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## Article

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## Article

# Examining Digital Government Maturity Models: Evaluating the Inclusion of Citizens

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**Abstract:** Digital transformation affects nearly every sector of society and is seen as a strategic approach to addressing evolving demands, including those of citizens, demographic shifts, and skill shortages. To tackle these challenges, governments have begun shifting from a government-centric to a citizen-centric approach, tailoring e-services to citizens' life events and actively involving them in decision-making processes. Digital government maturity models (DGMMs) are essential tools for assessing digital readiness and guiding transformation, but their attention to citizen-centricity varies significantly. This study examines 18 DGMMs, revealing that 17% do not mention citizens, 33% reference them minimally, and only 50% integrate citizen considerations extensively. This research identifies seven themes where citizens were explicitly addressed in the DGMM, and these themes are maturity stages, areas of focus, enablers, constraints, metrics, insights, and recommendations. Despite the increased policy emphasis on citizen-centricity, gaps remain in translating this into actionable frameworks within DGMMs. This research contributes a thematic matrix and actionable insights to advance citizen-centric approaches, fostering public value creation, transparency, and trust. The findings offer guidance for researchers and practitioners to develop improved frameworks that align digital transformation efforts with citizens' needs, ensuring inclusive and effective public sector transformation.

**Keywords:** digital government maturity model; digital maturity model; citizen; citizen-centricity; digital government; digital transformation



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## 1. Introduction

For the public sector, digital transformation is advocated as a strategic requirement needed to meet new and changing demands from its citizens (Kafel et al., 2021; Norling et al., 2022). Digital transformation is in constant flux as governments seek innovative digital solutions to address social, economic, political, and other issues, thus transforming during the process (Lindgren & van Veenstra, 2018; Meyerhoff Nielsen, 2020; Nerima & Ralyté, 2021). Moreover, governments are expected to display innovation in resource management and service delivery (Meyerhoff Nielsen, 2016). Therefore, policymakers, government executives, researchers, etc., need to understand and anticipate the intricate changes digital transformation brings forward, and the necessity of a prolonged process of change (Janowski, 2015; Lindgren & van Veenstra, 2018). Digital transformation is a holistic effort aimed at re-imagining core government processes and services, culminating in a comprehensive review of policies, current processes, and user needs. This process results in a complete overhaul of existing services and the creation of new digital solutions. Key outcomes include meeting user needs, introducing innovative service delivery models, and expanding the user base (Mergel et al., 2019).

A digital government is regarded as a facilitator or catalyst for the transformation of public administration. Despite being a costly and gradual process, digitalization can play a crucial role in addressing some of the welfare system's challenges (SOU, 2020, p. 8). Frequently, digitalizing public services is perceived as the primary method to generate public value (Lindgren & van Veenstra, 2018). To manage digital transformation, digital maturity models have been designed, building on a belief that an organization's digital maturity is directly linked to its performance. Digital government maturity models (DGMM) aim to help the public sector to assess their level of digital maturity, provide guidance for further development, and in some cases, allow for benchmarking against other municipalities (Hujran et al., 2023b; Nerima & Ralyté, 2021). Given the public sector's responsibility to prioritize the citizen, it is pivotal to evaluate how these models take citizens into account. However, my self-perceived experience from working in a municipality suggests that citizens are often overlooked when municipalities engage in digitalization efforts. Other factors, such as organizational efficiency, economic considerations, and internal management issues, tend to dominate the focus.

Meyerhoff Nielsen (2020) pointed out that criticism has been raised to DGMMs for neglecting the viewpoints of citizens. Chohan et al. (2020) argue that existing maturity models also face criticism due to several pragmatical limitations and DGMMs often conclude at the integration stage, neglecting public value creation and citizen involvement. The DGMMs typically focus on the supply side, i.e., technical and organizational aspects, lacking input from domain experts and citizen engagement in the development process.

In a democratic society, citizens should be able to influence decisions concerning their local environment and everyday life (Swedish Association of Local Authorities and Regions, 2021). Citizens constitute an important part, as the intention of the Swedish government's digitalization is to provide 'an easier everyday life for the citizens' (The Swedish Government, 2024). There is strong rhetorical emphasis on the citizen perspective in governmental policies and strategies, and citizen aspects are highlighted in several national governments' strategic action plans. Many times, the ambition is to consider citizens' needs and take a citizen-centric perspective; however, this often fails in practice, and the perspective of the citizen seems to be forgotten (Axelsson et al., 2010). The interaction between citizens and public officials, a core activity, has received little attention from researchers. Numerous studies have examined the diffusion of the digital government and citizens' willingness to adopt digital public services, but often these studies overlook the specific context, diversity, and significance of digital public services (Lindgren et al., 2019). Years ago, Axelsson et al. (2010) pointed out that citizen-centric ambitions can no longer be neglected. It is vital to consider stakeholders from both inside and outside, and direct or indirect (Axelsson et al., 2013). "Digital transformation within the public sector is not a task to be fulfilled by public administrations alone" (Mergel et al., 2019, p. 12). Citizens should play a more active role, as partners who contribute by actively engaging in the delivery of public (digital) services (Mergel et al., 2019). Thus, for the public sector to reach its long-term goals, citizen participation in democratic institutions and processes is essential. Citizen engagement enhances the acceptance and adoption of the government's digital channels, enabling the expansion of services while reducing costs, without sacrificing sustainability (Abu Bakar et al., 2020).

Digital transformation requires public organizations to adopt an outside-in perspective, view operations from the citizen's perspective, and start with the needs of the citizens rather than focusing solely on internal organizational processes. As digital transformation progresses, citizen expectations of the public sector increase, necessitating adaptation and development by public organizations to meet these new demands (Hujran et al., 2023b).

However, earlier criticism has highlighted their inability to incorporate the viewpoints of citizens (Meyerhoff Nielsen, 2020).

In response, I aim to investigate how current digital government maturity models (DGMMs) explicitly address citizens, identify the specific areas where this occurs, and determine whether these models explicitly consider citizens. Specifically, I seek to answer the following questions:

- How frequently do DGMMs explicitly address citizens?
- In which issues are citizens explicitly considered, and how is their involvement characterized?

By focusing on the representation and inclusion of citizens in these models, I aim to contribute to the theory on governmental digital maturity by highlighting the presence or absence of citizens in DGMMs. The research also has pragmatic value for municipalities, offering insights on how citizens can be included in their digital maturity work. Ultimately, the goal is to underscore that it is indeed the citizens that the public sector should serve; their needs should be at the forefront of governmental digital transformation efforts.

## 2. Digital Government Maturity and Citizen-Centricity: Two Key Concepts

### 2.1. Digital Government Maturity

One of the key promises of the digital revolution is its capacity to modernize government entities, enhance their efficiency, and improve responsiveness to the citizens' requirements (Al-Khoury, 2011). Digital government is a concept that has expanded from a focus on ICT use for public administration to encompass the broader influence of digital technologies on administration, management, and governance. A variety of digital technologies are used to meet the needs of citizens, service users, civil servants, and political leaders at all levels and in all branches of government (Abu Bakar et al., 2020). Today, governments have more opportunities than ever to serve their citizens. New tools are still emerging, e.g., data mining, machine learning, sensor technology, and service automation. These technologies have potential to realize the primary goals of a digital government, which include improving efficiency and service quality, by increasing transparency, providing seamless services, and reducing lead times (Lindgren et al., 2019). For citizens, digital public services can make everyday life easier, offer convenience and easy access to government services, and thereby increase citizen satisfaction and trust in government (Al-Khoury, 2011).

