

BRIDGING E-GOVERNMENT WITH DIGITAL LITERACY: A LITERATURE REVIEW

Isabella^{*}, Endy Agustian^{**}, Tawakkal Baharuddin^{***},
Abdul Halil Hi Ibrahim^{****}

^{*} Corresponding author, Department of Government Science, Universitas Indo Global Mandiri, Palembang, Indonesia
Contact details: Universitas Indo Global Mandiri, Jalan Jendral Sudirman No. 629 Km. 4, Palembang 30129, Indonesia

^{**} Universitas Indo Global Mandiri, Palembang, Indonesia

^{***} Department of Government Science, Universitas Muhammadiyah Makassar, Kota Makassar, Indonesia

^{****} Department of Public Administration Science, Universitas Muhammadiyah Maluku Utara, Maluku Utara, Indonesia



Abstract

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This research aims to overcome the lack of understanding of how digital literacy can improve the effectiveness and accessibility of e-government. This study conducts a bibliometric analysis of e-government and digital literacy literature using a document mapping approach, drawing from Scopus database data. The tool utilized for analysis is VOSviewer. The results reveal a noteworthy growth in publications over the years, underscoring an escalating interest in e-government and digital literacy. Authors from various countries contribute, reflecting global concern for understanding and enhancing best practices in this domain. Computer science and social sciences emerge as the primary subject areas with the highest publication volume, signifying the intricacy of public sector digital transformation. Frequent citations highlight emerging topics such as trust, digital skills, and digital transformation in e-government and digital literacy research. These themes underscore the significance of public trust in digital public services, elevating digital skills in the populace, and improving efficiency in public service delivery through digital transformation. Given these findings, prioritizing the development of digital literacy encompassing trust, digital skills, and digital transformation is recommended to bolster e-government's effectiveness. A profound comprehension and strategic implementation of these themes hold the potential for sustainable and inclusive growth in the realm of e-government and digital literacy in the future.

Keywords: E-Government, Digital Literacy, Digital Transformation, Digital Skills

Authors' individual contribution: Conceptualization — I. and E.A.; Methodology — E.A. and T.B.; Investigation — I., T.B., and A.H.H.I.; Writing — I., T.B., and A.H.H.I.; Supervision — I. and A.H.H.I.

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1. INTRODUCTION

The digital age we live in today requires e-government. Governments must acknowledge the role that information and communication technology (ICT) plays in managing administrative matters and public services in the context of the global digital transformation (Mensah, 2020). E-government is urgent because it may expedite and

streamline government administrative procedures, promote accountability and transparency, and make public services more accessible to the general public (Contreras-Espinosa & Blanco-M, 2022). The government can offer online services that the general public can access via the Internet at any time and from any location by implementing e-government. Thus, e-government not only accelerates the government's response to community

needs but also increases bureaucratic efficiency and reduces operational costs significantly (Chen & Aklirikou, 2021; Savoldelli et al., 2014).

The benefits of implementing e-government are very diverse and play an essential role in improving the quality of public services. First of all, e-government provides easy access to citizens through online platforms, which not only increases public satisfaction with public services but also strengthens the bond between government and citizens (Cordella & Tempini, 2015; Mensah et al., 2020; Umbach & Tkalec, 2022). Apart from that, e-government also strengthens government integrity and accountability by increasing transparency in the management of public administration and budgets (Li, 2021; MacLean & Titah, 2022). By encouraging active public participation through digital platforms, e-government opens up opportunities for greater public involvement in the decision-making process, encouraging more responsive and representative policies (Baharuddin, Qodir, et al., 2022; Rifaid et al., 2023). Lastly, e-government also increases government efficiency by speeding up decision-making processes and reducing excessive bureaucracy, saving valuable time and resources (Bakunzibake et al., 2019; Khan et al., 2021; Wirtz & Daiser, 2018).

Many governments in various countries have adopted the e-government approach, but it needs to be acknowledged that serious development is still needed to ensure optimal implementation success (Chung & Kim, 2019; Gao & Lee, 2017; Mensah, 2020; Wong & Welch, 2004). Although much progress has been made in terms of the use of ICT in government, there are still several challenges that must be overcome to maximize the potential of e-government. One of the main challenges is the need to ensure data security and protect people's privacy. With increasing cyber security threats, governments must develop systems that are robust and resistant to cyber attacks to protect sensitive data collected and stored by e-government systems (Lallmahomed et al., 2017; Li & Shang, 2020; Pleger et al., 2021). In addition, it is essential to increase digital literacy in society to ensure that all levels of society can access and use these services effectively (Abdulkareem & Ramli, 2021; Cestnik & Kern, 2014).

