A literature review of collaborative platforms: exploring implications for the co-creation of public services and future directions

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Abstract: Collaborative platforms are increasingly recognized as a promising approach in public administration for facilitating multi-actor collaboration and co-creation of public services. However, our current understanding of these platforms and their implications for public service design and delivery is limited, hindering both theoretical development and practical application. This article presents a conceptual summary of 74 articles published between 2011 and 2021 and highlights three fundamental dimensions of collaborative platforms for co-creating public services: technological, innovation, and governance. Additionally, six key implications and considerations for public service design and delivery are identified. The findings suggest a research agenda that calls for a socio-technical integrated approach to further investigate collaborative platforms, including their outcomes, antecedents, and the relationship between platform governance and value creation in public services.

Keywords: co-creation, platform, public services, systematic literature review

Word count: 8,295 (including title, abstract, references, figures and tables)

1. Introduction

The challenges posed by internal government pressures and budgetary constraints, coupled with increasing expectations from citizens and the complexity of societal problems, have compelled public organizations to seek new collaborative governance solutions (Ansell & Gash, 2007). Among the most promising forms of collaboration is co-creation, which proactively mobilizes public and private resources to design and implement new service solutions that generate public value (Ansell & Torfing, 2021a). However, co-creation processes can be time-consuming, costly, and limited by the government's ability to effectively coordinate and orchestrate interactions among geographically and socio-culturally diverse actors (Torfing et al., 2019).

Fortunately, the emergence of digital technologies has the potential to revolutionize the landscape by enabling unique many-to-many interactivity and ubiquitous communications, facilitating co-creation at "*an unprecedented scale*" (Linders, 2012, p. 446). In particular, collaborative platforms have been regarded as a promising approach to facilitate extensive co-creation and enable collaborative delivery of public services (Ansell & Gash, 2018; Ansell & Torfing, 2021a). Many governments worldwide have recognized the potential benefits of these platforms and are actively exploring their implementation in public services.[1]

Collaborative platforms are specialized interfaces encompassing digital and organizational structures that facilitate the convergence of multiple collaborators, enabling them to engage in a wide range of activities and establish complete ecosystems for collaboration (De Reuver et

[1] For example, the United Kingdom's GOV.UK platform provides a centralized platform for citizens to access various government services, simplifying the user experience, streamlining service delivery, and allowing for collaboration among agencies (Brown et al., 2017). In many cities in the United States, collaborative technology-enabled participatory platforms have been adopted to engage citizens in solving public service challenges (Desouza & Bhagwatwar, 2014).

al., 2018). In the realm of public services, collaborative platforms were initially introduced by Nambisan (2009) as a foundational framework that brings together governments, service users, providers, and citizens to collaboratively explore, experiment and deliver novel public services. These platforms can fill a distinct role in the governance landscape by providing a dedicated space for collective problem-solving, knowledge sharing, and resource pooling, thus enabling the co-creation of public services (Ansell & Gash, 2018; Ansell & Torfing, 2021b). This collaborative approach holds the potential to expedite the development and evolution of public services, fostering greater innovation and responsiveness (O'Reilly, 2011).

In recent years, there has been a growing scholarly interest in collaborative platforms within the field of public administration, although it is still in its early stages compared to the extensive research conducted in economics, information systems, and strategic management (for a systematic discussion of extant streams of literature on platforms in the private sector, refer to McIntyre & Srinivasan, 2017). This emerging literature has has looked at the government's regulatory role over commercial platforms (e.g., Nash et al., 2017), as well as the potential of platforms to transform government activities, from policymaking (e.g., Simonofski et al., 2021) to public service provision, governance and planning (e.g., Ranerup et al, 2016).

However, despite the growing body of research on this subject, there remains a fragmented scholarly interest that spans multiple disciplines, including public administration, political science, information science, and urban planning. This multi-disciplinary approach, while valuable, has led to a lack of cohesion and theoretical development in the field. Additionally, the term "platform" has often been misused or applied in a generic manner (Gillespie, 2010), leading to inconsistency in its application and creating confusion regarding its characteristics and its relevance to the public sector and public services (Thompson and Venters, 2021). Moreover, the implications of adopting collaborative platforms in public service delivery, the

changes they bring to the nature of government work and the decision-making processes, have not been adequately clarified (Cingolani, 2021).

We contend that the existing fragmentation and confusion surrounding collaborative platforms significantly impede their adoption and implementation in the public service context. In order to address these challenges, this study aims to bring clarity to the conceptual landscape by examining different perspectives on collaborative platforms for co-creating public services and highlighting various research foci. The objective is to provide a structured framework for exploring the conceptualization, implications, and considerations of collaborative platforms, with specific attention to their impact on public service design and delivery.

To achieve this, the study employs a systematic literature review approach, with the ultimate goal of identifying emerging themes in the rapidly evolving body of literature. This aim is intended to stimulate future research on the topic (Torraco, 2005; Webster & Watson, 2002) and provide insights to inform public administration policy and practice (Ridley, 2012).

The analysis undertaken in this study was guided by two main research questions:

1. *How have collaborative platforms for co-creating public services been conceptualized and defined in the existing literature?*
2. *What are the key implications of implementing collaborative platforms for co-creating public services?*

To address these questions, a total of 74 articles published between 2011 and 2021 were carefully selected for review. These articles were then subjected to deductive-inductive coding and thematic analysis. As a result of this systematic review, it was observed that collaborative platforms for co-creating public services consist of three fundamental dimensions: technological, innovation, and governance. Furthermore, six key implications and considerations for public service design and delivery emerged from the analysis.

The remainder of the paper is organized as follows: the first section outlines the methodology employed for conducting the review; subsequent sections provide a summary of the published research on the topic, identify emerging themes, and address the aforementioned research questions; finally, the paper concludes by presenting key findings and establishing a future research agenda.

2. Research method

This paper adopts a systematic literature review methodology following the approach suggested by Webster & Watson (2002). According to these authors, a literature review is worthwhile not only for mature topics but also, as in the case of collaborative platforms and their implications for public services, for "*emerging issues that would benefit from […] developing a conceptual model*" (Webster & Watson, 2002, p. xiv). Based on best available knowledge, no literature reviews have been published on this specific subject,[2] highlighting the need for a well-organized understanding of how collaborative platforms can be utilized for co-creating public services and their resulting effects.

Following Paul & Criado (2020), a structured, concept-based, and multi-disciplinary review approach was employed to examine the main implications of collaborative platforms on public service design and delivery. We applied the widely recognized "*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*" (PRISMA, Liberati et al., 2009). Figure 2.1

[2] Systematic reviews about platforms were published in strategic management, economics and information science (see, for example, Chen et al., 2022; de Reuver et al., 2018; Rietveld & Schilling, 2021). A recent contribution by Falco & Kleinhans (2018b) produced a review of multiple empirical cases of collaborative platforms in urban services, while Thompson & Venters (2021) published a literature review of different government roles in platform-based ICT projects.

summarizes the different phases of the process (refer to Appendix A for the complete PRISMA checklist).

***** Insert Figure 1 here *****

2.1 Literature search

The literature search was limited to peer-reviewed articles published in English between 2011-2021. Although commercial platforms have been researched for more than two decades (Chen et al., 2022), the scholarly interest in collaborative platforms for co-creating public services has emerged more recently, with early contributions dated back to the beginning of 2010s (e.g., Linders, 2012; O'Reilly, 2011). Empirical studies and conceptual studies were both included, as we aimed to not only synthesize the empirical evidence but also engage with authors who explored concepts and theories related to collaborative platforms.

To identify publications and retrieve citation data, we searched Scopus and ISI Web of Science (WoS), particularly the Social Sciences Citation Index (SSCI). The Scopus and WoS databases were selected because they offer a consistent and representative sample of the literature, with greater levels of article quality than other sources (Falagas et al., 2008). As a second step, the online database search was supplemented with a manual review of 13 selected peer-reviewed journals[3]. Finally, the search was improved through backward snowball sampling (Wohlin, 2014), using the reference list obtained in the previous searches to identify additional citations.

[3] This list included: *Administration & Society, Government Information Quarterly, Information Polity, International Journal of Public Administration, International Public Management Journal, International Review of Administrative Sciences, Journal of Public Administration Research and Theory, Policy and Internet, Policy and Politics, Public Administration, Public Administration Review, Public Management Review,* and *Technological Forecasting and Social Change*.

The complete list of search strategies and article extraction is available in Appendix B in the Supplemental Material.

