

# Crowdsourcing in Municipal Ombudsman Offices: A Systematic Literature Review.

Jean Zahn<sup>a\*</sup>, Erica Mourão<sup>a</sup>, José Viterbo<sup>a</sup>, Cristiano Maciel<sup>b</sup>, Flávia Bernardini<sup>a</sup>

<sup>a</sup>Institute of Computing, Universidade Federal Fluminense, Niterói-RJ, Brazil, {jzahn, ericamourao, viterbo, fbernardini}@ic.uff.br, 0000-0002-6636-6836, 0000-0001-7916-0143, 0000-0002-0339-6624, 0000-0001-8801-827X

<sup>b</sup>Institute of Computing, Universidade Federal de Mato Grosso, Cuiabá-MT, Brazil, cristiano.maciel@ufmt.br, 0000-0002-2431-8457.

Submitted: 31 January 2025, Revised: 26 March 2025, Accepted: 21 April 2025, Published: 26 May 2025

**Abstract.** Municipal ombudsman offices face challenges in managing increasing citizen demands and stimulating meaningful participation, despite legal frameworks guaranteeing citizen rights. Crowdsourcing presents a potential avenue to improve the efficiency of the Ombudsman office and the engagement of citizens. This systematic literature review (SLR) investigates the application of crowdsourcing in municipal ombudsman offices, synthesizing existing research to identify best practices, challenges, and research gaps. A comprehensive search of academic databases from 2010 to 2023 initially yielded 1590 papers. Following a rigorous five-stage filtering process, 24 relevant studies were selected for in-depth analysis. The findings reveal a growing trend of utilizing crowdsourcing primarily for feedback collection and complaint management, although its application in direct decision-making processes within ombudsman offices remains limited. While the literature reports benefits such as increased efficiency and faster problem resolution, significant challenges persist. These include digital inequality, which can exclude vulnerable populations; concerns about the credibility of citizen-submitted data; and institutional resistance to adopting new, crowdsourced approaches. This review indicates the need for further research into the long-term impacts of crowdsourcing on citizen empowerment and ombudsman office accountability. The study provides a valuable foundation for researchers and practitioners seeking to leverage crowdsourcing to strengthen municipal ombudsman services and promote citizen participation, emphasizing the importance of addressing these identified challenges to realize the full potential of crowdsourcing in this context.

**Keywords.** Systematic Literature Review, Ombudsman, Crowdsourcing, E-participation, Electronic Government.

**Research paper, DOI:** <https://doi.org/10.59490/dgo.2025.959>

## 1. Introduction

Municipal ombudsman offices play a crucial role in safeguarding citizen rights and promoting government transparency and accountability (Zahn, Viterbo, et al., 2024). However, these offices often face significant challenges in managing the increasing volume of citizen demands and fostering meaningful participation, despite existing legal frameworks (Quintão, 2016). Crowdsourcing, the practice of obtaining contributions from a large group of people, emerges as a potential strategy to enhance the efficiency of ombudsman offices and engage citizens more effectively (Noh, 2022).

Given the importance of ombudsman offices as communication channels between citizens and the government, the reality is that many face limitations in resources, difficulties in processing large volumes of information, and barriers to promoting broad and representative citizen participation (Zahn, Mourão, et al., 2024).

---

While crowdsourcing has shown potential in various public sector areas, its specific application within the context of Brazilian municipal ombudsman offices remains underexplored, lacking a systematic synthesis of existing knowledge (Bouzguenda et al., 2019).

In recent years, the field of e-Participation has witnessed a growing interest in the systematic exploration of existing knowledge (Boudjelida et al., 2016; Hassan and Hamari, 2019; Simonofski et al., 2017) as well as other fields (da Silva et al., 2022; Pincovsky et al., 2021) through a methodological approach known as Systematic Literature Review (SLR – Kitchenham and Charters, 2007). An SLR study includes identifying, evaluating, and interpreting all research relevant and provides empirical evidence. The main reasons to conduct the SLR are: to summarize the existing evidence, to identify any gaps in current research, and to provide a background to the appropriate position in research activities.

The execution of an SLR within the domain of Computing entails adherence to three fundamental phases: Planning, Conduction, and Reporting (Kitchenham and Charters, 2007). The planning phase includes the identification of the urgency for the review, commissioning thereof, articulation of research inquiries, formulation of a review protocol, and subsequent protocol evaluation. The conducting phase involves activities such as the identification of pertinent research, curation of primary studies, evaluation of study quality, data extraction and monitoring, and the synthesis of acquired information. The reporting phase includes the specification of dissemination mechanisms, formatting of the principal report, and its subsequent evaluation.

The main objective of this SLR is to investigate how crowdsourcing has been applied in municipal ombudsman offices, identifying best practices, key challenges, and existing research gaps. In this way, the outcomes will provide a knowledge base regarding the adoption of tools and technologies based on this paradigm, aiming to comprehend the state-of-the-art and the primary challenges faced by these local governments in implementing crowdsourcing.

The rest of this paper is organized as follows: Section 2 presents the theoretical foundations necessary to understand the remainder of this paper. Section 3 approaches our research methodology to support the execution of this systematic review. Section 4 presents the results of conducting the review, following the established protocol. Section 5 presents our findings aligned to our Research Questions (RQs). Section 6 discusses the findings, explores their implications, and addresses potential limitations. Finally, Section 7 presents the conclusions of this work.

## 2. Theoretical Background

Citizen participation is a cornerstone of democratic governance, allowing individuals to interact with, engage in, and contribute to government decision-making processes, policy design, and the assessment of public services (Simonofski et al., 2017). Achieving meaningful citizen participation, however, is a complex undertaking, requiring authorities to actively create mechanisms to motivate engagement over diverse social and technological landscapes (Bouzguenda et al., 2019).

The use of information and communication technologies (ICTs) to improve public service delivery and promote citizen participation (Polovchenko, 2019), offers a potential pathway to support this interaction and the digital transformation. Through digital platforms, online forums, and mobile applications, e-government aims to make public administration more efficient, transparent, accessible, and responsive to citizens' needs (Grönlund, 2004; Relyea, 2002). E-participation, a key component of e-government, specifically focuses on leveraging technology to facilitate citizen involvement in decision-making and governance (Boudjelida et al., 2016; Hassan and Hamari, 2019; Simonofski et al., 2017).

Within this context, ombudsman offices play a crucial role as intermediaries between citizens and government. Originating in Sweden in 1809, the ombudsman concept centers on an independent official tasked with investigating citizen complaints against government actions and promoting administrative accountability (Batalli, 2015). In Brazil, for example, the term *"Ouvidoria"* is commonly used to refer to institutions that handle citizen feedback and complaints within specific organizations, particularly in the public sector (Comparato, 2005; Quintão, 2016). Municipal ombudsman offices, therefore, serve as vital institutional mechanisms for facilitating citizen participation at the local level, promoting social and political inclusion, and mediating conflicts between citizens and the municipal administration (Antero, 2014). The *"Ouvidor"* (the public official respon-

---

sible for the *Ouvidoria*), acts as a conduit for citizen voices, receiving and processing demands, and facilitating their resolution by the relevant authorities (Alizadeh et al., 2019; Polovchenko, 2019; Simonofski et al., 2019).