Apart from that, it is also necessary to improve adequate technological infrastructure to support the implementation of e-government. Providing broad and reliable Internet access in all regions, both in urban and rural areas, will ensure that all people can take advantage of the services provided by the government equally. Furthermore, serious efforts are needed to reduce the digital divide between urban and rural areas, as well as between different societal groups. This requires a holistic approach, including the development of training and education programs to improve digital skills among technologically disadvantaged communities. This also indicates the need for adequate improvement in digital literacy (Bélanger & Carter, 2009; Ebbers et al., 2016).

There have been many studies on e-government, but there are still few specific study results that comprehensively examine the relationship between E-Government implementation and digital literacy. Although several studies have highlighted the importance of digital literacy in understanding and maximizing the benefits of electronic public services, thorough and detailed research that

considers the direct interaction between e-government and digital literacy still needs to be improved. While several studies have highlighted the importance of digital literacy in ensuring inclusive participation in the digital era, the lack of focus on the link between levels of digital literacy and the implementation of e-government services marks an urgent need to conduct more detailed and rigorous research in this area.

The main aim of this research is to investigate the relationship between e-government implementation and digital literacy through an examination of available published documents. Through a comprehensive literature review, this research aims to provide a deeper understanding of how increasing digital literacy can increase accessibility and citizen participation in electronic government services. In addition, this research is expected to reveal strategic potential and best practices in strengthening the link between e-government and digital literacy by providing valuable guidance and recommendations for policymakers to improve the design of digital literacy programs that can support and increase the effectiveness of public services based on technology in various societal contexts in the future.

The structure of this paper is as follows. Section 2 reviews relevant literature on e-government and digital literacy. Section 3 describes the methodology used in this research, including the document mapping approach and using the VOSviewer tool. Section 4 presents research data obtained from the Scopus database, including the results of the VOSviewer analysis. Section 5 discusses the research results, identifying key trends and topics in the literature. Section 6 summarizes the research findings and provides recommendations for developing digital literacy to support the effectiveness of e-government.

2. LITERATURE REVIEW

2.1. E-government

E-government development has become a major concern in many countries around the world. This concept refers to the application of ICT in the delivery of public services by the government. E-government aims to increase administrative efficiency, transparency, and accessibility of services for the public. Many countries strongly push to introduce e-government systems to overcome bureaucratic challenges and provide more responsive services to citizens (Reddick, 2009; Zorali & Kanipek, 2023). One important aspect of e-government is integrating technology into the public administration process. Technology allows governments to provide services online, reducing reliance on error-prone and slow manual processes. By utilizing electronic platforms, citizens can access government information and services more quickly and easily, increasing efficiency and satisfaction in interactions with the government.

Community participation is also a key factor in the success of e-government. Involving stakeholders from various levels of society, including civil society and the private sector, helps ensure that the solutions fully reflect society's needs and expectations. In addition, active community participation also supports transparency and accountability in delivering public services (Castro & Lopes, 2023;

Ebbers et al., 2016; Simonofski et al., 2019). Continuous evaluation and monitoring in e-government implementation must be addressed. Careful evaluation helps the government to identify weaknesses in existing systems and improve policies and infrastructure that support the delivery of electronic public services. Thus, e-government is not only about the use of technology but also about changing processes and policies that support the transformation of government towards more effective and inclusive services.

2.2. Digital literacy

In today's digital era, digital literacy has become an important ability for individuals to function effectively in an increasingly technologically connected society. Digital literacy includes an understanding of how to use and interact with ICT and the ability to evaluate, understand, and use information critically. Individuals with good digital literacy can utilize technology to search for information, communicate, collaborate, and participate in community life more effectively (Abdulkareem & Ramli, 2021; Sharma et al., 2016). Digital literacy also includes understanding the importance of privacy and security in interacting with digital technology. This includes protecting personal information and recognizing security risks associated with using the Internet and other digital media. In addition, digital literacy also includes the ability to understand and manage digital identity, including online reputation and digital traces left by online activities (Akman et al., 2023; Roy, 2016).

The role of education in promoting digital literacy must be addressed. Schools and educational institutions are responsible for providing adequate training and learning about digital literacy to students so that they can become intelligent, critical, and responsible users of technology. In addition, training and education programs for adults are also important to ensure that all levels of society have equal access to and understanding of digital literacy (Akman et al., 2023; Nelson et al., 2011). With continued technological advances, digital literacy is also the key to reducing the digital divide between individuals and societal groups.

Digital literacy is an important foundation for the successful implementation of e-government. With a high level of digital literacy, society can more effectively utilize e-government services provided by the government. Accessing, evaluating, and using information critically enables individuals to interact with e-government platforms more confidently and efficiently. Besides that, digital literacy also helps understand privacy and data security policies related to online government services. Therefore, efforts to increase digital literacy in society are a crucial step in strengthening participation and acceptance of e-government initiatives and reducing the digital divide in society (Abdulkareem & Ramli, 2021; Cestnik & Kern, 2014).