The evolution of digital government follows consistent yet emerging growth patterns, shaped by broader social, economic, and political influences, often with incremental progress (Janowski, 2015). Besides catering people's preferences for government engagement, digital services also empower citizens, fostering increased interaction with government entities (Abu Bakar et al., 2020). Today, citizens expect governments to streamline administrative processes through the digitalization of public services (McKinsey, 2016). The importance of digital government services is therefore increasing, and there is a growing demand for governments to shift to a "Citizen-Centric" approach from a traditional agency- and department-centric focus (Abu Bakar et al., 2020; Eggers & Bellman, 2015).

Thus, the implementation of digital services is only one part, as it is important to in parallel adapt the organizational structures and the underlying processes (Pittaway & Montazemi, 2020). Two key criteria are central for the success of a digital government. The first is 24/7 availability; users should be able to access services whenever they need them, including outside of regular office hours. The second is accessibility; the digital government's services must be easily accessible to citizens, otherwise the service will not be effective and is likely to fail (Alhomod et al., 2012). OECD (2014) recommend

bolstering the creation and execution of digital government strategies that enhance the relationship between governments and citizens and businesses, since this can drive a significant transition, from government-led citizen-centric models (where governments anticipate the needs of citizens and businesses), to citizen-driven models (where citizens and businesses actively participate in formulating and determining their needs in collaboration with governments). Today, digital government has entered its second phase characterized by significant digital transformation, where governments will play a dual role as both catalyst and enabler (Scholl, 2020).

#### 2.1.1. Digital Maturity

Maturity in relation to digital governance denotes the degree of implementation, and maturity is evaluated based on indicators, principles, and characteristics (Jussupova et al., 2019). Conducting maturity assessments requires specific tools, usually so-called maturity models (Nerima & Ralyté, 2021). Researchers, consultants, national authorities, and international organizations have proposed many models, which means that after almost 50 years of research in the field, there is a plethora of synonymous terms for the maturity model, e.g., framework, growth stage model, stage model, and change model (Fath-Allah et al., 2014; Thordsen & Bick, 2023).

Broadly speaking, digital maturity refers to a company's status in its digital transformation journey, encompassing implemented changes from an operational standpoint and the organization's acquired capabilities in navigating the digital transformation process (Thordsen & Bick, 2023). Magnusson and Lindroth (2023) define digital maturity as a measure of an organization's ability to leverage the benefits of digitalization. Hence, an organization with low digital maturity will yield little return on the resources invested in digitalization (Thordsen & Bick, 2023).

#### 2.1.2. Digital Maturity Models and Digital Government Maturity Models

Since the introduction of the first digital maturity model (DMM) in 2011, the topic has received significant global interest, sparking both enthusiasm and debate among managers and academics alike (Thordsen & Bick, 2023). Since 2013, a variety of digital government maturity models (DGMM) have been developed, outlining progression toward digital maturity in general (Hujran et al., 2023b). The DMMs have different architectures in different areas, but they still have significant similarities (Thordsen & Bick, 2023).

Mainly DMMs are designed either as stage models or dimension-based models (Hujran et al., 2023b). Typically, stage models encompass four to six evolutionary stages, and dimension-based models include an average of six dimensions, where the most popular are Technology; Digital culture; Operational processes; Digital strategy, and Management. A typical path for the stage models starts with the creation of a digital strategy aligned with the overall organizational strategy. Initial stages prioritize strategic planning, flexible work, and management support for digital transformation. Early stages emphasize innovation and collaboration, evaluating new technologies. Intermediate stages focus on internal culture, organizational structure, and leadership style. Later stages emphasize strategic planning, flexible work, management support, and user-centeredness, where becoming citizen-centric relies on data-driven processes and real-time analysis (Thordsen & Bick, 2023). Currently, there is a shift from "stage-based maturity models" to "dimensional-based maturity models" as the key approach to design stronger and more comprehensive maturity models. Rather than assuming distinct stages, these models emphasize interconnected phases that progress simultaneously (Hujran et al., 2023b).

DMMs differ in purpose; they can be descriptive, prescriptive, and comparative in nature. A maturity model serves as descriptive when it is used for “as-is” assessments, evaluating current capabilities against specific criteria. Here, the DMM acts as a diagnostic tool and the resulting maturity levels can subsequently be communicated to both internal and external stakeholders. A DMM that is prescriptive in nature assists with outlining how to decide desirable maturity levels and suggests a specific and detailed course of action, i.e., guidelines for improvement. When the nature of the maturity model is comparative, it facilitates internal or external benchmarking. With adequate historical data from numerous assessments, it becomes possible to compare the maturity levels of similar business units and organizations (Pöppelbuss & Rögglinger, 2011). If a model encompasses all the three purposes, it is holistic in nature (Nerima & Ralyté, 2021).

Assessing an organization’s digital maturity is essential in digital transformation. The traits and obstacles associated with digital transformation vary based on the sector of operation and type of organization. Consequently, an adapted DMM may be necessary, given the distinctive nature of their characteristics and challenges (Nerima & Ralyté, 2021). Digital government maturity models (DGMM) are valuable tools for governments to assess their capacity to use ICT to improve performance (Renteria et al., 2019; Jussupova et al., 2019). They are also helpful in developing strategies and action plans to reach desired levels of technology use, i.e., they serve to improve and create public value (Abu Bakar et al., 2020).

However, maturity models have been criticized for being oversimplified, universal, linear, and for having a technology-focused approach to development. They also lack robust theoretical underpinnings and fail to incorporate the viewpoints of citizens (Meyerhoff Nielsen, 2020). The practical application of DGMMs does not consistently provide a reliable determination of what stage of digitalization the public administration has reached, due to potential inaccuracies in parameters and indicators (Jussupova et al., 2019).

## 2.2. Citizen-Centricity

In digital government research, citizens appear as a central unit of analysis and are treated as key stakeholders who receive the most benefits from public sector digitalization. For example, the human-centric approach was suggested and demonstrated more than two decades ago, suggesting a focus on life-events and “one-stop government” as a basis for organizing digital services in the public sector, including municipalities, (Vintar et al., 2002; Wimmer, 2002; Haraldsen et al., 2004). The “one-stop government” however, appeared challenging to implement in practice (e.g., Schuppan & Köhl, 2017), and citizen-centricity has prevailed in the mainstream literature on the e-government as a “new” paradigm or a “dream” (cf. Distel & Lindgren, 2023; Wouters et al., 2023). Sundberg and Holmström (2024) recently argued, in line with the narratives of a paradigmatic shift from bureaucratic to citizen-centric, that digitalization is paving the way for a “new” era of governance within the public sector. The concept of citizen-centricity is integral to numerous, if not the majority of, government policies and agendas concerning digitalization and digital transformation and are often associated with such “new” paradigms (Sundberg & Holmström, 2024). However, researchers and practitioners understand citizens from various perspectives; Distel and Lindgren (2023) noted that the terms “citizens”, “clients”, and “customers” are used interchangeably and loosely, and that researchers refrain from clearly defining “citizen”, thus studying citizens in a rather generic manner. When discussing user influence, we need to elaborate on which participatory activities are performed and how the participation is organized (Axelsson et al., 2010).