Crowdsourcing, a term coined by Howe et al., 2006, represents a significant development in leveraging collective intelligence to address various challenges. It involves outsourcing a task traditionally performed by employees to a large, undefined network of people through an open call (Estellés-Arolas and González-Ladrón-de-Guevara, 2012). Citizen-sourcing, a specific application of crowdsourcing within the public sector, harnesses the knowledge, skills, and experiences of citizens to improve government services and decision-making (Grossman et al., 2018; Hammon and Hippner, 2012). Estellés-Arolas and González-Ladrón-de-Guevara, 2012 identified eight fundamental elements of crowdsourcing: a clearly defined group, a task with a clear goal, a specified reward for the group, a clearly identified crowdsourcing initiator, compensation for the group, an online and participatory process, an open call of variable reach, and the involvement of the Internet. Crowdsourcing projects can be classified based on various criteria, including the type of task (e.g., crowdcasting, crowdcollaboration, crowdcontent, crowdfunding, crowdopinion) and the initiator of the project (public institutions, citizens, or companies – Garrigos-Simon et al., 2015; Sánchez et al., 2015). This diverse range of approaches illustrates the adaptability of crowdsourcing to different contexts and objectives.

### 3. Research Methodology

This Systematic Literature Review (SLR) adheres to the guidelines proposed by Kitchenham and Charters Kitchenham and Charters, 2007 to ensure a rigorous, transparent, and replicable research process. The methodology is structured around a detailed review protocol, developed a priori, which guides the three main phases: Planning, Conducting, and Reporting.

The planning phase begins with the identification of the need for a review, justifying its relevance by suggesting a gap in the existing literature or a lack of consolidated knowledge. This is followed by the formulation of precise Research Questions (RQs), structured using frameworks such as PICO (Population, Intervention, Comparison, Outcome) where appropriate, to define the scope of the investigation. The core of the planning phase is the development of the review protocol itself. This protocol specifies the research questions, the comprehensive search strategy (including database selection, search term development, search string construction, and search limits), the study selection criteria (inclusion and exclusion criteria for title/abstract and full-text screening), the quality assessment procedures (using standardized checklists or tools), the data extraction strategy (using a generic form), and the data synthesis methods (narrative synthesis, thematic analysis, or meta-analysis, as appropriate).

The conducting phase implements the protocol. A systematic search is performed across relevant electronic databases using the predefined search strings and limits. Study selection proceeds in stages, typically involving title and abstract screening followed by full-text screening, with independent reviewers at each stage and mechanisms for resolving disagreements. Included studies undergo quality assessment to evaluate their methodological rigor and potential for bias. Data extraction systematically collects key information from each study using the predefined data extraction form. Finally, data synthesis integrates the findings, identifying patterns, themes, and relationships to answer the research questions.

The reporting phase, detailed in the subsequent sections of this paper, disseminates the findings in a clear, comprehensive, and transparent manner, following the structure recommended by the guidelines. This structured approach ensures that the SLR is conducted systematically and that the conclusions are based on a thorough and unbiased assessment of the available evidence.

#### 3.1. Research Goal and Questions

Grounded in the Goal-Question-Metric (GQM) paradigm (Basili et al., 1994), this research aims to analyze scientific publications on crowdsourcing in municipal ombudsman offices. The goal is to identify and characterize the mechanisms (processes, methods, tools, and frameworks) used to enhance citizen participation through crowdsourcing. This analysis is conducted from the perspective of researchers and aims to provide insights relevant to both academia and public administration. To achieve this goal, the following RQs were formulated:

---

***RQ 1. What types of crowdsourcing and citizen-sourcing approaches are employed in municipal ombudsman offices?*** This inquiry aims to identify and categorize specific crowdsourcing methodologies employed, transcending the mere listing of “techniques”.

***RQ 2. How have crowdsourcing and citizen-sourcing been applied to enhance citizen participation and engagement in municipal ombudsman offices, and what are the key processes involved?*** This question goes beyond simply asking if crowdsourcing has been applied. It aims to understand the specific applications and processes used to enhance participation and engagement.

***RQ 3. What are the reported benefits and drawbacks of using crowdsourcing and citizen-sourcing in municipal ombudsman offices?*** This question seeks to identify both the positive and negative outcomes associated with crowdsourcing in this context. It’s crucial to consider not only benefits (e.g., increased efficiency, improved transparency) but also potential drawbacks (e.g., unequal access, biased participation, data quality issues).

***RQ 4. What are the main limitations, challenges, and ethical considerations associated with the use of crowdsourcing and citizen-sourcing in municipal ombudsman offices?*** This question expands on the previous one by explicitly focusing on the challenges and ethical considerations. This includes issues such as digital inclusion, data privacy, security, representativeness of participants, and potential for manipulation or misuse of crowdsourced data.

***RQ 5. What methodological approaches and evaluation metrics are employed in assessing the use of crowdsourcing and citizen-sourcing in municipal ombudsman offices?*** This question focuses on how the impacts of crowdsourcing are being measured and evaluated. It’s important to understand not only what the outcomes are, but also how researchers are determining those outcomes (e.g., surveys, case studies, quantitative analysis of platform data). Adding “evaluation metrics” clarifies that we are looking for the specific measures used.

By addressing these questions, this review aims to synthesize current knowledge, identify key trends, challenges, and best practices, and ultimately contribute to a deeper understanding of how crowdsourcing can be effectively leveraged to enhance citizen participation and improve public service delivery in this context. The following section details the methodology employed to answer these research questions.

### **3.2. Search String**

To design the search string, we used PICO (Population, Intervention, Comparison, and Outcomes) criteria as described in Kitchenham and Charters, 2007. The elements are as follows:

- **Population:** Ombudsman;
- **Intervention:** Crowdsourcing, citizen-sourcing, and related concepts (e.g., e-participation, collaborative systems);
- **Comparison:** No specific comparison was defined, as the focus is on describing and analyzing existing approaches rather than comparing specific interventions;
- **Outcome:** A broad range of outcomes was considered, including but not limited to: efficiency, citizen engagement, service quality, transparency, accountability, and the development of frameworks or models;

Based on these PICO elements, a comprehensive search string was constructed using a combination of keywords, synonyms, and related terms. Wildcards and truncation were used where appropriate to broaden the search and capture variations in terminology. The search string was designed to be sensitive (capturing a high proportion of relevant studies) while also striving for reasonable precision (avoiding an excessive number of irrelevant studies).

