### ABSTRACT

**Purpose:** This study aims to conduct a systematic review of the literature on the issue of digital transformation in public administration.

**Theoretical framework:** The impact of digital transformation on public administration and the concepts of digitization, digitalization, and digital transformation.

**Design/methodology/approach:** The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement was used to guide this search, based on the databases of the most important article sources (Web of Science, ScienceDirect ...)

**Findings:** The results of the literature analysis on digitalization in the public sector indicate a focus on exploratory research, examining the impact of digitization and highlighting agents of change such as entrepreneurship and policy entrepreneurs. The analysis covers the major benefits of government digitalization, criteria for technology adoption, and the COVID-19 outbreak's role in accelerating digital transformation.

**Research, Practical & Social implications:** The study offers valuable insights into the current state of digitalization in the public sector and can guide future strategies for policymakers and public sector managers. This study provides practical implications for the successful implementation of digital technologies, enhancing transparency, efficiency, and accountability. Moreover, the research has important social implications, as it reveals the potential for digital governance to foster citizen engagement and participation. Overall, the study's findings provide a useful framework for understanding the benefits and challenges of digital transformation in public administration.

**Originality/value:** The study adds to the existing body of knowledge on digitalization in the public sector. The study's systematic approach provides a comprehensive overview of the literature, highlighting gaps in the current research and offering new avenues for future research.

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### RESUMO

**Objetivo:** Este estudo tem como objetivo realizar uma revisão sistemática da literatura sobre a questão da transformação digital na administração pública.

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Estrutura teórica: O impacto da transformação digital na administração pública e os conceitos de digitalização, digitalização e transformação digital.

Projeto/metodologia/abordagem: A declaração PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) foi usada para orientar essa pesquisa, com base nos bancos de dados das fontes de artigos mais importantes (Web of Science, ScienceDirect ...)

Resultados: Os resultados da análise da literatura sobre digitalização no setor público indicam um foco na pesquisa exploratória, examinando o impacto da digitalização e destacando os agentes de mudança, como o empreendedorismo e os empreendedores de políticas. A análise abrange os principais benefícios da digitalização do governo, os critérios para adoção de tecnologia e o papel do surto de COVID-19 na aceleração da transformação digital.

Pesquisa, implicações práticas e sociais: O estudo fornece percepções valiosas sobre o estado atual da digitalização no setor público e pode orientar estratégias futuras para formuladores de políticas e gerentes do setor público. Esse estudo oferece implicações práticas para a implementação bem-sucedida de tecnologias digitais, aumentando a transparência, a eficiência e a responsabilidade. Além disso, a pesquisa tem implicações sociais importantes, pois revela o potencial da governança digital para promover o envolvimento e a participação dos cidadãos. De modo geral, as conclusões do estudo fornecem uma estrutura útil para compreender os benefícios e os desafios da transformação digital na administração pública.

Originalidade/valor: O estudo contribui para o conjunto de conhecimentos existentes sobre digitalização no setor público. A abordagem sistemática do estudo fornece uma visão geral abrangente da literatura, destacando as lacunas na pesquisa atual e oferecendo novos caminhos para pesquisas futuras.


TRANSFORMACIÓN DIGITAL EN LA ADMINISTRACIÓN PÚBLICA: UNA REVISIÓN SISTEMÁTICA DE LA LITERATURA

RESUMEN
Propósito: Este estudio tiene como objetivo realizar una revisión sistemática de la literatura sobre el tema de la transformación digital en la administración pública

Marco teórico: El impacto de la transformación digital en la administración pública y los conceptos de digitalización, digitalización y transformación digital.

Diseño/metodología/enfoque: Se utilizó la declaración PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) para guiar esta búsqueda, a partir de las bases de datos de las fuentes de artículos más importantes (Web of Science, ScienceDirect ...)

Resultados: Los resultados del análisis de la literatura sobre la digitalización en el sector público indican un enfoque en la investigación exploratoria, examinando el impacto de la digitalización y destacando los agentes de cambio como el espíritu empresarial y los emprendedores políticos. El análisis abarca los principales beneficios de la digitalización gubernamental, los criterios para la adopción de tecnología y el papel del brote COVID-19 en la aceleración de la transformación digital.

