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Article

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Maturity models in digital transformation in e-government: a systematic literature review

Wellington de Oliveira Vieira[1]

Marta Macedo Kerr Pinheiro[2]

Abstract: This article aims to map the maturity models used in digital transformation in the public sector and discuss their relationship with information policy. This is an exploratory-descriptive study with a qualitative approach, conducted through a Systematic Literature Review (SLR) in the Brapci, Scopus and Scielo databases, considering publications in Portuguese and English from 2016 to 2025. After applying the selection criteria, the final sample consisted of six studies. The analysis revealed the existence of 46 digital transformation maturity models, highlighting significant conceptual and methodological diversity and the absence of a widely established model serving as a benchmark for the public sector. The results also indicate that many institutions adopt adaptations of international models or develop their own models, often without explicit alignment with an information policy. These findings suggest that the adoption of contextualised maturity models can contribute to more consistent organisational diagnoses and to the planning of more effective digital transformation strategies in public administration. As a practical implication, the need for greater coordination between digital government policies and the maturity models used by institutions is highlighted. For future research, it is recommended to deepen the comparative analysis of models adopted in different countries.

Keywords: E-government policy; digital transformation; public administration; maturity models.

Modelos de maturidade em transformação digital no governo eletrônico: uma revisão sistemática de literatura

Resumo: Este artigo tem como objetivo mapear os modelos de maturidade utilizados na transformação digital no setor público e discutir suas relações com a política de informação. Trata-se de uma pesquisa exploratória-descritiva, de abordagem qualitativa, conduzida por meio de uma Revisão Sistemática da Literatura (RSL) nas bases Brapci, Scopus e Scielo, considerando publicações em português e inglês no período de 2016 a 2025. Após aplicação dos critérios de seleção, a amostra final foi composta por seis estudos. A análise revelou a existência de 46 modelos de maturidade em transformação digital, evidenciando elevada diversidade conceitual e metodológica e a ausência de um modelo amplamente consolidado como referência para o setor público. Os resultados também indicam que muitas instituições adotam adaptações de modelos internacionais ou desenvolvem modelos próprios, frequentemente sem alinhamento explícito com uma política de informação. Esses achados

[1] Masters student in Information and Communication Technology and Knowledge Management, Fumec University, wellington.ovieira@bol.com.br.
[2] Associate Professor, Fumec University, marta.macedo@fumec.br.

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sugerem que a adoção de modelos de maturidade contextualizados pode contribuir para diagnósticos organizacionais mais consistentes e para o planejamento de estratégias de transformação digital mais eficazes na administração pública. Como implicação prática, destaca-se a necessidade de maior articulação entre políticas de governo digital e modelos de maturidade utilizados pelas instituições. Para pesquisas futuras, recomenda-se aprofundar a análise comparativa de modelos adotados em diferentes países.

Palavras-chave: Política de governo eletrônico; transformação digital; administração pública; modelos de maturidade.

Modelos de madurez en la transformación digital en la administración electrónica: una revisión sistemática de la literatura

Resumen: Este artículo tiene como objetivo mapear los modelos de madurez utilizados en la transformación digital en el sector público y analizar su relación con la política de información. Se trata de una investigación exploratoria-descriptiva, de enfoque cualitativo, desarrollada mediante una Revisión Sistemática de la Literatura (RSL) en las bases de datos Brapci, Scopus y Scielo, considerando publicaciones en portugués e inglés entre 2016 y 2025. Tras la aplicación de los criterios de selección, la muestra final estuvo compuesta por seis estudios. El análisis identificó 46 modelos de madurez en transformación digital, lo que evidencia una alta diversidad conceptual y metodológica, así como la ausencia de un modelo ampliamente consolidado como referencia para el sector público. Los resultados también indican que muchas instituciones optan por adaptar modelos internacionales o desarrollar modelos propios, frecuentemente sin una alineación explícita con una política de información. Estos hallazgos sugieren que la adopción de modelos de madurez ajustados al contexto organizacional puede contribuir a diagnósticos institucionales más precisos y a la formulación de estrategias de transformación digital más eficaces en la administración pública. Como implicación práctica, se destaca la necesidad de una mayor articulación entre las políticas de gobierno digital y los modelos de madurez utilizados por las instituciones. Para investigaciones futuras, se recomienda profundizar el análisis comparativo de los modelos adoptados en distintos contextos nacionales.

Palabras-clave: Política de gobierno electrónico; transformación digital; administración pública; modelos de madurez.

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1 Introduction

Since the advent of the computer and the availability of the internet, it has been possible to observe the progress of societies in an increasingly computerised world. These new tools have provided organisations with the most sophisticated processes enabled by the computerisation of their activities, which are indispensable for maintaining efficient communication and optimising administrative processes.

Against this backdrop, centred on Information and Communication Technologies (ICTs), the Brazilian Public Administration has been working to modernise its management and offer digital services in order to implement tools that bring benefits to citizens, thereby making Brazil, through a public policy focused on the digitisation of public services, a leader

in the field of e-government[3]. According to Ferrer and Santos (2004), Brazil has been firmly acting as a pioneer in the use of ICTs applied to its government activities (*e-government*), and this initiative by the country in the use of technology in its communications and public actions has brought great benefits to society.