The search string was applied to the title, abstract, and keywords fields in the selected databases (detailed in Section 3.3). The following is the base search string used, adapted as necessary for the specific syntax of each database:

*("Ombudsman" AND ("Crowdsourcing" OR "E-Government" OR "citizen-sourcing" OR "Citizen-participation" OR "e-participation" OR "electronic participation" OR "collaborative systems" OR "collective intelligence" OR "user-powered systems" OR "community systems" OR "user-generated content"))*

This comprehensive search strategy, combining a structured PICO-based approach with a carefully constructed and iteratively refined search string, aimed to identify all relevant studies on the use of crowdsourcing in municipal ombudsman offices published within the specified timeframe and language parameters. The subsequent stages of the review, including study selection, quality assessment, and data extraction, are detailed in the following sections.

### 3.3. Databases

The databases used to obtain primary studies that aim to answer the research questions were: ACM Digital Library website<sup>1</sup>, IEEE Digital Library<sup>2</sup>, Scopus<sup>3</sup>, and Springer Link<sup>4</sup>. Due to limited time, we decided to use the *Database Search* (set of digital libraries) and leave the use of the hybrid search strategy (Mourão et al., 2020) to search for relevant articles for an update of this work. The publication period considered was determined between 2010 and 2023.

### 3.4. Inclusion and Exclusion Criteria

We defined specific criteria that determine which articles will be considered eligible for analysis and which will be excluded from the scope of the research. We present the criteria, classified as Inclusion Criteria (IC) as shown in Table 1 and Exclusion Criteria (EC) as shown in Table 2:

**Tab. 1** – Criteria adopted to include papers in the study.

Inclusion Criteria	
<b>IC01</b>	Studies for which the full text is accessible, ensuring a comprehensive and thorough analysis of the content.
<b>IC02</b>	Qualitative and quantitative research studies, as well as mixed-methods approaches, that provide relevant insights into the functions, challenges, and best practices of Municipal Ombudsman offices.
<b>IC03</b>	Peer-reviewed journal articles and conference papers.
<b>IC04</b>	Studies conducted in different regions or countries to capture a wide range of perspectives and contexts.
<b>IC05</b>	Studies that investigate the impact or effectiveness of implementing Crowdsourcing or Citizen-Sourcing in Municipal Ombudsman offices in promoting accountability, transparency, citizen empowerment, or improvement in service delivery.

**Tab. 2** – Criteria adopted to exclude papers from the study.

Exclusion Criteria	
<b>EC01</b>	Multiple publications based on the same dataset or research project should not be included, selecting only the most comprehensive or recent publication.
<b>EC02</b>	Non-peer-reviewed sources such as blog posts, opinion articles, newspaper articles, and editorials.
<b>EC03</b>	Studies for which the full-text or adequate information is not available, preventing a comprehensive analysis and data extraction.
<b>EC04</b>	Studies published before the specified period (i.e., before 2010).
<b>EC05</b>	Studies published in languages other than English, as specified in the inclusion criteria.
<b>EC06</b>	Studies that do not address Crowdsourcing or Citizen-Sourcing in Municipal Ombudsman offices in promoting accountability, transparency, citizen empowerment, among other aspects.
<b>EC07</b>	Studies that do not focus on Municipal Ombudsman services or related concepts.

These meticulously defined inclusion and exclusion criteria, presented in Tables 1 and 2, served as the foundation for a rigorous study selection process. By applying these criteria systematically during both the title/abstract and full-text screening stages, we ensured that only the most relevant and appropriate studies

<sup>1</sup><http://portal.acm.org/>

<sup>2</sup><http://ieeexplore.ieee.org>

<sup>3</sup><http://www.scopus.com>

<sup>4</sup><http://link.springer.com>

were included in this review. This careful selection process enhances the validity and focus of the subsequent analysis. The next step in the methodology involved assessing the quality of the included studies, as detailed in the following section.

### 3.5. Criteria for Quality Assessment

We established 8 criteria for Quality Assessment (QA) of the selected studies. These criteria are essential to ensure the validity and reliability of the conclusions of the selected studies. Below is presented the set of 8 defined criteria, ranging from QA01 to QA08 as shown in Table 3.

**Tab. 3** – Quality Assessment

Quality Assessment	
QA01	<b>Crowdsourcing or citizen-sourcing approach:</b> verifies whether the approach of the studies involves Crowdsourcing or Citizen-Sourcing techniques.
QA02	<b>Relevance and applicability to the Ombudsman context:</b> evaluates the relevance and applicability of the findings and conclusions of the studies concerning Ombudsman practices.
QA03	<b>Presentation of limitations:</b> checks whether the selected studies adequately present their limitations. This analysis is critical to ensure the transparency and integrity of the reviews.
QA04	<b>Discussion of results:</b> assesses whether the studies provide an in-depth discussion of the obtained results, contextualizing and interpreting the findings to provide additional suggestions.
QA05	<b>context description:</b> checks whether the studies provide sufficient information to understand the environment in which the research was conducted.
QA06	<b>Proposal validation:</b> examines the possibility that the techniques proposed in the studies were validated in a simulated environment, laboratory, or case study.
QA07	<b>Specification of proposed techniques:</b> checks the clarity and specificity of the techniques proposed in the studies, ensuring that the methodologies are detailed.
QA08	<b>Presentation of study objectives:</b> it examines whether the study objectives were presented clearly and comprehensively, allowing readers to understand the purposes of the research.

To ensure the rigor of this systematic literature review, a comprehensive quality assessment of the included studies was conducted. This assessment was guided by a set of eight criteria (QA01-QA08), detailed in Table 3, designed to evaluate both the methodological soundness of the studies and their relevance to the specific context of crowdsourcing in municipal ombudsman offices. These criteria encompass fundamental aspects of research quality, such as the clear presentation of study objectives (QA08), adequate description of the research context (QA05), and a thorough discussion of results and limitations (QA03, QA04).

Beyond general methodological considerations, the criteria also specifically address the core themes of this review. QA01 verifies the explicit involvement of crowdsourcing or citizen-sourcing approaches, acting as a crucial final check on the alignment with the inclusion criteria. QA02 directly assesses the relevance and applicability of the findings to the ombudsman context, ensuring that the synthesized knowledge is directly pertinent to the research questions. This criterion is particularly important for bridging the gap between general crowdsourcing research and the specific needs and challenges of municipal ombudsman offices.

For studies proposing novel crowdsourcing techniques or systems, criteria QA06 (Proposal Validation) and QA07 (Specification of Proposed Techniques) were applied. These criteria assess the extent to which proposed solutions have been empirically validated and whether the technical details are sufficiently described to allow for replication or adaptation. While not all included studies propose new techniques, these criteria are critical for evaluating the practical applicability and potential impact of the research. The collective application of these quality assessment criteria allows for a nuanced understanding of the strengths and weaknesses of the existing evidence base, informing the subsequent synthesis and interpretation of findings.