Investigación, implicaciones prácticas y sociales: El estudio ofrece valiosas perspectivas sobre el estado actual de la digitalización en el sector público y puede orientar las estrategias futuras de los responsables políticos y los gestores del sector público. Este estudio proporciona implicaciones prácticas para la implementación exitosa de las tecnologías digitales, mejorando la transparencia, la eficiencia y la rendición de cuentas. Además, la investigación tiene importantes implicaciones sociales, ya que revela el potencial de la governança digital para fomentar el compromiso y la participación de los ciudadanos. En general, las conclusiones del estudio proporcionan un marco útil para comprender las ventajas y los retos de la transformación digital en la administración pública.

Originalidad/valor: El estudio se suma al conjunto de conocimientos existentes sobre la digitalización en el sector público. El enfoque sistemático del estudio proporciona una visión global de la literatura, poniendo de relieve las lagunas en la investigación actual y ofreciendo nuevas vías para futuras investigaciones.

Palabras clave: Transformación Digital, Administración Pública, Revisión Sistemática de la Literatura, Transparencia.
INTRODUCTION

The advent and growth of technology are linked to a series of societal shifts known as "digital transformation." (World Bank Group, 2016). This trend has spread to all areas of society; this is to be expected given the numerous advantages of digital technologies. (Belyakova et al., 2020; Belyakova & Pyrkina, 2021). One area where digital technologies have been put to good use is in public administration. They have helped improve access to information for the general public and allow for the prompt delivery of essential assistance. This powerful management instrument enhances productivity and the accuracy of reports. Undoubtedly, technology would be beneficial in the following domain: radically cutting down on paperwork handling times, streamlining administrative processes, aiding in the synchronization of efforts, and enhancing public management operations' candor and honesty, which strengthens trust in government among the general public. That's why it shouldn't come as a surprise that a central focus of economic development of any country is its introduction with cutting-edge digital systems into previously analog-only public administration.

According to (Mergel et al., 2019), government organizations are rethinking entire processes and services rather than just digitizing individual official documents to computerize their processes. Some public administrations are making more progress along this scale than others, while others are falling woefully behind on the execution front. This may be because of insufficient government support for digital initiatives, a lack of coordination between different governmental agencies, budget constraints, or ill-advised attempts to change public administration (Dunleavy et al., 2006).

The development of a network civilization is based on digital technologies. One area of government that the rise of digital technology has impacted is public management, making it possible to use cutting-edge public management instruments and emerging possibilities. The use of the invention in public management is made possible by digital technology. (Kondratenko et al., 2020; Tkachenko et al., 2019). The automatic workflow, speed, and adaptability of digital technologies have made them a sensation (Il’Ashenko, 2004; Tkachenko et al., 2019). Information sharing is the main goal of today's digital technologies. The widespread availability of digital infrastructure paves the way for their full participation in economic, social and political activity and the delivery of governmental services which shifts public administration's interactions with the general public and commercial institutions to an entirely new level between government officials, corporate management, and other channels of discourse.
The role of digitization in the economy has increased over the years, especially after the arrival of the Industrial Revolution 4.0 (Yuan et al., 2021). Digitalization allows to improve many areas such as teaching, in fact the integration of new technologies in the teaching process and the use of new communication and information resources, are part of a continuous, accelerated and ascending process, which will deliberate new perspectives, new actors, new relationships, at a speed never seen in the history of humanity (Gabriel César Dias, 2021). It also improves transparency and therefore improves the reputation of public organizations, the realization of transparent actions that benefit its users, its community and its culture, will create a positive reputation that will bring benefits (Quiroz-García et al., 2020).

Modern societal and commercial growth is dominated by digital transformation, bringing huge digital benefits to people and companies everywhere (World Bank Group, 2016). New ideas of administration for the digital age are being attributed to digitalization, according to some studies. (Margetts & Dunleavy, 2013) or revolutionary administration supported by information and communication technologies (Heidelberger, 2009). Whether the shift to digital creates a new paradigm for governance or just improves upon established methods of effecting change in public administration, technology's role in the perpetual shifts in public administration is generally considered crucial (Vintar, 2010).

