government initiatives should be assessed based on their ability to deliver benefits such as efficiency, accessibility, transparency, and citizen satisfaction. By integrating user-centric dimensions into performance measurement, this work has become a cornerstone for subsequent research examining how citizens perceive the value and effectiveness of digital public services.

The second most cited study, *"Trustworthiness of Digital Government Services: Deriving a Comprehensive Theory through Interpretive Structural Modelling"* by Janssen et al. (2018), has received 142 citations. This research makes a significant theoretical contribution by conceptualizing trust as a multidimensional construct influenced by interrelated factors, including system quality, information integrity, and institutional reliability. The study's use of interpretive structural modeling provides a systematic framework for understanding how trust is formed and sustained in digital environments. Its high citation count underscores the central role of trust in shaping citizens' perceptions and adoption of digital government services. The third most influential publication is Porumbescu's (2017) *"Linking Transparency to Trust in Government and Voice"*, with 126 citations. This study highlights the critical relationship between transparency, trust, and citizen participation. It demonstrates that increased transparency in government operations enhances public trust, which in turn encourages citizens to engage more actively in governance processes. This finding is particularly relevant in the context of digital public services, where transparency can be facilitated through open data, real-time information sharing, and accessible communication channels.

Another notable contribution is the study by Sofyani, Riyadh, and Fahlevi (2020), titled *"Improving Service Quality, Accountability and Transparency of Local Government: The Intervening Role of Information Technology Governance"*, which has garnered 81 citations. This research emphasizes the importance of IT governance in enhancing service quality and accountability within local government contexts. It suggests that effective governance mechanisms are essential for ensuring that digital systems operate efficiently and transparently, thereby improving citizens' perceptions of public services. Finally, Lin, Carter, and Liu (2020) contribute to the literature with their study, *"Privacy Concerns and Digital Government: Exploring Citizen Willingness to Adopt the COVIDSafe App,"* which has been cited 77 times. This work focuses on the role of privacy concerns and risk perception in influencing citizens' willingness to adopt digital government applications, particularly in sensitive contexts such as public health. The findings highlight that even when digital services offer significant benefits, concerns over data security and personal privacy can act as substantial barriers to adoption.

Collectively, the studies presented in Table 1 identify several key themes in the literature. First, public value and service effectiveness are central to evaluating the success of digital government. Second, trust and transparency emerge as critical determinants of citizen engagement and acceptance. Third, governance quality and institutional capacity play a vital role in shaping service outcomes. Finally, risk and privacy concerns remain persistent challenges that must be addressed to enhance adoption. From a broader perspective, the prominence of these highly cited works indicates that research on citizens' perceptions of digital public services is anchored in a combination of technological,

institutional, and behavioral factors. These studies not only provide theoretical foundations but also offer practical insights for policymakers seeking to design more effective and citizen-centered digital services. Their influence underscores the importance of integrating trust-building measures, transparent governance practices, and user-oriented design into digital transformation strategies.