2.2 Screening process and eligibility criteria

Following the removal of exact duplicates, the initial set of articles consisted of 2,633 entries. To be considered eligible for the review, articles had to be conducted in or relevant to the public sector, specifically focusing on public services. Public services were broadly defined as services catering to the needs and interests of the public, intended to promote societal well-being and contribute to overall societal functioning and development. These services encompass goods and services that can be owned by the state, contracted to the state, or regulated and subsidized in the public interest (Flynn & Asquer, 2016). The review focused solely on the design and delivery of public services, excluding platforms related to political participation and policymaking. The collaborative platforms considered encompassed both digital and non-digital interfaces facilitating collaboration among multiple user groups for service design and delivery. The review excluded platforms involving social media or government interaction with social media platforms.

Upon reviewing titles and abstracts, many articles were deemed ineligible as they referred to simple government IT projects, government websites, or used the term "platform" figuratively for generic government initiatives. Due to the diverse applications of platforms across sectors and the multidisciplinary nature of research on this topic, relying solely on titles and abstracts for screening proved challenging. Consequently, full texts were examined in many cases to filter out articles that did not align with the study's scope and objectives.

After the screening process, a total of 70 articles were selected for review. Additionally, four additional articles were identified through backward snowballing, resulting in a final sample

of 74 records. For a comprehensive list of the articles included in the review, please refer to Appendix C.

2.3 Review and coding method

The analysis employed a deductive-inductive approach, combining pre-established coding and thematic analysis. To classify the studies and address the first research question, the a-priori coding scheme shown in Table 1 was developed. This classification employed a concept-centric review of the literature (Webster & Watson, 2002), following the theoretical trajectories for studying the co-creation of public services proposed by Torfing et al. (2021). For the second research question, thematic analysis and inductive coding were utilized to identify the implications of platforms for public services (Saldana, 2021).

All the articles were independently coded by the author. Acknowledging that coding is inherently subjective, the author shared coded field note excerpts and discussed the main dilemmas with colleagues (Saldana, 2021). This process helped safeguard the quality of the review and discover better connections between categories in progress.

***** Insert Table 1 here *****

3. Descriptive results of the systematic review

3.1 Journals and research disciplines

The study reviewed 74 articles published in 35 peer-reviewed journals (for the complete list of journals classified by WoS category, please refer to Appendix D in the Supplemental Material). The top outlet for published articles was *Government Information Quarterly* (24), followed by *Public Administration Review* (4), *Public Management Review* (3), *International Review of Administrative Sciences* (3), *Journal of Public Administration Research and Theory* (3), and *Technological Forecasting and Social Change* (3). Table 2 shows that the academic debate on

collaborative platforms has predominantly taken place in information science journals rather than in public administration outlets.

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3.2 Research over time

The number of articles published over time shown in Figure 2.2 indicates that while some seminal contributions can be traced back to the early 2010s, the majority of articles were published after 2017, with significant growth in 2020 and 2021. This suggests that the literature is in its early stages of development, albeit experiencing rapid expansion.

***** Insert Figure 2 here *****

3.3 Research approaches

Table 3 shows that more than 70 percent of articles adopted an empirical research methodology. Among the empirical studies, most of them were qualitative, mainly adopting a case study approach. Quantitative or experimental methods were less commonly applied, indicating a qualitative bias. This preference for qualitative research may be attributed to the nascent stage of development of the topic, which requires more exploratory investigations.

***** Insert Table 3 here *****

3.4 Regional focus, service areas, and government layers

One-third of the empirical studies were conducted in Europe, particularly in the Netherlands and Scandinavia. This suggests that collaborative platform applications are more prevalent in countries known for their proactive citizenry and administrative traditions (Parrado et al., 2013). Surprisingly, there was limited research focusing on the UK, despite significant political commitment and government investments in supporting platforms (Brown et al., 2017). Few studies explored collaborative platforms across multiple geographies, limiting opportunities for cross-country comparisons.

The majority of empirical studies examined collaborative platforms developed or involving local governments, while fewer studies focused on central governments. Only a small number of studies encompassed platforms involving more than one government layer.

Urban services, particularly in the context of smart cities, received the most attention in empirical studies, while the welfare and education sectors were relatively underrepresented. This divergence from prior research on collaboration and co-creation, which focused on service areas characterized by direct relationships between citizens and public officials (Jukić et al., 2019; Voorberg et al., 2015), is noteworthy. Many studies referred to the public sector in general without specifying a particular public service area, potentially limiting the practical implications and applicability of previous findings to specific settings and the potential public services that could benefit the most from collaborative platform configurations.

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4. Conceptualizing collaborative platforms for co-creating public services

To address our first research question, we employed a concept matrix (Webster & Watson, 2002) to identify the key research foci related to collaborative platforms for co-creating public services within the existing literature. Our analysis revealed diverse perspectives on collaborative platforms, encompassing technological, innovation, and governance dimensions.

The technological focus views collaborative platforms as digital interfaces and technologies that enable communication, interaction, and collaboration among multiple user groups for the co-creation of public services. This perspective recognizes the pivotal role of technology in facilitating collaborative processes and transforming public service delivery. With advancements in technology, transaction costs have significantly decreased, making co-creation more feasible and allowing for the development of public services in partnership with citizens, businesses, and other government organizations (Lember et al., 2019; Linders, 2012).

From this standpoint, platforms are viewed as technological architectures that enhance coordination, break down organizational silos, and streamline interactions among various stakeholders, with the aim of establishing an infrastructure, policies, and mechanisms that enable effective collaboration and co-creation of public services (Cordella & Paletti, 2019).

The innovation focus regards collaborative platforms as catalysts for open innovation and experimentation within the public sector. These platforms provide a space for citizens, government agencies, and other stakeholders to collectively generate and implement innovative ideas and solutions to address public service challenges. By enabling the participation of diverse actors, collaborative platforms foster a culture of innovation and contribute to the development of responsive and citizen-centric public services. This perspective highlights the importance of a well-functioning community of users and complementors within the platform ecosystem (Bonina & Eaton, 2020; Mergel & Desouza, 2013). Platforms are seen as intermediaries that bridge gaps and incentivize fruitful exchanges, creating an environment conducive to open innovation.

The governance focus conceptualizes collaborative platforms as meta-organizations that transcend traditional organizational boundaries. These platforms bring together actors from different sectors and levels of governance to collaboratively design and deliver public services. Collaborative governance plays a vital role in shaping the co-creation process, requiring the establishment of new rules and frameworks to manage many-to-many relationships among stakeholders (Ansell & Gash, 2018). Platforms not only serve as interfaces connecting distributed and independent actors but also enable the creation and enforcement of rules and templates for organizing interactions. This literature highlights the evolving role of government in the context of platform-based co-creation, transforming from the sole provider of public services to a guarantor of service provision (Ansell & Miura, 2020; Ansell & Torfing, 2021b).

Table 2.5 summarizes these distinct perspectives and their connection to the main theoretical trajectories identified by Torfing et al (2021) for the study of co-creation. For a comprehensive categorization of articles based on conceptual frameworks, please consult Appendix E. The table illustrates that the dominant research perspectives in this field are open government and innovation, followed by digital government and governance. The integration of the platform concept into discussions on collaborative governance is an evolving area that warrants further exploration. While the majority of articles predominantly adopt a singular perspective, the exploration of more integrated perspectives also holds promise for advancing our understanding in this domain.

***** Insert Table 5 here *****

5. Exploring the implications of collaborative platforms for co-creating public services

To address our second research question, a thematic analysis was conducted to identify the implications of collaborative platforms for public service design and delivery. This analysis identified six main themes that have significant implications for the design and delivery of public services using collaborative platforms: (1) value creation objectives, (2) value creation mechanisms, (3) actors involved, needs and motivations, (4) roles and relationships, (5) configuration and user experience, and (6) governance and funding.

Table 6 provides a summary of these themes, outlining their respective implications and considerations. The table not only highlights the potential impacts associated with collaborative platforms but also provides important factors to consider when implementing these platforms and addressing potential challenges in public service delivery. Policymakers, practitioners, and researchers can refer to these implications and considerations to navigate the implementation of collaborative platforms effectively. It is important to note that the table provides a

conceptual overview based on existing research and may not cover all possible implications comprehensively. However, it focuses on the aspects that have been studied and reported in published research, providing valuable insights for further exploration in this domain.

The subsequent paragraphs offer a more detailed discussion of these implications and considerations, delving into their implications and exploring their impact on public service design and delivery.