There has been a surge of interest in the concept of digital change in recent years (Vukšić et al., 2018). As different scholars have different definitions for digital transformation (Reis et al., 2018), the term "digital transformation" mans the use of digital technologies to enhance human lives, and business operations and public services (Martin, 2008; McAffee et al., 2011). The approach stresses the need of digitization in order to increase the public value of government services for citizens as well as increasing government effectiveness via lean government models (Bannister & Connolly, 2014; Janssen & Estevez, 2013). Use of digital technology inspires consumer involvement in the creation of works of public value and raises public interest in such works (Cordella & Paletti, 2018; Luna-Reyes, 2017).

Several European nations have been interviewed for new studies on digital transformation in the public sphere, and their findings indicate that major shifts in government institutions and bureaucracies are a direct result of digital transformation. Therefore, it's important to distinguish (i) digitization, which defines the change from traditional to digital methods; (ii) digitalization, which looks beyond simple digitization of current processes and forms to consider how those processes might be altered; and (iii) digital transformation, with its consequences for culture, business, and interpersonal connections (Mergel et al., 2019).
Thus, efficiency and accessibility of public service is significantly impacted digital transformation, but also on how the other functions of public administration are executed, including the creation of policy, the implementation of legislation and enforcement. In this early phase, heavy prioritization is given to the implementation of government-as-a-platform solutions (O'Reilly, 2011) and, thus, on data-driven administration (World Bank Group, 2018).

Notably, neither data-centric models founded on open data nor platform solutions applied at the open government stage are viewed as outcomes of digitalization in public administration. These are merely the initial steps in the digital change process that will hopefully lead to complete digitalization and a wise government in the future. (Gartner, 2017). Even though most of the research on digital transformation in government administration emphasizes a single approach, many approaches have been offered in the academic world. Rather than being a one-and-done affair, digital transformation is an ongoing process (Janowski, 2015) entailing shift in public administration's method of talking to its most important constituents. Despite the importance of the anticipated results, there has been no widespread adoption of a standardized method for quantifying them. Digital change is indeed a dynamic phenomenon. Similarly, the criteria used to judge their success should develop over time as government digitalization's effect on government efficiency varies based on where you are in your digital transition. Distinctions like these matter greatly for output-level metrics. For instance, steps like the distribution of publicly accessible online e-services are considered essential for the first stages of e-government rollout. The impacts change at later phases of digital transformation: Automatic encounters will soon supplant government websites thanks to the smart government.

When public agencies outline new duties and digitalize existing procedures to assist the public better, public employees must develop digital skills. (Lember, 2018) Despite policy and administration shifts, many digitalization efforts still fall short of their goals. (Saleh & Awny, 2020). One possible explanation for this is that internal and external parties lack the necessary level of digital knowledge and skill, as (Rupp, 2017) suggested. Due to their "key role in public administration education," digital skills are essential for the digital transformation in the public sector, getting the next generation of government workers ready for the changes coming to the administration (Kausch-Zongo & Schenk, 2022). They targeted students of contemporary public administration in research on digital skills and assessed their knowledge, skills, abilities, and social and data networking. Their research indicates that while specialized skills develop primarily through on-the-job experience, a lack of focus and instruction is given to developing
epistemic skills. They stress the importance of knowing what kinds of skills organizations in the public sector need and encourage open communication between academic schools and the public sphere to enhance educational offerings. Despite the significance of identifying the required skills, the participation of partners is essential for changing the actions of public sector organizations. (Kaur & Lodhia, 2019) Given the importance of those competencies, a dearth of skills can also be an obstacle to digital transformation. (Edelmann, 2022; Verschuere, 2018).

Public policy, administration, and management experts have been debating the merits of incorporating cutting-edge technologies into government and governance structures for decades. Scholars of social policy and the welfare state have also been interested in the topic of digital government, particularly in light of the recent critical focus on the consequences of the so-called "fourth industrial revolution" (Schwab, 2016). As a continuation of the third industrial revolution, which started in the Seventies, aims to describe a paradigm change that is still unfolding. The current transformation is distinguished from its predecessor by the widespread availability of high-speed wireless internet, the miniaturization and decreased cost of sensing devices, and the rise of AI and ML. (Schwab, 2016).