Previous research shows that the increased use of digital services in society leads to citizens demanding equivalent services from governments. Public actors need to be flexible and agile to meet these new demands since if they fail to do so, the public sector’s

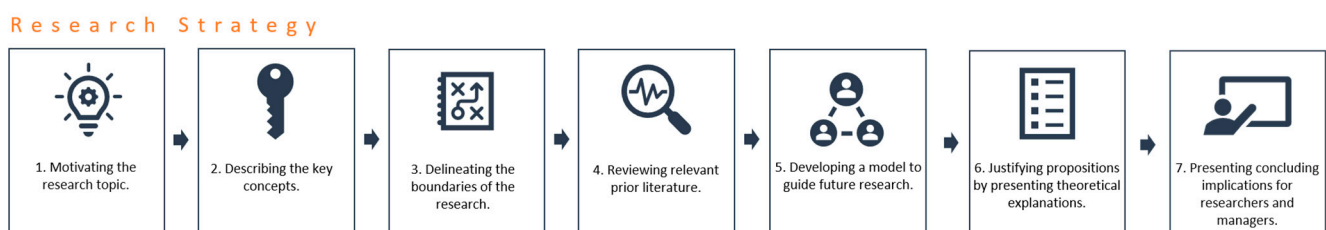
relevance will be undermined (Magnusson & Lindroth, 2023). A recent example from Finland, concerning services involved when someone who has died, shows that inflexible bureaucracy and multiple service breakdowns within the public–private service network necessitated repeated contacts with various service providers, resulting in added stress for grieving family members (Hietala et al., 2023). Accordingly, service disruptions and failures to fulfil citizens’ needs can lead to severe consequences.

The concept of “public value” refers to the value created by the government through its provision of public services and related activities. It highlights the value delivered to citizens through the government’s efforts in offering these services. Public value encompasses more than just practical efficiency and effectiveness; it also involves citizens’ vested interest in utilizing public services provided by the government. Therefore, the creation of public value should be a key objective for governments and their organizations, as it enhances the overall effectiveness and benefits of governance (Chohan et al., 2020).

There is a limited understanding of the underlying dynamics of citizen-centricity as a phenomenon, even though significant efforts have been made to understand the provision of citizen-centric services and the efforts required to address underlying organizational issues and resistance. Since the digital government is facing a paradigmatic shift from bureaucratic structures to a more citizen-centered orientation, there is a significant gap in the extent of literature (Sundberg & Holmström, 2024).

### 3. Research Strategy and Process

To address the aim of this research, I followed a concept-centric literature review approach as outlined by Webster and Watson (2002). This approach contrasts with the author’s centric approach, in which the readers are usually familiar with the main topic, and there are already studies available that discuss the main topic in detail. I chose the concept-centric method since it allows me to synthesize the literature systematically and enables me to gain a better understanding of the DGMM literature. The literature review aims to explore and describe the current state of how previous literature has addressed citizens in the context of DGMM. The review falls into the category of a topic-driven focus according to Onwuegbuzie et al. (2016), as it narrows down the topic and provides focused attention to a specific subject. My research follows seven steps adapted from Webster and Watson (2002), which are described below and presented as an overview in Figure 1.



**Figure 1.** My research in seven steps (adapted from Webster & Watson, 2002).

The first step, “defining the research topic and explaining the review’s contributions”, and the second step, “describing the key concepts”, are addressed in the initial two sections.

The third step, “delineating the boundaries of the research”, including the decisions: timespan, type of DGMM, sources, literature screening, and citizen addressed, as follows:

- Timespan: According to Thordsen et al. (2020), the first DMM was introduced in 2011, but since 2013, the later generation of DGMM has emerged and views the e-government as a path to advance digital, resilient, equitable, and inclusive societies, rather than solely serving as a conduit for delivering e-services (Hujran et al., 2023b).

The timeframe for my literature review spans from 2012 to the present, focusing on the interest of the newer wave of DGMM;

- **Type of DGMM:** This research includes DGMMs with different designs and purposes. For example, the model can be designed as a stage model or dimension-based model and the purpose can be descriptive, prescriptive, comparative, or holistic. Both practical applications and theoretical models have been included in this review because theoretical models can contribute to the development of models used in practice and are essential for theory building. The DGMM models are developed with different scopes of application. Sometimes, they are designed for use in different countries, while in other cases, they are developed specifically for use within the EU. In some instances, the geographic area of application is not explicitly mentioned;
- **Sources:** This literature review selected both academic (primary literature) and non-peer-reviewed literature, also known as grey literature (i.e., secondary data source). The Gartner Digital Government Maturity Model 2017 is not included;
- **The literature screening:** The screening for citizen addressed took place in the section for the DGMM and the text that discussed the model. The screening of citizens has not been conducted, for example, in the abstract, introduction, or theory chapter;
- **Citizen addressed:** This research aimed to examine how citizens are explicitly addressed in the literature. A search for references to “residents” instead of “citizens” was also conducted; however, the results remained unchanged, as “citizen” continued to be the predominant term. I acknowledge that citizens may be implicitly addressed in the models when they are referred to as customers, users, or similar terms. If the term “citizens” were not found, I scanned the models to see if they had used other concepts such as users, clients, customers, etc., that is, if they implicitly addressed citizens.

In the fourth step, “review the relevant prior literature in IS and related areas”, [Hujran et al. \(2023b\)](#), [Meyerhoff Nielsen \(2020\)](#), [Abu Bakar et al. \(2020\)](#), and [Fath-Allah et al. \(2014\)](#) were a starting point for the previous literature reviews on DGMM, as well as two literature reviews on DMM by [Thordsen and Bick \(2023\)](#) and [Teichert \(2019\)](#). A screening of reference lists of potential DGMMs, seminal works, and key authors from the literature has been conducted. This was done through backward and forward citation analysis based on Webster and Watson’s recommendation. This approach was employed because the number of relevant findings in the previous steps was too small to obtain reliable results. The citation tracking process added extra articles to the literature collection. Only English literature was considered in this review. Additionally, searches in various databases and Google Scholar for DGMMs and related literature have been performed. The search process has been iterative, as has the whole research process. After compiling a list of current DGMMs with the year, author, model name, whether it belongs to academic or gray literature, the purpose of the model, and whether it is used in practice, the content analysis began to examine the frequencies and subsequently on how these models’ addressed citizens.

In total, 18 DGMM were reviewed, each playing a role in shaping the research findings and conclusions. The DGMMs were then structured based on the frequency with which citizens were explicitly mentioned. The models were categorized into three groups: no mention, few mentions, and widespread citizen mentions. The process of developing the themes began with a systematic search to identify explicit mentions of citizens in the models and related text. Once identified, all paragraphs referencing citizens were extracted and compiled into an Excel sheet for further analysis.