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5.1 Value creation objectives

Collaborative platforms hold significant potential for supporting diverse value creation objectives in the co-creation of public services. These objectives can be categorized into three key dimensions.

Firstly, collaborative platforms contribute to improving administrative and service efficiency by facilitating communication between citizens and government entities (Janowski et al., 2018), enhancing coordination among different government departments and service providers involved in service design and delivery (Cordella & Paletti, 2019), streamlining processes, avoiding duplication, and reducing administrative costs (Brown et al., 2017), and enabling the participation of external actors in co-producing public services, thereby helping governments deliver more services with fewer costs (Janssen & Estevez, 2013).

Secondly, these platforms facilitate the enhancement of service effectiveness and innovation. This is accomplished by reducing bottlenecks, simplifying access to services, and minimizing waiting times for citizens (Brown et al., 2017), providing more inclusive and equitable access to public services (Xu & Tang, 2020), improving service quality (Allen et al., 2020), personalizing services to cater to diversified needs (Ranerup et al., 2016), and fostering innovative service offerings (Bonina & Eaton, 2020).

Lastly, collaborative platforms also contribute to promoting social values associated with public services. They facilitate increased citizen participation and empowerment (Baka, 2017; van den Berg et al., 2020), foster a sense of community and connections with like-minded peers (Kordzadeh & Warren, 2013), promote transparency and access to information (Haveri & Anttiroiko, 2021), and help achieve better service outcomes (Buntaine et al., 2021). These aspects contribute to reinforcing social cohesion, well-being, and trust in public services.

The utilization of collaborative platforms in public service design and delivery has the potential to revolutionize conventional approaches. Traditionally, the goals and objectives of public service initiatives have been predominantly dictated by government authorities in a top-down manner. However, the advent of collaborative platforms introduces a paradigm shift by enabling value to emerge from interactions among user groups in a bottom-up fashion (Randma-Liiv, 2021). The value objectives initially defined by platform leaders interact with the diverse perspectives and needs of the user community, facilitating the emergence of new purposes, ideas, and possibilities that might not have been envisioned initially.

5.2 Value creation mechanisms

Collaborative platforms play a crucial role in shaping the scope of value creation by defining the range of services and interactions available. In contrast to traditional approaches to public service delivery that rely on make or buy decisions, Ansell & Miura (2020) identify two key mechanisms that enable value creation in platforms: interaction leverage and innovation leverage.

Interaction leverage refers to the platform's ability to facilitate connections and exchanges. Platforms with high interaction leverage include participation and community engagement platforms, which streamline the exchange of information, knowledge, and resources with lower transaction costs (Allen et al., 2020; Desouza & Bhagwatwar, 2014; Falco & Kleinhans,

2018b). Service platforms and service marketplaces also possess significant interaction leverage as they act as intermediaries between dispersed users and service providers, pooling demand, improving matchmaking, and mobilizing previously untapped resources (Ranerup et al., 2016).

On the other hand, innovation leverage pertains to a platform's potential for leveraging complementarities and synergies to generate new ideas, solutions, and services. Platforms with high innovation leverage include open innovation platforms, which involve large groups of developers and service providers in the search for new solutions (Mergel & Desouza, 2013), as well as open data platforms that provide third-party developers and service providers with access to data and knowledge held by public organizations, enabling them to create innovative solutions (Bonina & Eaton, 2020; Cingolani, 2021). Additionally, creation and open coding platforms allow third-party developers and service providers to modify and reconfigure existing services or develop new ones (Mergel, 2015).

As the focus in collaborative platforms shifts from service production or outsourcing to orchestrating interactions and fostering innovation, this shift necessitates a change in the competencies required for managing public services. It becomes crucial to emphasize expertise in facilitating interactions, leveraging synergies, and driving innovation, moving beyond a traditional emphasis solely on service production and delivery.

5.3 Actors involved, needs and motivations

Collaborative platforms fundamentally reshape the actors engaged in public service design and delivery, extending beyond the traditional stakeholders of public organizations, service users, and professionals. These platforms attract a diverse range of actors, including developers, entrepreneurs, civic groups, academic institutions, non-governmental organizations, and individual citizens (Ansell & Gash, 2018). This diverse ecosystem of actors combines various

expertise, perspectives, and resources, enabling the identification and fulfillment of needs that go beyond existing services and uncovering unmet needs. By involving a diverse set of actors, including service users themselves, platforms facilitate the personalization of services to meet individual requirements.

The involvement of these actors is driven by specific needs and motivations. The success of platforms relies on achieving a critical mass of users from all sides, necessitating the identification and implementation of effective incentive structures for all actors (Cingolani, 2021; Falco & Kleinhans, 2018b). Actors on the platform are primarily motivated by individual benefits rather than generically participate in co-creation (Ju et al., 2019). Private service providers and developers seek knowledge advantages and revenue generation (Desouza & Bhagwatwar, 2014; Meijer & Boon, 2021), while citizens are attracted by time savings, access to tailored services, or direct improvements in their lives and neighborhoods (Ruijer et al., 2017).

However, various barriers hinder the mobilization of actors on collaborative platforms. Common barriers for low citizens' participation include the lack of clarity of what platforms are useful for or being unaware of their availability (Papavasiliou et al., 2021), as well as digital illiteracy and low internet access, information security and privacy concerns, and lack of trust in third-party service providers (Falco & Kleinhans, 2018a; Randma-Liiv, 2021). Removing these barriers takes precedence over establishing incentives when it comes to encouraging platform adoption and participation among public agencies and officers (Thompson & Venters, 2021). Common barriers include a shortage of trained personnel, reluctance to dedicate excessive time to manage activities with numerous actors, a preference for traditional in-person interactions, fear of relinquishing control and power, and an outdated organizational culture that undervalues input from citizens and third parties (Falco & Kleinhans, 2018a).

5.4 Roles and relationships

Collaborative platforms introduce platform-mediated relationships that manifest in different forms, depending on the level of active or passive involvement of the actors (Linders, 2012).

Government-to-government collaborative platforms serve as a means for government agencies and departments to collaborate in the production of public services. Examples of such platforms include electronic health records, government payment systems, and electronic identification systems, which enable multiple public administrators to co-create data and deliver services without developing their own individual system (Cordella & Paletti, 2019). Citizen-to-government platforms empower citizens to contribute actively by suggesting, rating, and voting on new ideas, providing feedback on public services, and reporting problems (Desouza & Bhagwatwar, 2014). Government-to-citizen informing and nudging platforms cater to more passive citizen users, equipping them with the necessary data to make informed decisions and select the best service providers and configurations (Ranerup et al., 2016). Peer-to-peer collaborative platforms facilitate direct connections between citizens and service providers, embodying the concept of "*Do-It-Yourself*," where citizens and providers organize and deliver public services themselves (Linders, 2012, p. 447).

The scope and directions of relationships among actors is influenced by factors such as the distribution of resources and competencies, as well as the nature of the public services involved. Government-to-government platforms are well-suited for services that require a high level of control over outcomes. Conversely, platforms like peer-to-peer do not hold the government accountable for the resulting activities and are more appropriate for services that rely on multiple contributions and where control over outcomes is limited (Cordella & Paletti, 2019).

While the complexity of relationships on collaborative platforms can introduce risks such as conflicts of interest (Danneels et al., 2017), these challenges can be addressed through the

unique capabilities of collaborative platforms. By providing a shared space for interaction, communication, and information sharing, platforms facilitate the building of relationships and the alignment of goals among diverse actors, offering a valuable shortcut for establishing collaboration and trust among stakeholders in public service design and delivery.

5.5 Configuration and user experience

The configuration and user experience of collaborative platforms are essential factors that shape the co-creation of services, as they directly influence the effectiveness of collaboration among stakeholders.

By incorporating user-friendly interfaces, intuitive navigation, and seamless interaction features, collaborative platforms enhance the user experience and promote effective engagement (Janssen & Estevez, 2013; O'Reilly, 2011). These platforms leverage a range of digital technologies, including web 2.0 applications, user experience design, data analytics, artificial intelligence, and the internet of things, to offer a diverse set of functionalities. These functionalities encompass user reviews, forums, blogs, voting and ranking systems for ideas, multichannel interaction and commerce, matching algorithms, embedded digital payments, crowdsourcing, and geo-located inputs (Anttiroiko et al., 2014; Falco & Kleinhans, 2018b).