Despite the abundance of published works on the topic of government digitization, studies have shown that theoretical and empirical advancements have been hampered by inconsistencies and gaps in conceptual and practical meanings (Heeks & Bailur, 2007; Helbig et al., 2009). The goal of this work is to systematically examine the existing research on the issue of administrative automation, with a special emphasis on studies pertaining to social policy and welfare. This is the first time the PRISMA technique has been used to try to organize the material on digitalization in the aforementioned areas of study. In addition to discussing the scholarly discussion, this piece examines the writings of prominent international groups and institutions having leading voices in the push for digitalization, helping to propel a number of legislative changes.

**METHODODOLOGY**

(Hartmann et al., 2021) emphasizes the importance of clearly identifying the materials, methods, and techniques used in the preparation of scientific projects and reports. In this vein we used the PRISMA (preferred reporting items for systematic reviews and meta-analyses) framework to conduct a systematic review of the literature.
Database Search

In-depth searches were conducted in the databases of Web of Science, Researchgate, ScienceDirect, and MDPI. To compile this data, I searched all English-language peer-reviewed journals that used "digital" or "digitalization" related to public management, public administration, or public policy. No other papers except those with these phrases in the title, abstract, or keywords were considered. I limited my search for social science topics to Researchgate. In reference to ScienceDirect, MDPI, and the Web of Science, I just looked in the SSCI for relevant results. Up to 2023, all years were included in the time frame. A total of 652 items were found with these searches. Six hundred and two were associated with public administration and policy, and fifty with public management. Only publications from peer-reviewed scientific journals were considered for this exercise.

Eligibility Criteria

To find relevant research, we used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method (Moher et al., 2009). To be considered for inclusion in the review, the articles must satisfy the following six conditions:

- **Field**: Articles should examine the impact of digital technology on public administration. (D'Este et al., 2012) provide the following definition of public administration, which we adopt: cooperative group work in a public context; the interaction between the government's three branches (executive, legislative, and judiciary); it is an integral aspect of the political process because it influences public policymaking. Significant distinctions exist between public and private administration and have deep ties to many non-governmental organizations and people serving the public good. In addition, we use the European Commission's (2017) definition of digital administration: new service delivery frameworks must be created as part of the public sector's digital transformation, collaborating with stakeholders in new ways, and forging new kinds of partnerships.
- **Topic**: Information on 'public administration' in any branch of government was required for inclusion in the study. Research on the role of 'public administration' in the failure to digitally change enterprises was not included. Some articles were left out because they did not sufficiently explain the digital transformation in public administration. The hidden effects of digital transformation should also be investigated.
Last but not least, we did not include research on the effects of digital transformation in public administration.

- **Methodology:** Since we aim to aggregate facts rather than theoretical contributions, we limit ourselves to empirical research. Second, to save unnecessary repetition, we did not include systematic reviews.
- **Language:** Articles were only accepted if written in English.
- **Publication date:** January 2000 to March 2023. Articles published before and after this time frame were also considered.
- **Type of Publication:** Only publications published in scholarly journals with worldwide peer review were considered.

**Review Method & Coding**

After identifying 652 papers, the authors narrowed their focus to 100 that met their inclusion criteria. The PRISMA flowchart graphic (Figure 1) below outlines the procedure and methodology used to select studies for analysis. First, we screened the titles and abstracts of the papers to see whether they addressed the topic of digital transformation in public administration. At this point, we also filtered out any articles written in non-English languages. Second, we checked the publications' entire texts to see whether they were relevant to our research. In the third step, we examined the remaining articles in a whole to see whether they fulfilled the inclusion criterion of revealing digital change inside the process. We could code 282 text pieces on digital transformation in public administration since each author coded their articles in the last step of the procedure. During coding, we employed both deductive and inductive reasoning. We produced a first codebook for previously used classifications. Meetings concurrently examined findings and label possibilities, leading to the insertion of new codes in the code book. In addition, inter-coder reliability was determined by having each author independently code the same 100 articles. It may be argued that this kind of encoding is subjective since there aren't always clear boundaries between the many labels and categories that can be applied to it. Many systematic reviews use this technique as an analytic tool to glean information from qualitative and quantitative investigations. (De Vries et al., 2016; Stirman et al., 2012; Tummers et al., 2015).