To interpret these data, an iterative analysis process was conducted. Each extracted paragraph was carefully examined multiple times to determine its context within the model and to understand the primary purpose behind the citizen references. Through this analysis, themes naturally emerged, highlighting the different ways in which citizens

were integrated into the models. For example, stages, dimensions, and metrics can serve as parameters of a DGMM, and thus, they naturally emerged as themes. At one stage, I considered merging ‘Enablers’ and ‘Constraints’ into a single category, but ultimately decided to keep them separate, as this distinction provided greater clarity. Despite its limited representation, I found this perspective valuable.

Step five, which “develops a model to guide future research”, presents the themes and answers the research question: in which aspect of the DGMM are citizens explicitly considered? This is accompanied by examples from the DGMMs illustrating how citizens are involved. The themes emerged based on the analysis of the reviewed literature and followed a lot like the structure of the DGMM. The analysis results will be discussed and subsequently serve as the basis for establishing a compass direction for further research, which is the sixth step, “justifies propositions by presenting theoretical explanations, past empirical findings, and practical”.

The last step concerns “presenting concluding implications for researchers and managers”, which are part of this paper. As for researchers, it opens pathways to examine the relationship between citizen engagement and digital government success. Practitioners, especially in public sector management, can use these insights to reassess their approaches to digital transformation, ensuring that citizen needs are at the forefront of future digital initiatives.

#### 4. Result

The results of the literature review are organized into three sections. The first section highlights the frequency with which citizens are explicitly addressed in the reviewed DGMMs (RQ1). The second section provides an overview of the issues explicitly considered by citizens and how their involvement is characterized (RQ2). The third section explores instances of implicit inclusion in models that do not explicitly mention citizens.

I am aware that there are different types of DGMM models, each serving different purposes: some are built upon dimensions and are holistic in nature, while others provide recommendations, or function as stage models that serve as roadmaps. Despite these differences, I reason that it is valuable to review them to determine if and how they address citizens.

##### 4.1. Frequency of DGMM Addressing Citizens

When it comes to how frequently do DGMMs explicitly address citizens? (RQ1), the frequency varies significantly across the different models. In Table 1, Frequency of Citizen Mentions, the results are presented of how the models address citizens. Three of the eighteen models (17%) do not explicitly mention “citizen” within their frameworks. Six of the models (33%) explicitly mention “citizen” a few times, while 50% of the models do so extensively.

**Table 1.** Frequency of Citizen Mentions.

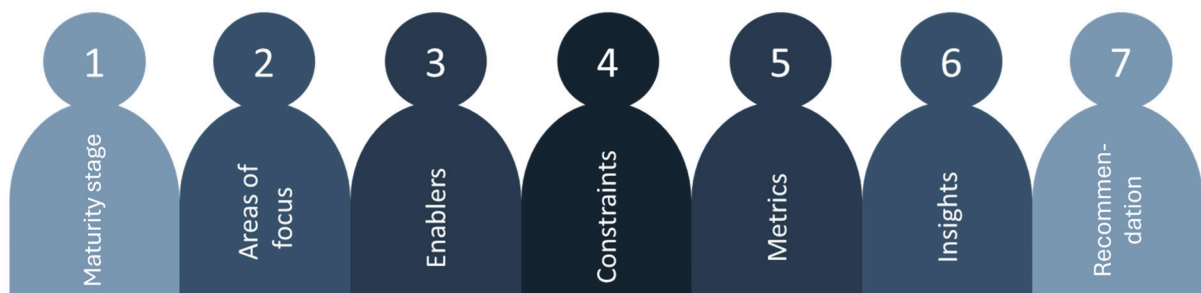
No	Author/s, Year	Model	Type of Model	Frequency	Group
1	(Magnusson & Nilsson, 2019)	DiMiOS: A model for government digital maturity	Dimension-based	0	No mention 3 models (17%)
2	(Kafel et al., 2021)	Multi dimensional PS organisations’ DMM	Dimension-based	0	
3	(Nerima & Ralyté, 2021)	Digital maturity balance model	Dimension-based	0	

Table 1. Cont.

No	Author/s, Year	Model	Type of Model	Frequency	Group
4	(Fath-Allah et al., 2014)	Measurement-based e-government portals maturity model	Stage model	1	Few mentions 6 models (33%)
5	(Heeks, 2015)	The Manchester e-government maturity model	Dimension-based with stage (process)	2	
6	(Lee & Kwak, 2012)	Open government maturity model	Stage model	2	
7	(Dias & Gomes, 2014)	A three-dimension maturity model	Dimension-based with stage within the dimensions	5	
8	(Renteria et al., 2019)	Digital government maturity framework	Dimension-based	5	
9	(Alhomod et al., 2012)	A four-stage maturity model of e-government	Stage model	8	
10	(OECD, 2014)	Recommendation of the council on digital government strategies	Dimension-based	19	Wide mentions 9 models (50%)
11	(UN, 2012)	E-Government survey 2012 e-government for the people	Stage model	20	
12	(EU, 2023)	eGovernment benchmark	Dimension-based	29	
13	(Hujran et al., 2023a)	SMARTGOV, an extended maturity model	Stage model but they also refer to dimensions	34	
14	(McKinsey, 2016)	Digital by default	Dimension-based	35	
15	(Joshi & Islam, 2018)	E-Government maturity model for sustainable e-government services	Dimension-based with stage	40	
16	(Chohan et al., 2020)	E-Government maturity model	Stage model	43	
17	(Janowski, 2015)	Digital government evolution model	Stage model with charecteristics	51	
18	(Eggers & Bellman, 2015)	Digital maturity model	Dimension-based	56	

#### 4.2. DGMM: Incorporating Citizen Perspective

Concerning in which issues are citizens considered, and how is their involvement characterized? (RQ2), seven themes emerged from the analysis, see Figure 2, Seven Themes of Citizen Inclusion in DGMM, and Appendix A for an overview of explicit citizen representation in DGMMs across themes.



**Figure 2.** Seven Themes of Citizen Inclusion in DGMM. The identified themes are (1) maturity stage, (2) areas of focus, (3) enablers, (4) constraints, (5) metrics, (6) insights, and (7) recommendations. Below follows an account of the seven themes.

#### 4.2.1. Theme 1, Maturity Stage

All seven stage models, along with the models by [Joshi and Islam \(2018\)](#) and [Heeks \(2015\)](#), which include both dimensions and stages, are represented in this theme. Thus, all stage models have, to some degree, mentioned citizens. This theme highlights the extent to which citizens are involved in the government's digital transformation process. The different stages can have different labels but serve a similar purpose.

Stage one addresses emerging or basic information, and involves making basic government information available online, marking a shift from physical to digital services. It emphasizes one-way communication with citizens and helps build trust through an online presence. [Chohan et al. \(2020\)](#) highlight the importance of involving citizens, emphasizing that e-government systems require a well-established ICT-enabled environment for citizens to adopt these services effectively. [UN \(2012\)](#), [Janowski \(2015\)](#), [Joshi and Islam \(2018\)](#), [Chohan et al. \(2020\)](#), and [Hujran et al. \(2023a\)](#) are represented in the first stage.