According to Moresi *et al*. (2023), the process of digitising public services in Brazil began in the late 1990s with the advent of e-government, centred primarily on the computerisation of internal processes and the provision of public services on digital platforms. With the advancement of technologies and the maturing of social demands, the e-government paradigm has evolved into digital government, whose focus goes beyond the digitisation of services and is oriented towards citizen-centred innovation, promoting more efficient, transparent and responsive management.

Santos, Figueiredo and Gomes (2023) reiterate that e-government in Brazil formally emerged in the early 2000s, driven by the spread of ICTs, particularly the expansion of the internet combined with the government's objective of transforming the relationship between the state and society, broadening access to information, improving the quality of public services and strengthening citizen participation.

The authors also point out that, from 2018 onwards, Brazil began to structure its digital transformation agenda through national strategies that integrate digital government, the digital economy and social participation, setting targets related to the expansion of digital services, single citizen authentication and the intensification of mechanisms for participation in public policy (Santos; Figueiredo; Gomes, 2023).

Digital Transformation (DT) in public administration, as a process that goes beyond the simple adoption of technologies (Santos *et al.*, 2024), has established itself globally as an essential strategy for modernising workflows, increasing efficiency and improving interaction between government and citizens, as well as addressing the need for access to information, transparency, accountability and social control, which form the basis of an e-government policy.

Meanwhile, digital government presupposes an integrated, proactive and data-centred public administration, capable of offering personalised, accessible and high-quality services, guided by an information policy, for the assertive selection of actions and models for implementing programmes and plans. However, maturity models serve as essential tools or theoretical frameworks for assessing the current state of an organisation's, company's or

[3] E-government refers to the use of Information and Communication Technologies (ICTs) by the Public Administration with the aim of improving the provision of public services, increasing government transparency and strengthening the interaction between the State and society (Ferrer; Santos, 2004).

process's capabilities (Luna; Breternitz, 2021; Andrade; Gonçalo; Santos, 2022; Corrêa *et al*., 2025).

According to Lechakoski and Tsunoda (2015), an analysis of the transition from e-government to digital government in Brazil, in the light of maturity models, reveals not only technological advances but also the challenges faced in ensuring the effectiveness of public policies on digital information. Among these challenges, the following stand out: promoting equity in access to services, improving the quality of public information, strengthening public trust in institutions, and expanding citizen participation in decision-making processes.

Braman (2006) adds that the shift from a patrimonial, bureaucratic state to an informational state is fundamental to understanding the dynamics of power in today's society. The informational state, therefore, uses control over information to produce and reproduce centres of power, with boundaries that become more fluid and defined in terms of informational reach rather than geography.

From this perspective, information policy can be understood as a set of guidelines, actions and decisions adopted by the state with the aim of organising, controlling, preserving and guaranteeing access to information, constituting a fundamental element for the functioning of public administration and democracy (Jardim, 2006).

According to Kerr Pinheiro (2011), information policy plays a fundamental role in the information state, establishing guidelines for the production, organisation, retrieval, access, use and preservation of government information, which naturally applies to the digital format.

Over the past few decades, particularly in the last ten years (2016–2025), Brazil has witnessed significant transformations in the design and implementation of these policies, driven by the publication of key legal and strategic frameworks, such as the 2015 Civil Rights Framework for the Internet, the 2016 Digital Governance Strategy (EGD), the 2018 General Data Protection Act, the 2020 Digital Government Strategy, and the 2024 Federal Digital Government Strategy (EFGD), amongst others.

The Digital Governance Strategy (EGD) covering the period from 2016 to 2019, as a government plan, was the Brazilian federal government's first digital governance strategy, established by Decree number 8.638 of 15 January 2016. It set out the strategic objectives, targets and indicators for the use of information and communication technologies in the public sector. Subsequently, the strategy was updated by Decree number 10.332/2020, with amendments introduced by Decrees numbers 10.996/2022 and 11.260/2022, which established the DGS for the period 2020–2023. Currently, the Federal Digital Government Strategy (EFGD 2024–2027) is in force, established by Decree number 12.198/2024, which

consolidates and expands upon the guidelines of previous strategies, with an emphasis on user-centredness and the digital transformation of the State (Brazil, 2025).

In recent years, although various initiatives have been implemented and the GOV.BR Platform[4] has seen significant growth in the number of digital services offered to citizens, a systematic assessment of the evolution of the maturity of digital government information policy at federal level over the last ten years is necessary to identify the progress achieved, the existing gaps and the factors that have influenced this trajectory, which guided the research question of this study.

Thus, maturity models become fundamental tools for measuring the effectiveness of digital development in public institutions. The EGD (2016–2019) and EGD (2020–2023) strategies were inspired by maturity models such as e-MAG and *GovTech,* which enable the assessment of aspects such as technological infrastructure, accessibility, information governance, interoperability, citizen-centredness, and mechanisms for transparency, social control and *accountability*, contributing to strategic planning and more assertive decision-making (Brazil, 2025).

In this context, this research aims to map other digital transformation maturity models in the public sector and observe whether, in this assessment of service delivery to citizens, there is greater control over information or its better use by the public, highlighting the good management practices achieved and identifying possible gaps. This addresses a strategic need to evaluate the effectiveness of digital government policies implemented by the Brazilian State. Consideration is also given to the growing importance of digital transformation for the modernisation of the State, which is essential for understanding whether such policies have, in fact, promoted improvements in transparency, accessibility and *accountability*. In summary, the application of maturity models in digital government constitutes a valuable theoretical and methodological tool for analysing the stage of development of these policies, enabling progress to be measured, challenges to be identified and providing input for their continuous improvement.