Once duplicates were removed, 254 articles remained in the sample. After reading all of the abstracts, I eliminated the 217 articles that were not directly linked to digitization in government. There were also 42 articles, 2 book chapters, and 5 books from other sources.
Accordingly, 86 scholarly documents related to public policy and administration or public management were examined. In addition, 14 non-scholarly sources from the World Bank, the OECD, and the European Commission, which have been instrumental in pushing for the use of ICT in government, were included in this study. That leaves us with 100 records for our final sample.

RESULTS AND DISCUSSION
Characteristics of Included Studies
In this part, we will summarize the main findings from the included research.

Publication Year
Figure 2 displays the trajectory of studies across the chosen time period of 2000-2023. While just 27 (or 27%) research appeared within the time frame of 2000 - 2009. After 2009,
there was a sharp increase in the annual publishing total and of them, 48 (or 48%) were released between 2009 and 2016. In the period of 2016-2023, about 25% of the examined papers were published.

![Figure 2: Year of publication and number of articles included in the present systematic review](image)

**Journals**

Twenty different journals were used as sources for the studies. The top four journals in terms of coverage were: Journal of Public Administration Research and Theory (9), Public Performance and Management Review (12), Voluntas (8), Teaching Public Administration (8).
Countries

Only 20% of the listed studies were performed in the United States. Regarding total research, the Netherlands ranked second (18%). Third most research was conducted in the UK, with 15% articles. Even though most articles focused on Western nations (87%), we also discovered a dearth of research originating from the regions mentioned above. However, only eight publications (13%) compared data from other countries, pointing to a deficiency of such research in the published works. Notably, one piece examined a global breakthrough made by the EU Parliament. (Susha and Gronlund 2014).

Policy Areas

The literature analyzed focused on applications of digitalization in government policy. The top two article categories were healthcare and general government activities & finances, each with 16 articles (or 25%). The next two most popular choices were social issues (7, 11%) and criminal justice (6, 10%). Low-frequency research was also conducted in education, water
management, and transportation. These numbers demonstrate that our search method included all major public administration policy domains.

Books & Book Chapters

The following books (N=5) are included in the sample: Digital Public Administration and E-Government in Developing Nations: Policy and Practice (Halpin et al., 2013), From Government to E-Governance: Public Administration in the Digital Age (Islam & Ehsan, 2012), Public Administration and Information Technology (Reddick, 2012), Digital Government (Falk et al., 2017), and Digitalization and European Welfare States (Petropoulos et al., 2019). Book chapters added in the study are by (Jalonen, 2022) and (Larsson & Teigland, 2019).

Types of Studies

Figure 4 shows that exploratory research accounts for 58% of all studies. Public management and well-being studies account for 49% and 51% of exploratory research. Regarding studies documenting public policy and public administration, nearly as many papers provide explanatory as exploratory findings. Except for public administration, where 49% of records look at what factors lead to digital governance, studies attempting to explain phenomena have mostly focused on digital governance as the explanatory factor rather than its causes, which has been studied extensively (57% in public policy and administration, 75% in welfare studies). Regarding research design, 43% of the explanatory documents use qualitative methodologies, while 49% rely on quantitative approaches. (Figure 5). Mixed-methods research was only identified in 7 of the entries.
Mountasser, T., Abdellatif, M. (2023)
Digital Transformation in Public Administration: A Systematic Literature Review

Figure 4: Types of studies (N=100)

- Exploratory (N=42) 58%
- Explanatory (N=58) 42%

Source: Author’s contribution

Figure 5: Types of Studies by Field of Research (N=100)

- Public Management (N = 32)
  - Exploratory (N=42)
  - Explanatory (N=58)

- Public Policy (N = 49)
  - Exploratory (N=42)
  - Explanatory (N=58)

- E-Government (N = 19)
  - Exploratory (N=42)
  - Explanatory (N=58)

Source: Author’s contribution
Figure 6: Division of Explanatory Research

Source: Author’s contribution

Factors of Digital Administration (N=33)  Impacts of Digital Administration (N=25)

56%  44%

Figure 7: Division of Explanatory Research by Field of Study

Source: Author’s contribution

Factors of Digital Administration  Impacts of Digital Administration

Public Management (N=22)  Public Policy (N=31)  E-Government (7)
Digitalization in Public Administration: Operational & Conceptual Definitions