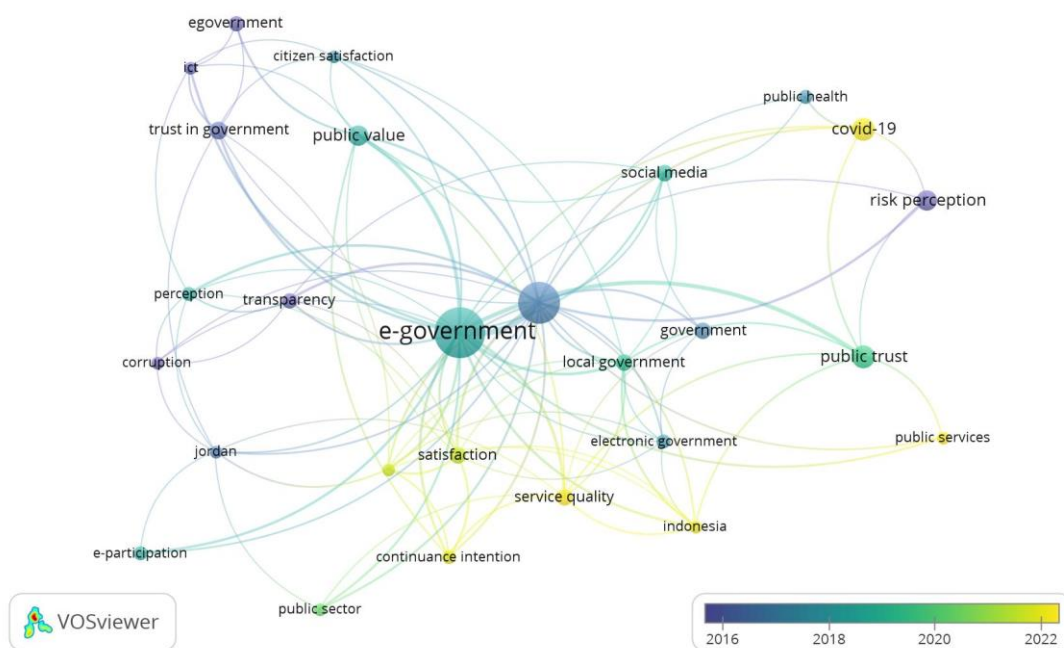


Figure 4. Research Topic Mapping Based on Trends

Source: Scopus Database (2025)

Figure 4 presents a bibliometric visualization of keyword co-occurrence, illustrating the intellectual structure and thematic evolution of research on citizens’ perceptions of digital public services. The network map, generated using VOSviewer, highlights the interconnections among key concepts, with node size representing frequency of occurrence and link strength indicating the degree of association between topics. The color gradient further reflects the temporal evolution of themes, with earlier studies shown in darker tones and more recent topics appearing in lighter colors. The visualization reveals that “e-government” functions as the central node, indicating its dominant role as the core research focus. This centrality suggests that most studies are anchored in the broader discourse of digital governance, with multiple interconnected themes shaping how citizens perceive and evaluate digital public services. Surrounding this core are several prominent clusters, including trust, transparency, service quality, satisfaction, risk perception, and public value, which collectively form the conceptual foundation of the field.

Among these, trust in e-government emerges as a pivotal theme, closely linked with concepts such as transparency, public trust, and citizen satisfaction. Trust refers to citizens’ confidence in the government’s competence, integrity, and commitment to delivering secure and reliable digital services (Luo et al., 2024). The network structure indicates that trust is not an isolated factor but is deeply embedded within a broader system of governance attributes. When citizens perceive digital platforms as transparent, accountable, and secure, they are more likely to develop positive attitudes and engage actively with these services. Conversely, weak trust resulting from data breaches, lack of transparency, or inefficient service delivery can significantly hinder adoption and reduce public participation. This finding reinforces the argument that trust serves as a foundational determinant of digital governance success, requiring continuous institutional efforts to maintain and strengthen it.

Closely associated with trust is the concept of risk perception, which appears as another significant cluster within the network. Risk perception encompasses citizens' subjective evaluation of potential threats related to digital service use, including concerns about privacy, data misuse, system failures, and government surveillance (Brewer, 2006; Fang et al., 2023; Han & Yan, 2019; Kim et al., 2015; Maestas et al., 2020). The network's positioning of risk perception suggests a strong inverse relationship with trust: as perceived risks increase, trust and adoption tend to decline. This dynamic highlights the importance of effective risk management strategies, such as robust cybersecurity measures and clear data protection policies, in shaping positive public perceptions. Even well-designed digital systems may fail to gain acceptance if perceived risks remain high, underscoring the need for governments to address both technical and psychological dimensions of digital service delivery.

