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## Reflections on the nature of digital government research: Marking the 50th anniversary of Government Information Quarterly

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### A B S T R A C T

Since the advent of the digital age, the transformation of government operations, policy-making, citizen engagement, and public services has fundamentally reshaped the relationships between citizens and public institutions. Digital government, as a field of study, has evolved to address the complex challenges at the intersection of technology, governance, and society. Over the past decades, Government Information Quarterly (GIQ) has played a pivotal role in documenting and shaping this evolution from basic computerization to sophisticated digital transformation initiatives. The impact of digitalization extends across all aspects of public administration, from service delivery and policy-making to citizen engagement and democratic processes. This study brings together perspectives from leading digital government scholars to examine the nature of digital government research. Through the analysis of the journal's distinctive identity and characteristics, evolution, theoretical landscape, and methodological approaches, it offers insights into how GIQ has evolved to a transdisciplinary platform that bridges theoretical foundations with practical applications while consistently addressing emerging technological challenges, fundamental public sector values, and high-value public policy goals.

### 1. Introduction

As Government Information Quarterly (GIQ) marks its 50th anniversary (having originated in 1973 as Government Publications Review before adopting its current name in 1984), it presents an opportune moment to reflect on its distinctive role in shaping the field of digital

government research. GIQ started as an information policy journal, but the pivot to digital government began in earnest around 2002 and gradually expanded into capturing related areas such as social media, open data, smart cities, value-driven government, data-driven government, sustainable government, and Artificial Intelligence (AI). GIQ operates at the intersection of global and local administrations and

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technology advancements. For this, GIQ is positioned at the intersection of policy, information technology, government, and the public. In particular, GIQ focuses on how policies affect government information, the use and the impact of (new) technology on the relationship between the governed and the governing, and the increasing significance of information policies and information technology in relation to democratic practices.

The scope and the multi- and inter-disciplinary nature of GIQ is a natural setting for *diversity*: diversity of questions/problems tackled, diversity of local, province, national, supra-national, and thematic contexts where such questions/problems are located, diversity of approaches used to tackle such questions/problems in their contexts, diversity of outcomes – answers to questions or solutions to problems, and diversity of audiences interested in such outcomes. Many of the outcomes are actionable by policy-makers and practitioners, making GIQ a journal heralded for its scientific rigor and practical relevance (Janssen & Janowski, 2015). For this reason, GIQ published a mix of both theoretical and practical studies relevant to this domain.

Given the developments and complexity, theorization is challenging, as the whole system should be taken into account from different perspectives. Technology, people, policies, systems, data, AI, processes, and geopolitics all co-evolve (Janssen, 2025). Hence, GIQ papers should consider institutional setting, government maturity, domain-specific risks, and other components. In GIQ, research should not be narrowly focused on a single theory or take a siloed approach; rather, multiple theories bringing in various perspectives on the domain should be considered. Also, the contextual diversity is key as countries, areas, cities, and villages are different and encounter various challenges (Janowski, 2015). For example, Chinese and international research communities show convergent tech trajectories but divergent contextual priorities (Zheng & Zhang, 2025). Neglecting the context can result in negative consequences such as exclusion, privacy violations, or undermining trust, especially if the local values, legal requirements, and power dynamics are ignored. Understanding the context may not solve the actual problems or may introduce new ones. Yet, the context can also be influenced and changed, which should also be considered.

Articles published in GIQ have changed over time in response to changes in technology, government, and society. A number of GIQ articles have been ground-breaking, setting the trend in other disciplines and paving new research avenues in public administration and information systems. As a domain-specific journal, the research that GIQ publishes concentrates on contextualized analyses and often contains strong implications for public values and societal concerns, which can differ per region or country. As such, studies from different countries showing the unique and different nature of digital government practice are highly relevant and welcomed.

The relationship between theory and practice has been core to the journal's distinct identity. Advancements in technology have continuously shaped the practice of digital government and guided researchers into new pathways. During the rich history of the journal, digitalization has reduced the distinction between natural and social sciences, reflecting the role that technology plays in organizations, science, and society, as computerization and automation have become part of every aspect of human activity. Likewise, digitalization is intrinsically linked with government and cannot be viewed without it. Technology, human behaviors, and institutions have become entangled and have continuously shaped each other. Understanding, analyzing, and designing requires deep insight into the technology artefact and its relationship with the organizational and social context. Some studies take technology only as a driver and black box the technological systems, whereas other studies focus on the technological artefact and take the social context as given. Fewer studies focus on understanding both the technology and its context. In these studies, technology is neither a dependent nor an independent variable; rather, technology and the context mutually influence each other. Typical GIQ papers show a deep understanding of these aspects and do not black-box either the context or the technology.

Sometimes, the context is more important than the technology, as the context and how it changes are the subject of the investigation. For example, technology can be a driver for transforming public organizations. In other situations, technology is key, like in open data, and understanding of meta-data and other technological aspects contribute to the main findings.

The objective of this contribution is to understand the nature of the research published in GIQ. This objective is important for a number of reasons. First, it could help current and future authors achieve a better match with the scope and quality of the journal. Second, it could help reviewers and editors evaluate submissions. Third, it could show how the journal has evolved to address the emerging challenges and provides future directions for digital government. To fulfill this article's purpose, we invited experts in digital government research to share their perspectives. The selection was based on major contributors to the area and diverse experiences with GIQ as authors, reviewers, and editorial board members. The different perspectives aim to bring together a comprehensive outline of the GIQ's distinctive characteristics and contributions to the field. By examining such perspectives, we seek to understand:

- What are the essential characteristics of the GIQ-published research?
- How has GIQ evolved in response to technological and societal changes?
- What theoretical foundations underpin GIQ publications, and how does GIQ balance academic rigor with practical relevance?

The following three sections present diverse expert-based perspectives on the nature of digital government research published in GIQ through the approach adopted by Dwivedi et al. (2015, 2024). The overview of expert contributions is shown in Table 1. Although more experts were invited, not all of them reacted or were able to contribute in time. The experts expressed a variety of perspectives classified into: 1) Identity and overall characteristics, 2) Evolution, and 3) Theoretical landscape and methodological approaches. The insights revealed epistemological pluriformity, blue sky contribution in emerging topics, and continuous evolution of research directions, although foundational themes like privacy, transparency, engagement, transformation and integrated service delivery persist.

## 2. Identity & overall characteristics

### 2.1. The shifting and grounded nature of GIQ papers - Hans Jochen Scholl

According to the records in the Digital Government Reference Library (DGRL) Version 20.0, a total of 1005 peer-reviewed articles were published in GIQ between 1996 and early 2024, on average some 40 articles per year; when analyzing the past eleven years, however, the average number of articles rose to over 60 (Scholl, 2024a). The topical and thematic breadth and geographic span also rose with the increase of publications per annum (Scholl, 2024b). Over the years, GIQ has entertained the entire spectrum of standards of academic inquiry and epistemological stances. The question of "what is the nature of a typical GIQ publication" is therefore not an easy one to answer at first glance. However, once we delve into the evolution of topical trends and themes, it becomes clear that GIQ is an academic companion and guide of digital government/digital governance/digital citizenship practice (Scholl, 2022).

Early themes (before and including 2002) focused on government information policy, the role of the Internet in public administration, and the beginning of digital government initiatives. Key topics included government information dissemination, the information highway, electronic government, and public information access. The period from 2003 through 2009 saw a focus on evolving practices in digital government, the digitization of public services, and the implications of information technology on public policy. The focus shifted between 2010 and 2016 towards more advanced topics in digital government,

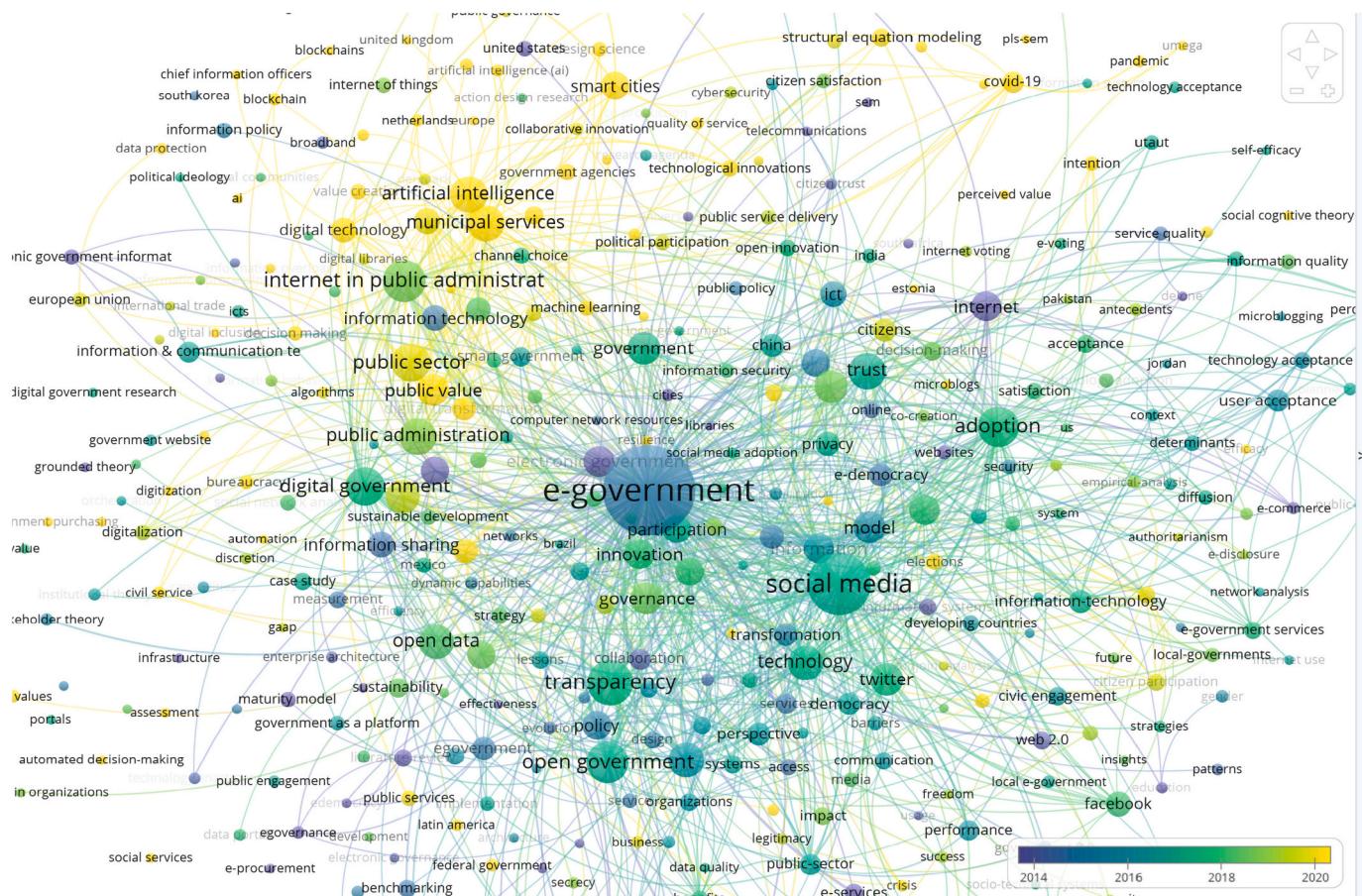
**Table 1**  
Summary of perspectives.