For the purposes of this research, the study is divided into sections. E-government, digital government and digital transformation are defined (section 2), as are maturity models (section 3). Consequently, the methodology applied to this research is outlined (section 4),

[4] The gov.br portal is the unified digital platform for Brazilian federal government services, created as part of the public administration's digital government policy. The initiative integrates institutional portals and digital public services into a single access environment, enabling citizen authentication via digital identity and the provision of various government services electronically.

followed by an analysis of the results derived from the methodological procedures (section 5). The final considerations (section 6) conclude this study.

2 E-government, digital government and digital transformation

The concept of e-government emerged from the evolution of ICTs, particularly the internet, which enabled new forms of interaction between public administration and society. In the late 1990s, e-government began to be promoted as a means of identifying activities supported or carried out through the use of ICTs in public administration, via the integration of networks and systems (Jambeiro; 2006; Santos; Figueiredo; Gomes, 2023).

According to Jambeiro (2006), the term e-government (*e-Gov*) is commonly used to describe the application of technology with the aim of optimising the provision of public services, seeking to expand their reach, streamline processes and reduce costs. This technological application is primarily aimed at strengthening government transparency through accountability and the disclosure of information on state activities, as well as fostering public participation. E-government initiatives gained global prominence following the launch of programmes in the United States in 1993 and in Canada in 1997, with the aim of promoting changes in public administration, inspiring the emergence of similar initiatives at state and municipal levels.

According to Moresi *et al*. (2023), although the terms “digital government” and “e-government” are sometimes used synonymously, a broader view suggests that digital government encompasses not only the digitisation of services and information, but also a more profound transformation in the way government operates and interacts with society, using digital technologies in a strategic and integrated manner.

Santos *et al*. (2024) address DT in an even broader context, described as the application of digital innovation to generate value and meet the needs of organisations. However, the authors argue that DT is a complex process with no predefined scope, which goes beyond the simple adoption of technologies.

According to the Organisation for Economic Co-operation and Development (OECD, 2020), DT in the public sector can be defined as the integration of digital technologies at all levels of government administration, with a view to improving services, promoting efficiency and increasing transparency. In turn, digital maturity models enable the measurement of institutional capacity to adopt technologies and transform processes, serving as diagnostic and planning tools.

Moresi *et al*. (2023) add that an analysis of the trajectory from e-government to digital government in Brazil, in the light of maturity models, reveals not only technological advances but also the challenges faced in ensuring the effectiveness of digital public policies. Among these challenges, the following stand out: promoting equity in access to services, improving the quality of public information, strengthening public trust in institutions, and expanding citizen participation in decision-making processes.

In accordance with the timeframe adopted in this study, in 2016 the Brazilian federal government established the Digital Governance Strategy (EGD) through Decree number 8.638 of 15 January 2016. This initial strategy, covering the period from 2016 to 2019, focused on the transition from e-government to digital government, with an emphasis on access to information, service delivery and social participation. Subsequently, Decree number 10.332 of 28 April 2020 updated the EGD for the period 2020–2022, prioritising the simplification of services, system interoperability and data security. This version was further improved by Decree number 10.996 of 14 March 2022, with the aim of reinforcing and expanding these guidelines. Currently, the Federal Digital Government Strategy (EFGD) for the period 2024 to 2027 is in force, established by SGD/MGI Ordinance number 6.618/2024, which sets out a new direction based on a citizen-centred, integrated, intelligent, reliable, transparent and efficient government, demonstrating a continuous trajectory of evolution in the digitisation of public services in Brazil.

In this regard, IT maturity models are frameworks that help organisations assess their current state of digitalisation and identify steps to progress towards higher levels of maturity in data and information management. These models generally consist of several levels, each representing an increasing sophistication in the use of digital technologies.

3 Contributions of maturity models

According to Luna and Breternitz (2021), Andrade, Gonçalo and Santos (2022) and Corrêa *et al*. (2025), maturity models are conceived as essential tools or theoretical frameworks for assessing the current state of an organisation’s, company’s or process’s capabilities. They are defined by successive levels or evolutionary stages, typically organised in a sequence. The main purpose of these models is to carry out a diagnosis of the current situation and, based on this assessment, to establish guidelines or propose actions aimed at improvement and advancement to higher levels of maturity. Maturity, in this context, represents the developmental stage at which an organisation finds itself, seeking to improve

its processes. A maturity model provides a methodology for this assessment, acting as a tool to describe the organisational reality and guide the implementation of best practices.

Luna and Breternitz (2021) add that an effective maturity model consists of fundamental elements such as dimensions and levels. The objects of maturity assessment refer to what is being assessed, such as technology, systems and processes.

According to Corrêa *et al*. (2025), dimensions are specific areas or capabilities that describe aspects of the object of assessment, serving as indicators for analysing the maturity level. Examples of dimensions mentioned include services, accessibility, usability, strategy, leadership, market, operations, people, culture, governance, technology, product, customers, partners, value creation processes, data, information, corporate standards, and employees. The selection of these dimensions must be aligned with the organisation's strategic positioning. The levels describe the different stages of maturity in relation to the object being assessed. Progression between levels is generally sequential, with most levels requiring compliance with the requirements of the previous stage, except for the initial level. The levels must be clearly distinct and encompass the characteristics of the preceding levels

Luna and Breternitz (2021) state that maturity models should have additional requirements, such as the ability to assess value-generating dimensions, a clear explanation of the different levels for each dimension, the ability to assess perceptions of maturity, a concise and clear presentation of results, and the ability to assess progress on the transformation journey. Ideally, the models should also include a tool (such as questionnaires) for collecting data and an analysis method to determine the maturity level.