While online platforms provide advantages such as larger network effects and lower-cost transactions (Lember et al., 2019), it is important to note that collaborative platforms are not exclusively delivered through digital infrastructure. Offline platforms refer to physical spaces or intermediary organizations that facilitate collaboration among actors (Ansell & Miura, 2020; Erikson & Larsson, 2020; Marais et al., 2021). These offline platforms possess dedicated competencies and resources, serving as valuable facilitators in the co-creation and delivery of services.

Online collaborative platforms face challenges related to the digital divide, which refers to the unequal access to digital technologies and online platforms (Falco & Kleinhans, 2018a). Additionally, the absence of personal connection and human touch in digital interactions can impact the quality of public service delivery (Papavasiliou et al., 2021). To address these challenges, some collaborative platforms adopt a hybrid approach by operating both offline and online components (Desouza & Bhagwatwar, 2014). This approach aims to bridge the gap between the digital and physical realms, ensuring inclusivity and accessibility for a broader range of users.

5.6 Governance and funding

Governance and funding play a crucial role in the co-creation of public services through collaborative platforms. The degree of openness within a platform, which governs user access and interaction, has a direct impact on the generative nature of the design and delivery process of public services (Klievink et al., 2016; Mergel, 2015). While high openness fosters innovation and the exploration of opportunities, control is necessary to uphold service quality, safeguard data privacy, and ensure security (Cordella & Paletti, 2019). This aspect holds particular significance in public services, which directly impact individuals and handle sensitive information, such as personal data, health records, or other confidential data. Establishing effective governance mechanisms becomes critical to govern the behavior of stakeholders. Key aspects include implementing user authentication, authorization protocols, data protection measures, and ensuring compliance with relevant regulations to mitigate risks and maintain public trust.

The role of the government in the platform context is also important to consider. The platform model represents a paradigmatic shift in the government's role, transforming it from being solely responsible for providing public services to becoming an enabler, orchestrator, and guarantor of service provision (Janssen & Estevez, 2013; Millard, 2018). As a platform leader,

the government designs and constructs the platform, as well as controls access and service quality (Klievink et al., 2016; Thompson & Venters, 2021). However, collaborative platforms are not limited to government-led efforts, as private businesses and civil-society organizations also establish and manage platforms (Meijer & Boon, 2021; Randma-Liiv, 2021). In such cases, the government's role may vary, acting as a catalyst, dominant platform user, or provider of data access and endorsement. Government funding can support both government-led and private-sector or civil-society platforms to enable and subsidize citizen access (Ranerup et al., 2016).

Research by Thompson & Venters (2021) indicates that governments often assume the role of platform leaders due to bureaucratic processes and a preference for control and limited access, leading to a lack of a "winner-takes-all" outcome seen in commercial platforms for public services. Instead, government-led platforms typically suffer from duplication, fragmentation, and low scalability, with each government entity developing its own solution, thereby reinforcing existing silos in public service delivery (Kassen, 2018).

Regardless of the platform's origin, the public sector bears the ultimate responsibility for delivering public services within platform ecosystems. This means that when satisfactory alternatives from third-party service providers and developers are lacking, the public sector must intervene to ensure the provision of necessary services. This responsibility ensures that the needs of citizens are met and that essential public services are not compromised within the platform environment (Linders, 2012).

5. Conclusions, further research, and limitations

This systematic literature review aimed to address a significant gap in the existing literature on collaborative platforms, specifically the lack of a structured and comprehensive understanding of how these digital and organizational structures can be effectively utilized to co-create public

services and the resulting impacts. Through a systematic review of 74 articles, this study made two main contributions.

Firstly, the findings highlighted that collaborative platforms encompass three essential dimensions: technological, innovation, and governance. These dimensions collectively enhance the capacity of collaborative platforms to attract, mobilize, and govern stakeholders involved in the collaborative co-creation of public services. While the technological and innovation perspectives have received more attention in the literature, the dimension of collaborative governance remains an area that is still evolving and requires further exploration, particularly within the context of public services. Public services involve multiple stakeholders and necessitate transparency, accountability, adherence to legal and regulatory frameworks, and the careful balancing of participation and representation. Understanding how collaborative platforms effectively navigate these aspects while spurring co-creation would establish a stronger connection to the literature in public administration and governance, specifically the transitions from new public management to new public governance (Osborne, 2006).

Secondly, the review findings highlight six key implications and considerations for public service design and delivery within the context of collaborative platforms. These include value creation objectives, value creation mechanisms, actors involved, needs and motivations, roles and relationships, configuration and user experience, and governance and funding. Collaborative platforms offer significant potential to enhance administrative efficiency, improve public service effectiveness, and promote social values and well-being. However, it is crucial to carefully plan and manage interactions, as user interactions shape value creation outcomes. The transition from traditional and more linear service production to effectively managing interactions and leveraging innovation on the platform necessitates the acquisition of new skills and capabilities in mapping and orchestrating external societal resources rather than solely focusing on make or buy decisions. While collaborative platforms present

opportunities for more open public service design and delivery, empowering the government "*to do more by leveraging more*" (Millard, 2018, p. S79), maintaining control remains crucial to prevent negative impacts, ensure service quality, protect citizens' privacy, and promote appropriate and ethical behavior. These implications and considerations provide valuable insights for policymakers, practitioners, and researchers involved in implementing collaborative platforms in public service contexts, contributing to a deeper understanding of their potential and informing effective utilization strategies.

This overview of academic research on collaborative platform applications in public services has identified several areas that warrant further investigation. Based on these findings, we offer the following recommendations for future research on collaborative platforms for co-creating public services:

1. *Conceptualize collaborative platforms as dynamic socio-technological phenomena*. The existing literature predominantly focuses on the technological and innovative aspects of collaborative platforms, while giving relatively limited attention to governance and the interplay between these domains. Further investigation is crucial to comprehend how to strike a balance between technology utilization, digital interfaces, incentives, recruitment strategies, and control rules. Such equilibrium is essential to enable equitable participation from diverse sociodemographic groups, preserve quality and privacy, while fostering the emergence of partially autonomous ecosystems of actors in the realm of public services.
2. *Bridge the gap between platforms' governance and collaborative value creation*. Collaborative platform value creation objectives, mechanisms, and ecosystem of actors are often discussed separately from platform governance, overlooking potential connections between the initiators, developers, and leaders of a platform and value creation in public services. The transfer of decision-making power and resources from the government to third-party actors raises questions about democratic accountability. Further investigation is

needed to understand the government's level of involvement and how platform goals, scope, users, and rules are defined.

3. *Explore the antecedents of collaborative platforms in public services*. Research on the factors that influence the emergence of collaborative platforms is scarce. It is important to examine the antecedents, such as legal and regulatory frameworks, policy environment, administrative traditions, organizational and cultural features of public organizations, and intrinsic attributes of public services, to determine which institutional contexts and public services would benefit the most from platform configurations.
4. *Assess the contributions of collaborative platforms to public value*. Limited knowledge exists regarding the outcomes generated by collaborative platforms. While these platforms are seen as a way to maintain service quality while increasing efficiency, they are also expected to address new societal needs, enhance effectiveness, and promote social cohesion and trust. However, preliminary evidence has called into question their ability to do so (e.g., van den Berg et al, 2020; Xu and Tang, 2020). Further empirical evidence is necessary to demonstrate that collaborative platforms not only represent desirable outcomes but also contribute to creating public value. Moreover, given the emerging and interesting debate on public value and the potential for disvalue to emerge in complex, interconnected, and not entirely predictable systems (Cluley et al., 2020; Hartley et al., 2019; Parker et al., 2023), it would be insightful to assess whether collaborative platforms create or destroy value. This assessment would shed light on the broader impacts and potential trade-offs associated with the implementation of collaborative platforms in public service contexts.

These areas for future developments might provide a more complete picture of the implications of platforms for public service delivery, which will be desirable not just for academic purposes. An insufficient conceptualization and understanding of platforms by policy makers and public

managers may compromise the use of these tools to enable distributed governance and innovation for the co-creation of better public services.

In conclusion, this study has some limitations, such as possible biases in article selection and inaccurate data extraction. To minimize these problems, a study protocol with clear research questions and article eligibility criteria was established in advance, and the database extraction of articles was supplemented with hand-searching key journals and snowball sampling. Another limitation of this study is that the conceptual framework of implications and considerations for public service design and delivery has not been empirically tested. Further research is needed to validate this framework and its potential applications.

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* Not all publications included in the review have been cited; a full list of all reviewed articles can be found in Appendix C in the Supplemental Material.