Theme	Author	Title	Overview of main points
Identity & Overall Characteristics	Hans Jochen Scholl	The shifting and grounded nature of GIQ Papers	<ul style="list-style-type: none"> <li>– GIQ's identity and greatest strength lie in its diversity of accepted standards of inquiry, epistemologically neutral stance, commitment to academic pluralism, global reach, and relevance to practice.</li> <li>– GIQ serves as a competent academic companion that bridges rigorous inquiry with real-world digital government practices rather than pursuing singular "general theories of digital government".</li> </ul>
	Gabriela Viale Pereira	The value of transdisciplinary knowledge integration in digital government research	<ul style="list-style-type: none"> <li>– While GIQ research inherently integrates knowledge from multiple disciplines, it can be strengthened by a transdisciplinary process that include a targeted interdisciplinary approach, a mitigated multistakeholder discourse and a facilitated collaboration of scientists and practitioners.</li> </ul>
	Lei Zheng	How is GIQ distinguished from other journals/disciplines	<ul style="list-style-type: none"> <li>– GIQ distinguishes itself by bridging local practices with global contributions and, integrating specific practical challenges with in-depth theoretical inquiries.</li> <li>– GIQ balances rapid technological change with long-standing theoretical foundations, fostering a dynamic, globally relevant platform that advances both academic knowledge and practical digital governance solutions.</li> </ul>
	Yogesh K. Dwivedi and Laurie Hughes	Characteristics of the Top 25 Highly Cited Articles Published in Government Information Quarterly	<ul style="list-style-type: none"> <li>– GIQ's most impactful research is distinguished by its focus on emergent topics, preference for qualitative-interpretive methodologies, and strong theoretical contributions (through <i>in situ</i> and <i>ex situ</i> theory development).</li> <li>– GIQ highly cited articles are influential in both academic research and policy development.</li> </ul>
	Tomasz Janowski and Jaromir Durkiewicz	Three paths to increasing GIQ real-world impact	<ul style="list-style-type: none"> <li>– GIQ is pursuing three paths to increasing its impact on digital government policy and practice: contextualization – conducting digital government research within specific country contexts; internationalization – extending the context to several countries and conducting research by international teams, and relevance – conducting research focused on high-value public policy goals.</li> </ul>
	Helen K. Liu	Evolution and Impact of Research in Government Information Quarterly: A Four-Decade Snapshot	<ul style="list-style-type: none"> <li>– GIQ's evolution over four decades is defined by four distinct stages: (1) focus on access and dissemination, (2) the rise of e-government, (3) the integration of ICTs, social media, and open government, and (4) more recent emphasis on AI, digital transformation, and public value.</li> <li>– Across these stages, GIQ has embraced building interdisciplinary frameworks and cross-country evidence bases, demonstrating its adaptability to technological advancements while addressing enduring questions of access, privacy, and public values.</li> </ul>
Theoretical Landscape & Methodological Approaches	Leonidas Anthopoulos	Addressing emerging trends in government technology: writing about smart cities for GIQ	<ul style="list-style-type: none"> <li>– While not yet a dominant trend in GIQ, smart cities represent a promising emerging research theme, aligning with the journal's interdisciplinary scope and focus on addressing critical, impactful problems.</li> <li>– GIQ's theoretical landscape is shaped by a diverse range of frameworks, with key themes including public administration and governance theories, cognitive, social, and behavioral theories, and technology, organization, and socio-technical systems theories.</li> </ul>
	Adegboyega Ojo	Weaving a tapestry of GIQ's theoretical themes	<ul style="list-style-type: none"> <li>– GIQ stands out for its 'blue sky' research, balancing future-oriented explorations of emerging technologies, the opportunities they generate and the risks and challenges they pose, with grounded studies on current digital governance challenges, while employing and combining innovative theoretical foundations from various domains (information systems, management, economics, cognitive psychology, etc.) adapted to the public sector.</li> </ul>
	Euripidis Loukis	'Blue Sky' research with respect to topics and theoretical foundations on digital governance	<ul style="list-style-type: none"> <li>– GIQ encourages "thinking outside the box" to address novel and impactful topics while avoiding overhype, balancing relevance and rigor.</li> <li>– GIQ embraces methodological flexibility, demanding scientifically sound, transparent, and replicable research, and focuses on delivering clear theoretical and practical contributions that communicate outcomes effectively to diverse audiences, ensuring studies are not "just another study."</li> </ul>
	Anastasija Nikiforova	The multi-faceted innovative nature of research and readership	<ul style="list-style-type: none"> <li>– GIQ welcomes methodological innovations that push the boundaries of current practices. GIQ has developed a robust stream of computational and social data science approaches underpinned by new forms of data. GIQ articles should pay strong attention to the interpretation and policy translation of their findings.</li> </ul>
	Panos Panagiotopoulos	A critical appraisal of GIQ's methodological pluralism	<ul style="list-style-type: none"> <li>– GIQ encourages "thinking outside the box" to address novel and impactful topics while avoiding overhype, balancing relevance and rigor.</li> <li>– GIQ embraces methodological flexibility, demanding scientifically sound, transparent, and replicable research, and focuses on delivering clear theoretical and practical contributions that communicate outcomes effectively to diverse audiences, ensuring studies are not "just another study."</li> <li>– GIQ welcomes methodological innovations that push the boundaries of current practices. GIQ has developed a robust stream of computational and social data science approaches underpinned by new forms of data. GIQ articles should pay strong attention to the interpretation and policy translation of their findings.</li> </ul>

including smart governance, data management, and cybersecurity. Social media and big data in public administration, smart cities, public sector innovation, and cybersecurity concerns in public administration were other major topics. Recent themes (since 2017) include the use of artificial intelligence in public administration, digital democracy, and the ethics of information management in the public sector (Scholl, 2006,

2007, 2010) (see also Fig. 1).

As this short summary exemplifies GIQ publications were close to the heartbeat of both challenges and opportunities facing public administrations around the world. From this, it follows that typical GIQ publications are highly relevant to practice. These contributions either analyze and evaluate practical experiences and outcomes, or they



**Fig. 1.** VOSviewer Overlay Visualization of Keyword Linkages and Strengths.

accompany and help guide practical initiatives and programs, or do both. As the topical and thematic scope summarized above further shows, the phenomena at the intersection of the public sphere, public administration, information management, and use of information technology cannot be tackled within the confines of a single discipline. It rather involves active interdisciplinary collaboration, or, at a minimum multi-disciplinary approaches, which together help shape a more comprehensive understanding of the intersectional problems at hand (Scholl, 2010). Digital Government Research has benefited from GIQ and its editors who have consistently and consequently upheld an epistemologically pluralist and interdisciplinary stance that encourages diverse academic viewpoints and standards of inquiry (Scholl, 2022).

In the early years, Digital Government Research was accused of lacking theoretical foundations (“theory-thin”) (Grönlund, 2004; Heeks & Bailur, 2007). In fact, over 25 years no “General or Special Theory of Digital Government” has been developed. While certain neighboring disciplines have unsuccessfully labored themselves for decades with attempts to create “solid” general theory foundations for their respective discipline (“Information Systems Theory”) (Benbasat & Zmud, 2003; King & Lyytinen, 2004; Lyytinen & King, 2004), such attempts have been absent from Digital Government Research. However, this does not mean that the study domain lacks theory undergirding. The analysis of GIQ publications demonstrates a rich foundation of theories and frameworks. An exemplary list of theories employed in GIQ research includes actor–network theory, agency theory, cognitive integration theory, innovation diffusion theory, institutional theory, public management theory, public value theory, systems theory, the technology acceptance model (TAM), trust theory, and unified theory of acceptance and use of technology (UTAUT) to name a few. Scholars developed and presented theoretical frameworks that would guide empirical research,

for example, the smart city development framework, the framework of resilient information infrastructures, or the technology enactment framework.

As indicated above, GIQ articles typically tackle complex, real-world problems at the intersection of public administration, information management, and information technology. GIQ is characterized by its focus on empirical research, policy analysis, and theoretical contributions that address the challenges and opportunities of digital transformation in government. The sources of data often include government reports, academic literature, and primary research methods such as surveys and case studies, reflecting the journal's commitment to advancing both the theory and practice of digital government/governance/citizenship. Analysis tools like VOSviewer (Van Eck & Waltman, 2010, 2011) allow for a chart-based representation of topical connections (see Fig. 1), which are here based on keywords chosen by the respective publication authors. The chart captures the astounding breadth of topics in the study domain that GIQ covers. The larger the nodes, the more frequently the keywords were used. The links between the nodes show the relationships and co-occurrences of the author-chosen keywords. For space constraints, no detailed analysis or discussion of these keyword relationships can be performed here. However, one observation can be made: Of the 1005 GIQ publications a mere 48 were found to focus on policy analyses of some kind. This is also evidenced in Fig. 1 where the node "policy" appears as a smaller node underneath central node "e-government" positioned between nodes "transparency" and "open government." It might need an editorial push, for example, by means of a special issue to foster policy-related research more strongly in GIQ.

When it comes to how GIQ distinguishes itself from other journals, then two journals come to mind, which like GIQ occupy “flagship” status

in their respective disciplines: MIS Quarterly (MISQ) in Information Systems Research and Public Administration Review (PAR). With regard to the former, GIQ maintains a broader theoretical and topical orientation, although it is exclusively public-sector focused, whereas MISQ covers information systems in a wide range of organizational settings.

MISQ tends to have a stronger emphasis on theoretical contributions to the field of information systems, although the theory developments have not been considered successful (Lyytinen & King, 2004). In the case of PAR, both journals exclusively maintain a public-sector orientation, in which PAR lacks the information management and information technology orientation, that GIQ emphasizes. PAR, however, covers a broader range of public administration topics, than GIQ, including traditional governance and policy issues. PAR and GIQ are complements rather than competitors, whereas MISQ and GIQ have little overlap, if any.

GIQ strongly emphasizes the practical applications of research, particularly how digital technologies can improve public administration, enhance transparency, and foster better citizen engagement, which contrasts with academic theory-heavy journals like Management Science or Academy of Management Journal. These journals are more focused on theoretical advancements and broad management practices, whereas GIQ emphasizes research with direct implications for improving public sector operations and services. Practitioner-oriented publications like Harvard Business Review, on the other hand, are more general and business-oriented, lacking the public sector focus and the rigorous academic research that GIQ offers.

In summary, GIQ's greatest strength is its diversity regarding the accepted standards of inquiry, its epistemologically neutral stance, its commitment to academic pluralism, its global reach, its remarkable anchoring in and relevancy to practice, its resistance to becoming an academic ivory tower with narrow-minded gatekeepers, its elegant abstinence from developing hocus-pocus "general theories of digital government," but rather serving as a competent academic companion of and guide to informing practice (and in turn quickly learning from what is found in practice).

## 2.2. The value of transdisciplinary knowledge integration in digital government research - Gabriela Viale Pereira

GIQ research explores the practical concepts of digital government, digital governance, and digital citizenship by integrating scientific knowledge from diverse fields – such as public administration, political science, information systems, economics, psychology, sociology, and law – developing the knowledge base and theories related to the use, management, and impact of digital technologies in government. Therefore, more than interdisciplinarity, the field calls for a transdisciplinary process that address real-world problems by integrating knowledge from science and practice, fostering collaboration between experts and stakeholders to develop solutions that are scientifically grounded, incorporate experiential wisdom, and acknowledge both the uncertainty and limitations of human knowledge (Scholz, 2020; Scholz & Steiner, 2015). GIQ research originates from the intersection between disciplines and equal integration of science and practice knowledge. But how transdisciplinary research is currently reflected in GIQ? Transdisciplinary research has appeared in only a few papers in the journal, particularly for addressing sustainable transitioning (Janowski et al., 2018), cross-boundary relationships and knowledge sharing (Bharosa, 2022; Dias, 2019; Ku et al., 2016), which is related to knowledge co-production (Norström et al., 2020) and interdisciplinary participation approaches (Marzouki et al., 2022).

Transdisciplinary is reflected on the study by Janowski et al. (2018), emphasizing the learning relationships and self-development by citizens, who through the platform paradigm, are empowered by the administration to create public value by themselves to respond to changing societal need and foster sustainability. With a focus on stakeholders' participation processes, Marzouki et al. (2022) highlight the

need for interdisciplinary and transdisciplinary research to advance participation processes, especially by integrating application, governance, stakeholders, and societal dimensions that lead to more informed and effective approaches. In Bharosa (2022), the author develops a conceptual research framework for studying GovTech design and governance, inspired by the study design framework provided by Koppenjan and Groenewegen (2005), which has transdisciplinary as a core element, together with a design-oriented approach and a socio-technical nature. The proposed framework emphasizes the importance of investigating relationships between technology, social science, public values, and private innovation which are characteristics of GovTech and are anchored in a transdisciplinary process.

The inherently transdisciplinary nature of e-government research is highlighted by Dias (2019), being evident in the patterns of publication and impact across disciplinary boundaries. When analyzing e-government research in the Ibero-American community, the author noted that while the most impacting authors from those countries publish most in technical sciences, they achieve greater impact when publishing in social sciences, stressing the value and increased benefit of integrating multiple perspectives to address complex digital government challenges and the need for cross-boundary cooperations. Ku et al. (2016) analyze the social dynamics of cross-boundary collaborations for digital government research, across organizational, and geographical boundaries, highlighting the importance of arriving at a consensus on what and how to study a subject, which is the starting point of a transdisciplinary process (Pohl, 2005; Scholz et al., 2024).

A key driver of transdisciplinary processes is the societal relevance and concerns raised by diverse stakeholders regarding specific challenges as they require the integration of knowledge across disciplines and sectors to develop socially robust solutions (Scholz et al., 2024). According to Scholz et al. (2024), transdisciplinary problems are systemically complex, societally relevant, ill-defined, and real-world problems that often demonstrate high levels of ambiguity in the perceptions and evaluations between scientists and practitioners. This is reflected by the increasing complexity of digital government research and practice, where cross-boundary knowledge sharing and the convergence of diverse fields are crucial to address the multifaceted challenges and uncertainties posed by the adoption of emerging technologies like artificial intelligence within the public sector, as well as the evolving social, economic, and political contexts of governments that raises complex questions (Ku et al., 2016), requiring transdisciplinary approaches. The need for transdisciplinary processes is also raised by Bharosa (2022), since based on his proposed model, the effective governance of GovTech solutions, which "refers to socio-technical solutions – that are developed and operated by private organizations – intertwined with public sector components for facilitating processes in the public sector" will require boundary spanning across the design areas and communities, such as through multiple-helix innovation hubs, to foster collaboration and integrated solutions. Seltén and Klievink (2024), while analyzing the complexities that public organizations face in adopting artificial intelligence technologies, suggest the need for convergence of knowledge across fields, as AI integration often fails due to the misalignment between data scientist and domain experts. This illustrates the necessity for transdisciplinary collaboration, where cross-boundary knowledge sharing can bridge these gaps, facilitating the effective integration of AI into public sector operations through the complementarity of technical expertise with domain-specific insights.

As predicted by Scholl (2008) electronic government research has developed with increasing relevance, highlighting the inherent complexity and multidisciplinary nature of government related problems, which require a transdisciplinary approach that embraces a more integrative understanding of knowledge. However, this is currently limited reflected in GIQ. As digital government research has strong ties to policy and practice (Gil-Garcia et al., 2018), GIQ research can be strengthened by a transdisciplinary process that include a targeted interdisciplinary process, a mitigated multistakeholder discourse and a

facilitated collaboration of scientists and practitioners, resulting on socially robust orientations (Scholz et al., 2024) for how to manage complex digital government challenges.