3. RESEARCH METHODOLOGY

The bibliometric analysis method was used in this research by examining 105 published documents

from the Scopus database related to the keywords "e-government" and "digital literacy". During the analysis, there were no restrictions regarding document type, year of publication, affiliation, or specific subject area. The documents are then transferred into the VOSviewer analysis tool, which provides a clearer picture of the most frequently discussed topics and subtopics in the context of e-government and digital literacy. This analysis aims to identify general trends, research focus, as well as quantitative and qualitative patterns that emerge from the analyzed data collection. Data from this bibliometric analysis is then presented systematically through the creation of figures and tables, providing a more comprehensive understanding of the existing scientific publication landscape, as well as the potential contribution of this research to our understanding of the relationship between e-government and digital literacy.

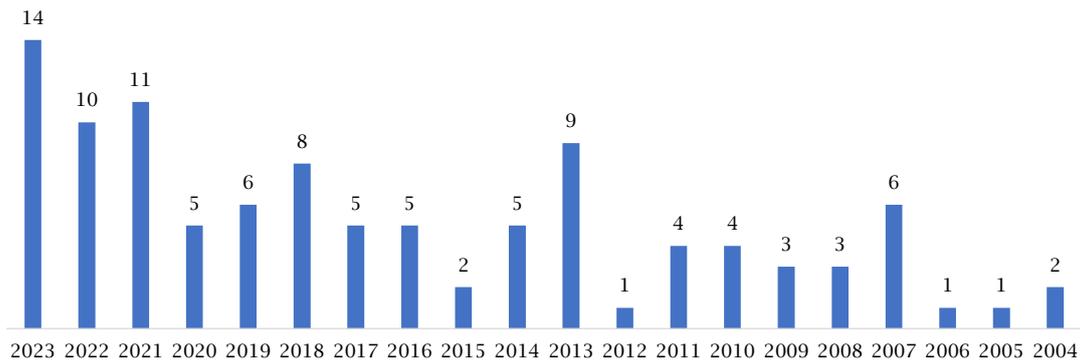
The results of the bibliometric analysis presented through data visualization, tables, and graphs aim to provide a comprehensive picture of research trends and developments on the topics of "e-government" and "digital literacy" in academic literature. By exploring various aspects, including research focus, under-covered research areas, and development trends over time, this research will provide a solid foundation for understanding the changing dynamics in e-government use and digital literacy. Thus, it is hoped that this research can provide valuable insights to practitioners, academics, and policymakers in understanding the challenges and opportunities associated with e-government integration and increasing digital literacy, as well as providing a basis for developing more effective and inclusive strategies in the future.

An alternative method that can be considered is descriptive analysis, where data collection is carried out through analysis of available and relevant literature. This approach systematically reviews existing literature sources, such as articles, reports, and policy documents, to describe e-government and digital literacy's main characteristics and trends. Using descriptive analysis, researchers can identify general patterns, important themes, and strengths and weaknesses in the existing literature, providing a clear picture of the current status and developments in the field without the need for complex statistical analysis techniques.

4. RESEARCH RESULTS

The focus of this research is to map a number of meaningful discussions, including the number of documents by year of publication, distribution of publications by author, author affiliation, subject areas covered, citation analysis, and mapping related themes that frequently appear. By using data generated from this bibliometric study, it is hoped that this research can provide a deeper understanding of trends, patterns, and research focus related to the interaction between e-government and digital literacy, as well as provide an essential contribution to the development of better strategies and policies. Effective in strengthening the connection between the two.

Figure 1. Number of documents by year of publication

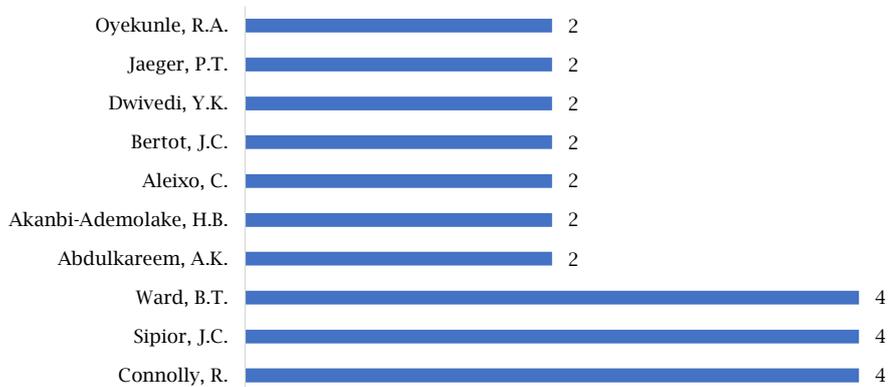


Source: Output from the Scopus database.

In Figure 1, it can be seen that the number of documents related to the topic of e-government and digital literacy has increased gradually from year to year.