### 3.6. Data Extraction

Data extraction is a stage in the SLR where the goal is to systematically collect critical information from selected studies, transforming complex texts and results into organized data ready for analysis. For each of the analyzed papers, information was extracted to contribute to the analysis and address the raised questions.

We used the Parsifal<sup>5</sup> tool to provide a structured and organized SLR protocol. The details and the dataset collected that support the findings of this study are available at *Zenodo* in the link <https://doi.org/10.5281/zenodo.10719418>.

In the next Section, the execution will effectively take place, applying the search string to the selected databases, implementing the inclusion and exclusion criteria, applying quality attributes, and finally, extracting information according to the presented form.

## 4. Conducting the Review

After applying the search strings to their respective databases, the SLR protocol was executed to ensure that only studies of interest were among the selected ones.

### 4.1. Search in Databases and Collections

To facilitate an understanding of how the process unfolded, we will propose naming the stages, calling them steps. At this point, we present the details of our SLR process in the selected databases for the execution of this study, as well as the results obtained after the application of specific steps. As detailed earlier, certain criteria are used in the work selection process. The initial 5 steps eliminate articles that meet the requirements stipulated in the SLR protocol.

- **Step 1:** Consider only papers obtained through application of the search string in the databases;
- **Step 2:** Only papers published from 2010 onwards were considered;
- **Step 3:** Discard papers classified as Gray Literature (Short Papers, Theses, Dissertations, among others);
- **Step 4:** Consider only papers published in the English language;
- **Step 5:** Consider only papers published in the field of Computer Science.



**Fig. 1** – Steps applied during the search for articles in the databases.

The conduct of the SLR on all databases resulted in a total of 1.590 results. To ensure that the analysis focused on more contemporary studies, a filter was applied to include only works published from 2010 onwards (step 2 – 1), reducing the set to 1.360 articles. Next, the gray literature exclusion filter was applied, further reducing the number of results to 376 papers.

The language of publication was restricted to English, retaining the 359 articles already found. Additionally, we filtered the results, selecting only articles in the field of computer science, maintaining the set of 193 articles. These 193 articles resulting from this refinement process represent a foundation for the literature review. They will undergo an analysis based on the inclusion and exclusion criteria, as defined earlier.

<sup>5</sup><https://parsif.al/>

#### 4.2. Applying Inclusion and Exclusion Criteria

After refining the results obtained in the systematic literature mapping phase in all the databases surveyed, it was essential to conduct a quick assessment of the articles to ensure that only those meeting the final criteria were included in the systematic literature review.

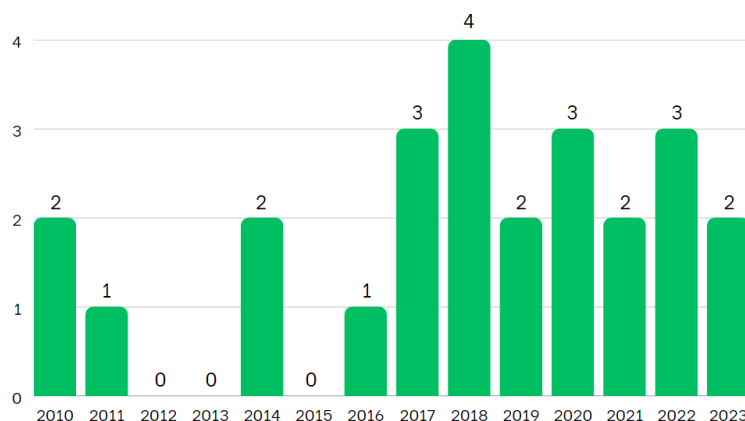
In this stage of the process, the 193 articles resulting from the previous steps were subjected to an initial assessment. This assessment focused on the key elements of each article, including the title, abstract, introduction, and conclusion. Through this quick analysis, it was possible to identify articles that were not aligned with the inclusion criteria established earlier.

Inclusion and exclusion criteria are applied so that only articles that satisfy these criteria are kept within the scope of the mapping, while those that did not meet the final criteria were rejected for the next phase of the review. One of the exclusion criteria, for example, is the removal of duplicate articles. In this process, 25 articles that were imported were duplicates (the same article was found in at least two distinct databases).

This quick assessment approach ensured that only articles directly or indirectly related to and aligned with the research objectives were considered in the systematic literature mapping. Out of the 193 subjected to the criteria, only 24 satisfied them and will proceed to the detailed evaluation.

#### 4.3. Temporal Distribution of Included Studies

The investigation of the timeline of studies helps to understand how the research field has evolved and how crowdsourcing and citizen-sourcing practices in municipal ombudsman offices have been addressed in academic literature. Figure 2 show the years 2017 and 2018 marked a period of substantial growth in research on the subject, with a total of seven articles published in these two years. The subsequent years, from 2019 to 2023, maintained a consistent level of interest.



**Fig. 2** – Temporal distribution of articles identified in the SLR.

Analysis of the publication timeline reveals a fluctuating but growing interest in crowdsourcing within municipal ombudsman offices. Initial interest was modest, with three articles published between 2010 and 2011. Following a period of inconsistent publication (two articles in 2014, one in 2016), a significant increase occurred in 2017-2018, with seven articles. The subsequent years (2019-2022) saw a sustained publication rate, with nine articles, suggesting continued relevance. Three articles were identified for 2023; however, this figure is partial due to potential indexing delays. This overall trend indicates an evolving field of inquiry.

Overall, the temporal distribution suggests an initial exploratory phase, followed by a period of increased research activity, and a subsequent stabilization, indicating an ongoing and evolving field of inquiry.

### 5. Answering the Research Questions

In this section, we answer the research questions defined in Section 3.1 and discuss them.



---

**RQ1.** *What are the main techniques of crowdsourcing and citizen-sourcing used in municipal ombudsman offices?*

The techniques of crowdsourcing and citizen-sourcing can be employed in municipal ombudsman offices to engage citizens in the process of information collection, problem-solving, and policy making (Certomà and Rizzi, 2017). These techniques leverage the collective wisdom of citizens to enhance governance and the delivery of public services (Grossman et al., 2018; Hammon and Hippner, 2012).

Among the accepted articles, Alenezy and Akhlaq, 2023; de Azambuja et al., 2014; Juk et al., 2021; Phatak, 2017, explicitly articulate a crowdsourcing-based solution for local government. While not functioning explicitly as ombudsman systems, they are deployed as a service connecting citizens with local government. Consequently, it can be inferred that the development of these solutions considered regional issues relevant to each area.

The approach presented in de Azambuja et al., 2014, describes "156 – Fala Porto Alegre," a channel used to address the demands of municipal citizens. It investigates how this channel integrates with the dimensions of a "Smart City Initiatives Framework." Although not explicitly using the terms "crowdsourcing" or "citizen-sourcing," the article discusses the integration of citizens' contributions into smart city initiatives, fitting the concept of citizen-sourcing.