### 2.3. How is GIQ distinguished from other journals/disciplines? – Lei Zheng

#### 2.3.1. Unifying local practices with global theoretical contribution

GIQ excels in aligning localized practices with broader theoretical contributions to the international academic community. The journal recognizes that digital governance practices often emerge from specific local or national contexts, shaped by unique cultural, political, and economic conditions. At the same time, GIQ encourages authors to connect these local practices to global theories, fostering a two-way dialogue between specific contexts and universal knowledge. For example, studies may explore how a unique digital government practice in one particular country could be used to test or refine theories on public administration or digital transformation that might be applied globally. By bridging these two perspectives, GIQ promotes research that provides rich, context-specific insights and advances the understanding of digital governance in diverse settings, thereby enriching global discourse with localized knowledge.

#### 2.3.2. Integrating specific practical challenges with in-depth theoretical inquiries

GIQ distinguishes itself by unifying specific practical challenges with in-depth theoretical inquiries. Many of the journal's contributions start with tangible, real-world problems but are then extended to explore the broader theoretical implications of these issues. This dual focus allows GIQ to produce both applicable and theoretically significant research. For instance, a study may examine the effectiveness of digital public services in a particular region while also developing new theoretical frameworks on digital inclusivity or public value creation. By engaging with specific practices and grounding them in theoretical contexts, GIQ fosters an environment where practical insights are continually used to refine and advance the theoretical foundations of digital governance, thus contributing both to academic knowledge and to policy development.

#### 2.3.3. Balancing rapid technological change with long-standing theoretical foundations

A hallmark of GIQ is its ability to balance the rapid pace of technological change with long-standing theoretical foundation. The journal consistently addresses contemporary challenges posed by emerging technologies such as artificial intelligence, blockchain, and big data while anchoring these discussions in well-established theories of governance, information systems, psychology, public policy, and administration and thereafter integrating and modifying these theories. This balance is crucial because it ensures that research remains relevant to current technological trends while adhering to core values such as accountability, transparency, equity, and public trust. For example, a GIQ paper might explore the governance challenges associated with AI deployment in public services while applying long-standing theoretical frameworks related to ethical governance or political accountability. This approach allows GIQ to offer unique perspective on how new technologies can be effectively integrated into public administration practices, without compromising on the fundamental principles that guide digital governance. By doing so, GIQ provides a dynamic yet stable platform for understanding the implications of technological change in the public sector.

### 2.4. Characteristics of the top 25 highly cited articles published in government information quarterly – Yogesh K. Dwivedi and Laurie Hughes

The GIQ has developed an international reputation for innovative, inter-disciplinary research across a diverse range of emerging disciplines

that has actively contributed to public policy and leading debates on many of the significant digitalization of government focused challenges over the last 50 years. Although the majority of GIQ articles have influenced academic research, practice, and policy, some of its articles have made a much greater impact than others. This section follows an approach outlined in Aksnes (2003) and Antonakis et al. (2014), that analyses the underlying contributory factors in highly cited publications. We assess the top 25 highly cited articles in GIQ (for full list see Supplementary Table S1) and analyze the theoretical and methodological approaches adopted by researchers and the impact on the wider community in the context of policy and influence on emergent research topics. This analysis highlights the significant influence of GIQ and its interpretivism focused contribution in the advancement of both theory and practice.

#### 2.4.1. Metric analysis: Exploring role of article age, article length, number of co-authors, collaboration, and number of Mendeley readers

Data relating to article age and citations (see Supplementary Table S1) shows that older articles generally accumulate more citations, though exceptions exist, with younger articles gaining significant attention quickly. Articles between 10 and 19 years tend to have a consistent citation range, though the trend is not strictly linear. Policy citations, however, show no clear trend with age; some younger articles have high policy influence despite fewer academic citations, while some older articles with high academic impact show low policy relevance. This suggests that policy citations are more influenced by an article's relevance to current discussions than its age.

Based on the data presented in Supplementary Table S1, there appears to be an inverse relationship between article length and citations. Generally, shorter articles (e.g., 7–10 pages) tend to receive more citations, with the highest citation count observed at 14 pages (1862 citations). As article length increases beyond 20 pages, citations tend to decrease, suggesting that longer articles may attract fewer citations overall. The reason for this is unclear, but could be due to reduced readability, accessibility, or engagement from researchers.

In terms of the influence of the number of co-authors, based on the data presented in Supplementary Table S1, there appears to be a positive association between the number of co-authors and citations, as publications with more co-authors tend to have higher citation counts. For example, papers with 2–4 co-authors generally receive more citations than those with just one author. However, there are exceptions, suggesting that while collaboration may boost visibility, other factors also contribute to citation frequency.

Out of 25 entries, 8 instances involve Cross-Disciplinary Collaboration, and 17 do not (see Supplementary Table S1). The trend suggests that Cross-Disciplinary Collaboration is associated with higher citation rates. For instance, when collaboration is present, citation counts tend to be higher (e.g., 1862, 677, 669). Additionally, these instances also feature more policy citations, averaging around 20.5 citations. Conversely, entries without collaboration have relatively lower citations (e.g., 445, 595) and fewer policy citations, averaging approximately 11 citations. This trend implies that cross-disciplinary efforts may lead to more impactful research, both in academic and policy contexts.

Based on the data in Supplementary Table S1, there appears to be a moderate positive trend between the number of readers and citations, with higher readership generally aligns with more citations. For example, articles with 1848 and 2641 readers have 1862 and 1593 citations, respectively, indicating a potential correlation. However, policy citations do not follow the same pattern, as articles with more readers or citations don't necessarily have more policy citations. For instance, an article with 2641 readers has 62 policy citations, while one with 2782 readers has only 34 policy citations, showing less consistent association.

#### 2.4.2. Topical focus: Emergent vs. established topics

Of the 25 articles, topics of 23 are categorized as emergent in nature, which means these studies examined novel issues. Only two highly cited

studies examined established issues, when a large number of studies had already been published on those topics. One of the non-emergent studies developed and tested the UMEGA model (Dwivedi et al., 2017), demonstrating an adaptation of a very well-established IS theory (i.e., UTAUT by Venkatesh et al., 2003), which provided a new and suitable theoretical paradigm for e-government researchers. The focus on emergent concepts has been a consistent factor throughout the period spanning the 23 articles, in that these topics have been transformational in the context of theoretical development and understanding. The Four-Stage Digital Government Evolution Model presented by Layne and Lee (2001), is a good example of this, where back then e-government was still a novel concept, lacking demonstrable application and theoretical development. The high level of citations, both academic and policy of this particular study, demonstrates the impact on further research as well as the development and evolution of policy.

#### 2.4.3. Methodological approaches

Among the 25 highly cited articles, 16 employed a qualitative-interpretive-based approach, utilizing various methods such as literature analysis, interviews, and case studies. The second-largest group comprised six studies that adopted a quantitative approach. The remaining three highly cited articles focused on literature reviews. Notably, the majority of the qualitative-interpretive studies and review articles received more policy citations than the quantitative studies, with only one exception. This suggests that qualitative-interpretive and review articles are significantly more likely to be utilized by their readership, particularly by practitioners and policymakers, compared to quantitative studies. This observation, therefore, highlights the value of qualitative approaches and supports a recommendation that future work in GIQ should incorporate a strong qualitative component to enhance its relevance and utility for its audience.

#### 2.4.4. Development and use of theories

An analysis of the theoretical aspects of 25 highly cited articles published in GIQ reveals that several theoretical concepts, frameworks, and models have been developed, applied, and/or tested. These can be categorized into the following three groupings:

- 1) In Situ Theory Development or Application - focuses on building or applying theory in real-world settings, grounded in the lived experiences, social interactions, and specific circumstances of the research context. This category includes nine highly cited articles, among them the three most cited, where e-government (e-gov) related theories and frameworks were developed from initial concepts and emerging ideas. Examples of in situ developed theories, concepts, and models published within GIQ include the "Stages of Growth Model for E-Gov", "E-Gov and Social Media as Openness and Anti-Corruption Tools", "ICTs as Change Agents", "Citizen Sourcing", "Government as a Platform", "Do-It-Yourself Government", "We Government", "Open Government Data Lifecycle", "Open Government Maturity Model" and the "Four-Stage Digital Government Evolution Model".
- 2) Ex Situ Development of Theories and Models - refers to the development or application of theories in contexts that are removed from the actual setting in which the phenomenon occurs. Seven highly cited articles fall into this second category, where theories and models were initially developed in reference disciplines but were significantly integrated and adapted to become e-government specific. Since the foundational work originated outside the e-gov domain, these are referred to as ex situ developed theories, models, and concepts. This category includes the "e-Participation" theory, "E-Gov Challenges & Success Factors", "E-Gov Adoption Model (GAM)", "Unified Model of Electronic Government Adoption (UMEGA)", "Regulatory Framework", "Digital Transformation", and the "Public Value of E-Government".

- 3) Application of External Theories and Models: This third category includes six articles that apply external theories, models, and theoretical concepts from other disciplines to examine and understand e-government-related issues. These include the "Technology Enactment View", "Social Media Use in Government", "Transparency and Governance", "IS Success Model", "Theory of Planned Behaviour", "Technology Acceptance Model", and the "Theoretical Lens of Framing".

This specific analysis clearly suggests that studies developing theories indigenous to e-government, whether in situ or ex-situ, are more likely to be highly cited. Therefore, future studies published in GIQ are recommended to emphasize developing and adapting relevant theories and concepts native to the e-government/digital government field. The remaining highly cited articles among the top 25 are primarily review articles that generally focus on emergent digital government related topics without developing or applying specific theories, concepts, or models. This grouping of articles is highly cited and has received relatively high levels of policy citations, underscoring the value of research that addresses emergent trends and critical issues in digital government.

#### 2.5. Three paths to increasing GIQ real-world impact – Tomasz Janowski and Jaromir Durkiewicz

As a leading scientific journal for digital government research, the articles published in GIQ reflect the trends and dynamics shaping the inception, funding, conduct, management, and follow-up of such research over the years. Among them, a major trend is digital government research pursuing real-world impact, i.e., impact on digital government policy and practice.

This section reflects upon three interrelated paths to increasing such impact – contextualization, internationalization, and relevance. The following sections examine the extent of GIQ-published research pursuing these paths, including minimum conceptual and theoretical background, and an analysis of the entire body of GIQ articles published between 1984 and 2024 for each of them. A full article documenting the details of this analysis – rationale, process, outcomes and recommendations – is forthcoming.

##### 2.5.1. Contextualization

One of the long-held tenets in digital government research is the recognition that digital government is not an isolated technological artefact but an act of putting technology in the institutional, social, and economic context and transforming both – the technology and the context – in the process. A prominent carrier of this context is a country with its laws, institutions and citizens where (or about which) the research was conducted – motivating the problem, providing the data to solve it, and helping validate the solution.

The contextualization of digital government research dates back to the seminal work on technology enactment framework and the distinction between the objective and enacted technology by Fountain (2001). Subsequently, Heeks (2003) uncovered the design-reality gap between e-government project design and on-the-ground reality. Contextualization is the fourth stage in the digital government evolution model specializing digital government initiatives to "different local, sectorial and local-sectorial contexts" (Janowski, 2015). Four contextual factors relevant to e-government in developing countries are institutional and administrative, cultural and social, economic and infrastructural, and demographic (Priandi et al., 2019).

The extent of GIQ-published articles pursuing the contextualization path was analyzed through the occurrence of the names of all 193 member states of the United Nations in the abstracts of all 1885 articles published in GIQ since 1984. The assumption is that the occurrence of country names represents the articles' interest in those countries and likely the context in which the research was conducted.

Overall, 1373 (73 %) article abstracts do not mention any country,

426 (23 %) mention one country, 57 (3 %) two countries, 18 (1 %) three countries, 7 (0.5 %) four countries, and 2 (0.01 %) five countries. See Fig. 2.1. The most frequently mentioned countries are the United States (19 %), China (9 %), India (6 %), and Australia, Netherlands and Canada at 5 % each. See Fig. 2.2.

### 2.5.2. Internationalization

Internationalization of digital government research is naturally born when the research context comprises several countries, when the problem tackled concerns relationships between countries, when the problem is shared and needs a coordinated solution among several countries, when the proposed solution/design is transferred from one country to another, etc. Faced with the risks of applying emerging technologies to digitalizing government, internationalization in digital government research enables policy experimentation, risk-sharing and mutual learning. It also helps scale-up solutions from the national to international levels.

The internationalization of digital government research can be tracked back to the work of [Heeks \(2005\)](#) who postulated e-government as “a global project of technology transfer taking designs from one context into a different context”, to studies extending the then dominant US focus with international considerations ([Evans & Yen, 2006](#)), to research on global technology programs ([Navarra & Cornford, 2009](#)), and to early experiments with building international digital government research community ([Dawes et al., 2011](#)). More recently, it has been shaped by the studies of e-government in autocracies ([Maerz, 2016](#)), internationalization of e-government services ([Williams et al., 2018](#)) and various cross-country studies: Australia vs. New Zealand ([Gauld et al., 2009](#)), UK vs. the Netherlands ([James & Petersen, 2018](#)), Latin America and Spain ([Dias, 2019](#)), and six countries remaining in sensitive relationships with their neighbors – India, Netherlands, Pakistan, Taiwan, Ukraine, and the United Kingdom ([Jansen et al., 2023](#)).

The extent of GIQ-published articles pursuing the internationalization path was analyzed through the country affiliations of the authors of 1885–355 = 1530 articles published in GIQ since 1984; author affiliations could not be established for 355 articles. The presence of co-authors from different countries represents international collaboration although the research may not concern the countries of the authors.