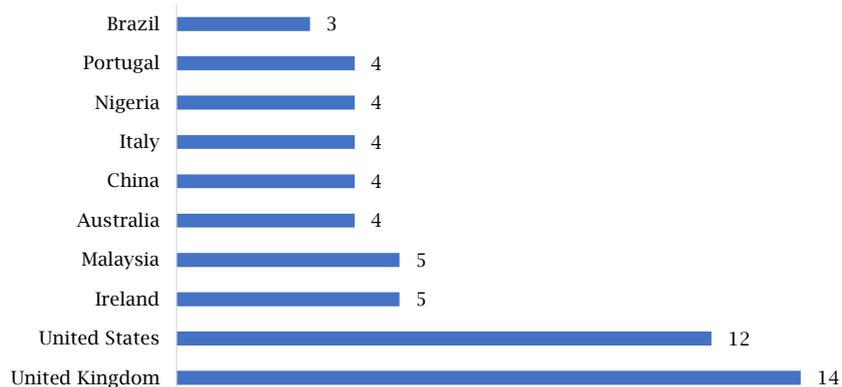
In Figure 2, several authors have made significant contributions to publications about e-government and digital literacy.

Figure 2. Number of publications by author



Source: Output from the Scopus database.

Figure 3. Number of publications by author's country affiliation



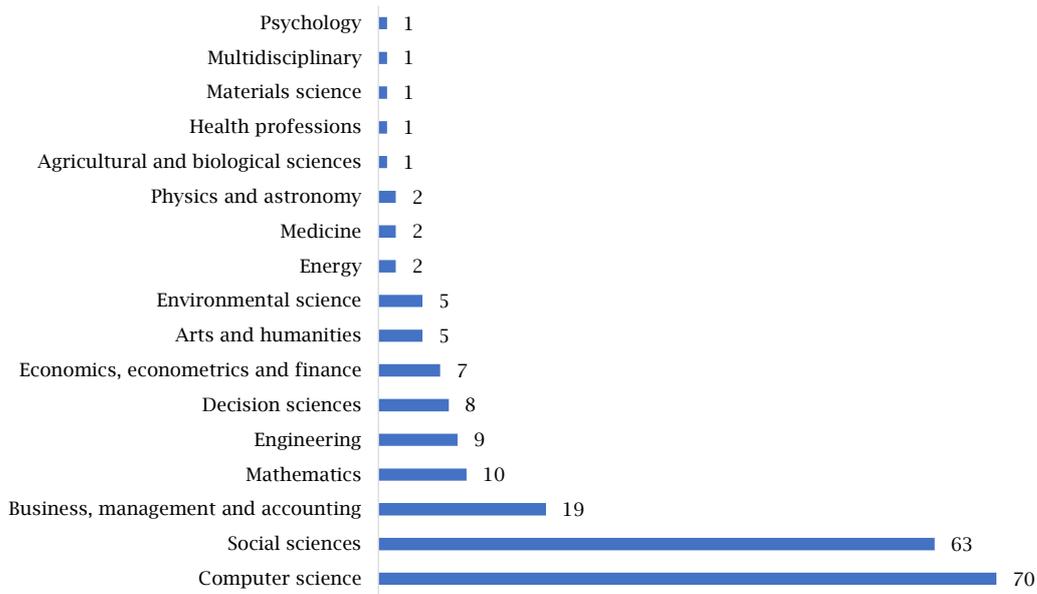
Source: Output from the Scopus database.

Based on data on the number of publications related to the topic of e-government and digital literacy based on the author's country affiliation, it can be seen that countries such as the United Kingdom (UK), the United States (US), and Ireland are some of the countries with the highest contribution of publications.

Based on data regarding the number of publications related to e-government and digital literacy by subject area, the subjects of computer science and social sciences are the two areas that dominate with the highest number of publications.

The five frequently cited documents are directly related to important issues in the e-government and digital literacy domain (see Table 1).

Figure 4. Number of publications by subject area



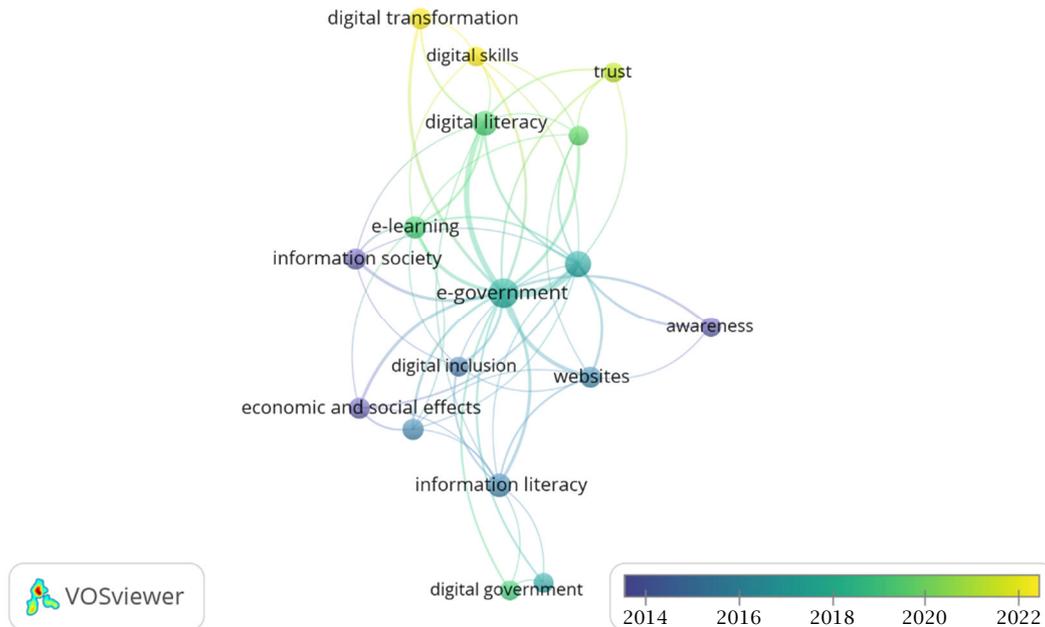
Source: Output from the Scopus database.