E-government, or electronic government, has been shown to play a significant role in 80% of the published literature on public sector digitalization (N=80). The phrase "e-government" muddles the lines between government, technology, and evolving management practices. (Giritli Nygren, 2012). The literature has several different definitions for the idea. "E-government" refers to the electronic enabling of all public sector functions (Bovaird, 2003). In particular, it refers to disseminating data and services via digital media (Tolbert et al., 2008; West, 2005). According to (Lau et al., 2008), e-government is "the process of connecting citizens to their government via the Internet in order to access information and services provided by government agencies"; this definition expands on previous ones by including the service users and thus providing a dynamic understanding of the concept. Reform and transformation of governments are inextricably tied to the usage of ICTs because of how they reframe information sharing and exchange (Homburg, 2018).

In line with the (OECD, 2003) and the (World Bank Group, 2002) definitions, which see digitalization as a means toward more effective governance, (Asgarkhani, 2005) defines digital governance and broadly understands its benefits. To this end, governments worldwide increasingly use digital technology, known as "e-government." It makes it easier for people and corporations to share information with the public, promotes economic growth, and increases government transparency and accountability. In this article, "digital government" refers to the practice of providing citizens with access to government-run resources and information through

the Internet and other ICTs. Further, we'll delve into the benefits of digital governance and the prerequisites for its effective implementation.

Further, I will define digital government from an operational perspective, outlining its core features and practical implications. In fact, without operational definitions, it would be impossible to observe, analyze, and quantify the occurrence experimentally. (C. Hood & Margetts, 2007) important book, The Tools of Governance in the Digital Age, significantly discusses how digital governance might be implemented. Nodality, Authority, Treasure, and Organization are some of the core resources governments rely on, and the authors examine how they have changed as digital technologies have advanced. (C. C. Hood, 1983).

The ability of a government to function as a node in a data network is referred to as Nodality; consequently, it has the potential to gather and share data. The ability to demand, prohibit, guarantee, and adjudicate via the creation and enforcement of public policy is known as authority (C. C. Hood, 1983). The resources traded to accomplish policy objectives are called "treasure". Last but not least, "organization" refers to the availability of resources like money and people, which provide governments the power to do anything (C. C. Hood, 1983). These resources may be used to create tools that can either "detect" or "effect." While detectors collect data, effectors change the external environment (C. C. Hood, 1983). The contents of digitalized government instruments that may be utilized as detectors and effectors are summarized in Table 1.

<table>
<thead>
<tr>
<th>Basic Resources of Government</th>
<th>Factors Examples</th>
<th>Impacts Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nodality</td>
<td>Email and online web resources for inquiries about government</td>
<td>Information databases and websites of government</td>
</tr>
<tr>
<td>Authority</td>
<td>Taxes liability databases</td>
<td>Regulatory and legal databases like computerized penalty systems</td>
</tr>
<tr>
<td>Treasure</td>
<td>Electronic tax forms used by businesses and individuals</td>
<td>Databases for the tax system and benefit payment systems for the welfare state</td>
</tr>
<tr>
<td>Organization</td>
<td>Information systems for budget and personnel allocations</td>
<td>Systems of grants supporting public sector delivery networks</td>
</tr>
</tbody>
</table>

Source: (C. Hood & Margetts, 2007)

Advantages of Digital Transformation in Public Administration

Pure optimists in the scholarly discussion claim that the initial investment in digitization is the sole expense to benefit all policy domains forever. Pure pessimists, on the other hand, worry that oversimplification in data modeling and interpretation would damage the government's use of digital technology. Conversely, optimists say that the transition to a digital administration shouldn't be considered a silver bullet and that prerequisites must be addressed
before the advent of digital technology may lead to improved governance. (Asgarkhani, 2005; Heeks & Bailur, 2007; Homburg, 2018).

Not only has digitization been praised in the academic community but also by prominent worldwide organizations. Digitalization, defined by the World Bank, is "the adoption of digital technology in government information systems" that may drastically alter interactions with corporations, individuals, and other government entities. The advent of digital governance holds great promise for increasing citizen engagement and access to government data, democracy is strengthened, and the government is more responsive to its people’s demands (World Bank Group, 2002). The Organization for Economic Cooperation and Development (OECD, 2003) defines digitalization as "the use of information and communication technologies, and especially the Internet, as a tool to achieve better government".