The approach found in Phatak, 2017, explores the evolution of the public grievance resolution sector (PGRS) in Pakistan, emphasizing the use of information and communication technology in the complaint-handling process. The study examines how digital technologies are being used to address public complaints and improve the customer service process.

In Juk et al., 2021, the impact of the Covid-19 pandemic on public service delivery is discussed, along with the adoption of digital solutions. This article addresses digital transformation in complaint management and how services were adapted to meet citizens' needs during the pandemic.

Finally, Matos et al., 2021, describes a public complaint management system called "Fix-It," which utilizes an Android application to enable citizens to report incidents and issues to the public administration. The system involves citizens directly in communicating problems and improving public services, representing a form of citizen-sourcing.

These articles demonstrate various approaches to involving citizens in information collection, participation in problem-solving, and contributing to the improvement of municipal-level public services, even if the terms "crowdsourcing" and "citizen-sourcing" are not explicitly mentioned.

**RQ2.** *How have crowdsourcing and citizen-sourcing been applied to enhance citizen participation and engagement in municipal ombudsman offices?*

Crowdsourcing and citizen-sourcing have been applied to enhance citizen participation and engagement in municipal ombudsman offices in various ways. However, it is important to note that not all articles specifically address the use of these techniques in municipal ombudsman offices. Below, we highlight how these approaches are applied to improve engagement and citizen participation and which articles discuss these applications.

Crowdsourcing and citizen-sourcing are often used to collect feedback and complaints from citizens regarding public services and municipal issues. Citizens can report problems such as faulty infrastructure, lack of basic services, and environmental issues using digital platforms. Articles Adenskog et al., 2017; Alenezy and Akhlaq, 2023; Bonacin et al., 2010; Cho and Chun, 2011; Faber and Budding, 2018; Juk et al., 2021; Maciel et al., 2016; Matos et al., 2021; Phatak, 2017, mention similar approaches to **collecting feedback and complaints**.

Some municipal ombudsman offices employ crowdsourcing and citizen-sourcing to involve citizens in public consultations and decision-making processes. Citizens can contribute ideas, opinions, and suggestions through online platforms. Articles Bonacin et al., 2010; Cho and Chun, 2011; Pathmanathan and Poulier, 2017, address **public consultations and citizen participation**.

---

Crowdsourcing is used for the real-time **monitoring of public services**, where citizens report issues such as road potholes or lack of public lighting. This helps improve the accountability of municipal authorities. Articles Alenezy and Akhlaq, 2023; de Azambuja et al., 2014; Juk et al., 2021; Lanza et al., 2017; Matheus et al., 2010; Matos et al., 2021; Phatak, 2017; Przybilowicz et al., 2014, mention the monitoring of public services.

Crowdsourcing and citizen-sourcing also **contribute to increased transparency** in government actions. Citizens have access to information about projects, budgets, and government activities through digital platforms. Article Villao et al., 2023 discusses the importance of transparency.

Citizen engagement is strengthened by improving communication between municipal authorities and citizens. Articles Adenskog et al., 2017; Alenezy and Akhlaq, 2023; Faber and Budding, 2018 mention **enhanced communication** through technologies.

In summary, the use of crowdsourcing and citizen-sourcing in municipal ombudsman offices has been applied to actively engage citizens, improve feedback collection, promote transparency, monitor public services, and strengthen communication between authorities and citizens. However, it is important to note that not all articles address these applications, and some focus on broader aspects of e-governance.

**RQ3.** *What are the reported results and benefits of using crowdsourcing and citizen-sourcing in municipal ombudsman offices?*

The selected studies in this research reveal various outcomes and benefits associated with the use of crowdsourcing and citizen-sourcing in municipal ombudsman offices. Some of the key identified outcomes and benefits include the improvement of citizen participation and engagement, increased transparency and accountability, identification of issues and solutions, among other points.

Articles Adenskog et al., 2017; Alenezy and Akhlaq, 2023; Bonacin et al., 2010; Cho and Chun, 2011; Juk et al., 2021; Maciel et al., 2016; Pathmanathan and Poulier, 2017; Ribeiro et al., 2018, cite how the use of citizen-sourcing often results in a significant increase in citizen participation, allowing more citizens to engage in solving municipal problems and policymaking. On the other hand, increased efficiency and problem resolution are discussed in Alenezy and Akhlaq, 2023; de Azambuja et al., 2014; Karkin and Janssen, 2020; Lanza et al., 2017; Phatak, 2017; Przybilowicz et al., 2014, where it is demonstrated that real-time feedback collection and the ability of citizens to report issues directly to municipal authorities can lead to quicker and more efficient resolution of local issues.

The use of these techniques can enhance the transparency of municipal activities, making governmental information and processes more accessible to citizens. Articles Faber and Budding, 2018; Ingrams, 2018; Villao et al., 2023, discuss how these approaches can contribute to transparency. Contributions from citizens through crowdsourcing and citizen-sourcing provide feedback to municipal authorities, allowing them to better understand the needs and concerns of the community. Discussions presented in articles Bernardes et al., 2018; Matheus et al., 2010; Sharma et al., 2021 highlight the importance of feedback.

The ability for citizens to report issues directly can help authorities allocate resources more effectively and direct efforts where they are most needed, as discussed in Juk et al., 2021; Phatak, 2017; Przybilowicz et al., 2014. Additionally, crowdsourcing and citizen-sourcing can also help identify emerging issues or trends that may not have been detected through traditional data collection methods, as mentioned in Maciel et al., 2016.

Lastly, by allowing citizens to actively participate in solving municipal problems, the use of crowdsourcing can promote citizen empowerment. The approaches Alenezy and Akhlaq, 2023; Bernardes et al., 2018; Cho and Chun, 2011; de Azambuja et al., 2014; Lanza et al., 2017 discuss how this can occur. These are some of the benefits found in the target articles studied so far.

**RQ4.** *What are the main limitations and challenges associated with the use of these practices in municipal ombudsman offices?*

The practices of crowdsourcing and citizen-sourcing in municipal ombudsman offices also face various limitations and challenges, as evidenced in several of the selected articles. Some of the key challenges and limitations identified are described in the next paragraph.