Overall, 1181 (77 %) of the articles were written by the authors from one country and 349 (23 %) by the authors from several countries. The latter is divided into 258 (17 %) articles written by authors from two countries, 70 (6 %) from three countries, 16 (1 %) from four countries and 5 (0.2 %) from five countries. Additionally, one article was written by the authors from nine countries. See Fig. 3.1. The essence of internationalization is when the authors from several countries consistently work with each other. The largest numbers include collaboration

between the United States and: Mexico (31 articles), China (20 articles), South Korea (19 articles), Australia (11 articles), Germany (10 articles), Netherlands (10 articles), United Kingdom (7 articles), Canada (5 articles), Italy (5 articles), and Spain (5 articles). See Fig. 3.2.

### 2.5.3. Relevance

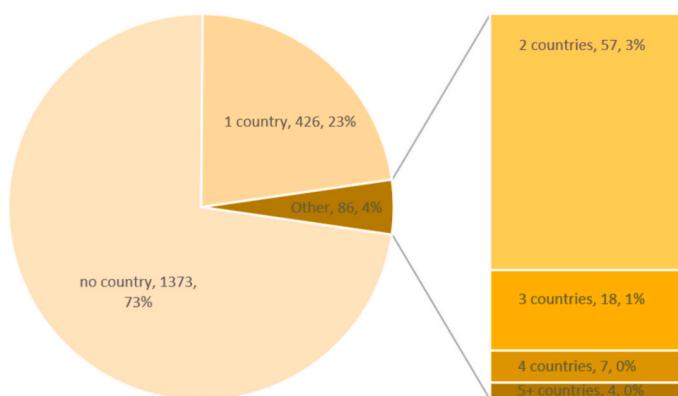
The third approach to increasing real-world impact is enhancing policy relevance, pursuing research frames and contributions to high-value public policy goals. Every country should have its own framework to define and prioritize such goals and drive the policy agenda to fulfill them. It is key that policy-relevant digital government research is aligned with such frameworks. On the international level, the framework driving development action by all member states of the United Nations is Sustainable Development Goals (SDGs).

The conceptual framework for the intersection between the domains of digital government and sustainable development and the state of research at this intersection were first laid out by ([Estevez & Janowski, 2013](#)). The framework supported the analysis of the aspiration-capacity gap between the countries' pursuit of SDGs and their digital government capacity to support it ([Janowski, 2016](#)), and the measurement of digital government's contribution to SDGs as the “means of implementation” ([Marcovecchio et al., 2019](#)). Digital government is critical for the attainment of SDGs ([Lyulyov et al., 2024](#)), including the provision of open government data ([Fasli et al., 2023](#)), supporting the transition from the linear to the circular economy ([Medaglia et al., 2024](#)), localizing SDGs at the local level ([ElMassah & Mohieldin, 2020](#)), etc. It is also insufficient – even digital government leaders may fail to advance sustainable governance, i.e. their “capacity to steer and coordinate public action towards sustainable development” ([Durkiewicz & Janowski, 2021](#)). ([Sanina et al., 2024](#)) take stock of the literature on digital government and SDGs and to what extent they are connected.

The extent of GIQ-published articles pursuing the relevance path was analyzed through the numbers of GIQ articles published since 1984 that use in their titles, abstracts and keywords the terms associated with different SDGs. The terms follow the methodological proposal for categorizing scientific publications according to SDGs ([Ribeiro et al., 2023](#)). For example, SDG16 on peace, justice and strong institutions is associated with: governance, participatory approach, public participation, institutional development, institutions, violence, peace, corruption, anti-corruption, social conflict. For an article to be associated with a SDG, its title, abstract, or keywords should contain at least one of these terms.

Overall, among 1885 articles, 1325 (70 %) are not associated with any SDG. The remaining 560 articles most frequently use SDG9 on industry, innovation and infrastructure (246 articles), SDG16 on peace, justice and strong institutions (178 articles), SDG12 on responsible

1. Number of countries in GIQ article abstracts



2. Countries most used in GIQ abstracts

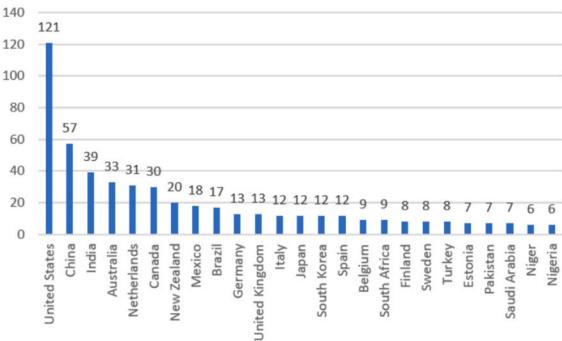


Fig. 2. Contextualization analysis of the GIQ articles 1984–2025: 1) number of countries occurring in article abstracts, 2) most frequently mentioned countries in article abstracts.

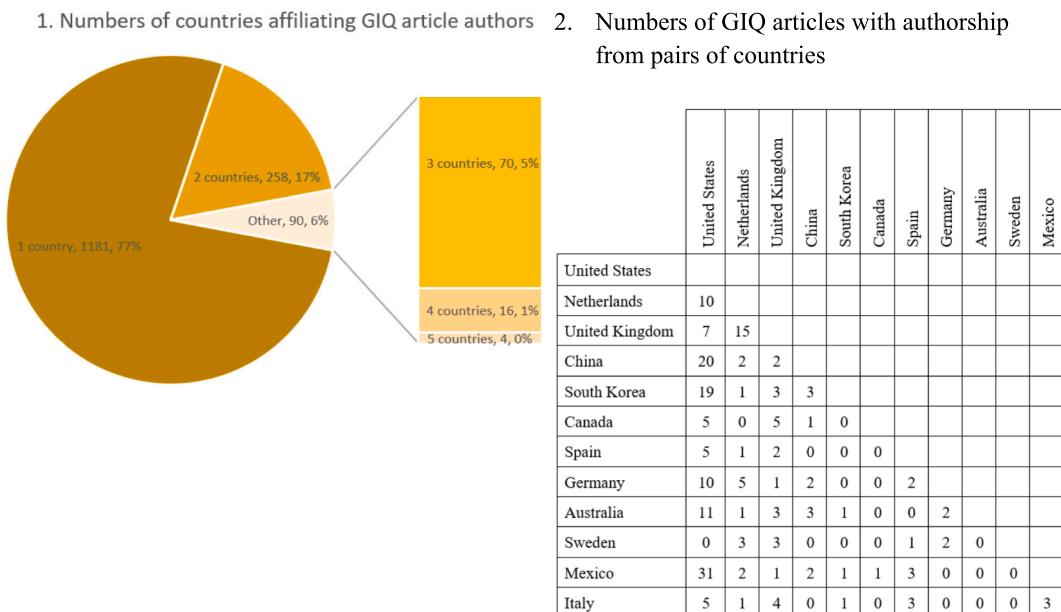


Fig. 3. Internationalization analysis of the GIQ articles 1984–2025: 1) numbers of countries affiliating GIQ article authors, 2) numbers of GIQ articles with authorship from pairs of countries.

consumption and production (118 articles), SDG17 on partnership for the goals (109 articles), SDG8 on decent work and economic growth (49 articles), SDG10 on reduced inequalities (47 articles) and SDG4 on quality education (44 articles). Surprisingly, SDG11 on sustainable cities and communities is only associated with 15 articles. See Fig. 4.

### 3. Evolution

#### 3.1. Evolution and impact of research in government information quarterly: A four-decade snapshot - Helen K. Liu

The field of government information has undergone significant transformation over the past four decades, mirroring the rapid advancements in technology and the evolving relationship between governments, citizens, and society. Government Information Quarterly (GIQ), founded in 1984, has played a crucial role in documenting and shaping this evolution. Hernon and McClure (1984), the founding editors of GIQ, stated that the establishment of GIQ has been to fill the gap of accumulating knowledge in the field of government information.

They argued that GIQ aims to “address the myriad issues confronting the production, dissemination, accessibility, bibliographic control, collection, and use of government information.” (p.v). This article thus offers an analysis of GIQ’s high impact contributions, focusing on the most cited articles in each decade to highlight key themes, methodological approaches, and theoretical frameworks.

A comprehensive search of the Web of Science on September 7, 2024, identified 1680 articles and reviews published in GIQ. These were divided into four periods based on publication year. The top 2 % most cited articles within each period were selected for in-depth analysis, examining the topics addressed, research subjects, methodologies employed, and theoretical underpinnings (see Supplementary Table S2).

On September 7th, 2024, a Web of Science search using “Government Information Quarterly” as the publication title yielded 2626 items. This was refined to include only articles and reviews, resulting in 1680 items after excluding 13 anonymous government reports. These items were then divided into four time periods, with 248 in the first, 232 in the second, 456 in the third, and 744 in the fourth. For each period, the top 2 % most cited articles were selected for analysis, as citation tracking for

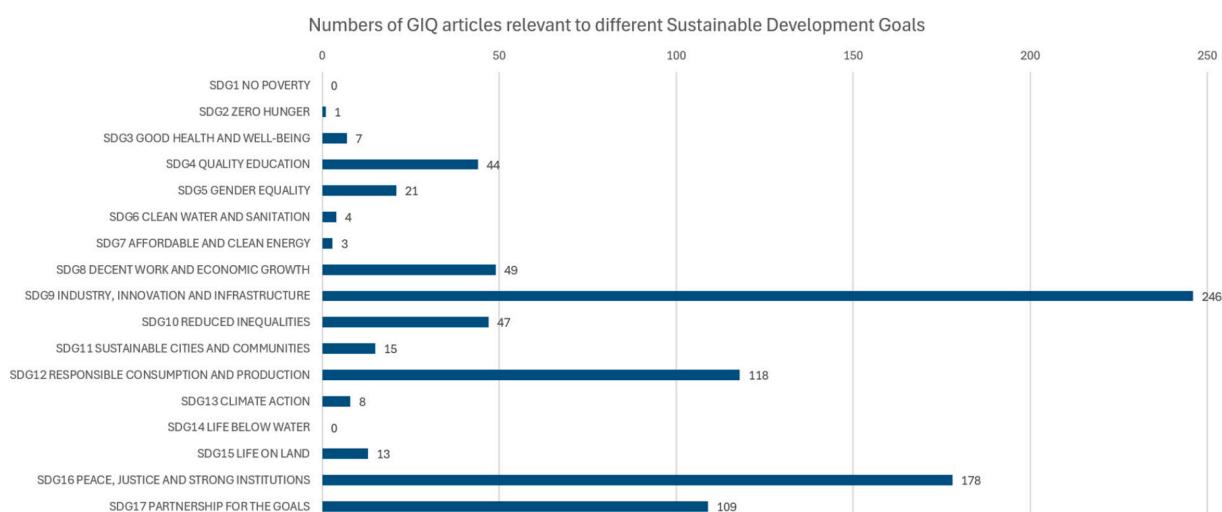


Fig. 4. Relevance analysis of the GIQ articles 1984–2025: numbers of articles associated with SDGs.

older articles was limited in Web of Science (total reviewed articles = 34; 1st = 5; 2nd = 5; 3rd = 9; 4th = 15).

### 3.1.1. Period 1 (1984–1993): Access and dissemination

The first decade of GIQ was marked by a focus on fundamental issues of access to and dissemination of government information. Research like [Heron's \(1984\)](#) exploration of how academics utilized government publications and [McClure's \(1988\)](#) examination of federal technical reports laid the groundwork for understanding information practices in the pre-digital era. [Flaherty's \(1988\)](#) prescient concerns about privacy and surveillance in an increasingly automated world foreshadowed debates that continue to this day. [Allen's \(1992\)](#) conceptualization of public access to government information and [Myer's \(1985\)](#) investigation into the Government Printing Office's computer category system further illustrate the early focus on information management and accessibility.

### 3.1.2. Period 2 (1994–2003): Rise of E-government

The second period witnessed the emergence of e-government as a transformative force. [Kaylor et al. \(2001\)](#) definition of e-government and identification of key municipal website functions provided a foundational understanding of this new paradigm. [Layne and Lee \(2001\)](#) offered a four-stage framework for e-government development, while [Gupta and Jana \(2003\)](#) assessed its tangible and intangible benefits through a case study in India. [Jaeger and Thompson \(2003\)](#) and [Jaeger \(2003\)](#) critically examined challenges and international perspectives on e-government, highlighting concerns about the security, privacy, homeland security, digital divide, economic disparities, education, accessibility, prioritization, citizen awareness and confidence, and the need for clear policies and performance indicators.

### 3.1.3. Period 3 (2004–2013): ICTs, social media, and open government

The third period reflected the growing influence of information and communication technologies (ICTs) and social media on government and citizen interaction. Research explored how these technologies empowered citizens to demand transparency ([Bertot et al., 2010](#)), participate in co-production of public services ([Linders, 2012](#)), and engage with local governments ([Yildiz, 2007](#)). The open government movement gained momentum, prompting discussions about regulation ([Bertot et al., 2012](#)), analytical framework development ([Heeks & Bajur, 2007](#)), a gap analysis between theories and practices ([Gil-García & Pardo, 2005](#)), and the effective use of social media and government websites ([Lee & Kwak, 2012](#); [Wang & Liao, 2008](#)).