The application of maturity models is wide-ranging, covering areas such as knowledge management (Corrêa *et al.,* 2025), e-government, DT, human resource management, quality management, software engineering, innovation management and business process management, amongst others. Within the broader context of DT, these models assist in linking digital processes, promote the adoption of innovations, and help institutions assess their position to build competitive advantage and improve quality.

This study draws on the frameworks presented in the Brazilian Digital Government Strategies, particularly the *e-MAG* and GovTech models mentioned in the EGD (2016–2019) and EGD (2020–2023). Whilst *e-MAG* focuses on promoting digital accessibility and ensuring universal access to electronic public services, the *GovTech* model introduces a more recent approach linked to public innovation, the start-up ecosystem and the modernisation of the State through digital technologies. In this context, these frameworks contribute to understanding the digital maturity of federal agencies by addressing dimensions related to

strategy and governance, digital capabilities, the digitisation of public services, data management and use, as well as digital culture and skills. However, given the complexity and continuous evolution of digital transformation in the public sector, it is necessary to broaden the analytical scope beyond these institutional frameworks, investigating other models of digital maturity present in the scientific literature. This broadening makes it possible to identify different theoretical and methodological approaches used to measure government digital maturity, contributing to a more comprehensive and well-founded analysis of the evolution of digital government.

4 Methodology

This research is exploratory-descriptive, as it seeks to expand knowledge on a specific topic, relying on "[...] precise descriptions of the situation and aims to uncover the relationships between its elements" (Bervian; Cervo; Silva, 2002, p. 63). Furthermore, it is a qualitative study, as it allows the researcher to capture meanings related to the phenomenon under study (Gil, 2015).

To carry out this investigation, a Systematic Literature Review (SLR) was employed, which aims to map maturity models in TD within the public sector. Thus, the exploratory-descriptive approach, of a qualitative nature, is based on the principles of bibliographic research (Marconi; Lakatos, 2003), which is essential for understanding the state of the art, identifying gaps and providing a theoretical foundation for the research (Gil, 2015).

SLR, according to Souza *et al*. (2022), is a research strategy that aims to gather, analyse and synthesise scientific output in a judicious and methodical manner, offering a comprehensive and well-founded overview of accumulated knowledge, following a structured and transparent approach. Oliveira and Barbosa (2023) highlight that the RSL seeks to ensure impartiality and answer a specific question, using the existing literature as the main source of data, with systematic, transparent and reproducible methods.

To conduct the SLR, the PICO strategy (Zaccagnini; Li, 2023) was used to structure the following research question: what maturity models are used to assess DT in the public sector? The defined PICO framework was: P (Digital Transformation), I (Maturity), C (Governmental Context), O (maturity models).

The systematic search was conducted in three relevant databases: Brapci, Scopus and Scielo, using the PRISMA guidelines, a gold standard for systematic reviews, which guide the process from the identification of studies to the synthesis of findings, ensuring the

reproducibility and interpretability of the reviews, thereby strengthening their credibility and utility (Page *et al*., 2021). The search strategy included terminology commonly used in the field in two languages, combined with Boolean operators for retrieving records, as shown in Table 1.

Table 1 - Selection of search terms

Language	**Keywords**
English	*"digital* transformation" AND *"maturity* model" AND "e-government" OR *"digital government"*
Portuguese	"digital transformation" AND "maturity model" AND "e-government" OR "digital government"

Source: Research data (2025).

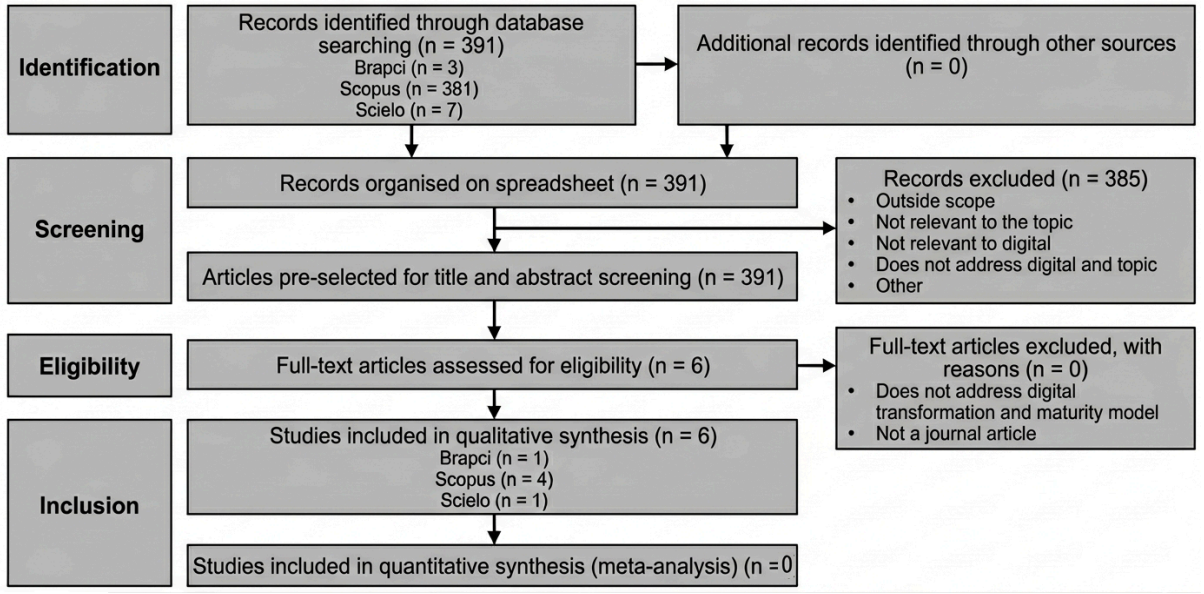
Initially, combinations of descriptors were tested that included terms directly associated with the public sector, such as *"public sector"*, *"government"*, *"e-government"* and *"digital government"*, combined with *"digital transformation"* and *"maturity model*". However, it was found that these combinations were ineffective in retrieving relevant studies, resulting in a small number of records or in works that did not directly address maturity models. In view of this limitation, it was decided to broaden the search strategy, focusing it on the intersection between the terms *"digital transformation"* and *"maturity model"*, which demonstrated a greater capacity to retrieve literature relevant to the topic.