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Figures

Figure 1: PRISMA flow through the different phases of the systematic review

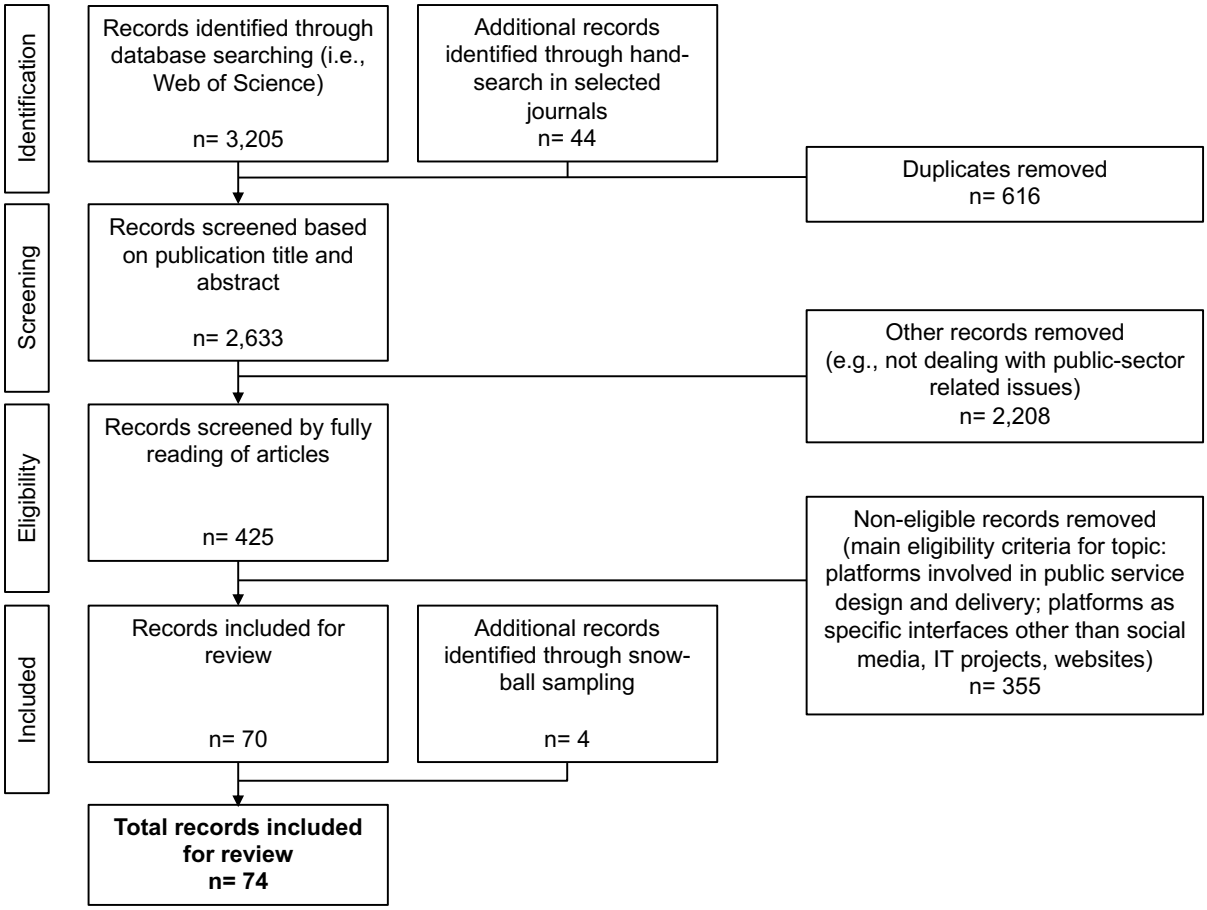
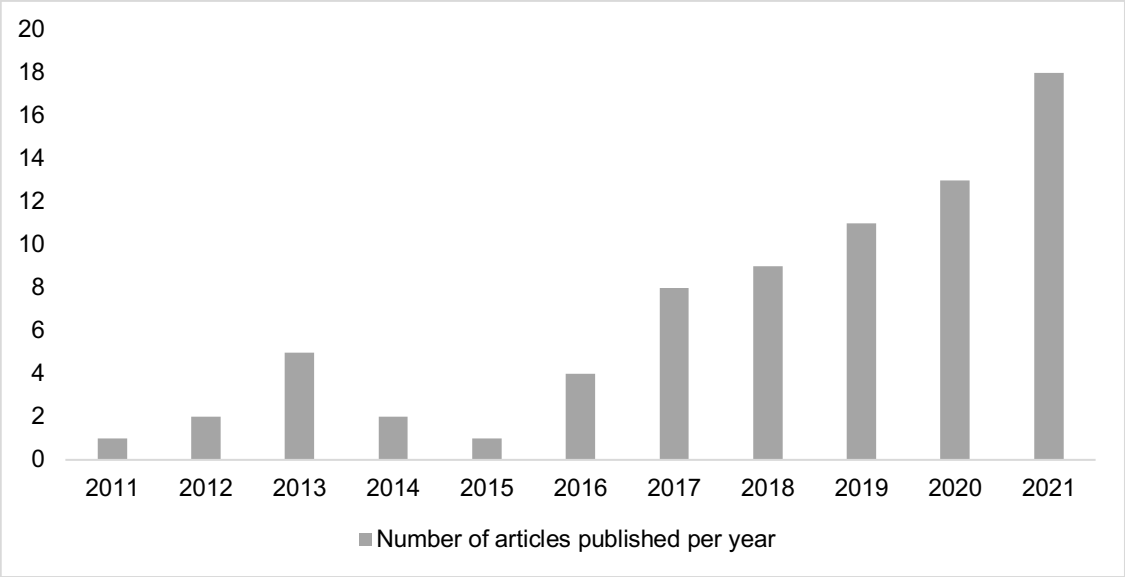


Figure 2: Published articles per year, 2011-2021



Tables

Table 1: Literature a-priori coding scheme

Coding categories	Definition
Article descriptive information	Author(s), publication year, title, and journal; extracted from the title page.
Research discipline	Information Science, Political Science, Public Administration and Policy, Regional and Urban Planning.
Analytical method	Theoretical or empirical methods; empirical studies further classified as experimental, quantitative, or qualitative approaches.
Public service area	Administrative services (including electronic identification services and payments), education, healthcare, urban services (including local mobility services and utilities), and welfare (excluding healthcare).
Government layer	Governmental layer involved in the collaborative platform, such as local or central government.
Geographic area	Country and geographic area in which the study was conducted.
Collaborative platform definition	Classification based on the theoretical framework proposed by Torfing et al. (2021): Digital government and governance, Open government and innovation, Collaborative governance.

Table 2: Classification of articles by research discipline

Research area	N. of articles	%
Information Science	32	43.24
Political Science	6	8.11
Public Administration and Policy	13	17.57
Regional and Urban Planning	8	10.81
Others	15	20.27
Total	74	100

Table 3: Classification of articles by research methodology

Research methodology	**N. of articles**	**%**
Empirical	54	72.97
Theoretical	20	27.03
Total	74	100

Research type of empirical studies	**N. of articles**	**%**
Experimental	2	3.70
Qualitative	38	70.37
Quantitative	14	25.93
Total	54	100

Table 4: Classification of empirical articles by geographic focus, public service areas and government layer involved

Geographic focus	**N. of articles**	**%**
Africa	4	7.41
Australia	2	3.70
China	4	7.41
Europe (incl. UK)	19	35.19
Latin America	3	5.56
Middle East	2	3.70
North America (i.e., USA)	8	14.81
South-East Asia	4	7.41
Studies with an international scope, comparing multiple geographical locations	8	14.81
Total	54	100

Government layer involved	**N. of articles**	**%**
Central	16	29.63
Local	33	61.11
Studies comparing cases at both central and local government	5	9.26
Total	54	100

Public service area	**N. of articles**	**%**
Administrative Services, E-ID, Payments	3	5.56
Education	2	3.70
Healthcare	5	9.26
Urban Services	19	35.19
Welfare (excl. healthcare)	4	7.41
Studies with no specific service focus, referring to the public sector in general	21	38.89
Total	54	100

Table 5: Conceptualization of collaborative platforms for co-creating public services

Focus	**Technological**	**Innovation**	**Governance**
Collaborative platform conceptualization	Platforms as technological infrastructure and digital interfaces	Platforms as catalysts for exploration and experimentation within the public sector	Platforms as meta-organizations providing new rules and templates
Theoretical framework applied	Digital government and governance	Open government and open innovation	Collaborative governance
Key issues	▪ Digital transformation of public services, including the setup of infrastructure, policies, and mechanisms ▪ Challenges and opportunities associated with digital transformation, such as privacy, security, and data governance	▪ Bridging knowledge gaps and fostering crowd participation ▪ Utilizing open data and resources made openly available as drivers of innovation ▪ Exploring the incentives for participation	▪ Exploring new modes of governance and decision-making ▪ Examining changes in public service governance and funding ▪ Defining new rules and frameworks for steering many-to-many relationships ▪ Addressing trust, accountability, and dispute resolution
N. of articles	33	37	9

Note: The total number of articles does not sum to 74 because some articles adopted multiple conceptualizations, resulting in their classification in more than one category.