The second stage represents the interaction and the enhanced information between citizens and government. This stage is found in [Alhomod et al. \(2012\)](#), [UN \(2012\)](#), [Fath-Allah et al. \(2014\)](#), [Janowski \(2015\)](#), [Joshi and Islam \(2018\)](#), [Chohan et al. \(2020\)](#), and [Hujran et al. \(2023a\)](#). Government services become more interactive, focusing on two-way communication between citizens and the government. It involves tools like public consultations and participatory tools to increase citizen involvement, empowering them to engage in public consultations by utilizing new technologies for policymaking and trust in government. [Hujran et al. \(2023a\)](#) mention that a citizen-centric e-government maturity model assumes increased public value creation for both the government and public at this maturity stage. [Joshi and Islam \(2018\)](#) suggest combined strategies to better guide governments toward citizen satisfaction focusing on understanding citizens' demands and extending e-gov services accordingly, i.e., public value creation. Trust is key in government-to-citizen (G2C) communication, as citizens' trust in the political and administrative systems impacts e-gov adoption. Successful adoption depends on citizens' trust and willingness to use these services ([Chohan et al., 2020](#)). In [Janowski \(2015\)](#), this stage is in principle internal, but citizens are impacted indirectly.

In stage three, transactions are represented, and almost every stage model follows that structure except [Chohan et al. \(2020\)](#), who consider this in stage four. From a citizen-centered e-government perspective, this phase significantly contributes to creating greater public value ([Hujran et al., 2023a](#)). This stage enables and allows citizens to complete tasks online at any time, 24/7, and it is more complex, involving two-way communication and full online service completion, fostering trust, and encouraging greater citizen engagement and contributing to public value creation. However, if the transaction process fails, it can negatively impact citizens' trust in e-government services, and lead to dissatisfaction. People tend to trust other user's experiences; therefore, it is key to share positive experiences widely, as they are shaping citizens' behavior ([Chohan et al., 2020](#)). [Lee and Kwak \(2012\)](#) emphasize the importance of open participation, public feedback, conversation, voting, ideation, interaction, and crowdsourcing during the third phase. Similarly, [Janowski \(2015\)](#) highlights the role of engagement in transforming relationships between government and citizens, fostering trust, and encouraging greater citizen involvement. To increase citizen adoption of e-government services, governments can apply marketing strategies that guide users towards electronic channels, thereby boosting service usage. This stage is represented in [Alhomod et al. \(2012\)](#), [UN \(2012\)](#), [Lee and Kwak \(2012\)](#), [Janowski \(2015\)](#), [Chohan et al. \(2020\)](#), and [Hujran et al. \(2023a\)](#).

Stage four is defined differently across the models. In summary, it can be seen as service integration, where participatory services and government services are integrated across departments, allowing for smoother online services and greater citizen input. It

involves using tools to gather citizen input and tailor services to their needs, to facilitate participation in policymaking and encourage public engagement. In this stage, [UN \(2012\)](#), [Janowski \(2015\)](#), and [Hujran et al. \(2023a\)](#) are represented.

Stage five introduces two key aspects: public participation and smart services. The primary goal of this phase is to maximize citizen involvement in governance through tools such as online voting and polling. This stage emphasizes transparency, accountability, engagement, and interoperability, and leveraging smart technologies to enhance government services and foster citizen engagement. In [Heeks's \(2015\)](#) model, citizen-led service provision is the highest objective in the maturity model. In the last stage, the following models are represented: [Heeks \(2015\)](#), [Chohan et al. \(2020\)](#), and [Hujran et al. \(2023a\)](#).

#### 4.2.2. Theme 2, Area of Focus

Eight models are represented in this theme; six models are dimension-based and two are stage models. Citizens are primarily emphasized across various focus areas, dimensions, categories, or processes. For example, [Eggers and Bellman \(2015\)](#) identify “User Focus” as a distinct characteristic, emphasizing citizen demands as a key driver of digital transformation. The strategic objective is centered on enhancing citizen experience, engagement, and transparency. Furthermore, citizen involvement in developing digital services is regarded as co-creation. Other models include citizens in both service and participation dimensions, enabling activities such as online form submissions and involvement in public budget decisions. This theme underscores citizens’ roles in innovation, collaboration, and digital transformation, aiming to strengthen engagement and transparency. It also fosters closer relationships between citizens and governments, highlighting innovations. Building awareness and trust among citizens is a recurring priority in this theme. [EU \(2023\)](#) incorporates principles like “Once-only”, ensuring citizens and businesses to provide data only if they are not already available to the administration, and “Inclusive by Default”, which ensures all citizens and businesses can interact with the administration. [Joshi and Islam \(2018\)](#) argue that implementing a sustainable e-government requires prioritizing citizen-centric and efficient services and propose determinants that help governments deliver efficient, citizen-centric e-government services. The model also emphasizes the critical importance of building awareness and trust among citizens, as e-government adoption relies heavily on active citizen participation. Models represented in this theme are [Dias and Gomes \(2014\)](#), [Eggers and Bellman \(2015\)](#), [Janowski \(2015\)](#), [McKinsey \(2016\)](#), [Joshi and Islam \(2018\)](#), [Renteria et al. \(2019\)](#), [EU \(2023\)](#), and [Hujran et al. \(2023a\)](#).

#### 4.2.3. Theme 3, Enablers

[McKinsey's \(2016\)](#) model is the only one represented in Theme 3: Enablers, emphasizing innovation across government systems. The strategy focuses on improving citizen experiences, while governance and organization highlight the importance of prioritizing citizen and business needs and fostering effective collaboration across different levels of government. Successful digital transformation requires informed leadership and commitment to innovations that enhance citizen experiences. Additionally, addressing the needs of marginalized groups, such as the elderly, is crucial for achieving successful government digitization.

#### 4.2.4. Theme 4, Constraints

Constraints include main challenges, barriers, and limitations for the e-government, and are identified across the models. They include navigating online presence, difficulty in finding and selecting appropriate government sites, despite the potential for improved citizen use, and information delivery through integrated service delivery. [Eggers and Bellman \(2015\)](#) note that the public sector often struggles to fund digital initia-

tives, even though it is seen as a cost-saving opportunity. The Manchester e-Government Maturity Model (Heeks, 2015) categorizes governmental process changes as “Redesign” and “Transformation”, emphasizing the need for fundamental shifts. A missed opportunity to integrate citizens and non-government actors into digital workflows is limiting engagement in decision-making and trust-building (Janowski, 2015). This theme encompasses the following models: Eggers and Bellman (2015), Heeks (2015), Janowski (2015), and UN (2012).