Subsequently, a qualitative refinement stage was carried out, based on the reading of titles, abstracts and full texts, with the aim of identifying studies that had an interface with the public sector, e-government or digital government. This methodological strategy allowed us to broaden the scope of the search and, at the same time, ensure the thematic adherence of the final sample, a procedure consistent with recommended practices in systematic literature reviews.

The inclusion criteria covered full-text publications in Portuguese and English that were thematically relevant to TD and maturity models. Studies containing keywords but with no direct relevance to the study, as well as duplicates and repetitive or generic texts, were excluded. The analysis of the selected material involved exploratory reading, critical analysis and interpretation.

The search was conducted on 15 October 2025, yielding the following results from the databases: Brapci, three records; Scielo, seven records; and Scopus, 381 records. The results were exported in CSV format and the data tabulated and analysed in *Microsoft Excel* 365. The Figure 1 presents the number of records retrieved using the outlined strategies and the number of eligible articles, following the application of the aforementioned exclusion criteria.

Figure 1 - Quantitative results of the database searches



Source: Research data (2025).

Thus, the research focused on the results of combining the defined descriptors, which were most effective in retrieving literature on DT and maturity models, in accordance with the inclusion and exclusion criteria. The qualitative analysis sought to identify, within the retrieved material, possible interfaces with the public sector, even without the direct use of these terms in the initial search.

5 Results and discussion

The remaining sample consisted of six articles, namely: AlMurtadha (2024); Blyznyuk *et al*. (2021); Moresi *et al*. (2023); Silva, Vieira and Silva (2024); Waara (2025); and Zakiuddin, Anggara and Suhardi (2024).

AlMurtadha (2024) presents the use of World Bank indicators and the *Digital Transformation Maturity Index (DXMI)* and *GovTech Maturity Index (GTMI)* models as a basis for governments' transition to 'smart government' status. However, the article does not delve into the discussion of specific maturity models or their characteristics in the context of DT.

Blyznyuk *et al*. (2021) review studies and concepts regarding four maturity models in DT within public administration, contextualising the interface with project management, e-government portals and model evaluations for process improvement. The authors advocate for investment in digitisation and digital platforms as tools for DT and for increasing maturity in the public sector.

Moresi *et al*. (2023), through a bibliometric analysis of DT in the public sector, point out that its effectiveness is intrinsically linked to maturity in e-governance. The adoption of an IT governance framework is fundamental to the success of DT, whose conceptual structure involves e-governance, IT and digital participation, underpinned by technological infrastructure, e-governance and organisational culture.

Silva, Vieira and Silva (2024) analysed 19 Digital Maturity Models (DMMs), revealing that their dimensions vary little across domains, limiting flexibility. Most DMMs are descriptive, lacking action plans and prioritisation of dimensions by domain. The authors propose the future development of a generic DMM with prioritisation of dimensions by domain, suggesting a participatory approach such as the Delphi method.

Waara (2025) reviewed 9 Digital Government Maturity Models (DGMMs), highlighting their citizen-centred approach. Although DGMMs have stages, dimensions and metrics, the review focused on the methodology and classification of the models regarding the mention of citizens, without detailing the specific contributions of the models to maturity assessment.

Zakiuddin, Anggara and Suhardi (2024) present 12 maturity models in DT and the development of a maturity model for public service DT, aiming to increase public value and assess the quality of implementation. The model utilises Key Process Areas (KPAs) mapped to maturity levels, with a methodology based on a literature review and interviews with experts. The research indicates that essential processes such as ‘building understanding and commitment’ and ‘establishing strategy and action plans’ achieved the highest average scores.

In summary, a full review of the articles revealed that there is no single maturity model that serves as a benchmark that is, one that is widely applied to the public sector, but rather a diversity of models. The literature indicates that most institutions opt to adapt international models or develop their own versions. As shown in Table 2, 46 maturity models were identified, namely: two in AlMurtadha (2024); four in Blyznyuk *et al.* (2021); 19 in Silva, Vieira and Silva (2024); nine in Waara (2025); and 12 in Zakiuddin, Anggara and Suhardi (2024).