Another key theme identified in the network is perceived usefulness, which is closely linked to service quality, satisfaction, and continuance intention. Rooted in the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), perceived usefulness refers to the extent to which individuals believe that digital services enhance their efficiency and effectiveness in accessing public services (Horst et al., 2007; Chiang, 2011, 2013). The strong connections between perceived usefulness and satisfaction-related variables indicate that citizens are more likely to adopt and continue using digital services when they perceive clear, tangible benefits. This finding emphasizes that beyond technological sophistication, digital public services must deliver practical value in everyday life to achieve widespread acceptance.

In addition to these core constructs, the network also highlights emerging and context-specific themes such as social media, public health, COVID-19, and local government, reflecting the evolving scope of digital governance research. The presence of terms like COVID-19 indicates a shift in recent studies toward examining digital service adoption in crisis contexts, where governments rely heavily on digital platforms for communication, monitoring, and service delivery. Similarly, the inclusion of local government suggests increasing attention to decentralized governance and the role of regional institutions in shaping citizen experiences. Furthermore, the clustering of topics such as service quality, citizen satisfaction, public services, and public sector underscores the continued relevance of traditional public administration concepts within digital environments. These themes demonstrate that while digital transformation introduces new technological dimensions, the fundamental principles of effective service delivery, such as responsiveness, reliability, and accountability, remain essential.

This study illustrates that research on citizens' perceptions of digital public services is multidimensional and highly interconnected, integrating technological, institutional, and behavioral perspectives. While significant progress has been made in understanding key determinants such as trust, risk, and perceived usefulness, the network also indicates areas that require further exploration. In particular, the evolving roles of social media, public health applications, and localized governance contexts suggest new directions for future research. From a policy perspective, the findings imply that successful digital governance requires a holistic approach that goes beyond technological implementation. Governments must simultaneously enhance trust, reduce perceived risks, and ensure that digital services deliver meaningful benefits to citizens. By aligning service design with user expectations and addressing emerging challenges, policymakers can foster more inclusive, responsive, and sustainable digital public service systems.

4.2. Policy Initiatives to Address Citizens' Perceptions of Government Digital Service Products

In response to emerging research on citizens' perceptions of government digital service products, it is essential to formulate policy initiatives and strategic actions that guide governments toward more solution-oriented, responsive approaches. Continuous research and development in this field enable governments to systematically identify evolving trends, challenges, and opportunities. Such evidence-based insights provide a strong foundation for designing policies that are not only relevant but also aligned with public expectations and societal needs. One of the most critical priorities is building digital trust. Governments must strengthen trust by ensuring transparency, safeguarding personal data, and delivering consistent, accurate, and reliable services. Beyond technical improvements, the design of digital public services should incorporate user-centered principles, accounting for citizens' psychological experiences, behavioral patterns, and levels of digital literacy. This shift from a purely technology-driven approach to a citizen-centric model is essential for enhancing user acceptance and long-term engagement.

Furthermore, governments should develop adaptive, flexible policy frameworks that address negative public perceptions and mitigate the adverse effects of distrust. Insights from research on public trust and trust in government indicate that trust plays a strategic role in fostering digital citizenship and encouraging active participation in digital governance. Therefore, policy interventions should prioritize trust-building mechanisms, including transparent communication, accountability measures, and consistent service performance. In addition, governments must clearly communicate the tangible benefits of digital public services. Citizens are more likely to adopt digital platforms when they perceive direct, practical benefits in their daily lives. Accordingly, features of digital applications should be designed based on actual user needs rather than solely on developers' technical capabilities. Public education and outreach programs should emphasize the real, everyday benefits of digital services, moving beyond abstract technological narratives to more relatable and user-oriented messaging (Ghimire, 2018; Park et al., 2016).