Table 6: Implications and considerations of collaborative platforms for co-creating public services

Key themes	**Implications** *What the platform helps to accomplish*	**Considerations** *What should be kept in mind in the implementation*
1. Value creation objectives	▪ Enhanced administrative efficiency. ▪ Increased public service effectiveness and innovation. ▪ Promotion of social values and well-being.	▪ Value creation can be planned but can also emerge organically from user interactions. ▪ Managing and steering interactions is crucial to balance planned objectives with spontaneous value creation.
2. Value creation mechanisms	▪ Facilitation of interactions, enabling matchmaking, and utilization of untapped or unused resources. ▪ Encouragement of innovation and novel solutions, leveraging complementarities, and tapping into collective intelligence.	▪ Emphasis moves from service production/outsourcing to managing interactions and harnessing innovation. ▪ It is necessary to acquire new skills and capabilities in mapping and orchestrating external societal resources.
3. Actors involved, needs and motivations	▪ Involvement of diverse actors extending beyond public organizations, service users, and professionals. ▪ Addressing needs beyond existing services and uncovering unmet needs.	▪ Mobilizing and engaging actors by understanding motivations of different actors, designing incentives, and removing barriers.
4. Roles and relationships	▪ Involvement of actors with different roles (users, contributors). ▪ Facilitation of platform-mediated relationships (government-to-government, citizen-to-government, government-to-citizen, and peer-to-peer).	▪ Multiple actors may introduce complexities and conflicts of interest. ▪ Collaborative platforms can expedite rule-setting and trust-building.
5. Configuration and user experience	▪ Enhancing user experience through user-friendly interfaces and seamless interaction features. ▪ Incorporating offline components for inclusivity.	▪ Balancing technology-enabled collaboration with the risk of digital divide. ▪ Balancing automation with human touch in service delivery.
6. Governance and funding	▪ Open and more generative service provision. ▪ Defining standards and quality rules. ▪ Leadership by government, businesses, or civil organizations.	▪ Public service design is more open, but control is needed to prevent negative impacts and misbehaviors. ▪ Ensure quality, privacy, and appropriate behavior.

Appendices

Appendix A: PRISMA checklist for conducting the systematic review

The checklist is based on Liberati et al. (2009). Some checks are not applicable as they are meant for a meta-analysis, not a systematic review.

TITLE			page
Title	1	Identify the report as a systematic review, meta-analysis or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	1–2
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes and study design (PICOS).	2
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g. Web address) and, if available, provide registration information including registration number.	n.a.
Eligibility criteria	6	Specify study characteristics (e.g. PICOS, length of follow-up) and report characteristics (e.g. years considered, language, publication status) used as criteria for eligibility, giving rationale.	3–6
Information sources	7	Describe all information sources (e.g. databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	3–6
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	3-4
Study selection	9	State the process for selecting studies (i.e. screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	5
Data collection process	10	Describe method of data extraction from reports (e.g. piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	6
Data items	11	List and define all variables for which data were sought (e.g. PICOS, funding sources) and any assumptions and simplifications made.	3–6
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias in individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	n.a.
Summary measures	13	State the principal summary measures (e.g. risk ratio, difference in means).	n.a.

Synthesis of results	14	Describe the methods for handling data and combining results of studies, if done, including measures of consistency (e.g. I) for each meta-analysis.	n.a.
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g. publication bias, selective reporting within studies).	3–6
Additional analyses	16	Describe methods of additional analyses (e.g. sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	n.a.
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	5
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g. study size, PICOS, follow-up period) and provide the citations.	n.a.
Risk of bias within studies	19	Present data on risk of bias for each study and, if available, any outcome level assessment (see item 12).	n.a.
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	n.a.
Synthesis of results	21	Present the main results of the review. If meta-analyses are done, include for each, confidence intervals and measures of consistency	7-18
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	n.a.
Additional analysis	23	Give results of additional analyses, if done (e.g. sensitivity or subgroup analyses, meta-regression [see Item 16]).	n.a.
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g. healthcare providers, users, and policy makers).	7-18
Limitations	25	Discuss limitations at study and outcome level (e.g. risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	20
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	18-20
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	

Appendix B: Note on the literature search

This appendix provides a note regarding the literature search conducted for the study. The search was limited to articles published in English in peer-reviewed journals between 2011 and 2021. The search strategy included utilizing the Web of Science (WoS) Social Sciences Citation Index (SSCI) with categories such as "Public Administration," "Political Science," and "Information Science." Additionally, Scopus was used to search within the subject area of "Social Science," encompassing sub-fields like public administration, political science, and interdisciplinary studies involving government, technology, and society. To identify relevant articles, these searching keywords were applied: "*platform*, govern*, public servic*, public sector, public org*, co-creat*, co-produc**," combining them in different search strings for higher accuracy. This search was last conducted in March 2022.

Furthermore, a manual hand search was conducted in selected journals, namely *Administration & Society*, *Government Information Quarterly*, *Information Polity*, *International Journal of Public Administration*, *International Public Management Journal*, *International Review of Administrative Sciences*, *Journal of Public Administration Research and Theory*, *Policy and Internet, Public Administration*, *Public Administration Review*, *Public Management Review*, and *Technological Forecasting and Social Change*. Each journal was searched separately, using the same list of keywords mentioned above. The last search was conducted in April 2022.

The table below presents a comprehensive summary of the search strategy employed to gather relevant literature for the review, including both database searches and hand searching selected journals. The total number of results obtained from all sources is also provided.

Export #	Source	Keyword	Search within	Filter(s)	Results
1	Web of Science - SSCI Social Science Citation Index	platform* AND govern* OR public sector OR public org*	Title, abstract, author keywords, keywords	Web of Science Category: Public Administration, Political Science, Information Science	565
2	Web of Science - SSCI Social Science Citation Index	platform* AND public servic*	Title, abstract, author keywords, keywords	Web of Science Category: Public Administration, Political Science, Information Science	25
3	Web of Science - SSCI Social Science Citation Index	platform* AND co-creat* OR co-produc*	Title, abstract, author keywords, keywords	Web of Science Category: Public Administration, Political Science, Information Science	45
4	Scopus	platform* AND govern* OR public sector OR public org*	Title, abstract, keywords	Subject Area: Social Sciences	1,211
5	Scopus	platform* AND public servic*	Title, abstract, keywords	Subject Area: Social Sciences	995
6	Scopus	platform* AND co-creat* OR co-produc*	Title, abstract, keywords	Subject Area: Social Sciences	364
7	Hand search selected journals				44
Total					**3,249**

Appendix C: List of articles included in the literature sample of the systematic review

The list of articles is organized in alphabetical order by the authors' names, publication year, article title, and the journal in which they were published.