Table 1. Frequently cited documents

No.	Document title	Citation
1	The effects of information literacy on trust in government websites: Evidence from an online experiment	55
2	Digital inclusion and social inclusion: A tale of two cities	50
3	A study of higher education students' self-perceived digital competences for learning and everyday life online participation	49
4	Digital literacy and knowledge societies: A grounded theory investigation of sustainable development	46
5	Digital divide and its implication on Malaysian E-Government: Policy initiatives	36

Source: Output from the Scopus database.

Figure 5. Mapping of related research themes



Source: Output from the Scopus database.

From these findings, the research focus in the e-government and digital literacy domain has grown. However, among the themes related to e-government and digital literacy, there are only

three relatively new themes being discussed, namely trust, digital skills, and digital transformation (see Figure 5).

5. DISCUSSION

5.1. Mapping the number of documents

Mapping the number of documents based on year of publication, author, author affiliation, and subject area in the context of research on e-government and digital literacy is a significant effort to understand the evolution and coverage of the topic comprehensively. By tracking the distribution of documents based on the year of publication, insight can be gained into changing trends in research focus over time (Baharuddin, Nurmandi, et al., 2022; Malik et al., 2023; Widayat et al., 2022). Through analysis of the number of publications by author and author affiliation, individual and institutional contributions will be seen in developing knowledge in this field. Meanwhile, subject area mapping will show the areas of expertise most frequently involved in these studies, providing a more complete picture of the existing research landscape (Baharuddin, Nurmandi, et al., 2022). By combining these elements, a richer understanding of the development and scope of literature on this topic can be gained from a diverse and comprehensive perspective.

In 2004, there were only two documents related to this topic, but this number began to increase significantly over time. From 2005 to 2010, the number of documents varied between one and four documents per year, indicating increasing awareness of the importance of these issues. Since 2011, there has been a steady increase, with the number of documents published ranging from four to 14 each year.

This trend reflects an increasing focus on e-government issues and digital literacy, which may be triggered by the rapid development of ICT and increased awareness of the importance of digital knowledge in society. This increase may also reflect efforts by governments and other organizations to expand digital access and strengthen IT infrastructure to improve public services and civic engagement online.

The data also suggests that in recent years, the number of published documents has increased significantly, reflecting the importance of e-government and digital literacy issues in the era of growing digitalization. This shows that this topic has become an increasingly important subject and is receiving greater attention from researchers, government, and related institutions. It reflects the importance of understanding and utilizing IT for the progress and welfare of society.

From Figure 2, it can be seen that multiple authors have made significant publications on e-government and digital literacy. Each of these authors has contributed two to four publications on this topic. The fact that some of the authors have made considerable contributions to this field suggests that they may be the leading experts in e-government studies and digital literacy. Their contributions include in-depth research, policy analysis, or development of relevant theories on the topic. The continued presence of these names in publications indicates that they have a strong interest and commitment to the development and dissemination of knowledge in this area.

In addition, the presence of many authors with balanced contributions in the number of publications shows the existence of diversity and collaboration in research on e-government and

digital literacy. This suggests there is a trend towards a dynamic scientific industry around this topic, where authors from a variety of backgrounds can contribute to the development of broader thinking and knowledge. This also reflects the existence of interdisciplinarity in approaches to e-government and digital literacy issues, where contributions from various scientific disciplines can come together to develop a holistic and comprehensive understanding. However, this study suggests that other authors and researchers should be involved in developing related discussions.

Figure 3 shows that countries such as the UK, the US, and Ireland are the countries with the highest contribution of publications. This suggests that these countries have a strong focus on developing and implementing e-government policies as well as increasing digital literacy among their societies. The significant contribution from these countries also reflects the possible commitment of the government and the academic sector in promoting the use of IT and mastery of digital literacy at the national level.