- 
- i **Digital Inequality:** Studies such as Przybilovicz et al., 2014; Villao et al., 2023 highlight digital inequality as a significant challenge. Not all citizens have equal access to technology or digital skills, which can exclude vulnerable and marginalized groups from the participation process;
  - ii **Security and Privacy:** Articles Apleni and Smuts, 2020; Lanza et al., 2017 point out concerns about security and privacy in the use of crowdsourcing and citizen-sourcing. The collection and sharing of sensitive information can expose citizens to security risks and privacy breaches;
  - iii **Language and Cultural Barriers:** Maciel et al., 2016; Matheus et al., 2010; Villao et al., 2023 mention linguistic and cultural barriers as obstacles to effective participation. Ensuring that tools are accessible in different languages and culturally sensitive is a challenge;
  - iv **Credibility of Contributions:** Articles Adenskog et al., 2017; Ávila et al., 2022; Bernardes et al., 2018; Bonacin et al., 2010; Ingrams, 2018; Juk et al., 2021; Karkin and Janssen, 2020; Maciel et al., 2016; Matheus et al., 2010; Seidel, 2019; Villao et al., 2023 raise concerns about the credibility of citizens' contributions. It is important to distinguish between legitimate information and misleading or malicious content;
  - v **Institutional Resistance:** Bonacin et al., 2010; de Azambuja et al., 2014; Karkin and Janssen, 2020; Matheus et al., 2010; Sharma et al., 2021 point out that institutional resistance can be a challenge. Changes introduced by these practices may encounter resistance within existing government structures;
  - vi **Data Volume Management:** Articles like Faber and Budding, 2018; Pathmanathan and Poulier, 2017; Seidel, 2019 mention the challenge of managing large volumes of data generated by crowdsourcing and citizen-sourcing. Analyzing and interpreting this data can be time-consuming and require significant resources;
  - vii **Training and Capacity Building:** Studies including Adenskog et al., 2017; Bernardes et al., 2018; Bonacin et al., 2010; de Azambuja et al., 2014; Ingrams, 2018; Karkin and Janssen, 2020; Maciel et al., 2016; Matheus et al., 2010; Matos et al., 2021; Villao et al., 2023 emphasize the importance of training and capacity building for municipal staff to deal effectively with these practices. Lack of adequate skills can be a barrier;
  - viii **Legislation and Regulation:** Some articles, such as Adenskog et al., 2017; Bernardes et al., 2018; Juk et al., 2021; Pathmanathan and Poulier, 2017; Phatak, 2017; Villao et al., 2023, mention challenges related to legislation and regulation. Clear policies and regulations need to be developed to govern the use of crowdsourcing and citizen-sourcing;
  - ix **Platform Maintenance:** Studies like Alenezy and Akhlaq, 2023; Pathmanathan and Poulier, 2017 indicate that the continuous maintenance of digital platforms can be expensive and challenging. Ensuring that tools remain functional and up-to-date is crucial;
  - x **Exclusion of Marginalized Groups:** Most articles express concerns about the exclusion of marginalized groups—who may not have access to mobile devices or the Internet. This includes articles such as Bonacin et al., 2010; Durachman et al., 2020; Lanza et al., 2017; Matheus et al., 2010; Matos et al., 2021; Phatak, 2017; Przybilovicz et al., 2014.

These challenges and limitations emphasize the importance of a careful and balanced approach when implementing crowdsourcing and citizen-sourcing in municipal ombudsman offices, considering the needs and concerns of all segments of society.

**RQ5.** *What methodological approaches are employed in evaluating the use of crowdsourcing and citizen-sourcing in municipal ombudsman offices?*

Various methodological approaches have been employed in assessing the use of crowdsourcing and citizen-sourcing in municipal ombudsman offices. Table 4 presents the identified methodological approaches and the articles that employ them.

These methodological approaches provided several perspectives and data to assess the use of crowdsourcing and citizen-sourcing in municipal ombudsman offices, enabling a more comprehensive understanding of their impacts and challenges.

## 6. Open Issues and Discussion

This systematic literature review has synthesized the current state of knowledge regarding the application of crowdsourcing in municipal ombudsman offices, revealing both promising opportunities and significant

**Tab. 4** – Methodological approaches employed by each assessed paper.

Methodology	Approaches
Qualitative Research	Adenskog et al., 2017; Alenezy and Akhlaq, 2023; Ávila et al., 2022; Cho and Chun, 2011; Karkin and Janssen, 2020; Pathmanathan and Poulier, 2017; Phatak, 2017; Seidel, 2019
Quantitative Research	Faber and Budding, 2018; Lanza et al., 2017; Przybilovicz et al., 2014; Ribeiro et al., 2018; Villao et al., 2023
Case Studies	Apleni and Smuts, 2020; Bernardes et al., 2018; Bonacin et al., 2010; de Azambuja et al., 2014; Juk et al., 2021; Matheus et al., 2010; Matos et al., 2021
Documentary Analysis	Ingrams, 2018; Maciel et al., 2016; Sharma et al., 2021
Content Analysis	Durachman et al., 2020; Sharma et al., 2021
Action Research	Pathmanathan and Poulier, 2017
Theoretical Models	Bernardes et al., 2018; Ingrams, 2018; Sharma et al., 2021
Platform Evaluation Methods	Alenezy and Akhlaq, 2023; Villao et al., 2023

challenges. While the findings demonstrate the potential of crowdsourcing to enhance citizen participation, improve service delivery, and promote government transparency, several key issues require further consideration and research.

A persistent theme across the reviewed literature is the challenge of the digital divide. Crowdsourcing initiatives, relying heavily on digital technology, can inadvertently exclude vulnerable and marginalized populations who lack access to the internet, necessary devices, or digital literacy skills (Przybilovicz et al., 2014; Villao et al., 2023). This raises serious concerns about equity and representativeness, as simply deploying a crowdsourcing platform does not guarantee that all citizens will be able to participate equally. Future research must prioritize strategies to mitigate this digital exclusion.

The credibility and reliability of citizen-submitted data are also paramount for the success of crowdsourcing in ombudsman offices. The reviewed studies suggest the need for robust mechanisms to verify information, prevent the spread of misinformation, and address potential biases in participation (Adenskog et al., 2017; Ávila et al., 2022; Bernardes et al., 2018; Bonacin et al., 2010; Ingrams, 2018; Juk et al., 2021; Karkin and Janssen, 2020; Maciel et al., 2016; Matheus et al., 2010; Seidel, 2019; Villao et al., 2023). While some studies mention data validation techniques, there is a distinct lack of in-depth research on the effectiveness of different approaches within the specific context of ombudsman services. Future investigations should explore optimal strategies for data quality assurance.

The successful implementation of crowdsourcing requires seamless integration with existing ombudsman office workflows and processes. The literature reveals a wide range of integration levels, from standalone platforms to fully integrated systems (de Azambuja et al., 2014; Matos et al., 2021; Phatak, 2017). However, there is limited understanding of the organizational factors that facilitate or hinder this integration. Future research should investigate the impact of organizational structure, staff training and capacity building, and interdepartmental collaboration on the effectiveness of crowdsourcing initiatives. Comparative case studies examining different integration approaches could provide valuable, actionable insights for practitioners.

Beyond initial implementation, the long-term sustainability and scalability of these initiatives are often overlooked. Maintaining citizen engagement over time, ensuring ongoing platform maintenance and updates, and securing adequate funding are crucial, yet often under-researched, challenges (Alenezy and Akhlaq, 2023; Pathmanathan and Poulier, 2017). Future research should explore sustainable funding models (e.g., public-private partnerships, citizen-funded initiatives), strategies for fostering long-term citizen participation (e.g., gamification, feedback loops, community building), and the scalability of different crowdsourcing approaches to accommodate growing demands and evolving citizen needs.