Improvements in efficiency, quality, effectiveness, accountability, and trust are the key justifications for the digitizing government. (Table 2). For example, (Wirtz et al., 2015) describe open government as "a process that includes participatory, collaborative, and transparent action by government and administration." This latter feature is closely tied to the notion of open government. ICTs can play a role in incorporating decision-making with the involvement of citizens to attain these conditions of participation, collaboration, and transparency. (De Blasio & Selva, 2016).

Table 2: Advantages of digitalization

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Influences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency is improved through digitalization</td>
<td>There are significant savings in the areas of data and information collection, supply, transmission, and exchange thanks to the use of ICTs, especially Internet-based applications.</td>
</tr>
<tr>
<td>Service quality is enhanced through digitalization</td>
<td>With the use of ICTs, service providers may better understand citizen demands and provide more personalized assistance.</td>
</tr>
<tr>
<td>Effectiveness is Enhanced by Digitalization</td>
<td>Using ICTs' networking capabilities to disseminate information among diverse, geographically distributed players in various policy sectors leads to better policy results.</td>
</tr>
<tr>
<td>Accountability and trust are both increased by digitalization</td>
<td>The trust between people and their government, as well as between government agencies, is bolstered by digitization because of increased transparency and public participation.</td>
</tr>
</tbody>
</table>

Source: Heeks & Bailur, 2007
Factors & Impacts of Digital Transformation

Factors: cultural, organizational & institutional factors

The cultural, organizational, and institutional drivers of digitization have received the most explanatory study attention. The author of "Digital Government: Technology and Public Sector Performance," (West, 2005), explores organizational features' impact on the spread of digital technology across the public sector, like Concerns about security and privacy may cause bureaucrats to oppose the adoption of digital technologies that they may disrupt established procedures and social dynamics inside government organizations. On smart work efforts in South Korea, new research by (Hur et al., 2019) highlights the importance of cultural and organizational and cultural resistance to change. This research casts doubt on the simplistic idea that implementing ICT-enabled changes would automatically lead to a more effective government.

The authors focus on many types of resistance to changing from manual to computer-aided "smart work" procedures: emotional resistance (the fear of change that comes with adopting a new ICT-based system); intellectual resistance (the traditions, customs and values of the workplace that are implicit in daily interactions); technological resistance (the ongoing use of communication and information technology in their existing form); and resistance in the area of resource allocation. (Tolbert et al., 2008) use findings from recent institutional research to investigate the causes of the widespread adoption of the United States' ICT infrastructure, clarifying the function of institutions in fostering policy innovation.

The authors use a cross-sectional time series analysis to demonstrate that countries that have higher levels of education and a higher per capita income have a greater propensity to build up their IT management and institutional capability. Moreover, the authors conclude that state infrastructures created to foster constant innovation in the United States and are critical to understanding the growth of digital governance: more and more states with the proper institutional framework and organizational capabilities are adopting digital governance. Legislative competence is also crucial in deciding whether states will adopt digital government methods: Online government services are more likely to be provided by competent governments. Partisan politics are also significant, with Republican state legislators being more open to adopting digital government techniques than their Democratic counterparts, as shown by the research illustrating how e-government has always been seen as a means to increase productivity while decreasing costs (Tolbert et al., 2008).
Impacts of Digital Transformation

The effects of digitalization on national and local governments as well as public administration and society at large have been the primary focus of the research reviewed here. (Dunleavy et al., 2006) observed that ICT developments before the 1990s had a modest effect. Although public sector firms' automated data processes were modified to fit current structures, they were deemed less crucial to successful management by many organizations' cultures. The agencies' reliance on their IT systems grew dramatically, nonetheless, this did not have the desired effect on how they conducted business. (Dunleavy et al., 2006). A new age, the so-called Digital Age Governance (DEG), began in the 2000s due to the proliferation of the Internet. It represents a wide variety of shifts, which are based on shifts in technology and information management, but which occur on a far larger scale and in a plethora of additional dimensions at once compared to earlier instances of IT's impact (Dunleavy et al., 2006). The authors contend that the New Public Management (NPM) paradigm of the late 20th and early 21st centuries have been superseded by DEG. National Performance Management (NPM) is an approach to public administration that brings business methods and standards from the private sector into government.