### 3.1.4. Period 4 (2014–2023): AI, digital transformation, and public value

The fourth period (2014–2023) witnessed a significant increase in research volume and a focus on AI, digital transformation, and public value. The open government movement facilitated systematic, cross-country comparisons, leading to the development of generalizable frameworks. Notable contributions include [Mergel et al. \(2019\)](#) model for understanding government digital transformation, [Zuiderwijk and Janssen's \(2014\)](#) analysis of open data policies, and [Bannister and Connolly's \(2014\)](#) taxonomy of public values for assessing ICT impact. Additionally, researchers explored technology acceptance models ([Dwivedi et al., 2017](#)), open data quality assessment ([Vetrò et al., 2016](#)), and the application of the DeLone and McLean model to e-filing usage ([Veeramootoo et al., 2018](#)). Further studies focused on practical aspects like open data strategies ([Attard et al., 2015](#)), social media usage strategies ([Bonsón et al., 2015](#)), and AI adoption ([Sun & Medaglia, 2019](#)). The period also saw continued interest in public value ([Twizeyimana & Andersson, 2019](#)), privacy concerns ([Van Zoonen, 2016](#)), and the relationship between social media engagement and citizen trust ([Warren et al., 2014](#)).

### 3.1.5. Technological development as a catalyst for research

GIQ's content has consistently mirrored the technological landscape,

adapting to emerging trends and challenges. In the early years, the focus on information categorization reflected the constraints of pre-digital information systems. The rise of e-government in the late 1990s and early 2000s prompted research on topics like website design of municipal governments ([Kaylor et al., 2001](#)) and digital service delivery ([Layne & Lee, 2001](#)). The subsequent proliferation of ICTs and social media led to studies on their impact on transparency, citizen participation, and open government initiatives ([Bertot et al., 2010](#); [Lee & Kwak, 2012](#); [Yildiz, 2007](#)). The current focus on AI ([Sun & Medaglia, 2019](#)) and data-driven governance ([Zuiderwijk & Janssen, 2014](#)) underscores the journal's ongoing relevance in addressing the latest technological developments and digital transformation ([Mergel et al., 2019](#)).

### 3.1.6. Persistence of fundamental questions

While technology has evolved, fundamental research questions concerning data protection, access to government information, and other essential issues remain as pertinent as ever across four periods. For instance, concerns about privacy and surveillance, first raised by [Flaherty \(1988\)](#), have only intensified in the digital age, as evidenced by [Van Zoonen's \(2016\)](#) framework for categorizing privacy concerns in smart cities. Similarly, the ongoing debate about public access to government information, exemplified by [Allen's \(1992\)](#) guidelines, continues to be relevant in the context of open data initiatives ([Vetrò et al., 2016](#); [Zuiderwijk & Janssen, 2014](#)).

### 3.1.7. Interdisciplinary framework building with cross-country evidence

Reflecting the objective of GIQ founders, recent research has increasingly adopted an interdisciplinary approach, drawing on theories and concepts from diverse fields to construct more comprehensive and nuanced analytical frameworks. This is exemplified by the building and development of the modified Unified Theory of Acceptance and Use of Technology (UTAUT) ([Dwivedi et al., 2016](#); [Dwivedi et al., 2017](#); [Zuiderwijk et al., 2015](#)) or the DeLone and McLean Information Systems Success Model ([Veeramootoo et al., 2018](#); [Wang & Liao, 2008](#)) for the public sector.

Furthermore, the use of empirical data and cross-country comparisons has become increasingly prevalent in GIQ. This trend is exemplified by studies like [Zuiderwijk and Janssen's \(2014\)](#) analysis of open data policies across countries or social media engagement by municipal governments in the EU ([Bonsón et al., 2012](#); [Bonsón et al., 2015](#)). The inclusion of data from across countries or cities enhances the generalizability and applicability of research findings, offering a broader understanding of government information challenges and solutions.

### 3.1.8. Conclusions

The review shows that GIQ's evolution illustrates a dynamic field driven by technological change yet grounded in enduring questions of access, privacy, and public values. Research has expanded from single-agency studies to cross-sectoral and international comparisons, employing increasingly sophisticated, interdisciplinary frameworks backed by empirical evidence. However, this review does not claim to provide a comprehensive overview of GIQ, but rather offers a snapshot of high-impact articles, highlighting the importance of theoretical rigor, methodological diversity, and responsiveness to practitioners' needs. As the growth of the field, GIQ remains an essential venue for navigating the complexities at the intersection of government, information, and society.

## 3.2. Addressing emerging trends in government technology: writing about smart cities for GIQ - Leonidas Anthopoulos

Writing for GIQ is more than just publishing research. It's about addressing critical problems and generating unique findings that strongly impact the scientific community. This viewpoint article explores how research trends evolved in GIQ and discusses how smart cities could be integrated with their multi-disciplinary scope.

### 3.2.1. Smart cities: integrating its emergence with GIQ research

Publishing with GIQ is challenging and demands an effective approach to clearly defined problems with strong impact. Understanding how GIQ research trends emerged in time and influenced its interdisciplinary context could guide the authors in meeting the journal's requirements.

Applying the bibliometric analysis method on GIQ articles would be a quick method to uncover how its publications evolved over time. More specifically, the amount of 1844 articles (C1) that were retrieved from Scopus® in September 2024, were combined with the pool of 2626 articles (C2) that were collected from Web of Science® the same period and they were explored with the functions of the biblioshiny® library that can be embedded in R-Studio® software application.

The “big picture” that is extracted from the analysis of the C1 shows that 2713 authors published during the period 1984:2024 with an annual growth rate of 1.38 %. Single authorships are the minority (28.25 %), while 2.17 scholars co-authored and cited 45.94 works on average, while they used 3251 different keywords in total. Conversely, trends are quite ambiguous for C1 (see [Fig. 5](#)), since the applied keywords refer to problems for developed countries in terms of applying information technology and data processing in public administration. Moreover, themes about geography and economy can be observed, while the rest are more likely to correspond to research methodologies. (See [Fig. 6](#).)

A deeper analysis with the C2 pool, exploring 5 groups of articles (Fig. 5), sorted from most recent to older publications, shows that e-government adoption and trust are the motor themes, while the scholars question usability and openness. Trends evolved in this 40-year timeline: the most recent is validation, while AI and public value were dominant in 2023, adoption in 2022, and social media and openness from 2019 to 2022. Some earlier trends concerned engagement and transparency from 2014 to 2017, followed by service satisfaction from 2012 to 2014. The role of the internet, management and information are the main trends from 2006 to 2010, a period when strategy and accountability concerned motor themes, and digital divide an emerging theme. Government information was the sole trend in the period 1993–2003, which was seen in terms of management, access, automation, and impact. Finally, works before 1993 were focused on systems management and assessment frameworks.

The term “smart city” emerged during the same period (1990-today), following alternative adjectives (e.g., “digital”, “ubiquitous”, “sustainable” etc.) based on city priorities until it became an interdisciplinary scientific and industrial domain, and passed through the following phases (see [Fig. 7](#)):

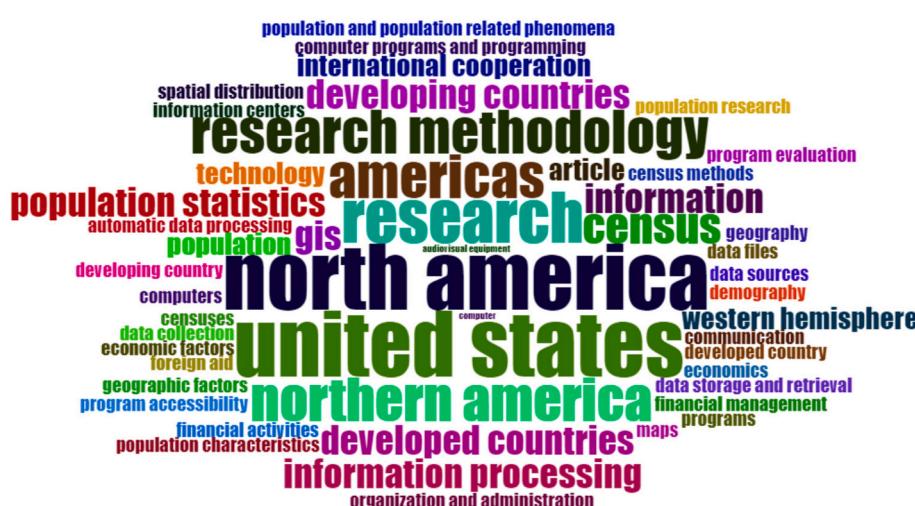
1. Experimentation: cities tested alternative solutions for their applicability. This period started in the early 1990s and lasted until the late 2000s.
2. Opportunism: local governments found the smart city as a “new power game” and utilized it to engage their communities and grow. This period lasted until the late 2010s.
3. Maturation: cities defined strategies for implementation and for the post completion period, while they defined and adopted standards. This period can be observed that it started during and beyond the Covid-19 outbreak in the early 2020s and it is ongoing.
4. Leadership: successful smart cities continually prototype and keep advancing with digital technologies. This period can be observed today and accompanies the mature cases to their future versions including being “resilient” with the ICT and the “citiverse” (Anthopoulos et al., 2024).

The smart city emergence is interdisciplinary too and can be validated with more than 23,000 articles published in ScienceDirect® (see Fig. 8).

The major scientific field for smart cities was computer science, followed by engineering, environment, social and business sciences, to a lesser extent public administration. Moreover, although smart cities emerged mainly after 2017, they stabilized during the last 2 years, and it remains to see if they will attract the same attention in the following years as well the importance that the different scientific fields will play in its future growth.

In a similar vein bibliometric analysis of the 20,000 latest articles highlights sustainable urban growth, human centricity and AI for government decision-making. Some more trends concern IoT security for service and production automation and emerging technologies like blockchain, 5G, data federation and edge computing. Moreover, the role of local governments has been leading, while they have transformed to adopt digital technologies and to ensure the smart city successful implementation and citizen-centricity lately.

These findings show that although the smart city has not become a trend in GIQ timeline, there have been several points of relevance that can be met by potential smart city authors. Scholars must recognize how their smart city discipline complies with the GIQ's and ensure that the examined problem meets the latest journal's priorities. Moreover, they have to respect GIQ's emergence and how it has been achieved in terms of problem-solving, scholar collaboration, exhaustive scientific analysis, and proof validation before their attempt to write their stories.



**Fig. 5.** Keyword cloud (C1).



Fig. 6. Performance figs. (C2).

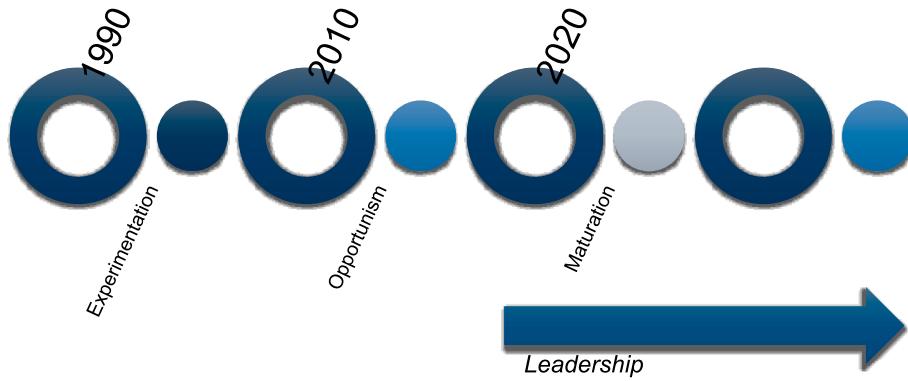


Fig. 7. Smart city emergence.

#### 4. Theoretical landscape & methodological approaches

##### 4.1. Weaving a tapestry of GIQ'S theoretical themes - Adegboyega Ojo

This contribution aims to identify the major themes in the theoretical frameworks in articles published in the GIQ journal. We analyzed the bibliographic information of 2321 GIQ articles published between 1984 and 2024 to identify theoretical frameworks mentioned in their abstracts and keywords (see Supplementary Table S3). Our analysis revealed over 150 theoretical frameworks shaping the scientific inquiries and methodological approaches in the journal's articles (see

Supplementary Table S4). We identified the major theoretical themes employed in GIQ articles by clustering these frameworks and labeling the resulting groups. The findings indicate that public administration and governance theories, cognitive, social, and behavioral theories, as well as technology, organization, and socio-technical systems theories and frameworks, are among the major theoretical categories that significantly influence studies published in GIQ.

##### 4.1.1. Introduction

Theories provide a coherent description and explanation of a phenomenon (Swanson, 2007). They shape and frame scientific enquiries,

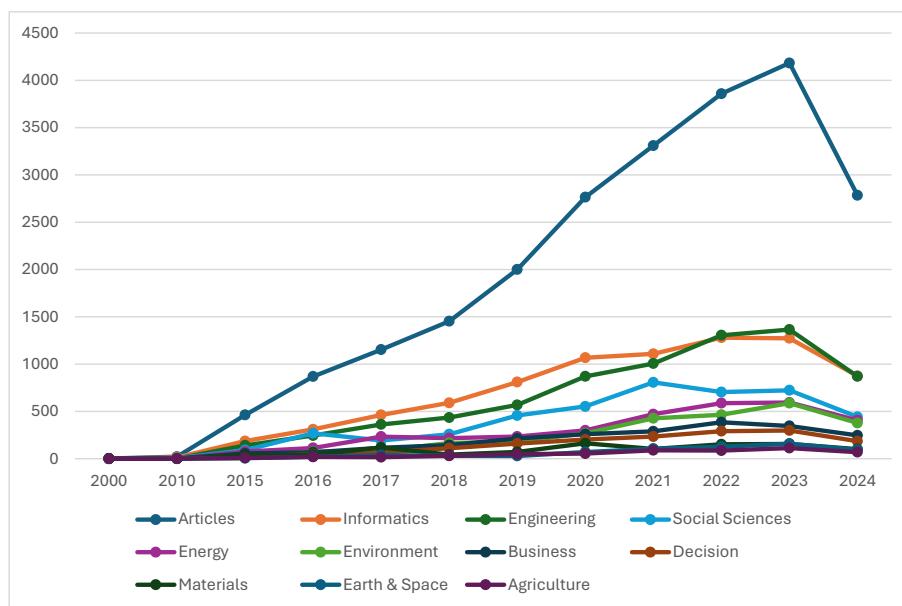


Fig. 8. Interdisciplinary publications (data source: ScienceDirect®. Keywords: “smart city”).

determine the questions we explore, and how we approach them and interpret results (Kuhn, 1970). In addition, theories provide alternative views regarding the purpose and practices within the different fields and disciplines (Swanson, 2007). GIQ articles largely draw theories from information science, public policy, public administration, political science, information systems and communication studies. These theories are used to explore problems related to information flows within and among government organizations, the impact of digital technology on public sector innovation and transformation, the co-production of public services and participatory decision-making. However, there are limited studies (if any) on the specific nature of theories associated with GIQ articles. Thus, this article seeks to answer the question - What categories or types of theories influence studies published in GIQ?