Table 2 – Digital transformation maturity models applied in the public sector *(2016–2025)*

Id	**Model**	**Author**
1	*Digital Transformation Maturity Index (DXMI)*	AlMurtadha (2024)
2	*GovTech Maturity Index (GTMI)*	AlMurtadha (2024)
3	*Maturity model of integrated management system*	Blyznyuk *et al. (2021)*
4	*Comprehensive Project Management Maturity Model*	Blyznyuk *et al. (2021)*
5	*3-Level Maturity Model in Public Administration*	Blyznyuk *et al. (2021)*
6	*Organisational Project Management Maturity*	Blyznyuk *et al. (2021)*

7	*360DMA*	Silva, Vieira and Silva (2024)
8	*Acatech Industry 4.0 Maturity Index*	Silva, Vieira and Silva (2024)
9	*Digital Capability Framework (DCF)*	Silva, Vieira and Silva (2024)
10	*Digital Capability Framework (variation)*	Silva, Vieira and Silva (2024)
11	*Digital Readiness Assessment (DRA)*	Silva, Vieira and Silva (2024)
12	*DIGROW*	Silva, Vieira and Silva (2024)
13	*Adapted from DMFHEI*	Silva, Vieira and Silva (2024)
14	*DREAMY (Digital REadiness Assessment MaturitY model)*	Silva, Vieira and Silva (2024)
15	*Enabler-Based Digital Government Maturity Framework (EDGMF)*	Silva, Vieira and Silva (2024)
16	*Forrester's Digital Maturity Model 4.0*	Silva, Vieira and Silva (2024)
17	*Framework for Digitally Mature Schools (FDMS)*	Silva, Vieira and Silva (2024)
18	*Integrated Multidimensional Digital Transformation Model*	Silva, Vieira and Silva (2024)
19	*MIT SMR*	Silva, Vieira and Silva (2024)
20	*MMEO*	Silva, Vieira and Silva (2024)
21	*PWC Digital Maturity Model – Industry 4.0*	Silva, Vieira and Silva (2024)
22	*SIMMI 4.0*	Silva, Vieira and Silva (2024)
23	*Smart Digital Treasury Model (SDTM)*	Silva, Vieira and Silva (2024)
24	*UniDigMaturity*	Silva, Vieira and Silva (2024)
25	*VTT Model of Digimaturity*	Silva, Vieira and Silva (2024)
26	*Digital by Default*	Waara (2025)
27	*Digital government maturity framework*	Waara (2025)
28	*Digital maturity balance model*	Waara (2025)
29	*DiMiOS: A model for government digital maturity*	Waara (2025)
30	*E-Gov maturity model for sustainable e-gov services*	Waara (2025)
31	*eGovernment Benchmark*	Waara (2025)
32	*E-Government maturity model*	Waara (2025)
33	*Multidimensional PS organisations' DMM*	Waara (2025)
34	*SMARTGOV: An extended maturity model*	Waara (2025)
35	*AI Readiness Framework*	Zakiuddin, Anggara and Suhardi (2024)
36	*Business Process Management Maturity Assessment in Digital Transformation*	Zakiuddin, Anggara and Suhardi (2024)
37	*Co-Production Maturity Model in Public Services*	Zakiuddin, Anggara and Suhardi (2024)
38	*Development and Implementation of a Maturity Model for Digital Transformation*	Zakiuddin, Anggara and Suhardi (2024)

39	*Digital Orientation, Digital Maturity, and Digital Intensity: Determinants of Financial Success*	Zakiuddin, Anggara and Suhardi (2024)
40	*Digital Transformation Capability Maturity Model for Industrial Manufacturers*	Zakiuddin, Anggara and Suhardi (2024)
41	*Digital Transformation in Higher Education: A Framework for Maturity Assessment*	Zakiuddin, Anggara and Suhardi (2024)
42	*Digital Transformation Readiness: Perspectives on Academic and Library Outcomes*	Zakiuddin, Anggara and Suhardi (2024)
43	*Organisational E-Health Readiness Model*	Zakiuddin, Anggara and Suhardi (2024)
44	*Readiness Model for Digital Transformation in Airports*	Zakiuddin, Anggara and Suhardi (2024)
45	*Service Ecosystem Emergence Model (Public Sector)*	Zakiuddin, Anggara and Suhardi (2024)
46	*Value Co-Creation and Digital Service Transformation Framework (Denmark case)*	Zakiuddin, Anggara and Suhardi (2024)

Source: Research data (2025).

According to Corrêa *et al*. (2025), despite their benefits, existing maturity models face criticism and limitations. Some models do not provide sufficient information for practical application, lack detail regarding the analysis method used, and neglect dimensions considered critical for assessment. Subjectivity in the interpretation and application of the models is another criticism, especially when there are no clear rules for the evaluation or specification of the documents to be analysed.

Furthermore, theoretical gaps and a lack of concrete suggestions for improvement are mentioned. Many of the models analysed, as they do not present the complete set of dimensions, instruments, levels and analysis methods, are viewed as reductionist (Corrêa *et al*., 2025). According to Luna and Breternitz (2021), specifically in the context of DT, several models are predominantly descriptive and do not offer a clear action plan for organisations. The limited variation in dimensions across models applied to different domains also hinders flexibility and a more accurate assessment of reality

With regard to the Brazilian context, scientific and academic output on DT and digital maturity is still considered in its infancy (Luna; Breternitz, 2021). However, specific models have been proposed for the Brazilian context, such as a maturity model for e-government websites that takes local requirements into account, such as e-MAG (Jambeiro, 2006) and the *Govtech* ecosystem (EGD 2020–2023); since then, no further guidance has been provided.