Another important dimension is stakeholder engagement. Research highlights the value of involving citizens, communities, and other stakeholders in the design and evaluation of digital services. Such participatory approaches can foster broader dialogue, enhance inclusiveness, and improve the responsiveness of policy initiatives. By actively engaging stakeholders, governments can better understand diverse user needs and co-create solutions that are more widely accepted and effective. Moreover, governments can benefit from examining global e-government practices and aligning their strategies with international best practices. Comparative insights from different countries offer valuable lessons on addressing common challenges, such as trust deficits, digital inequality, and service inefficiencies. By integrating these insights into national policy frameworks, governments can develop more robust, transparent, and context-sensitive digital governance strategies. Thus, the policy initiatives grounded in empirical research and global trends enable governments to remain adaptive, responsive, and forward-looking. Such initiatives not only enhance the effectiveness of digital public services but also strengthen public trust, improve citizen satisfaction, and support the broader goals of sustainable and inclusive digital transformation.

5. Conclusions

This study provides a comprehensive bibliometric analysis of global research on citizens' perceptions of digital public services, offering important insights into the evolution, structure, and key determinants of this field. The findings reveal a consistent and significant increase in scholarly attention over the past decade, reflecting the growing importance of understanding citizen perspectives amid rapid digital transformation. The analysis demonstrates that research in this area is dominated by themes such as trust, transparency, service quality, user experience, risk perception, and citizen satisfaction, all of which play a crucial role in shaping the adoption and sustainability of digital public services. The results further highlight that trust in e-government serves as the central foundation influencing citizens' perceptions and engagement. Without trust, even technologically advanced systems may fail to achieve widespread acceptance. At the same time, risk perception, particularly regarding data privacy and security, acts as a significant barrier, underscoring the need for governments to address both the technical and psychological dimensions of digital service delivery. In addition, perceived usefulness and service quality emerge as key drivers of positive user experiences, emphasizing the importance of delivering tangible benefits that align with citizens' everyday needs. The geographical distribution of research also indicates strong contributions from developed countries, alongside increasing participation from developing nations such as Indonesia, highlighting the global relevance of this topic.

5.1. Research Implications

This study offers several important implications. From a theoretical perspective, it contributes to integrating technology adoption theories (such as TAM and UTAUT) with broader governance frameworks, including public value and trust-based approaches. By synthesizing these perspectives, the study enhances understanding of how technological, institutional, and behavioral factors interact in shaping citizens' perceptions. From a practical and policy perspective, the findings underscore the need for governments to adopt citizen-centered digital governance strategies. Policymakers should prioritize trust-building through transparency, data protection, and consistent service delivery, while also addressing perceived risks associated with digital platforms. Furthermore, digital services must be designed to deliver clear and practical benefits, supported by effective communication and inclusive outreach programs. Strengthening stakeholder engagement and learning from global best practices are also essential for improving policy effectiveness and fostering sustainable digital transformation.

5.2. Research Limitations

Despite its contributions, this study has several limitations. First, the analysis is based solely on the Scopus database, which, although comprehensive, may exclude relevant publications indexed in other databases such as Web of Science or Google Scholar. Second, the use of bibliometric methods provides a macro-level overview of research trends but does not allow for in-depth qualitative analysis of individual studies. Third, the study focuses on publication patterns and thematic structures, without directly examining causal relationships or empirically validating the identified factors. These limitations suggest that the findings should be interpreted as indicative of general trends rather than exhaustive representations of the field.

5.3. Future Research Directions

Future research can build upon this study in several ways. First, scholars are encouraged to conduct comparative and cross-country analyses to better understand how socio-cultural, institutional, and economic contexts influence citizens' perceptions of digital public services. Second, integrating qualitative and mixed-method approaches would provide deeper insights into user experiences and the underlying reasons behind trust, satisfaction, and adoption.

behaviors. Third, future studies could explore emerging topics identified in the bibliometric analysis, such as the role of social media, public health applications, and crisis-driven digitalization (e.g., COVID-19) in shaping citizen perceptions. Additionally, there is a need to develop and test comprehensive conceptual models that integrate trust, risk perception, perceived usefulness, and governance quality within a unified framework. Longitudinal studies examining changes in citizens' perceptions over time would also be valuable in understanding the dynamic nature of digital governance. Finally, future research should place greater emphasis on developing country contexts, where digital transformation presents unique challenges related to digital literacy, infrastructure, and institutional trust.

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