#### 4.1.2. Approach

We exported the bibliographic information of all articles associated with the GIQ as the source title from the Scopus database on September 3, 2024. This process yielded a dataset comprising 2321 published articles. The dataset was pre-processed in two major steps:

*First Pre-processing Step:* We extracted information related to the theory or theoretical framework mentioned in the abstracts and authors' keywords using the Named Entity Recognition (NER) technique. This was implemented using two large language model APIs: Mistral-7B-Instruct-v0.3 API provided by Hugging Face & GPT-4o-mini API provided by OpenAI. The results from this step indicated that only 236 of the 2321 articles (approximately 10.1 %) explicitly mentioned theory-related terms in their abstracts and keywords. To ensure the accuracy of these results, we manually reviewed a random sample of about 50 articles to identify instances of false positives and negatives.

*Second Pre-processing Step:* For the 236 articles identified in the first step, we further extracted information regarding the problem, domain, and methodology mentioned in their abstracts.

The analysis also comprises two steps. The *first* step involves computing the sentence embeddings of the theories or theoretical frameworks identified for each abstract. We used the text-embedding-3-small embedding - a highly efficient and performant embedding model developed by OpenAI that is commonly used for tasks including search, clustering, diversity measurement and classification (<https://platform.openai.com/docs/guides/embeddings>). The *second* step entailed using the K-Means clustering algorithm to group the resulting 236 embedding vectors into 10 categories (judiciously determined after a few runs). We

extended the K-Means algorithm with an additional step to automatically label the clusters of theories using OpenAI's frontier model “01-mini” API. The provided labels were then manually reviewed and refined.

#### 4.1.3. Findings

The analysis of GIQ abstracts revealed ten clusters or categories of theories. These include public administration and governance theories; innovation diffusion theories; organizational, institutional, and network theories; sociotechnical systems theories; theories of cognitive and social processes; e-government and digital transformation frameworks; technology acceptance frameworks; and behavioral and decision-making theories. The specific theories under each category are provided in Appendix A. Below, we provide a brief description of each category and examples of the problems addressed using the associated theories.

**Public Administration and Governance Theories** – address governance, public value, stakeholder engagement, organizational behavior, and policy development. Examples of issues explored by GIQ articles that used theories in this category include how digital technologies contribute to public value generation, governing collaboration between public and private organizations, e-participation and inclusive development, and citizen perception of fairness in algorithmic decision-making.

**Innovation and Diffusion Theories** – explain how innovations develop, spread and are managed in the public sector and societies. GIQ articles that used innovation adoption theories have examined operationalising open innovation in the public sector; maturity models for open government implementation; the spread of e-voting among voters; and factors influencing the diffusion of open data policies in governments.

**Organizational, Institutional, Resource-Based, and Network Theories** – analyze organizational and institutional factors associated with the operation, interaction, and performance of public organizations. In these published articles, these theories have examined, among others, factors influencing knowledge management implementation and effectiveness in public organizations; institutional pressures driving innovation; contextual understanding of AI adoption in public administration in addressing ethical tension with public value; and the effect of digitization on the discretionary power of public servants in decision-making.

**Theories of Social Dynamics and Technological Integration** – explore

changes in the social dynamics in public organizations and societies and the role of technology in these changes. Articles that applied these theories have investigated issues on the use of digital technologies by authoritarian governments in maintaining power; the complexity of measuring open data quality due to the diversity of stakeholder preferences; and the invisibility of records management work and professionals in municipal organizations.

Technology, Organization, and Socio-technical systems theories and frameworks – examine how technology use is constructed by organizational actors, entangled with and shaped by both organizational structures, capabilities, and external factors. Past GIQ articles using theories here have investigated issues related to identifying technology, environment and organizational barriers to AI adoption; digital inequality among migrants accessing electronic identification services; socio-material complexities in the adoption of digital technologies in fighting public health pandemics; and e-government failures through a structuration lens.

Cognitive, Social, and Behavioral Theories Domains – a diverse set of theories examining cognitive processes, social interaction and learnings in decision and other contexts in public organizations. Past studies published in GIQ have used theories under this category to examine issues like the impact of national culture on e-government readiness; information overload on citizens from public and private data and the effect on the use of e-government service; and limiting effect of government's single-loop learning approach on social media platforms.

E-Government, Public Participation, and Digital Transformation Frameworks – addresses digital technology adoption, governance, public deliberation, and user-centered design in the public sector. GIQ articles have applied these theories to evaluate government websites, develop frameworks to explain factors influencing citizen use of digital government services, and skill requirements for citizens to utilize open data for democratic participation.

Technology Acceptance Frameworks – explain user acceptance and usage of digital technologies and one of the most commonly used categories of theories. Theories here have been to explore issues like demographic and social factors affecting public acceptance of facial recognition use by law enforcement, models predicting e-government service adoption, and how individual and personality factors contribute to the digital divide in ICT adoption and use.

Multidisciplinary Theories on Organizational Behavior, Information Systems, and Social Influence – a mixed class of theories which inter-alia examine factors associated with the effective use of digital technologies, citizen experience in using digital services, and the role that national culture and identity might play. GIQ articles have used theories in this category to examine how cultural factors might hinder using e-learning; factors predicting citizen trust in e-government services; and factors contributing to the continued use of e-government services.

Behavioral and Decision-Making Theories – explain behavioral factors associated with using digital technologies in public organizations and by citizens in decision-making and other contexts. Published GIQ articles have used these theories to examine issues like how internet use by citizens correlates with support for government transparency and public record access, factors associated with mobile e-government, e-democracy systems, and citizen participation in citizen-sourcing platforms.

#### 4.1.4. Conclusions

We expect that future GIQ articles will continue to be shaped by the three major categories of theories outlined in Fig. 9, which also have the highest number of associated articles – Cognitive, Social & Behavioral (43), Public Administration & Governance (33), Technology, Organization and Sociotechnical Systems (32), as they investigate emerging technological, social, and organizational phenomena across various disciplines and fields. For example, in the digital government domain, there is a growing emphasis on integrating advanced and disruptive digital technologies such as AI, big data, and blockchain into

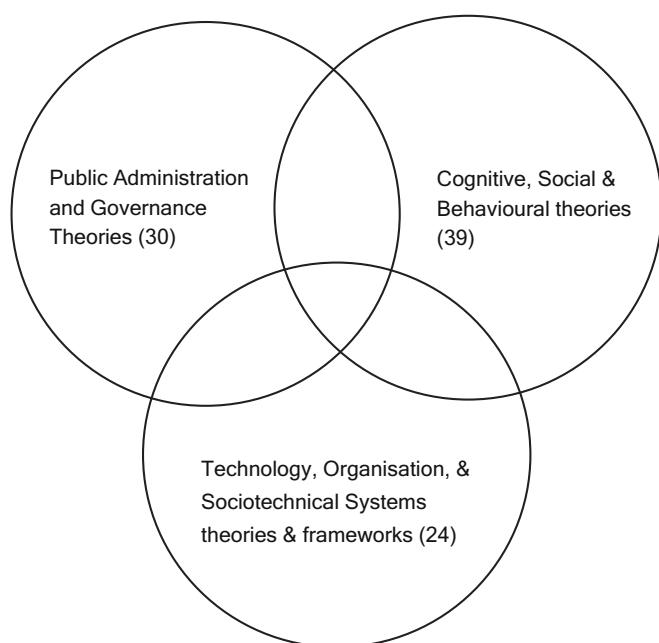


Fig. 9. Three largest clusters of theories found in the analyzed articles.

government operations and practices, along with their governance implications (Scholl, 2024b). In this vein, future articles would probably employ theoretical frameworks related to digital ethics and governance. They are also expected to critically examine the affordances and impacts that emerging technologies have on individuals (public servants or citizens), public organizations, and society.

A major limitation of the analysis reported here is that the extraction of theoretical information was confined to the published abstracts and authors' keywords. It is possible that even if abstracts and keywords do not mention theoretical frameworks, such frameworks were utilized within the articles themselves. Another potential limitation is that we did not attempt to search for the most optimal cluster number of the theories. We compensated partly for this limitation by using the state-of-the-art frontier embedding models as the basis for our clustering. Despite this limitation, we believe the reported findings shed significant light on the theoretical foundations of articles representative for the GIQ journal.

#### 4.2. 'Blue sky' research with respect to topics and theoretical foundations on digital governance - Euripidis Loukis

In a recent paper published in the GIQ (Bannister, 2023) it is argued that the high pressure on academics to publish leads them to low-risk approaches to their research: to investigate well-established topics using well-established theoretical foundations; this holds for many scientific research domains, and the digital governance domain is not an exception. The author states that this is quite negative for the advancement of the digital governance domain, and strongly recommends to conduct 'blue sky' research on more innovative topics using novel theoretical foundations. Yet, this is the main distinguishing characteristic of GIQ: it is the most 'Blue Sky' research journal, as it includes papers on a wide variety of topics and theoretical foundations, with a main emphasis on novel ones. Research requires creativity by a process that can be followed better to understand a research domain's assumptions and challenges, to explore novel research directions, and to craft ideas for new theories (Janssen, 2023). This is the main precondition for a successful submission to the GIQ: to address novel topics and questions concerning the application of ICT in government or to address established topics and questions (that continue to be important) from novel perspectives, using novel theoretical foundations.

In particular, GIQ publishes, on one hand, papers investigating and shaping the future of digital governance, which concern the use of novel ICTs that will transform important functions of government. As examples of such papers, we can mention (Kshetri et al., 2024; Ølnes et al., 2017; Tan et al., 2022). Kshetri et al. (2024) investigated the potential of Metaverse use in modern government, the capabilities it can provide, and at the same time its barriers and risks. Ølnes et al. (2017) examined the potential of using Blockchain technologies in government, the benefits they can provide, distinguishing between technical, economic and strategic ones, and their implications, and identified various kinds of innovations and transformations they can drive. A subsequent paper (Tan et al., 2022) proceeds further in the same direction: as it deals with the governance of the exploitation of these blockchain technologies in the public sector, distinguishing between micro, *meso* and macro level governance, and identifying nine types of decision that will have to be made for this purpose.

On the other hand, GIQ stays 'on the earth' and publishes papers presenting novel research that investigates major current problems and challenges that digital governance faces today, which are numerous: failures of ambitious, complex, and costly ICT projects in the public sector, ICT overspending but lower levels of benefits from it, changes in the role and the duties of the ICT units of the public sector towards 'bimodality'; and at the same time development of new digital governance (new kinds of IS in government agencies) that support the management and mitigation of severe problems and challenges that modern societies and economies face. As examples of such papers we can mention (Baxter et al., 2023; Engvall et al., 2023). Baxter et al. (2023) investigated the 'institutional challenges' of the adoption of agile methods of IS development in public sector ICT projects; it is concluded that these methods (already used extensively in the private sector) can be very useful (or even necessary) for large and complex public sector ICT projects, but at the same time can have significant problems due to incongruence between agile practices and conventional methods of ICT project funding, governance, and management in the public sector, and lead to enduring tensions and conflicts. Another study (Engvall et al., 2023) examined the role digital technologies can play in supporting global climate negotiations, enhancing the participation of and interaction between competent government agencies as well as other stakeholders from multiple countries, and addressing paradoxes and tensions that complicate the resolution of this serious problem.

Furthermore, papers published in GIQ have strong theoretical basis, using a wide variety of theoretical lenses – foundations, which include both 'classical' ones (such as the technology acceptance model, the unified theory of acceptance and use of technology (UTAUT), the resources and capabilities view, etc.), as well as 'fresh' and novel ones, from various domains (information systems, management science, political science, economics, cognitive psychology, etc.); very often these 'classical' or novel theoretical lenses – foundations are adapted or extended in order to address the specificities of the public sector. A good example is the abovementioned study (Baxter et al., 2023), which uses the 'institutional logics' lens for examining the use of agile methods in public sector ICT projects. Other useful examples can be found in these studies (Afzal & Panagiotopoulos, 2024; Alshahrani et al., 2022; Androutsopoulou et al., 2019; Corbett & El Idrissi, 2022; Dwivedi et al., 2017). Alshahrani et al. (2022) used the 'attention-based view' from organizational science for analyzing the assimilation of artificial intelligence in public organizations in Saudi Arabia. The study described by Corbett and El Idrissi (2022) uses persuasion theory and models in order to assess the effectiveness of the websites of cities in promoting environmentally responsible behaviors of citizens. The 'media richness theory' is used by Androutsopoulou et al. (2019) to analyze the potential of government AI-guided chatbots to transform the communication between citizens and government agencies. Quite interesting and innovative is the study by Dwivedi et al. (2017), which uses nine theoretical models of ICT adoption to develop a new unified adoption model specific to e-government. The recently published study (Afzal &

Panagiotopoulos, 2024) extends the 'coping theory' in order to investigate how frontline public officials (focusing on police officers) cope with digitalization initiatives and the role of discretion in the coping process.