6 Final considerations

The aim of this study was to map maturity models in DT within the public sector and, in principle, to verify whether they were selected in accordance with an information policy,

thereby highlighting the positive actions achieved and identifying potential gaps. However, analysis of the EGD and EFGD within the context of the Brazilian government revealed no such guidance provided by information policies. On the other hand, DT in the Brazilian public administration shows progress, but also significant challenges. The use of maturity models adapted to the organisational context, such as *e-MAG* and *Govtech,* can contribute to more accurate diagnoses and more effective strategies. However, it is essential to promote the evaluation of these models, the sharing of best practices, and the strengthening of institutional capacities.

To this end, a systematic literature review (SLR) was conducted to identify articles presenting maturity models in e-government or digital government. From the six articles remaining after the SLR, 46 maturity models were identified, revealing that there is no single maturity model that serves as a benchmark.

The adaptation and customisation of existing models, or even the development of specific models for a given context, as evidenced in the studies analysed, are fundamental steps to ensure that maturity assessment and DT planning are relevant, accurate and lead to meaningful and sustainable results. However, it is clear that the lack of direction from an information policy for digital government weakens the process and demonstrates that the application of maturity models is still in its infancy.

Digital Transformation in the Brazilian public administration shows progress, but also faces significant challenges. The use of maturity models adapted to the organisational context can contribute to more accurate diagnoses and more effective strategies. However, it is essential to promote the evaluation of models, the sharing of best practices and the strengthening of institutional capacities.

The maturity of digital government in Brazil, at the federal level, is the result of a planned and progressive strategy, initiated under e-*MAG* with a focus on websites, refined by EGD through *Govtech*, consolidated by EFGD, and monitored by the Secretariat for Digital Government (SGD) within the Ministry of Management and Innovation (MGI). Although there have been significant advances, particularly in the digitisation of services and infrastructure, the consolidation of a truly digital government requires continuous efforts in the areas of governance, data, training and innovation, with a focus on the citizen experience.

In light of the preliminary findings of this research, it is recommended that the DT process be aligned with a maturity model appropriate to the organisational context, resulting from a policy direction for e-government or digital government. As a perspective for future

research, the importance of deepening the analysis of e-government in other countries that adopt maturity models in their DT processes is highlighted.

References

ALMURTADHA, Y. AI prediction model to investigate the GovTech Maturity Index (GTMI) indicators for assessing governments' readiness for digital transformation. **Journal of Applied Data Sciences,** [*S.l.*], vol. 5, no. 4, pp. 1838–1849, Dec. 2024. Available at: https://bright-journal.org/Journal/index.php/JADS/article/view/373. Accessed on: 7 May 2025.

ANDRADE, C. R. D.; GONÇALO, C. R.; SANTOS, A. M. Agile digital transformation: The emerging dynamic capacity of complementary services. **Revista de Administração Mackenzie,** vol. 23, no. 6, 2022. Available at: https://doi.org/10.1590/1678-6971/eRAMD220063.pt. Accessed on: 7 May 2025.

BERVIAN, P. A.; CERVO, A. L.; SILVA, R. **Scientific methodology**. São Paulo: Pretence Hall, 2002.

BLYZNYUK, A. *et al*. Formation of the project maturity of public administration in the implementation of digital transformation projects. **Journal of Information Technology Management**, [*S.l.*], Special Issue, pp. 164–184, 2021. Available at: https://jitm.ut.ac.ir/article_82615.html. Accessed on: 5 May 2025.

BRAMAN, S. **Information, policy, and power.** Cambridge: MIT Press, 2006.

BRAZIL. **Decree No. 8,638, of 15 January 2016**. Available at: https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2016/decreto/d8638.htm. Accessed on: 7 May 2025.

BRAZIL. **Digital government.** Available at: https://www.gov.br/governodigital/pt-br/estrategia-de-governanca-digital/do-eletronico-ao-digital. Accessed on: 16 Oct. 2025.

BRAZIL. **History of the digital government strategy,** Brasília, DF, 2025. Available at: https://www.gov.br/governodigital/pt-br/estrategia-de-governanca-digital/historico. Accessed on: 16 Oct. 2025.

CORRÊA, F. *et al*. Analysis of knowledge management maturity models. **Perspectives on Management & Knowledge**, João Pessoa, vol. 15, no. 1, pp. 2–14, Jan.–Apr. 2025. Available at: https://enancib.ancib.org/index.php/enancib/xxienancib/paper/view/25. Accessed on: 7 May 2025.

FERRER, F.; SANTOS, P. (Eds.). **E-government:** electronic government in Brazil. 2nd ed. São Paulo: Saraiva, 2004.

GIL, A. C. **Methods and techniques of social research.** São Paulo: Atlas, 2015. 201 p.

JARDIM, J. M. Public archival policies: principles, actors and processes. **Arquivo & Administração**, vol. 5, no. 2, 2006. Available at: http://hdl.handle.net/20.500.11959/brapci/51586. Accessed on: 15 Dec. 2025.

JAMBEIRO, O. Accessibility, navigability and content on e-government portals and websites in Brazilian state capitals. **Communication & Information,** vol. 9, no. 2, 2006. Available at: https://revistas.ufg.br/ci/article/view/25250. Accessed on: 7 May 2025.