#	Author(s)	Publication Year	Article title	Journal title
1	Allen, B; Tamindael, LE; Bickerton, SH; Cho, W	2020	Does citizen coproduction lead to better urban services in smart cities projects? An empirical study on e-participation in a mobile big data platform	Government Information Quarterly
2	Ansell, C; Gash, A	2018	Collaborative Platforms as a Governance Strategy	Journal of Public Administration Research and Theory
3	Ansell, C; Miura, S	2020	Can the power of platforms be harnessed for governance?	Public Administration
4	Ansell, C; Torfing, J	2021	Co-creation: the new kid on the block in public governance	Policy and Politics
5	Anttiroiko, A; Valkama, P; Bailey, S	2014	Smart cities in the new service economy: building platforms for smart services	AI & Society
6	Baka, V	2017	Co-creating an open platform at the local governance level: How openness is enacted in Zambia	Government Information Quarterly
7	Bonina, C; Eaton, B	2020	Cultivating open government data platform ecosystems through governance: Lessons from Buenos Aires, Mexico City and Montevideo	Government Information Quarterly
8	Brown, A; Fishenden, J; Thompson, M; Venters, W	2017	Appraising the impact and role of platform models and Government as a Platform (GaaP) in UK Government public service reform: Towards a Platform Assessment Framework (PAF)	Government Information Quarterly
9	Buntaine, MT; Hunnicutt, P; Komakech, P	2021	The Challenges of Using Citizen Reporting to Improve Public Services: A Field Experiment on Solid Waste Services in Uganda	Journal of Public Administration Research and Theory
10	Cingolani, L	2021	The survival of open government platforms: Empirical insights from a global sample	Government Information Quarterly
11	Cordella, A; Paletti, A	2019	Government as a platform, orchestration, and public value creation: The Italian case	Government Information Quarterly
12	Danneels, L; Viaene, S; Van den Bergh, J	2017	Open data platforms: Discussing alternative knowledge epistemologies	Government Information Quarterly
13	de Jong, MDT; Neulen, S; Jansma, SR	2019	Citizens' intentions to participate in governmental co-creation initiatives: Comparing three co-creation configurations	Government Information Quarterly

14	Desouza, K. C.; Bhagwatwar, A.	2014	Technology-enabled participatory platforms for civic engagement: The case of US cities	Journal of Urban Technologies
15	Emaldi, M; Aguilera, U; Lopez-de-Ipina, D; Perez-Velasco, J	2017	Towards Citizen Co-Created Public Service Apps	Sensors
16	Erikson, J; Larsson, OL	2020	How platforms facilitate collaboration across organizational boundaries: fighting human trafficking in Sweden	Policy Sciences
17	Falco, E; Kleinhans, R	2018	Beyond technology: Identifying local government challenges for using digital platforms for citizen engagement	International Journal of Information Management
18	Falco, E; Kleinhans, R	2018	Digital Participatory Platforms for Co-Production in Urban Development: A Systematic Review	International Journal of E-Planning Research
19	Faulkner-Gurstein, R; Wyatt, D	2021	Platform NHS: Reconfiguring a Public Service in the Age of Digital Capitalism	Science, Technology, & Human Values
20	Fishenden, J; Thompson, M	2013	Digital Government, Open Architecture, and Innovation: Why Public Sector IT Will Never Be the Same Again	Journal of Public Administration Research and Theory
21	Frankowski, A	2019	Collaborative governance as a policy strategy in healthcare	Journal of Health Organization and Management
22	Gil, O; Cortés-Cediel, ME; Cantador, I	2019	Citizen participation and the rise of digital media platforms in smart governance and smart cities	International Journal of E-Planning Research
23	Hatuka, T; Zur, H	2020	Who is the 'smart' resident in the digital age? The varied profiles of users and non-users in the contemporary city	Urban Studies
24	Haveri, A; Anttiroiko, AV	2021	Urban platforms as a mode of governance	International Review of Administrative Sciences
25	Hofmann, S; Saebo, O; Braccini, AM; Za, S	2019	The public sector's roles in the sharing economy and the implications for public values	Government Information Quarterly
26	Janowski, T; Estevez, E; Baguma, R	2018	Platform governance for sustainable development: Reshaping citizen-administration relationships in the digital age	Government Information Quarterly
27	Janssen, M; Estevez, E	2013	Lean government and platform-based governance-Doing more with less	Government Information Quarterly
28	Ju, JR; Liu, LN; Feng, YQ	2019	Public and private value in citizen participation in E-governance: Evidence from a government-sponsored green commuting platform	Government Information Quarterly
29	Kassen, M	2013	A promising phenomenon of open data: A case study of the Chicago open data project	Government Information Quarterly
30	Kassen, M	2018	Open data and its institutional ecosystems: A comparative cross-	Canadian Public Administration

			jurisdictional analysis of open data platforms	
31	Kassen, M	2018	Adopting and managing open data: Stakeholder perspectives, challenges and policy recommendations	Aslib Journal of Information Management
32	Kassen, M	2020	E-participation actors: understanding roles, connections, partnerships	Knowledge Management Research & Practice
33	Klievink, B; Bharosa, N; Tan, YH	2016	The collaborative realization of public values and business goals: Governance and infrastructure of public-private information platforms	Government Information Quarterly
34	Kordzadeh, N.; Warren, J.	2013	Toward a typology of health 2.0 collaboration platforms and websites	Health and Technology
35	Larsson, KK; Skjølsvik, T	2021	Making sense of the digital co-production of welfare services: using digital technology to simplify or tailor the co-production of services	Public Management Review
36	Lember, V; Brandsen, T; Tõnurist, P	2019	The potential impacts of digital technologies on co-production and co-creation	Public Management Review
37	Linders, D	2012	From e-government to we-government: Defining a typology for citizen coproduction in the age of social media	Government Information Quarterly
38	Ma, L; Christensen, T; Zheng, YP	2021	Government technological capacity and public-private partnerships regarding digital service delivery: evidence from Chinese cities	International Review of Administrative Sciences
39	Marais, A; Grobbelaar, SS; Meyer, I; Kennon, D; Herselman, M	2021	Supporting the formation and functioning of innovation platforms in healthcare value chains	Science and Public Policy
40	Marjanovic, O; Cecez-Kecmanovic, D	2020	Open government data platforms - A complex adaptive sociomaterial systems perspective	Information and Organization
41	Meijer, A; Boon, W	2021	Digital platforms for the co-creation of public value	Policy and Politics
42	Meijer, A; Lips, M; Chen, K	2019	Open Governance: A New Paradigm for Understanding Urban Governance in an Information Age	Frontiers in Sustainable Cities
43	Meijer, A; Potjer, S	2018	Citizen-generated open data: An explorative analysis of 25 cases	Government Information Quarterly
44	Mergel, I	2015	Open collaboration in the public sector: The case of social coding on GitHub	Government Information Quarterly
45	Mergel, I	2018	Open innovation in the public sector: drivers and barriers for the adoption of Challenge.gov	Public Management Review
46	Mergel, I; Desouza, KC	2013	Implementing Open Innovation in the Public Sector: The Case of Challenge.gov	Public Administration Review
47	Millard, J	2018	Open governance systems: Doing more with more	Government Information Quarterly

48	Nam, T	2012	Suggesting frameworks of citizen-sourcing via Government 2.0	Government Information Quarterly
49	Neumann, O; Schott, C	2021	Behavioral effects of public service motivation among citizens: testing the case of digital co-production	International Public Management Journal
50	O'Reilly, T	2011	Government as a Platform	Innovations: Technology, Governance, Globalization
51	Ojasalo, J; Kauppinen, H	2016	Collaborative Innovation with External Actors: An Empirical Study on Open Innovation Platforms in Smart Cities	Technology Innovation Management Review
52	Papavasiliou, S; Reaiche, C; Papavasiliou, S	2021	Digital health and patient-centred care: A digital systems view	Systems Research and Behavioral Science
53	Pozzebon, M; Cunha, MA; Coelho, TR	2016	Making sense to decreasing citizen eParticipation through a social representation lens	Information and Organization
54	Randma-Liiv, T	2021	Organizing e-participation: Challenges stemming from the multiplicity of actors	Public Administration
55	Ranerup, A; Henriksen, HZ; Hedman, J	2016	An analysis of business models in Public Service Platforms	Government Information Quarterly
56	Repette, P; Sabatini-Marques, J; Yigitcanlar, T; Sell, D; Costa, E	2021	The Evolution of City-as-a-Platform: Smart Urban Development Governance with Collective Knowledge-Based Platform Urbanism	Land
57	Rotta, MJR; Sell, D; Pacheco, RCD; Yigitcanlar, T	2019	Digital Commons and Citizen Coproduction in Smart Cities: Assessment of Brazilian Municipal E-Government Platforms	Energies
58	Ruijer, E; Grimmelikhuijsen, S; Hogan, M; Enzerink, S; Ojo, A; Meijer, A	2017	Connecting societal issues, users and data. Scenario-based design of open data platforms	Government Information Quarterly
59	Ruijer, E; Grimmelikhuijsen, S; Meijer, A	2017	Open data for democracy: Developing a theoretical framework for open data use	Government Information Quarterly
60	Ruijer, E; Grimmelikhuijsen, S; van den Berg, J; Meijer, A	2020	Open data work: understanding open data usage from a practice lens	International Review of Administrative Sciences
61	Schmidthuber, L; Hilgers, D; Gegenhuber, T; Etzelstorfer, S	2017	The emergence of local open government: Determinants of citizen participation in online service reporting	Government Information Quarterly
62	Schmidthuber, L; Piller, F; Bogers, M; Hilgers, D	2019	Citizen participation in public administration: investigating open government for social innovation	R & D Management
63	Schreieck, M; Wiesche, M; Krcmar, H	2017	Governing nonprofit platform ecosystems - an information platform for refugees	Information Technology for Development