Furthermore, some GIQ papers go further: they combine theoretical foundations from several domains in order to develop innovative specialized research frameworks and models for investigating public sector digitalization and digital transformation research questions, e.g. for analyzing the use of emerging digital technologies or novel digital infrastructures by government agencies from several perspectives. A good example is the study by Loukis et al. (2017), which combines theoretical foundations from management science (diffusion of innovation theory as well as a crowdsourcing evaluation framework) and from political science (wicked social problems theory), in order to develop an innovative multi-perspective research framework for analyzing the use of a novel social media monitoring platform in the public sector for promoting open innovation. This indicates that the widely discussed lack of digital governance-specific theories (= specialized theories for the digital governance domain) can be compensated for by a government-specific (= specialized for the government context) combination and adaptation of theoretical foundations from various domains (mainly information systems, management science, political science, economics and cognitive psychology). This might be a useful and practical direction for the development of digital governance-specific theories in the future.

#### 4.3. The multi-faceted innovative nature of research and readership - Anastasija Nikiforova

##### 4.3.1. Think outside the box, but do not overhype!

Typically, GIQ publications cannot be characterized as "just another study". This refers to both the phenomena studied and the methodologies employed. Not many GIQ studies cover topics that have been extensively investigated and are already well understood by the community. Many studies published and expected by GIQ explore emerging topics, particularly those at the cutting edge of technology, organization, and policy, such as blockchain in e-government (Ølnes et al., 2017; Shahaab et al., 2023), quantum computing (Kong et al., 2024), the Internet of Things, virtual and augmented reality (Hong et al., 2022), the Metaverse (Kshetri et al., 2024) and new innovations and policy directions that have not been tackled before. One of the most prominent topics in recent GIQ research is Artificial Intelligence, and GIQ addressed topics related to the trustworthiness and governance of AI, its role in creating public value, and the competencies required for responsible adoption. While AI has gained widespread attention in recent years, GIQ has explored its foundations already for more than a decade, often under terms such as big data algorithm, algorithmic decision-making, and data-driven governance before.

This makes some well-explored areas and widely used approaches, such as technology adoption and Systematic Literature Reviews (SLRs), to name a few, "risky" and sometimes less appealing for GIQ. At the same time, one can notice that some studies following one of the above approaches do occasionally appear in GIQ. One can ask "why?" The answer lies in the contribution they offer, filling the gaps in both theory and practice. Let's take the SLR as an example. Most topics surrounding us are dynamic nature, which sometimes makes systematic reviews useful to prevent redundant research that do not substantially advance the field (Moher et al., 2009; Paul et al., 2021; Paul & Criado, 2020). However, with the increasing number of SLRs, there is often an overlap. Moreover, producing a "good" SLR is demanding, and even minor mistakes at the very initial steps of a well-designed SLR (which is also not very common), will require starting over. A "good" SLR, in turn, should do more than merely summarizing existing work. It must systematically review the domain-specific literature, synthesize existing, often disparate, findings, provide a comprehensive and integrative insight into the existing findings, highlight trends, gaps, and directions for future research, thereby, pushing boundaries of existing research (Moher et al.,

2009; Palmatier et al., 2018; Paul et al., 2021; Paul & Criado, 2020; Snyder, 2019). Thus, if conducting rigorously, authors have a good chance of finding a “home” for their contribution with *GIQ*. However, this by no means should be seen as an easy way to get published - the mistake made by many submissions preventing them from publishing in *GIQ*.

However, what *GIQ* authors should be mindful of is the balance, - “thinking outside the box” should not devolve into (over)hype, which is something that editors and reviewers are sometimes faced with. Studies that explore unfeasible ideas, attempt to combine unrelated concepts, or employ theories from a completely different field that should not be applied to the studied phenomena for the sake of novelty are rarely successful. Thus, while innovative thinking outside the box is strongly encouraged - research should be forward-looking, rigorous, and grounded in realistic assumptions - overhype is never welcome, either in the choice of topic or in the method used to explore it.

#### 4.3.2. Methodological flexibility or no single “recipe” for success

Unlike some journals, *GIQ* does not impose strict restrictions on research methodologies. Given its interdisciplinary focus—spanning policy, information technology, and public administration—the journal embraces methodological diversity. Published studies reflect this diversity, ranging from technology adoption (e.g., Li, 2024) to Design Science Research (Lee et al., 2021; Shahaab et al., 2023; Zeleti et al., 2016), SLR, systems theory or ecosystem approach (Dawes et al., 2016; Kemppainen et al., 2023; König & Wenzelburger, 2020), comparative reviews of models and tools (Margariti et al., 2022), case studies (Kemppainen et al., 2023; Scupola & Mergel, 2022; Shahaab et al., 2023; Thorsby et al., 2017), surveys, interviews, artefact development (Margariti et al., 2022), usability studies, to name just a few, and hybrid approaches (e.g., Saura et al., 2022). Similarly, both qualitative, quantitative and mixed-method approaches are acceptable, provided they are applied rigorously. This is also compliant with the readership, where the most read, downloaded and cited articles range from case studies (e.g., Mansoor, 2021; Scupola & Mergel, 2022) to SLR (Saura et al., 2022; Zuiderwijk et al., 2021).

*GIQ* is thus inclusive and welcomes submissions employing a wide range of methods, where quality is a decisive factor. In case of methodology, this quality is multifaceted and refers to at least (1) the appropriateness of the method for the studied phenomenon, (2) the accuracy in applying the method, and (3) transparency, replicability, and reproducibility, although this goes beyond the methodology attributed to the entire study.

#### 4.3.3. Replicability & reproducibility matters, distinguishing scientific article from report/whitepaper/blog!

Not of less importance, especially in today’s push for open science, is replicability and reproducibility.<sup>1</sup> This is what differentiates a study from a report/whitepaper/blog. *GIQ* contributions require replication, and authors should be as transparent as possible throughout the entire research process, from design to results.

While in the past, only those editors and reviewers who are true advocates for open science urged authors to accompany their studies

<sup>1</sup> Reproducibility - the measurement can be obtained with stated precision by a different team using the same measurement procedure, the same measuring system, under the same operating conditions, in the same or a different location on multiple trials. For computational experiments, this means that an independent group can obtain the same result using the author’s own artifacts.

Replicability - the measurement can be obtained with stated precision by a different team, a different measuring system, in a different location on multiple trials. For computational experiments, this means that an independent group can obtain the same result using artifacts which they develop completely independently (source: <https://www.acm.org/publications/policies/artifact-review-badging>)

with supplementary materials and data, either along with the article or through open repositories such as Zenodo or GitHub, to facilitate replicability and reproducibility, today *GIQ* expects them from every contribution, incorporating this criterion in the review form. This is the only way to facilitate “good research,” where in addition to the quality of the manuscript and its individual constituents, both the validity of the research can be verified, and others can actually benefit of it being able to repeat studies in their own settings. Nearly half of *GIQ* articles already include such artifacts, a trend likely to grow, as actual research that matters should go far beyond publishing the results, which only inform but do not allow future research to be built on top of them.

#### 4.3.4. Contributions and implications to communicating outcomes effectively to different audiences

Ultimately, the most important aspect of any *GIQ* article is its contribution to both theory and practice, unless the subject under investigation informs only one of them, which is rather exceptional. This is to say, even if a study has a clear idea and a well-designed and well-applied methodology, the implications for theory and practice are not of less importance, or what many reviewers often call “so what?”

Given that *GIQ* serves a broad audience, including policy-makers (although, in fact, all quadruple helix), authors should clearly communicate key findings, especially for a portion of the audience that may be less interested in the full path the authors took to reach their results (e.g., employed methodology). The message should be conveyed as concisely as possible, encouraging its adoption – as William Shakespeare wrote “Brevity is the soul of wit” (Shakespeare, 2021, p. 39). These contributions can take various forms (following on inclusivity of *GIQ*), covering key findings delivered in plain text, tools (Gagliardi et al., 2017; Shahaab et al., 2023), incl. models, frameworks and indices (Criado & Villodre, 2022; Gandía et al., 2016; Margariti et al., 2022; Rukanova et al., 2021; Thorsby et al., 2017; Zeleti et al., 2016), incl. refining or expanding existing ones or pointing out their shortcomings (Kabanov, 2022; Lnenicka et al., 2024; Pirannejad et al., 2019), or structured recommendations (Bonina & Eaton, 2020; Harrison & Johnson, 2019; Kong et al., 2024; Lnenicka et al., 2024; Mansoor, 2021) for (different) audiences of *GIQ*.

All in all, the *balance between relevance and rigor* is one of the most distinctive characteristics of *GIQ*, which not merely seeks innovative topics but also demands scientifically sound methodologies to explore the respective phenomena. *Relevance*, in this case, means addressing real-world challenges and bringing public value, while *rigor* ensures that these studies are scientifically sound, transparent, replicable, and reproducible. In this way, *GIQ* seeks to have a dual impact by advancing academic knowledge while offering insights that are immediately applicable in practice.

#### 4.4. A critical appraisal of *GIQ*’s methodological pluralism - Panos Panagiotopoulos

Other contributions in this collection have discussed how *GIQ*’s multidisciplinary nature and rich theoretical foundations translate to the methodological pluralism evident in *GIQ* articles. This note discusses four key points of consideration for our critical understanding of methodological pluralism in *GIQ* and offers relevant suggestions.

First, methodological inclusivity is a core aspect of *GIQ*’s identity, alongside its open-minded approach to new research directions. The aims and scope of *GIQ* highlight the intention to publish ‘high-quality scholarly research’ followed by the variety of disciplines from which the journal seeks submissions. Compared to journals in adjacent fields, the *GIQ* community is more likely to assess contributions based on their relevance, outcomes, and implications rather than the level of methodological sophistication. This welcoming realization should not be misunderstood. The editorial team, reviewers, and authors pay as much attention to methodological rigor as any other high-quality journal. Submitted manuscripts may often not be assessed favourably due to

methodological limitations despite strengths in other areas. For example, GIQ receives numerous systematic literature reviews that, while often well-executed, may lack a clearly articulated contribution. Similarly, empirical submissions employing quantitative or qualitative methods may be competent in sourcing and analyzing data but lack sufficient clarity, novelty, or relevance to the field. Reviewers may often be invited to assess a manuscript due to their methodological expertise, especially for studies that extend beyond established practices.

Closely related is the recognition that GIQ's methodological pluralism evolves continuously, inspired by emerging topics and researchers' renewed interests. Prospective authors should not feel anchored to the precedent of methodologies established by previously published GIQ articles. Instead, they should expand their research toolkits to make the best out of their data and support their original thinking, adapted to the research problem they address. This fundamental point should be reiterated, especially at times when we observe an increasing trend of methodological complexity that, as [Bannister \(2023\)](#) notes, may not always be productive. New methods, like fuzzy-set qualitative comparative analysis (fsQCA), have certainly expanded the ways in which data can be collected, analyzed, and presented to inform contributions to digital government. Researchers often feel compelled to push the boundaries of robust methods of reporting due to advancements in software improvements and good practice guidelines across different communities. At other times, they might attempt to boost methodological complexity with the intention to increase the overall chances of publication.

Third, conceptual contributions in the form of frameworks, typologies, classifications, guidelines, and other artifacts have been prominent among researchers and at the forefront of GIQ's policy engagement. Influential articles like the [Layne and Lee \(2001\)](#) stage model and [Linders' \(2012\)](#) typology of citizen co-production on social media, have integrated timely ideas that sustained an informed academic conversation. Other GIQ articles have succeeded in combining the development of conceptual devices with deep empirical research using methods such as ethnography or design science. These approaches hold special value within GIQ's traditions and merit more explicit recognition. A review by [Fedorowicz and Dias \(2010\)](#) reiterated the use of design science principles in constructing technological artifacts for digital government. Building on these recommendations, [Goldkuhl \(2016\)](#) developed a distinct design science approach for digital government contributions that seeks to present policy-ingrained IT artifacts. These excellent recommendations have inspired more recent contributions, such as those by [Matheus et al. \(2021\)](#), [Bharosa \(2022\)](#), and [Sprenkamp et al. \(2025\)](#).

The final point of consideration is that – alongside traditional qualitative and quantitative methods – GIQ has developed a robust stream of computational and social data science approaches underpinned by new forms of data. Methods such as machine learning, opinion mining, social network analysis, sentiment analysis, natural language processing, and various forms of textual analytics have been employed in GIQ articles. These methods have been predominantly applied to social media and other diverse data sources to map, visualize and explore new relationships and types of content (e.g., [Driss et al. 2019](#); [Hong & Kim, 2016](#); [Lee et al., 2021](#)). Advancements in large language models and generative AI applications may further transform the landscape of data generation and analysis ([Busker et al., 2025](#)). Researchers should, at the least, consider continuously evolving guidelines and advice when employing these methods (e.g., [Davison et al., 2024](#); [Padmanabhan et al., 2022](#)).