KERR PINHEIRO, M. M. Information policy as a public document in the information state. *In*: NATIONAL CONFERENCE ON RESEARCH AND POSTGRADUATE STUDIES IN INFORMATION SCIENCE, 2011. **Proceedings** [...] XII National Conference on Research and Postgraduate Studies in Information Science, 2011. Available at: https://www.brapci.inf.br/v/180867. Accessed on 5 May 2025.

LECHAKOSKI, Rafael de Mello; TSUNODA, Denise Fukumi. Proposal for a maturity model for e-government websites. **AtoZ: New Practices in Information and Knowledge,** vol. 4, no. 1, 2015. Available at: https://revistas.ufpr.br/atoz/article/view/42319. Accessed on: 5 May 2025.

LUNA, F. D. S.; BRETERNITZ, V. J. Digital transformation in Brazilian private higher education institutions: Pre-coronavirus baseline. **Revista de Administração Mackenzie,** São Paulo, vol. 22, no. 6, 2021. Available at: https://www.scielo.br/j/ram/a/HwtTwDhPW4G35w49KTh9Knd/abstract/?lang=pt. Accessed on: 5 May 2025.

MARCONI, M. A., LAKATOS, E. M. **Fundamentals of scientific methodology**. 5th ed. São Paulo: Atlas, 2003.

MORESI, E. A. D. *et al*. Digital transformation in the public sphere: a bibliometric analysis. **Information Science,** vol. 52, no. 2, 2023. Available at: https://brapci.inf.br/v/303744. Accessed on: 5 May 2025.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD). **Digital Government Review of Brazil.** OECD Publishing, 2020. Available at: https://www.oecd.org/en/publications/digital-government-review-of-brazil_9789264307636-en.html. Accessed on: 30 Apr. 2025.

OLIVEIRA, B. M.; BARBOSA, I. M. B. R. **Systematic literature review (SLR):** a guide from theory to practice. Barreiros-PE: Ed. dos Autores, 2023. Available at: https://repositorio.ifpe.edu.br/xmlui/handle/123456789/997. Accessed on: 30 Apr. 2025.

PAGE, M. J. *et al*. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. **BMJ**, vol. 372, no. 71, 2021. Available at: https://www.bmj.com/content/372/bmj.n71. Accessed on: 29 Apr. 2025.

SANTOS, M. R.; FIGUEIREDO, R. M. C.; GOMES, M. M. F. Evolution of perspectives on government digitalisation in Brazil from 2000 to 2023. **Revista Relações** Sociais, vol. 6, no. 4, 2023. Available at: https://periodicos.ufv.br/reves/article/view/17777. Accessed on: 5 May 2025.

SANTOS, L. G. P. et al. MATURITY MODELS IN DIGITAL TRANSFORMATION: analysis of proposals for small and medium-sized enterprises in the manufacturing sector. **P2P AND INNOVATION**, vol. 11, no. 1, 2024. Available at: https://revista.ibict.br/p2p/article/view/7073. Accessed on: 7 May 2025.

SILVA, J. L., VIEIRA, A. C. L., SILVA, S. V. Digital maturity models: a characterisation study based on a systematic literature review. **BBR – Brazilian Business Review**, [*S. l.*], vol. 21, no. 2, 2024. Available at: https://www.scielo.br/j/bbr/a/j6Pj7wz95MBNP9KQRzQcMBm/?lang=en. Accessed on: 29 Apr. 2025.

SOUZA, A. D. *et al*. Tools for information management in literature reviews. **Perspectives on Management & Knowledge**, [*S. l.*], vol. 12, no. 3, pp. 299–313, 2022. Available at: https://periodicos.ufpb.br/ojs2/index.php/pgc/article/view/65024. Accessed on: 29 Apr. 2025.

WAARA, A. Examining digital government maturity models: evaluating the inclusion of citizens. **Administrative Sciences**, [*S.l.*], vol. 15, no. 3, p. 73, 2025. Available at: https://www.mdpi.com/2076-3387/15/3/73. Accessed on: 7 May 2025

ZACCAGNINI, M.; LI, J. How to Conduct a Systematic Review and Meta-Analysis: A Guide for Clinicians. **Respir Care,** [*S. l.*], vol. 68, no. 9, pp. 1295–1308, Sept. 2023. Available at: https://pmc.ncbi.nlm.nih.gov/articles/PMC10468159/pdf/zrk1295.pdf. Accessed on: 29 Apr. 2025.

ZAKIUDDIN, Naufal Fahmi; ANGGARA, Sawung Murdha; SUHARDI. Developing a digital service transformation maturity model in the public sector. **IEEE Access,** [*No place*], vol. 12, pp. 174491–174506, 2024. Available at: https://ieeexplore.ieee.org/abstract/document/10695068/. Accessed on: 5 May 2025.

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AUTHORSHIP CONTRIBUTIONS
Conception and drafting of the manuscript: W. O. Vieira, M. M. Kerr Pinheiro
Data collection: W. O. Vieira
Data analysis: W. O. Vieira
Discussion of results: W. O. Vieira
Review and approval: M. M. Kerr Pinheiro

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EDITOR-IN-CHARGE
Patrícia Nascimento Silva (https://orcid.org/0000-0002-2405-8536).

SUPPORT TEAM
Daiane Campos Procópio (https://orcid.org/0000-0002-9006-191X)
Danielle Teixeira de Oliveira (https://orcid.org/0000-0002-1958-9113)

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