These are essential for enhancing government service delivery's quality, timeliness, adaptability, and transparency (C. Hood, 1991). Adopting ICT-based solutions in the public sector was partially motivated by a desire to alleviate anxiety, as (Pina et al., 2007) noted that the 1990s' managerial approach to governance increased distrust between officials and the public contrary to what one may expect, a sentiment that has driven experimentation with different forms of government. Some people believe that DEG emerged in response to problems with NPM. But research shows that there isn't a simple connection between managerial style and public administration, and the introduction of government-wide digital initiatives (Pina et al., 2007). If we also consider that the advent of e-government coincided perfectly with the rise of the NPM reform movement, this becomes much more apparent. (Castelnovo & Sorrentino, 2018). In reality, the DEG reform movement's proponents' underlying theory has acknowledged in recent years that their position does not refute the continued use of NPM; DEG processes are superimposed on NPM setups. (Clarke & Margetts, 2014; Dunleavy & Evans, 2019, 2019).
CONCLUSION

This research aimed to conduct a comprehensive literature analysis on digitalization in the public sector, focusing on works from welfare studies, policy management, and public administration. One hundred records from various fields of study have been evaluated using the PRISMA methodology. The bulk of the research in this sample is either descriptive or exploratory, as shown by the overview, aiming for advances in thought, technique, or theory. Numerous records, however, examine digital governance as either the explanandum (factors of digitalization) or explanans (effect of digitalization).

In addition to organizing the literature, different conceptual and practical advancements related to exploratory research have been covered in the paper, looking at the major benefits of government digitalization and what criteria determine whether a new piece of technology is adopted or rejected. Many people favor a fully digital government because it will increase transparency, efficiency, effectiveness, and accountability. The success or failure of e-government programs is contingent on demand and supply considerations at both the national and local levels of government.

Scholars have stressed the need to use a sociotechnical stance while doing explanatory research, thinking about the potential of digital governance beyond cutting-edge of its technology while emphasizing the role of preexisting organizational and institutional variables, as both technological and cultural factors play significant roles in understanding the spread of digital technology. Researchers have tested the benefits of digital governance and examined the difficulties of digitalization in their studies of its effects in addition to determining whether or not its effects have been revolutionary. For instance, although there is consensus among academics that digitalization has ushered in a new age, others consider it a researchable angle that may be paired with other methods of public administration.

Studies of digitalization's effects have examined whether the widespread use of IT may bring about revolutionary or evolutionary shifts in government, the operationalization of stability and change has received little research. In this regard, several well-established analytical notions may be found in political, economic, and public policy literature. Change has been seen as revolutionary or evolutionary by scholars in the new institutional analysis school. Compared to the latter, which occurs over a protracted period, changes in the former tend to be more sudden and radical; in the former, lengthy stretches of stability or development are shattered by sudden and dramatic shifts. (Streeck & Thelen, 2005), in their classic work on institutional shifts, propose that sudden and gradual shifts may lead to discontinuity. An abrupt
split occurs due to a revolutionary process of dismantling and rebuilding. When modest changes add up over extended periods, they create a gap known as an incremental discontinuity. Major advances have been made in conceptualizing the mechanisms behind the gradual change that leads to transformative outcomes. Studies on the impact of digitization on the government have emphasized the need for a viewpoint that takes context into account. In particular, agents of change have been highlighted in writings on public sector digitalization.

Explanatory power of agency may be elucidated by considering concepts like entrepreneurship and policy entrepreneurs (Capano & Galanti, 2021; Petridou & Mintrom, 2021), which do not feature often in the records investigated for this paper. (Homburg, 2018) argues that human agency, reasoning, and persuasive abilities are crucial elements to examine when explaining the spread of digital technology. Last but not least, according to (Agostino et al., 2021), the current COVID-19 outbreak has unquestionably pushed the public sector's digital transformation in almost every sector, from healthcare to education. As a result, studies of modern policy management, public administration, and welfare will focus heavily on digital governance.

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