#### 4.2.5. Theme 5, Metrics

This theme focuses on measuring citizen engagement and service delivery. Citizen-government collaborations and public-private partnerships are key metrics, along with the use of an e-government to provide information and services, particularly on environmental issues. Citizen life events, such as career, family, health, and transport, are used to benchmark public services, reflecting the user journey across various government domains. Digital government frameworks emphasize stages of service initiation, citizen engagement, consultation, and feedback. Different models assess services like interactive, transactional, and participatory systems. While citizen involvement in co-creating digital services remains low, agile accessibility to e-government services is seen as crucial for increasing citizen adoption, especially in developing regions. This theme is represented by both dimension-based and stage-based models: Lee and Kwak (2012), UN (2012), Eggers and Bellman (2015), Janowski (2015), Joshi and Islam (2018), EU (2023), and Hujran et al. (2023a).

#### 4.2.6. Theme 6, Insights

In theme 6, Insights, the emphasis is on the importance of involving citizens in digital government strategies. Of the nine models represented, Eggers and Bellman (2015) include characteristics of a digital mature government, i.e., it has a digital strategy aimed at fundamental transformation and a vision that every domain of government is able to deploy and uses digital technologies in a manner that increases the service level, improves interactions with citizens and citizen experience and raises efficiency. They argue that “Levels of user focus are higher across sectors where the public service is delivering knowledge services to citizens/customers—in particular, information technology, education, and higher education” (Eggers & Bellman, 2015, p. 17). However, they continue that “The level of involvement of citizens in co-creating digital services is quite low, with just 13 percent of agencies reporting high citizen involvement in the process” (Eggers & Bellman, 2015, p. 17). Government officials find it beneficial to devise approaches to service delivery that focus on the needs of citizens, i.e., citizen-oriented approaches, since they enhance the clarity and transparency of communication between government officials and the public. Nonetheless, various obstacles, including access to technology, service quality, and levels of awareness and trust, restrict citizen engagement in these e-government initiatives (Joshi & Islam, 2018).

There are six key similarities among best practices and “Closer interaction with the citizens” is one of them (Alhomod et al., 2012). This is confirmed by Eggers and Bellman (2015), who report that digital technologies and capabilities enable employees to work better with citizens and that “94 percent of maturing organizations have a digital strategy aimed at improving customer/citizen experience and engagement” (Eggers & Bellman, 2015, p. 9). Hence, digital trends improve citizen/customer service quality, and citizen satisfaction decreases when citizens need to use multiple channels to interact with governments (McKinsey, 2016).

The success of an e-government requires support from citizens, implementers, and researchers (Fath-Allah et al., 2014). To bring governments closer to citizens, theories of

change should also be included, such as improving trust in government, citizen satisfaction, and service quality (Renteria et al., 2019). Enabling digital participation, where citizens actively determine their own needs in collaboration with governments is vital, since it improves service delivery, public sector efficiency, and governance, enhances transparency, integrity, and citizen engagement. Effective coordination, capacity-building, and frameworks are essential to fully leverage digital technologies for public value and trust.

Digital government strategies must align with public expectations of openness, innovation, and personalized service. Public value is created by satisfying citizen needs, ensuring justice and efficiency, reflecting public preferences, and promoting fairness, innovation, and adaptability (OECD, 2014). The lack of citizen involvement in existing maturity models has hindered public acceptance, as these models focus mainly on supply-side and technological issues without considering citizens' input. To enhance participation, governments can offer motivational rewards to citizens for contributing suggestions and using e-government services. The digital divide highlights the disparity in ICT infrastructure and internet availability between urban and rural areas, which must be addressed. Outdated government websites and failure to meet citizens' needs in terms of usability and accessibility can lead to poor e-government implementation. Increasing internet access has transformed citizens from passive consumers to active participants in e-government (Chohan et al., 2020).

The eGovernment Benchmark (EU, 2023) focuses on ensuring that services meet citizens' needs, both within their country and cross-border. Citizen-focused insights are life events where government services are structured as packages based on life events relevant to citizens, involving multiple agencies working together to address specific needs. Citizens seeking information and services within their own country are classified as national users, emphasizing local access to government resources. Citizens who need services from other European countries are considered cross-border users, highlighting the importance of cross-country service access in the European context. The eGovernment Benchmark assesses how well public services cater to citizens' needs across life events, reflecting their interactions with different government domains. The focus is on ensuring that services meet citizens' needs, both within and outside their country.

#### 4.2.7. Theme 7, Recommendation

In Theme (7), Recommendations, four models are represented. OECD (2014) present, among other things, recommendations to foster engagement and participation from public, private, and civil society stakeholders in policymaking and public service design and delivery, while addressing issues of citizens' rights. Enhance international cooperation with other governments to improve services for citizens and businesses across borders and maximize the benefits of early knowledge sharing and the coordination of digital strategies on a global scale. The main recommendations where the citizen is included in the Digital Government Model (Eggers & Bellman, 2015) are strategy, user focus, and workforce skills. A recommendation is to develop a digital transformation strategy centered on openness, transparency, citizen engagement, and upgrading technologies. Place citizens at the heart of the strategy by formalizing feedback mechanisms, publicizing achievements, and enhancing engagement through initiatives like focus groups and app competitions. Another recommendation is prioritizing user-centric design by involving citizens in the service design process. Employ agile development methodologies and improve user-centered design skills within the workforce to better meet citizens' needs. And attract and retain younger talent by emphasizing the positive societal impact of their work. Create a flexible and creative work environment that appeals to the values of millennials and younger employees. Digital by Default (McKinsey, 2016) advises leaders to focus on increasing citizen engagement as a priority in digital government transformation. This

includes actively involving citizens in the process to enhance their interaction with public services. The goal is to improve citizens' quality of life through more efficient, accessible services. Governments should commit to a citizen-centric vision that makes government more responsive to their needs. [Chohan et al. \(2020\)](#) recommend enhancing citizen–state relations through information and communication technologies, which can strengthen the democratic process in Pakistan. The public value of e-government lies in meeting citizens' expectations and fostering stronger engagement.

#### 4.3. Models That Do Not Explicitly Address Citizens

Three models do not explicitly mention “citizens” but instead refer to terms such as users or customers. These models are not included in the seven themes above. The implicit inclusion of citizens was made by [Magnusson and Nilsson \(2019\)](#) in Innovation, one category under the dimension digital capability. Here, they state the following: “The user has traditionally been a lost source for insight in terms of the design of new solutions. Research has now shown the benefits of actively involving the prospective end-users in all phases of development” ([Magnusson & Nilsson, 2019](#), p. 7). However, it is unclear whether the focus is on internal or external users; my interpretation is that the model overall adopts an organizational perspective. [Kafel et al. \(2021\)](#) highlight a dimension in their model called Openness to Stakeholders' Needs, which encompasses customers, clients, stakeholders, and partners. They emphasize involving stakeholders in improving e-service delivery in the public sector. The model advocates monitoring digitalization outcomes (e.g., efficiency and costs) using indicators like implementation time and customer satisfaction. It also recommends enabling clients to conduct most interactions online, adopting modern IT infrastructure (e.g., self-service touchpoints), seeking expert advice on digitalization, improving service accessibility, and broadening client reach, particularly for underserved groups such as individuals with reduced mobility or benefit recipients. [Nerima and Ralyté \(2021\)](#) highlighted the customer once in the model under the Process dimension, “the weight of the Process dimension depends on the variety of the organization's activities and the relationship it has with its customers and collaborators in terms of products and services” ([Nerima & Ralyté, 2021](#), p. 11). Public contact is identified as a key attribute but not developed any further.