The reviewed studies employ a variety of metrics to assess the impact of crowdsourcing, including participation rates, response times, and citizen satisfaction (Faber and Budding, 2018; Lanza et al., 2017; Przybilovicz et al., 2014; Ribeiro et al., 2018; Villao et al., 2023). However, there is a lack of standardized metrics and a need for more rigorous evaluation methodologies. Future research should prioritize the development of

---

robust and meaningful indicators of success, considering both quantitative and qualitative measures. This includes exploring the impact of crowdsourcing on citizen empowerment, trust in government, and the overall effectiveness of ombudsman services.

Furthermore, research should move beyond short-term evaluations and investigate the long-term effects of crowdsourcing on ombudsman office performance and citizen-government relations. There are also several discussions involving how to empower citizens to take action, how those actions will impact their lives and how governments can enhance the use of those actions (Alenezy and Akhlaq, 2023; Bernardes et al., 2018; Cho and Chun, 2011; de Azambuja et al., 2014; Lanza et al., 2017).

## 7. Final Remarks and Future Works

After examining the studies addressing crowdsourcing and citizen-sourcing in municipal ombudsman offices, following the SLR protocol, it is possible to identify several trends and important conclusions. These studies provide insight into how these practices are being implemented, their implications, and the challenges faced in a municipal context.

One notable aspect when analyzing these studies is the diversity of methodological approaches adopted. This is indicative of the complexity and multidimensionality of the topic. One of the main motivations behind the adoption of these practices is to improve citizen participation and engagement in public policies and municipal services. The studies highlight that the use of these tools can enable citizens to actively participate in problem identification, provide feedback, and co-create solutions. This can strengthen the relationship between municipal government and its citizens, making the administration more responsive and transparent.

The examined studies suggest that crowdsourcing and citizen-sourcing have the potential to continue playing a significant role in municipal governance. However, for this to happen, it is crucial that municipal governments proactively address challenges and constraints, promote digital inclusion, and ensure the reliability and transparency of platforms.

While this systematic literature review offers a valuable synthesis of current knowledge, it has limitations that suggest future research directions. Our search, focused on specific databases and English publications, may have missed relevant studies. Quality assessment relied on the completeness and objectivity of reported information, and the limited research specifically on crowdsourcing in municipal ombudsman offices calls for further investigation. Specifically, future work should prioritize the longitudinal impacts of crowdsourcing on citizen empowerment and ombudsman effectiveness, enabling researchers and practitioners to refine implementation strategies and fully realize its transformative potential.

## References

- Adenskog, M., Åström, J., Ertiö, T., Karlsson, M., Ruoppila, S., & Thiel, S.-K. (2017). Balancing potential and risk: The living lab approach in mobile participation research. *Electronic Participation: 9th IFIP WG 8.5 International Conference, ePart 2017, St. Petersburg, Russia, September 4-7, 2017, Proceedings 9*, 12–23.
- Alenezy, F. A., & Akhlaq, M. (2023). Fix-it: Design and implementation of a public complaint management system. *2023 International Conference on Computer Science, Information Technology and Engineering (IC-CoSITE)*, 858–862.
- Alizadeh, T., Sarkar, S., & Burgoyne, S. (2019). Capturing citizen voice online: Enabling smart participatory local government. *Cities*, 95, 102400.
- Antero, S. (2014). Evaluating the participatory potential of the brazilian active model in the federal executive branch: An implementation perspective (2014).
- Apleni, A., & Smuts, H. (2020). An e-government implementation framework: A developing country case study. *Responsible Design, Implementation and Use of Information and Communication Technology: 19th IFIP WG 6.11 Conference on e-Business, e-Services, and e-Society, I3E 2020, Skukuza, South Africa, April 6–8, 2020, Proceedings, Part II 19*, 15–27.
- Ávila, T. J. T., Santos, D. G. d., & de Oliveira, R. S. (2022). Intergovernmental relations in the implementation of the public service user defense code in brazil: State capabilities and institutional arrangements. *DG. O 2022: The 23rd Annual International Conference on Digital Government Research*, 425–436.

- 
- Basili, V. R., Caldiera, G., & Rombach, H. D. (1994). Goal, question metric paradigm. encyclopedia of software engineering, vol. 1.
- Batalli, M. (2015). Role of ombudsman institution over the administration. *Academic Journal of Business, Administration, Law and Social Sciences*, 1(3).
- Bernardes, M. B., de Andrade, F. P., Novais, P., & Lopes, N. V. (2018). Participatory governance of smart cities: A study upon portuguese and brazilian government portals. *Proceedings of the 11th International Conference on Theory and Practice of Electronic Governance*, 526–536.
- Bonacin, R., Melo, A. M., Simoni, C. A., & Baranauskas, M. C. C. (2010). Accessibility and interoperability in e-government systems: Outlining an inclusive development process. *Universal Access in the Information Society*, 9, 17–33.
- Boudjelida, A., Mellouli, S., & Lee, J. (2016). Electronic citizens participation: Systematic review. *Proceedings of the 9th international conference on theory and practice of electronic governance*, 31–39.
- Bouzguenda, I., Alalouch, C., & Fava, N. (2019). Towards smart sustainable cities: A review of the role digital citizen participation could play in advancing social sustainability. *Sustainable Cities and Society*, 50, 101627.
- Certomà, C., & Rizzi, F. (2017). Crowdsourcing processes for citizen-driven governance. *Citizen empowerment and innovation in the data-rich city*, 57–77.
- Cho, J.-S., & Chun, S. A. (2011). Towards transparent policy decision making process: A case study for seoul metropolitan government. *Proceedings of the 12th Annual International Digital Government Research Conference: Digital Government Innovation in Challenging Times*, 219–224.
- Comparato, B. K. (2005). As ouvidorias de polícia no brasil: Controle e participação. *PhD diss., Universidade de São Paulo*.
- da Silva, L. C. B., Loureiro, A. C., Magoni, F. M., & Gonçalves, V. M. B. (2022). Active methodologies and digital technologies in learning: A systematic literature review. *2022 17th Iberian Conference on Information Systems and Technologies (CISTI)*, 1–5.
- de Azambuja, L. S., Lheureux-De-Freitas, J., Moreira, C. R., & Macadar, M. A. (2014). A smart city initiative: A case study of porto alegre 156. *Proceedings of the 15th annual international conference on digital government research*, 245–252.
- Durachman, Y., Harahap, D., Rodoni, A., Bakti, A. M. F., Mansoer, M., et al. (2020). Analysis of factors that affect the quality of e-government services: A case study in ombudsman of the republic of indonesia. *2020 8th International Conference on Cyber and IT Service Management (CITSM)*, 1–7.
- Estellés-Arolas, E., & González-Ladrón-de-Guevara, F. (2012). Towards an integrated crowdsourcing definition. *Journal of Information science*, 38(2), 189–200.
- Faber, A., & Budding, G. (2018). How to be open about spending: Innovating in public sector reporting in the information age. *Information Technology Science*, 137–147.
- Garrigos-Simon, F. J., Gil-Pechuán, I., & Estelles-Miguel, S. (2015). *Advances in crowdsourcing*. Springer.
- Grönlund, Å. (2004). State of the art in e-gov research—a survey. *International Conference on Electronic Government*, 178–185.
- Grossman, G., Platas, M. R., & Rodden, J. (2018). Crowdsourcing accountability: Ict for service delivery. *World Development*, 112, 74–87.
- Hammon, L., & Hippner, H. (2012). Crowdsourcing. *Business & Information systems engineering*, 4, 163–166.
- Hassan, L., & Hamari, J. (2019). Gamification of e-participation: A literature review.
- Howe, J., et al. (2006). The rise of crowdsourcing. *Wired magazine*, 14(6), 176–183.
- Ingrams, A. (2018). Public values in the age of big data: A public information perspective. *policy and internet*, 11 (2), 128–148.
- Juk, Y., Valotto, D., Lanza, B., & Jose Tavares Avila, T. (2021). An overview of on-site contact centers in subnational governments in brazil. *DG. O2021: The 22nd Annual International Conference on Digital Government Research*, 363–375.
- Karkin, N., & Janssen, M. (2020). Structural changes driven by e-petitioning technology: Changing the relationship between the central government and local governments. *Information Technology for Development*, 26(4), 837–855.
- Kitchenham, B., & Charters, S. (2007). Guidelines for performing systematic literature reviews in software engineering.
- Lanza, B. B., Gil-Garcia, J. R., & Gimenez, F. A. P. (2017). Understanding the potential of mobile government in developing countries: The case of short message service (sms) use by a brazilian state government. *Proceedings of the 18th Annual International Conference on Digital Government Research*, 436–445.