64	Senyo, PK; Effah, J; Osabutey, ELC	2021	Digital platformisation as public sector transformation strategy: A case of Ghana's paperless port	Technological Forecasting and Social Change
65	Seo, H; Myeong, S	2020	The Priority of Factors of Building Government as a Platform with Analytic Hierarchy Process Analysis	Sustainability
66	Seo, H; Myeong, S	2021	Determinant Factors for Adoption of Government as a Platform in South Korea: Mediating Effects on the Perception of Intelligent Information Technology	Sustainability
67	Shirazi, F; Wu, Y; Hajli, A; Zadeh, AH; Hajli, N; Lin, XL	2021	Value co-creation in online healthcare communities	Technological Forecasting and Social Change
68	Thompson, M; Venters, W	2021	Platform, or technology project? A spectrum of six strategic 'plays' from UK government IT initiatives and their implications for policy	Government Information Quarterly
69	van den Berg, AC; Giest, SN; Groeneveld, SM; Kraaij, W	2020	Inclusivity in Online Platforms: Recruitment Strategies for Improving Participation of Diverse Sociodemographic Groups	Public Administration Review
70	Wang, X; Chen, YL; Han, ZY; Yao, XY; Gu, PQ; Jiang, Y	2021	Evaluation of mobile-based public participation in China's urban planning: Case study of the PinStreet platform	Cities
71	Xu, CK; Tang, T	2020	Closing the Gap or Widening the Divide: The Impacts of Technology-Enabled Coproduction on Equity in Public Service Delivery	Public Administration Review
72	Young, MM	2020	Implementation of Digital-Era Governance: The Case of Open Data in US Cities	Public Administration Review
73	Yu, J; Wen, YT; Jin, J; Zhang, Y	2019	Towards a service-dominant platform for public value co-creation in a smart city: Evidence from two metropolitan cities in China	Technological Forecasting and Social Change
74	Zhenbin, Y; Kankanhalli, A; Ha, S; Tayi, GK	2020	What drives public agencies to participate in open government data initiatives? An innovation resource perspective	Information & Management

Appendix D: List of journals included in the literature sample of the systematic review

The list of journals is shown in alphabetical order, by WoS category and number of articles published. Journal classification categories were extracted from the Social Sciences Citation Index (SSCI) of Web of Science (WoS); for those articles not indexed in the SSCI, the classification provided by the Emerging Sources Citation Index (ESCI) is reported.

#	Journal title	WoS Category	N. of articles
1	AI & Society	Information Science - SSCI	1
2	Aslib Journal of Information Management	Information Science - SSCI	1
3	Canadian Public Administration	Public Administration - SSCI	1
4	Cities	Regional & Urban Planning - SSCI	1
5	Energies	Energy - SSCI	1
6	Frontiers in Sustainable Cities	Urban Studies - ESCI	1
7	Government Information Quarterly	Information Science - SSCI	24
8	Health and Technology	Information Science - ESCI	1
9	Information & Management	Information Science - SSCI	1
10	Information and Organization	Information Science - SSCI	2
11	Information Technology for Development	Development Studies - SSCI	1
12	Innovations: Technology, Governance, Globalization	n.a.	1
13	International Journal of E-Planning Research	Urban Studies - SSCI	2
14	International Journal of Information Management	Information Science - SSCI	1
15	International Public Management Journal	Public Administration - SSCI	1
16	International Review of Administrative Sciences	Public Administration - SSCI	3
17	Journal of Health Organization and Management	Health Policy & Services - SSCI	1
18	Journal of Public Administration Research and Theory	Political Science - SSCI Public Administration - SSCI	3
19	Journal of Urban Technologies	n.a.	1
20	Knowledge Management Research & Practice	Information Science - SSCI	1
21	Land	Environmental Studies - SSCI	1
22	Policy and Politics	Political Science - SSCI Public Administration - SSCI	2
23	Policy Sciences	Public Administration - SSCI	1
24	Public Administration	Political Science - SSCI Public Administration - SSCI	2
25	Public Administration Review	Public Administration - SSCI	4
26	Public Management Review	Public Administration - SSCI	3
27	R & D Management	Business - SSCI	1
28	Science and Public Policy	Social Sciences, Interdisciplinary - SSCI	1
29	Science, Technology, & Human Values	n.a.	1

30	Sensors	Engineering, Electrical & Electronic - SSCI	1
31	Sustainability	Environmental Studies - SSCI	2
32	Systems Research and Behavioral Science	Social Sciences, Interdisciplinary - SSCI	1
33	Technological Forecasting and Social Change	Regional & Urban Planning - SSCI	3
34	Technology Innovation Management Review	Business - ESCI	1
35	Urban Studies	Regional & Urban Planning - SSCI	1
	Total number of articles		**74**

Appendix E: Concept matrix on main foci of the existing research on platforms for co-creating public services

The concept matrix follows Webster & Watson (2002). Articles are classified accordingly to the theoretical lenses proposed by Torfing et al. (2021). Please note that the total number of articles does not sum to 74 because some articles adopted multiple lenses and therefore were classified in more than one category.

Focus	**Technological**	**Innovation**	**Governance**
Collaborative platform conceptualization	*Platforms as technological infrastructure and digital interfaces*	*Platforms as catalysts for exploration and experimentation within the public sector*	*Platforms as meta-organizations providing new rules and templates*
Theoretical framework applied	*Digital government and governance*	*Open government and open innovation*	*Collaborative governance*
Articles			
Allen et al., 2020		x	
Ansell & Gash, 2018			x
Ansell & Miura, 2020			x
Ansell & Torfing, 2021			x
Anttiroiko et al., 2014	x		
Baka, 2017		x	
Bonina & Eaton, 2020		x	
Brown et al., 2017	x		
Buntaine et al., 2021		x	
Cingolani, 2021		x	
Cordella & Paletti, 2019	x		
Danneels et al., 2017		x	
de Jong et al., 2019		x	
Desouza & Bhagwatwar, 2014	x		
Emaldi et al., 2017		x	
Erikson & Larsson, 2020			x
Falco & Kleinhans, 2018a	x		

Falco & Kleinhans, 2018b	x		
Faulkner-Gurstein & Wyatt, 2021	x		
Fishenden & Thompson, 2013	x	x	
Frankowski, 2019			x
Gil et al., 2019	x		
Hatuka & Zur, 2020	x		
Haveri & Anttiroiko, 2021			x
Hofmann et al., 2019			x
Janowski et al., 2018	x		
Janssen & Estevez, 2013	x		
Ju et al., 2019		x	
Kassen, 2013	x		
Kassen, 2018a		x	
Kassen, 2018b		x	
Kassen, 2020		x	
Klievink et al., 2016	x		
Kordzadeh & Warren, 2013	x		
Larsson & Skjølsvik, 2021	x		
Lember et al., 2019	x		
Linders, 2012	x		
Ma et al., 2021	x		
Marais et al., 2021		x	
Marjanovic & Cecez-Kecmanovic, 2020		x	
Meijer & Boon, 2021	x	x	x
Meijer et al., 2019		x	
Meijer & Potjer, 2018		x	
Mergel, 2015		x	
Mergel, 2018		x	
Mergel & Desouza, 2013		x	
Millard, 2018		x	
Nam, 2012	x		
Neumann & Schott, 2021		x	
O'Reilly, 2011	x	x	
Ojasalo & Kauppinen, 2016		x	
Papavasiliou et al., 2021	x		
Pozzebon et al., 2016		x	
Randma-Liiv, 2021		x	

Ranerup et al., 2016	x		
Repette et al., 2021	x		
Rotta et al., 2019	x		
Ruijer, Grimmelikhuijsen, Hogan, et al., 2017	x		
Ruijer, Grimmelikhuijsen, & Meijer, 2017		x	
Ruijer et al., 2020		x	
Schmidthuber et al., 2019		x	
Schmidthuber et al., 2019		x	
Schreieck et al., 2017			x
Senyo et al., 2021	x		
Seo & Myeong, 2020	x		
Seo & Myeong, 2021	x		
Shirazi et al., 2021		x	
Thompson & Venters, 2021	x		
van den Berg et al., 2020		x	
Wang et al., 2021		x	
Xu & Tang, 2020		x	
Young, 2020	x	x	
Yu et al., 2019	x		
Zhenbin et al., 2020		x	
Total articles	**33**	**37**	**9**