## 5. Discussion

Assessing an organization's digital maturity is essential for digital transformation ([Nerima & Ralyté, 2021](#)), and citizens play a crucial role in digital government and the public sector's digital transformation. However, digital transformation in the public sector is not solely the responsibility of public administrations ([Mergel et al., 2019](#)). In digital government research, citizens are considered a central unit of analysis, as they are the primary beneficiaries of public sector digitalization ([Vintar et al., 2002](#); [Wimmer, 2002](#); [Haraldsen et al., 2004](#)). Consequently, integrating the citizen perspective into digital government maturity models (DGMMs) is a logical step. However, the findings of this study reveal significant differences in how and to what extent citizens are addressed within DGMMs. While some models do not consider citizens at all, others explicitly incorporate them throughout the framework. The literature lacks a unified approach to integrating citizens into DGMMs. As [Meyerhoff Nielsen \(2016\)](#) observed, the citizen's viewpoint is underrepresented in maturity models, which may limit their ability to foster inclusive governance.

This research provides an overview of the current landscape, and the themes were developed to create a clearer and more structured representation of the results. The findings serve as a map of how citizens are currently addressed in DGMMs, while also inspiring

further research to explore the next steps in this field. Future studies could build on this foundation to analyze where and how citizens are integrated into digital government maturity models. Therefore, even a single representation within Enablers holds significant value, as recognizing citizens as enablers can open new perspectives on their role in digital government maturity models. Practitioners can also use these themes as inspiration, for example, to consider citizens as enablers, examine constraints, or include citizens as a metric.

DGMMs are typically designed as stage-based or dimension-based models (Hujran et al., 2023b). My review places the DGMMs of Eggers and Bellman (2015), EU (2023), Kafel et al. (2021), Magnusson and Nilsson (2019), McKinsey (2016), Nerima and Ralyté (2021), OECD (2014), and Renteria et al. (2019) as dimension-based models. Additionally, five models incorporate both dimensions and stages: Dias and Gomes (2014) propose a dimension-based model with stages within each dimension; Janowski (2015) proposes a stage model with characteristics; Joshi and Islam (2018) introduce a dimension-based model with stages; Heeks (2015) present a dimension-based model with stages (in this case, maturity progressing from bottom to top). Hujran et al. (2023a) present a stage-based model that also refers to dimensions. The following models were categorized as stage-based models: Alhomod et al. (2012), Chohan et al. (2020), Fath-Allah et al. (2014), Lee and Kwak (2012), and UN (2012).

Among purely dimension-based models, nearly 40% did not mention citizens. In contrast, all stage-based models, as well as models that integrate both dimensions and stages, addressed citizens to some extent, with some incorporating citizens across all stages.

One interesting result is that dimension-based models have become more popular in recent years, and these models, one from 2019, and two models from 2021, did not explicitly mention citizens. After a closer look to explore if these models implicitly did so, showed that Kafel et al. (2021) introduced a dimension called Openness to Stakeholders' Needs, using terms such as customers, clients, stakeholders, and partners, albeit without clearly defining their roles, which implicitly include citizens, but not in a clear manner. Similarly, Magnusson and Nilsson (2019) used the term 'Users', which encompass both internal and external users, but did not highlight citizens as a distinct group. Nerima and Ralyté (2021) highlighted customer and collaboration in terms of product and services. Public contact is identified as a key attribute but is not further developed. Despite these gaps of citizen inclusion, certain models have made progress by extensively address citizens, examples are Chohan et al. (2020), EU (2023), OECD (2014), UN (2012), Janowski (2015), etc.

When DGMMs address citizens explicitly, they tend to do so in a plethora of ways. I structured the inclusion of citizens in seven themes: (1) Maturity stage, (2) Areas of focus, (3) Enablers, (4) Constraints, (5) Metrics, (6) Insights, and (7) Recommendations. The degree of citizen involvement varies widely in these themes; some emphasize co-creation with citizens and public participation, and others focus on one-way communication and building trust.

The inclusion of citizens at different maturity stages within DGMMs presents a critical point for discussion. While some models integrate citizens consistently from early to advanced stages, others primarily focus on them at specific points. Incorporating citizens at lower maturity stages may significantly impact how the public sector engages with citizens as maturity evolves, fostering a more citizen-centric digital transformation. However, in some cases, citizens are mainly either considered in the initial stages only or at advanced levels, leading to potential gaps in continuity and inclusion. Interesting viewpoints are whether the early inclusion of citizens influences long-term goals, and what consequences may arise when citizen involvement is delayed until the higher maturity stages? Additionally, we might reflect on whether citizens are being taken for granted at the lower maturity

stages. This raises the question of whether DGMMs should establish a structured approach to ensure citizen participation throughout all stages of maturity.

In the theme Area of Focus, which mirrors dimensions but also includes categories and similar concepts, different models vary in how they incorporate citizens. For example, in [Eggers and Bellman \(2015\)](#), user focus is a distinct characteristic where citizens are explicitly addressed, whereas in other models, citizen engagement is integrated within broader dimensions. This variation may influence the public sector's digital efforts, depending on the extent to which citizen engagement is prioritized. The placement of citizens within different dimensions likely impacts maturity assessments, and having a dedicated citizen-focused dimension could promote a stronger citizen-centric approach compared to sporadic integration across various areas. This raises a critical question: should there be a standardized dimension to ensure citizens are adequately considered in maturity assessments? Establishing a common framework for citizen inclusion may help create a more consistent and effective approach to evaluating digital government maturity.

Citizens can be seen as key enablers of successful digital transformation, as their engagement drives improved experiences, fosters collaboration, and ensures that their needs are addressed. Viewing citizens as active contributors rather than passive recipients requires a strategic shift in governance. According to [McKinsey \(2016\)](#), which represents this theme, achieving this approach demands strong leadership, a commitment to innovation, and a focus on inclusivity, particularly for marginalized groups such as the elderly. How can governments effectively position citizens as enablers of digital transformation? What leadership strategies are needed to foster citizen-driven innovation? How can digital initiatives ensure inclusivity, particularly for marginalized groups? Exploring the role of citizens in shaping digital government strategies and identifying the necessary governance approaches to support their active involvement is essential.

Citizen engagement plays a crucial role in driving successful digital transformation in the public sector. However, several barriers, challenges, and constraints tied to digital maturity make it difficult to fully integrate citizens into digital efforts. Limited funding, difficulty in navigating online government services, and the need for fundamental process redesign are key obstacles that must be addressed. [Eggers and Bellman \(2015\)](#) for example highlight that despite digital initiatives being seen as cost-saving opportunities, public sector organizations often struggle with funding. [Janowski \(2015\)](#) argues that failing to integrate citizens and non-government actors into digital workflows limits engagement in decision-making and weakens trust in public institutions.