Additionally, it is seen that countries such as Malaysia, Australia, China, Italy, Nigeria, Portugal, and Brazil also contribute a significant number of publications related to the topic of e-government and digital literacy. The contributions from these countries show that e-government and digital literacy issues have a significant global impact and are of concern in various social and economic contexts around the world. This reflects the importance of international collaboration in promoting the effective use of IT and increasing digital literacy among people in various countries. The uniform contribution from these countries also indicates a global need to understand and implement best practices in the use of IT and increase digital literacy to strengthen public services and community participation in the ever-evolving digital era.

In this study, no specific data was found on the involvement of Indonesian affiliates. So, it is recommended for academic institutions and research institutions to contribute. This needs to be considered because Indonesia has the potential to become a regional leader in the application of IT to increase the efficiency of public services and community involvement. Through investment in in-depth research, training, and cross-sector collaboration, Indonesia can strengthen its digital infrastructure, encourage innovation, and ensure equitable digital inclusion across all levels of society, enabling increased participation in an increasingly advanced digital era.

Based on data in Figure 4 the subjects of computer science and social sciences dominate with the highest number of publications. This indicates that issues related to e-government and digital literacy involve intersections between complex technical and social aspects. Publications related to computer science show an emphasis on aspects of IT and system development underlying e-government. In contrast, publications related to social sciences reflect a focus on the social, political, and cultural impacts of IT adoption in the public sector.

Apart from that, several other subjects, such as business, management and accounting, mathematics, and engineering, also have significant contributions, showing that e-government implementation involves complex management, financial, and engineering aspects. There are also contributions from other

subjects, such as decision sciences, economics, econometrics and finance, and art and humanities, which highlight the various multidisciplinary aspects involved in the digital transformation of the public sector. Thus, these data demonstrate the need for a holistic, interdisciplinary approach to understanding, designing, and implementing effective e-government solutions, which not only involve IT but also involve complex social, economic, and political factors.

In addition, there are more limited contributions from subjects such as environmental science, energy, medicine, physics and astronomy, agricultural and biological sciences, health professions, materials science, multidisciplinary, and psychology. Although the contributions from these subjects are more limited, they indicate that the implementation of e-government and increasing digital literacy have a widespread impact in various fields, including the environment, energy, health, and other natural sciences. This attention to multidisciplinary aspects emphasizes the need for cross-sector and interdisciplinary collaboration in designing holistic and sustainable e-government solutions.

This data provides a clear picture of the complexity of issues related to e-government and digital literacy, which involve broad aspects, ranging from IT to social and environmental impacts. Thus, the development of effective and sustainable e-government solutions requires an integrated approach from various scientific disciplines and sectors, including the scientific community, government, and the private sector. This shows that a deep understanding and collaborative approach across disciplines is the key to success in developing an e-government system that is adaptive, responsive, and sustainable in facing the challenges of ever-growing digitalization.

Overall, data analysis shows a significant increase in the number of publications related to e-government and digital literacy over time, with an increasing emphasis on the involvement of multiple disciplines in understanding and developing these complex issues. The contributions of authors from a variety of countries demonstrate the global interest in understanding and developing best practices in this domain, with particular attention to consistent contributions from the UK, the US, and other countries. The expansion of e-government and digital literacy issues into various fields, such as the environment, health, and natural sciences, shows the need for a holistic and interdisciplinary approach to facing the challenges of global digitalization. Therefore, collaboration between sectors and researchers from various backgrounds is critical in ensuring the development of an effective, inclusive, and sustainable e-government system in the future.

5.2. Mapping frequently cited documents and related research themes

Mapping frequently cited documents in the context of e-government and digital literacy research is critical to understanding trends, focus, and leading contributions in this domain. In addition, by analyzing research documents, this study can identify research themes that receive significant attention from researchers and practitioners. This helps in understanding the main issues that are the center of attention in policy development, implementation of IT, as well as public understanding

of digital transformation in public services. Through this mapping, we can identify the direction of development of research and practice related to e-government and digital literacy, which in turn can provide valuable insights for future improvement and development in this field.

Table 5 shows the five most frequently referenced documents directly related to major issues in the field of e-government and digital literacy:

- The first document, “The effects of information literacy on trust in government websites: Evidence from an online experiment”, highlights the importance of information literacy in influencing the level of public trust in government websites (Lee et al., 2020). In the context of e-government, understanding how information literacy influences perceptions and trust in online government services is critical to increasing citizen participation in digital government processes (Carter & Bélanger, 2005; Lee et al., 2020).

- “Digital inclusion and social inclusion: A tale of two cities” highlights the relationship between digital inclusion and social inclusion, highlighting the importance of providing digital access and skills to communities at risk of being marginalized. In the context of e-government, the issue of digital inclusion is important because it determines whether people from various levels of society have equal access to government services provided digitally (Mervyn et al., 2014).