- 
- Maciel, C., Cappelli, C., Slaviero, C., & Garcia, A. C. B. (2016). Technologies for popular participation: A research agenda. *Proceedings of the 17th international digital government research conference on digital government research*, 202–211.
- Matheus, R., Ribeiro, M. M., Vaz, J. C., & de Souza, C. A. (2010). Internet use for social control and participation: What are local governments doing in latin america? *Proceedings of the 4th international conference on theory and practice of electronic governance*, 333–338.
- Matos, E., BB Lanza, B., & D. Lara, R. (2021). Mobile government in states: Exploratory research on the development of mobile apps by the brazilian subnational government. *DG. O2021: The 22nd Annual International Conference on Digital Government Research*, 351–362.
- Mourão, E., Pimentel, J. F., Murta, L., Kalinowski, M., Mendes, E., & Wohlin, C. (2020). On the performance of hybrid search strategies for systematic literature reviews in software engineering. *Information and Software Technology*, 123, 106294.
- Noh, I. H. (2022). Crowdsourcing platform acting as an intermediary role in collaborative governance. *DG. O 2022: The 23rd Annual International Conference on Digital Government Research*, 474–476.
- Pathmanathan, P., & Poulrier, R. (2017). A comprehensive citizen engagement framework for effective resolution of public complaints in cities. *2017 International Conference On Smart Technologies For Smart Nation (SmartTechCon)*, 1128–1133.
- Phatak, S. A. (2017). 14 public complaint handling process and the usage of ict in public sector: An exploratory study of ombudsman sector of pakistan. *Pakistan Journal of Engineering and Applied Sciences*.
- Pincovsky, M., Falcão, A., Nunes, W. N., Furtado, A. P., & Cunha, R. C. (2021). Machine learning applied to credit analysis: A systematic literature review. *2021 16th Iberian Conference on Information Systems and Technologies (CISTI)*, 1–5.
- Polovchenko, K. A. (2019). Role of ombudsman in human rights protection in a contemporary state. *Opción: Revista de Ciencias Humanas y Sociales*, (35), 637–665.
- Przebylłowicz, E., da Silva, W. V., & Cunha, M. A. (2014). Profile of the municipalities of paran  state, brazil, concerning ict infrastructure and use: A cluster analysis. *Proceedings of the 15th Annual International Conference on Digital Government Research*, 290–299.
- Quint o, T. T. (2016). Parliamentary ombudsman (ouvidoria) and its democratic potential: The brazilian case. *Politikon: The IAPSS Journal of Political Science*, 31, 5–25.
- Relyea, H. C. (2002). E-gov: Introduction and overview. *Government information quarterly*, 19(1), 9–35.
- Ribeiro, M. M., Cunha, M. A., & Barbosa, A. F. (2018). E-participation, social media and digital gap: Challenges in the brazilian context. *Proceedings of the 19th annual international conference on digital government research: Governance in the data age*, 1–9.
- S nchez, D.  ., Gimilio, D. P., & Altamirano, J. I. (2015). Crowdsourcing: A new way to citizen empowermen. *Advances in crowdsourcing. London: Springer*, 73–86.
- Seidel, N. (2019). Democratic power structures in virtual communities. *Proceedings of the 24th European Conference on Pattern Languages of Programs*, 1–8.
- Sharma, S., Kumar Kar, A., & Gupta, M. (2021). Unpacking digital accountability: Ensuring efficient and answerable e-governance service delivery. *Proceedings of the 14th International Conference on Theory and Practice of Electronic Governance*, 260–269.
- Simonofski, A., Serral Asensio, E., De Smedt, J., & Snoeck, M. (2019). Hearing the voice of citizens in smart city design: The citivoice framework. *Business & Information Systems Engineering*, 61, 665–678.
- Simonofski, A., Snoeck, M., Vanderose, B., Cromptvoets, J., & Habra, N. (2017). Reexamining e-participation: Systematic literature review on citizen participation in e-government service delivery. *AMCIS*.
- Villao, D., Vera, G., Duque, V., & Maz n, L. (2023). Opportunities and challenges of digital transformation in the public sector: The case of ecuador. *International Conference on Computational Science and Its Applications*, 3–15.
- Zahn, J., Mour o, E., Bernardini, F., Maciel, C., & Viterbo, J. (2024). Mapping the communication channels in the general ombudsman offices of state capitals in brazil. In  . Rocha, C. Ferr s, J. Hochstetter Diez, & M. Di guez Rebollo (Eds.), *Information technology and systems* (pp. 435–445). Springer Nature Switzerland.
- Zahn, J., Viterbo, J., Maciel, C., & Bernardini, F. (2024). A framework for implanting citizen-sourcing platforms in municipal ombudsman offices. *Proceedings of the 25th Annual International Conference on Digital Government Research*, 542–554. DOI: <https://doi.org/10.1145/3657054.3657118>.