Metrics that include citizens in some DGMM assessments provide the public sector with an opportunity to track and enhance citizen engagement and perception. However, the purpose of each DGMM varies, and the emphasis on citizen participation depends on the model's specific focus. While some models prioritize internal processes and efficiency, others place greater importance on inclusivity and user experience. This discussion highlights the significance of metrics in ensuring that citizen engagement remains a core focus in digital governance and explores how different models address this aspect.

The themes Insights and Recommendations are valuable components of citizen inclusion and DGMMs. Maturity models, along with their related literature, provide valuable insights into citizen participation and digital transformation, offering guidance and areas for improvement. Additionally, the recommendations derived from these models can help to shape policies and strategies to enhance digital service delivery and inclusivity.

As maturity models reflect researchers' and practitioners' interpretations of e-governance goals, shaping how maturity stages align with these perspectives ([Hujran et al., 2023b](#)), it becomes important to examine how the creators of these models perceive citizens, their roles, and the impact they have on digital maturity. When citizens are not

mentioned or solely implicitly addressed, this omission somehow mirrors how the creators of the models view citizens, their roles, and their influence on digital maturity and, more broadly, on the overarching goals of digital governments. [Sundberg and Holmström \(2024\)](#) argue that we are witnessing a paradigmatic shift from bureaucratic to citizen-centric governance, with digitalization paving the way for a “new” era of public sector management. The concept of citizen-centricity is integral to numerous government policies and agendas related to digitalization and digital transformation and is often associated with these emerging paradigms ([Sundberg & Holmström, 2024](#)). Developers of the DGMMs must also incorporate this shift toward a citizen-centric approach within their models to reflect this evolving perspective.

## 6. Conclusions

Citizens play a crucial role in digital government and public sector transformation. As primary stakeholders, their integration into digital government maturity models (DGMMs) should be a natural expectation rather than an exception. Given their central role, it is reasonable to assume that citizens would be inherently embedded in these models as a fundamental component of digital transformation efforts, which serve as essential tools to guide and assess the progress of digital transformation initiatives. However, while citizens should be a default component of DGMMs, many models fail to explicitly articulate their inclusion.

This study reveals significant variability in the frequency, manner, and extent to which citizens are addressed in DGMMs. While some models explicitly incorporate citizens, others reference them indirectly as users or customers. Notably, dimension-based models, which have gained popularity, often lack explicit citizen inclusion, whereas stage-based models consistently mention citizens, albeit to varying degrees. This raises the question of whether citizens should be a distinct dimension in DGMMs.

Regardless of their explicit mention, citizens are essential for the success of digital transformation. Governments and policymakers must prioritize making daily life easier for citizens while ensuring effective digital initiatives. A global shift toward citizen-centered governance is emerging, driven by the need for efficiency and cost-effectiveness in the public sector. However, DGMMs have yet to fully reflect this shift, as many models still focus on technical and organizational metrics rather than citizen engagement.

This study offers a novel contribution by analyzing the explicit inclusion of citizens in DGMMs and uniquely examines how and where citizens are addressed, providing a structured mapping of their actual consideration in DGMMs. The study examines 18 DGMMs and categorizes them based on how frequently they reference citizens, offering an overview of an underexplored aspect of DGMM research to the best of my knowledge.

The findings reveal significant gaps—some models do not mention citizens at all, while others fully integrate them, highlighting a lack of standardization in citizen inclusion. This inconsistency has now been systematically examined, underscoring the need for a more unified approach to incorporating citizens into DGMMs.

These insights support further studies in bridging the citizen-centric gap in DGMM research. While digital governance increasingly emphasizes citizen engagement, DGMMs have yet to fully reflect this shift. This study lays a foundation for future research and provides a framework for analyzing current citizen integration, offering a basis for deeper exploration of their role in digital transformation.

The findings also have practical implications for policymakers and practitioners, guiding public sector organizations in refining digital strategies to better integrate citizens. Although only one model is represented in the Enablers theme, this perspective is valuable

as it highlights the potential of recognizing citizens as enablers in the digital transformation process.

Ultimately, these findings support the development of more inclusive DGMMs, ensuring that digital transformation strategies align with citizen needs. Strengthening citizen inclusion can enhance public trust, transparency, and service effectiveness, contributing to a more responsive and citizen-centric digital government.

Further Research and Limitations

Further empirical research is needed to examine how municipalities engage citizens in their digital maturity and transformation processes. Additionally, while citizens are recognized as central stakeholders, their specific roles remain underexplored and are often described in broad terms (Distel & Lindgren, 2023). Investigating both implicitly and explicitly the role of citizens in DGMMs would provide valuable insights.

Moreover, future studies should focus on citizen perspectives, as they are the primary beneficiaries of public sector digitalization. Examining from citizens’ viewpoints on how they perceive and engage with digital transformation (DT) in the public sector could bridge the existing research gap and strengthen the citizen-oriented approach in DGMMs.

By addressing these gaps, future research can enhance the effectiveness of DGMMs, ensuring they align with citizen needs and contribute to more inclusive and participatory digital governance. Further exploration is needed to understand how DGMMs can either bridge the gap or contribute to the digital divide. Additionally, by establishing a clearer research agenda, future studies can provide valuable insights into the evolving role of DGMMs in shaping equitable and citizen-centric digital governance.

My research has examined only 18 DGMMs, which may not fully represent the entire spectrum of existing models. For example, a broader range of models could have been included if the time span had been extended. However, since the focus was on identifying a new wave of DGMMs, this selection was intentional. Another limitation is the need for a deeper interpretation of DGMMs regarding both the implicit and explicit inclusion of citizens—not only in models that mention citizens explicitly, but across all models. Therefore, further research is needed to explore these aspects in greater depth.

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Appendix A

Table A1. Overview of Explicit Citizen Representation in DGMMs Across Themes.

Model	(1) Maturity Stage	(2) Area of Focus	(3) Enablers	(4) Constraints	(5) Metrics	(6) Insights	(7) Recommendation
(Magnusson & Nilsson, 2019) Dimension-based							
(Kafel et al., 2021) Dimension-based							
(Nerima & Ralyté, 2021) Dimension-based							
(Renteria et al., 2019) Dimension-based							

Table A1. Cont.

Model	(1) Maturity Stage	(2) Area of Focus	(3) Enablers	(4) Constraints	(5) Metrics	(6) Insights	(7) Recommendation
(OECD, 2014) Dimension-based							
(EU, 2023) Dimension-based							
(McKinsey, 2016) Dimension-based							
(Eggers & Bellman, 2015) Dimension-based							
(Heeks, 2015) Dimension-based and stages (in this case, maturity progressing from bottom to top)							
(Dias & Gomes, 2014) Dimension-based with stages in the dimensions							
(Joshi & Islam, 2018) Dimension-based and stages							
(Hujran et al., 2023a) Stage-based model, mainly, but they also refer to dimensions							
(Janowski, 2015) Stage model with characteristics							
(Fath-Allah et al., 2014) Stage model							
(Lee & Kwak, 2012) Stage model							
(Alhomod et al., 2012) Stage model							
(UN, 2012) Stage model							
(Chohan et al., 2020) Stage model							
Number of models/themes	9	8	1	4	7	10	4

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