- Meanwhile, “A study of higher education students’ self-perceived digital competences for learning and everyday life online participation” illustrates the importance of digital competence among students to participate effectively in everyday online life and the learning process. In the context of e-government, a strong understanding of students’ digital competencies can provide essential insights into how to increase citizen participation in government services provided digitally (Martoukou et al., 2020).

- “Digital literacy and knowledge societies: A grounded theory investigation of sustainable development” highlights the role of digital literacy in building sustainable knowledge societies. In the context of e-government, digital literacy is an essential factor in ensuring that society can participate effectively in decision-making and governance processes, as well as in ensuring that sustainable development can be achieved through the use of IT (Sharma et al., 2016).

- Finally, “Digital divide and its implications on Malaysian e-government: Policy initiatives” highlights the importance of overcoming the digital divide in the context of e-government policy in Malaysia. This document shows the need for solid policy initiatives to ensure that access and mastery of IT are equitable across all levels of society, thereby enabling equitable participation in government services provided digitally (Ambali, 2009).

The high citations of a document indicates that the work is recognized and considered necessary in the related academic literature (Baharuddin, Nurmandi, et al., 2022). High citations indicate that the document makes a significant contribution to the understanding and development of a particular topic, in this case, related to e-government and digital literacy issues. A high number of citations indicates that the research has offered new insights, innovative methods, or findings that are important

in solving relevant problems in this domain and have influenced further thinking and research in the field. In addition, high citations also reflect the practical relevance of the findings, which has encouraged policy implementation or concrete action in the context of e-government and digital literacy.

As shown in Figure 5, research attention to e-government and digital literacy has increased, although only three relatively new topics are being discussed, namely trust, digital skills, and digital transformation.

The trust theme describes the importance of people's trust in digitally provided government services, which is a critical factor in ensuring broad participation and successful adoption of e-government initiatives (Abdulkareem et al., 2022; Khan et al., 2021; Lee et al., 2020). In the context of e-government and digital literacy, the theme of trust is a central factor influencing public adoption and participation in digital government services.

Strong trust in data security and the integrity of online services is critical in ensuring the effectiveness and widespread acceptance of e-government initiatives. In order to strengthen trust, the government needs to prioritize transparency, data security, and user privacy as part of an inclusive e-government development strategy. In addition, strengthening society's digital literacy through a comprehensive and inclusive approach will be an essential foundation for increasing trust and sustainable participation in e-government processes (Abdulkareem et al., 2022; Contreras-Espinosa & Blanco-M, 2022; Khan et al., 2021; Lee et al., 2020). Thus, joint efforts in building public trust and strengthening digital literacy will be the primary driver in encouraging sustainable development in the e-government and digital literacy domains in the future.

The digital skills theme emphasizes the importance of improving digital skills in society to ensure effective participation in an ever-evolving digital environment while strengthening critical and adaptive digital literacy (Stasis & Papastylianou, 2022). Meanwhile, digital transformation describes a fundamental change in the way government and society interact and participate, with a focus on the application of IT to increase efficiency, transparency, and involvement in government processes and public services (Trček, 2019; Trček, 2022). With a new focus on these themes, research in the field of e-government and digital literacy can further enrich our understanding of the challenges and opportunities in facing digital transformation in the context of government and society.

In the context of e-government and digital literacy, it is essential to emphasize developing solid digital skills among the public to ensure effective participation in ever-evolving digital public services. Increasing digital skills evenly will empower people to take advantage of various digital services and platforms provided by the government. Apart from that, implementing digital transformation in government processes is essential to increase efficiency, transparency, and responsiveness in the provision of public services. By adopting IT innovatively and strategically, governments can strengthen their digital infrastructure and provide a more integrated and efficient experience for citizens. Thus, the development of solid digital skills and planned digital transformation will be vital in

ensuring equitable access, broad participation, and strengthening adaptive government systems in the ever-evolving digital era.

5.3. Strengthening e-government through digital literacy: A recommendation

In the ever-growing digital era, it is essential to understand the critical role of digital literacy in strengthening the effectiveness of e-government. Strengthening e-government through digital literacy is not only related to ensuring equitable access to technology but also involves developing the skills needed so that citizens can actively participate in public services provided digitally. This includes the ability to access information, understand and evaluate digital content, and use government services efficiently. With strong digital literacy, people can be more confident and involved in the decision-making process and interactions with the government through online platforms.

Efforts to strengthen digital literacy in the e-government context involve a comprehensive approach, including investments in training, education, and the development of inclusive technological infrastructure (AbdulKareem & Oladimeji, 2024; Chohan & Hu, 2022). This requires collaboration between government, educational institutions, and the private sector to develop training programs that suit community needs (Isabella et al., 2024). In addition, it is essential to increase accessibility to technology by providing equitable and affordable Internet access, especially in rural or remote areas. By strengthening digital literacy, society can more easily adapt to technological changes and use them for personal gain and social progress.