Closing this note, it is important to emphasize that methodology is a fundamental component of every article's toolkit. Researchers should focus on methodologies that are appropriate, well-executed, and support the narrative of their contributions. GIQ welcomes methodological innovations that push the boundaries of current practices, keeping in mind the journal's wide readership and global audience including policy-makers. More than being meticulously scrutinized, methodologies should be accessible and well-explained. Open datasets and other supporting material can be used to strengthen the evidence produced and

reinforce good practice principles like transparency and reproducibility. Finally, and equally important to research methods, it is worth reiterating the recommendation that GIQ articles should pay strong attention to their findings' interpretation and policy translation.

## 5. Conclusions

Through examining multiple expert perspectives on research from GIQ, this study reveals several key insights about the nature of digital government research and its future directions. GIQ has shaped digital government into a *discipline* of its own. Researchers in this area operate with a rich foundation of methods, frameworks, theories, principles, and boundaries for the structured study of digital government, which are characterized by pluriformity, active interdisciplinary collaboration, and incorporate many aspects from other disciplines. GIQ has published robust, native theories that are specifically tailored to digital government's characteristics and unique challenges, such as accountability, inclusion, democracy, and ethical considerations to account for the diverse stakeholders and institutional complexities. Both the advantages and harms of developments and initiatives are captured. The outcomes inform practice, help policy-makers and designers. GIQ avoids black boxing the technology or reducing complexity and aims to gain a deep understanding of all relevant aspects. GIQ tackles complex, real-world problems with a broad theoretical orientation and openness towards new ideas and views. GIQ publications have been characterized by blue sky research, which is often a frontrunner. There is a shared understanding and a knowledge base among researchers, and research goes beyond merely combining some disciplines, as the unique nature needs to be taken into account. GIQ has developed a robust stream of computational and social data science approaches underpinned by new forms of data, changing the way of conducting research and data collection. It has its own classifications, frameworks, theories, and digital government books, journals, conferences, and the e-government reference library (EGRL), which Jochen Scholl initiated. Future studies published in GIQ are recommended to emphasize developing and adapting relevant theories and concepts native to the e-government/digital government field, in which the unique nature and context are taken into account.

### 5.1. Distinctive characteristics of GIQ'S identity

GIQ has established itself as more than just a research venue - it serves as a crucial bridge between academic rigor and practical governance challenges. Its distinctive identity emerges from several core elements related to the domain under study, aiming at both rigor and relevance.

First, GIQ embodies transdisciplinary integration, actively integrating knowledge from diverse fields, including public administration, information systems, and political science, while fostering collaboration between researchers and practitioners. The work is characterized by pluriformity which often requires active interdisciplinary collaboration among persons having different knowledge and originating from various disciplines. This often results in incorporating many aspects from other disciplines to grasp the complexity. This nature enables a comprehensive understanding of complex digital government challenges that cannot be adequately addressed through any disciplinary lens ([Scholl, 2008](#)). The whole complexity, both at the social and technical levels, is captured to avoid simplistic conceptualizations. Furthermore, by focusing on the nature, research methods and theories are not only adapted to the GIQ domain, but also new methods and theories are developed. In turn, these are used in other domains, like social media research methods published in GIQ have become common.

Second, it maintains a delicate balance between theoretical depth and practical applicability. This requires an in-depth understanding of the government practice. GIQ actively seeks research that can inform policy and practice while maintaining high scholarly standards. This

dual focus has created a unique space where theoretical innovations are consistently grounded in real-world governance challenges. Such a balance results in blue sky research and introducing novel aspects.

Third, GIQ can unite local practices with global theoretical contributions. Researchers have a deep understanding of government practice. By encouraging research that connects context-specific (Janowski, 2015) experiences to broader theoretical frameworks, GIQ facilitates knowledge exchange across different governance contexts and cultures. This exchange, however, is somehow limited by the articles covering disproportionately the countries at the highest levels of technological and organizational advancement. Therefore, GIQ tries to cover countries from all over the world and is interested in their distinct nature, but at the same time, the generalization to other contexts is a key aspect.

Fourth, understanding design and technology plays a crucial role in many GIQ papers. The interplay can result in positive or negative outcomes, and both need to be considered. Critical thinking is required to evaluate ideas, collect evidence, analyze and question arguments, and also identify, question, and challenge assumptions. This has become more important in today's world to differentiate science from misinformation and avoid content that systematically favors particular outcomes, beliefs, or perspectives. The interactions between technical and social elements are crucial, although papers might focus on one of them. GIQ generates both descriptive and prescriptive knowledge. For designers, prescriptive frameworks, principles, and guidelines are developed. These can be used by practitioners, but also by researchers, as often many future research directions are opened. Also, developing and evaluating policies requires the generation of prescriptive knowledge and consideration of the possible implications.

Fifth, GIQ takes deep domain knowledge into account. Researchers understand the institutional context and the technology developments. Becoming a digital government researcher requires an understanding of both. The context often differs per geographical area, which makes translation to other contexts more difficult, but should be taken into account to avoid remaining at a too high level of abstraction and having limited practical relevance. GIQ facilitates a broad range of research approaches fit to the domain of study and country-specific studies, while also stimulating cross-country comparisons.

Sixth, GIQ papers are highly referred to in other journals and in practice. GIQ creates multiple paths to generating both research and real-world impact. GIQ publications are used as input for policy documents to direct and guide, or vice versa; innovative and future-looking policy documents are translated into GIQ articles. Tackling the transformation is key, as governments are continuously adapting and changing. This transformation extends far beyond technical implementation. For example, AI systems are increasingly taking on roles that previously would have been filled by public servants. GIQ captures complex technical, human, organizational and institutional factors. GIQ also offers a spectrum of options for balancing published work's relevance (research problems tackled) and rigor (methodologies for addressing such problems).

## 5.2. Adaptation and continuous evolution of core themes

The journal's evolution reflects broader changes in technology, policy and governance relationships. Initially focused on government information management, GIQ has successfully adapted to address increasingly complex socio-technical challenges of digital transformation. This evolution has not been merely reactive. Instead, GIQ has often played a proactive role (e.g., organizing special issues) in shaping how researchers and practitioners conceptualize and deal with digital government challenges by taking a long-term perspective. The roles of public services are changing with the advent of AI systems, and a new vision is needed for the future of government design and the use of AI. This technology can not only replace public servants by offering chatbots, but also take on the role of politicians. All aspects of government should be considered and can be changed simultaneously to transform.

The question remains what is desirable in the future, and both design and policy need to be informed by research.

In addition, GIQ maintains consistent attention to both emerging challenges and fundamental issues. This balance has allowed GIQ to remain relevant through multiple waves of technological change while building a cumulative body of knowledge, which is particularly significant given that digital government research has often been criticized for its lack of cumulative theoretical development and fragmented knowledge base (Heeks & Bailur, 2007). A variety of approaches and stances are needed to deal with the fundamental issues and variety can be a grace to be prepared for the changes. Both the fundamentals and theorizing are important to address new emerging issues. As such, emerging topics can more easily be tackled by using the existing knowledge base.

Drawing from GIQ's evolution over the past five decades, we observe how fundamental questions persist while taking new forms. For instance, early concerns about surveillance and privacy that Flaherty (1988) raised in the 1980s have transformed into contemporary challenges surrounding AI systems and smart city implementations. These enduring themes require continued attention as they manifest in new technological contexts, particularly as the challenges of digital inclusion and equity remain critical in an increasingly digitalized government service environment (Aguilar, 2020; Chohan & Hu, 2022). Several other themes, like inclusion, transparency, and transformation, appear repeatedly over time. Identifying these themes and building upon the solid theoretical foundation is a key characteristic of GIQ research.

Alongside the evolution and reappearance of research themes, a constant transition paving the future for GIQ is the realization of '*digital = government*'. Digital is everywhere, a common good, embedded in our daily lives and in all our policies, both for services and democratic governance. GIQ is an information science journal and not a political science journal. In this domain, researching government without having a technology component becomes less and less possible. Whereas there is sometimes a focus on a single technology, often the combination of technologies or the technology used in the context results in practical challenges and the need for theorizing. The interaction between policies, technologies, government, and the public within a context is essential.

## 5.3. Theoretical development and knowledge production

The field of GIQ is epistemologically pluralistic and takes an interdisciplinary stance. GIQ manuscripts can contain descriptive and prescriptive research ranging from qualitative to quantitative. Research typically adapts research methods that are suitable for the empirical problem at hand. Good papers typically will adapt those research methods to the GIQ field to avoid the 'if all you have is a hammer, everything looks like a nail' problem. Over time, specific GIQ theories have been developed, and those have a bigger impact.

The journal's approach to theory building has evolved in distinctive ways that reflect the complex nature of digital governance. Rather than pursuing a single grand theory, *GIQ has fostered a rich theoretical ecosystem where multiple perspectives coexist and interact*. This approach has proven particularly valuable in addressing the multifaceted challenges of digitalization and digital transformation in the public sector.

The theoretical contributions published in GIQ stand out for their emphasis on practical utility. Authors have consistently developed frameworks that help practitioners navigate complex decisions while advancing scholarly understanding. This pragmatic orientation has helped bridge the often-cited gap between theory and practice (Åkesson et al., 2008; Cumbie & Kar, 2016; Ko & Fink, 2010). Many papers have both a theoretical and a practical component, although balancing them equally is often challenging.

GIQ exhibits remarkable flexibility in methodological approaches while maintaining strict standards for research quality. This methodological pluralism, combined with rigorous peer review, has enabled the journal to address complex governance challenges from multiple perspectives - from quantitative analyses of e-government adoption to

qualitative explorations of organizational change. This also allows to be prepared for future developments and taking many perspectives into account.

#### 5.4. Future considerations

GIQ papers are highly referred to in other journals and in practice. GIQ creates multiple paths to generating both research and real-world impact. GIQ publications are used as input for policy documents, or vice versa; policy documents are translated into GIQ papers. GIQ also offers a spectrum of options for balancing published work's relevance (of the questions/problems tackled) and rigor (of how such questions/problems are answered/solved). Drawing from GIQ's evolution over the past five decades, we can also identify several general critical directions for future research and development.

GIQ takes a broad view on what constitutes theory, as the GIQ nature is dealing with socio-technical complexity embedded in a context. Taking the specific nature of the digital government domain into account cannot be dealt with using reductionist approaches only. Although the latter are needed for generalization and focusing on the essence. Deep knowledge and understanding of the elements, ranging from technology to policy, are needed. Everything becomes digital does not mean that humans and institutions do not matter anymore. Focus on the domain and do not take a narrow view, as relating the aspects is key to understanding the whole situation at hand.

The increasing complexity of digital government ecosystems demands rigorous theoretical frameworks that can account for rapid technological change while maintaining focus on fundamental public administration principles. The field needs theories that can effectively address the unique characteristics of public sector digitalization, particularly the complex interplay between technological innovation, organizational change and public value creation (Panagiotopoulos et al., 2019). Many elements need to be combined to create comprehensive insight and avoid to blindly aim at a certain direction of solution without questioning approaches and their underlying assumptions.

Given the variety of contexts, more comparative research is needed for different institutional systems and the use of technologies. Indiscriminately copying practices from one context to another might easily result in failure (Kuk & Janssen, 2013). Comparative research can reveal the differences and similarities to understand better what does and does not work in which context and situations. In this way, policy-makers and practitioners can deal with the context-dependent nature of digital government and learn what is relevant for their situation.

The transdisciplinary nature of digital government research can be further strengthened. This means not only fostering dialogue between different academic disciplines but also creating new frameworks for knowledge co-production between researchers, practitioners, and citizens. The journal can continue to evolve its role in connecting local governance innovations with global theoretical understanding while remaining sensitive to different cultural and regional perspectives on digital governance. Both rigorous research approach and practical relevant papers are needed.

GIQ's distinctive position as a bridge between academic research and practical implementation remains crucial for future development. Future work must focus on developing more systematic approaches to translating research findings into policy measures and actionable guidance for practitioners. This includes creating frameworks that can help government organizations deal with uncertainties and complexities (Janssen & Van Der Voort, 2016) caused by emerging technologies like AI, IoT, and blockchain while strengthening the feedback loop between theoretical development and practical implementation. Also, this requires blue sky research to go beyond what is already well-known.

#### CRediT authorship contribution statement

**Marijn Janssen:** Writing – review & editing, Writing – original draft,

Validation, Supervision, Project administration, Methodology, Investigation, Conceptualization. **Hong Zhang:** Writing – review & editing, Project administration, Formal analysis, Data curation, Conceptualization. **Adegboyega Ojo:** Writing – original draft, Methodology, Conceptualization. **Anastasija Nikiforova:** Writing – original draft, Methodology, Conceptualization. **Euripidis Loukis:** Writing – original draft, Methodology, Conceptualization. **Gabriela Viale Pereira:** Writing – original draft, Methodology, Conceptualization. **Hans Jochen Scholl:** Writing – original draft, Methodology, Conceptualization. **Helen K. Liu:** Writing – original draft, Methodology, Conceptualization. **Jaromir Durkiewicz:** Writing – original draft, Methodology, Conceptualization. **Laurie Hughes:** Writing – original draft, Methodology, Conceptualization. **Lei Zheng:** Writing – original draft, Methodology, Conceptualization. **Leonidas Anthopoulos:** Writing – original draft, Methodology, Conceptualization. **Panos Panagiotopoulos:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Tomasz Janowski:** Writing – review & editing, Writing – original draft, Conceptualization. **Yogesh K. Dwivedi:** Writing – original draft, Methodology, Conceptualization.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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#### Appendix A. Supplementary data

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