However, the challenges faced in strengthening digital literacy must be addressed. Some challenges include gaps in access to technology, lack of availability of appropriate training, and the need for awareness of the importance of digital literacy among the public. Therefore, comprehensive strategies that take into account regional, social, and economic differences need to be formulated to overcome these obstacles. By facing this challenge, the government and relevant stakeholders can ensure that digital literacy is not only a right but also an essential instrument for strengthening community participation in an inclusive and responsive digital government.

Strengthening e-government through digital literacy also contributes to building public trust in digital public services. With increasing digital literacy, citizens can better understand data security and privacy when using e-government platforms, which in turn strengthens their trust in the government. In addition, increasing digital skills through digital literacy enables citizens to use various digital tools and applications more efficiently, increases active participation in e-government processes, and strengthens their capacity to face complex digital challenges.

Digital transformation in e-government is also closely related to efforts to strengthen digital literacy. By increasing digital literacy among the public, the government can more effectively implement digital transformation initiatives in providing responsive and efficient public services. An emphasis on developing adaptive and flexible digital skills also enables the government to adapt quickly to evolving

technological changes, strengthen digital infrastructure, and improve the quality of public services provided. Thus, strengthening digital literacy is not only an essential foundation for strengthening citizen participation in e-government but also a key catalyst in driving sustainable and inclusive digital transformation in public administration.

Overall, the importance of digital literacy in strengthening the effectiveness of e-government must be addressed. By ensuring equitable access, developing the necessary skills, and strengthening confidence and adaptive capabilities in facing digital transformation, the government can create an inclusive and responsive environment for the public in accessing public services. By prioritizing a comprehensive and collaborative approach to addressing existing challenges, governments can develop a strong foundation for society to face rapid technological change, strengthen participation in decision-making processes, and ensure sustainable economic growth.

Theoretically, strengthening e-government through digital literacy highlights the importance of digital literacy as a critical component in social development and public administration. This shows that digital literacy is not just about technical skills but also includes understanding how technology can influence citizen participation in governance and decision-making. This theory emphasizes that digital literacy must be seen as the main foundation in developing a digitally intelligent society that is ready to face rapid technological change. In addition, this study adds to the literature on the relationship between digital literacy and public trust, showing that increasing digital literacy can strengthen public trust in digital public services and, ultimately, the legitimacy of digital government itself.

Practically, the implications of strengthening e-government through digital literacy include implementing policies and programs that support increasing digital skills in society. Governments, educational institutions, and the private sector must work together to provide relevant training and education and build inclusive technology infrastructure. These practices should include providing affordable and equitable Internet access, especially in remote areas. Implementing this strategy will enable citizens to more effectively utilize e-government services, increase citizen participation in government processes, and ensure that all levels of society benefit from digital transformation. Additionally, a focus on data security and privacy in digital literacy programs will help increase public trust in technology use in government interactions.

The relationship between e-government and digital literacy is very close because strong digital literacy is the main foundation for optimizing the effectiveness of e-government. Digital literacy ensures equitable access to technology and develops people's skills to access, understand, and utilize government services efficiently. With good digital literacy, citizens can be more confident interacting

with government platforms, understand data security and privacy, and actively participate in decision-making. Therefore, strengthening digital literacy through collaboration between government, educational institutions, and the private sector is a crucial step to creating a digital government that is inclusive, responsive, and able to adapt to rapid technological change.

6. CONCLUSION

Analyzing data related to mapping the number of documents based on year of publication, author, author affiliation, and subject area in the context of research on e-government and digital literacy, a significant increasing trend was found in the number of publications related to this topic from year to year. This reflects an increasing focus on e-government and digital literacy issues, which is characterized by significant contributions from leading authors as well as diverse contributions from various countries around the world. In addition, it was found that the subjects of computer science and social sciences were the two dominant areas with the highest number of publications, indicating the complexity of the issues involved in the digital transformation of the public sector.

Through analysis of frequently cited documents and related research themes, it was found that the themes of trust, digital skills, and digital transformation were the main focus of e-government and digital literacy research. These three themes require more exploration because they are still relatively new than other general themes. These three themes highlight the importance of public trust in digital public services, increasing digital skills among the public, and digital transformation in providing responsive and efficient public services. Therefore, to strengthen the effectiveness of e-government, it is essential to prioritize the development of digital literacy, which involves aspects of trust, digital skills, and digital transformation. Thus, a deep understanding and strategic implementation of these themes will be vital in ensuring sustainable and inclusive growth in the field of e-government and digital literacy in the future.

This paper is important for future research as it provides in-depth insights into the relationship between trust, digital skills, and digital transformation in e-government, which can inform the development of more effective and inclusive policies and practices. However, this study also has limitations, such as reliance on the Scopus database, which may not include all relevant publications, and not considering other databases that could offer additional perspectives or more comprehensive data. Explanation of these limitations is important to understand the context of the research results and identify areas that need attention in future studies.

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