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BIBLIOMETRIC MAPPING OF TECHNOLOGY ACCEPTANCE MODEL AND ELECTRONIC SERVICE QUALITY RESEARCH: THE POSITION OF DIGITAL PUBLIC SERVICES

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Abstract

Digital transformation has established the Technology Acceptance Model (TAM) and the Electronic Service Quality (E-S-QUAL) framework as prominent theoretical perspectives for explaining technology adoption and digital service performance; however, the position of digital public service within this research landscape remains empirically unclear. This study maps the relative position of digital public service within the intellectual structure of TAM and E-S-QUAL research. A bibliometric approach was applied to 1,000 documents published between 2016 and 2026 and retrieved from Google Scholar through Publish or Perish using the keywords "Technology Acceptance Model," "Electronic Service Quality," "Digital Public Service," "Perceived Usefulness," and "Perceived Ease of Use." The data were analyzed using VOSviewer 1.6.21 through bibliometric network mapping, yielding 211 keyword items across eight clusters, 6,468 links, and a total link strength of 25,815. The findings demonstrate that digital public service occupies a peripheral position within the broader TAM and E-S-QUAL research landscape. Public-sector terms, including "public administration," "e-government," and "citizen," were substantially less prominent than commercial constructs such as "usefulness" and "mobile banking" and education-related terms such as "higher education." This thematic imbalance indicates that public administration has not yet become

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a central domain within technology acceptance research despite the rapid expansion of digital government initiatives. The study contributes a bibliometric overview of the underrepresentation of digital public service in TAM and E-S-QUAL scholarship and identifies opportunities to extend these frameworks toward digital governance, citizen-centered service design, and public trust.

Keywords: Digital Public Service; Electronic Service Quality; Perceived Ease of Use; Perceived Usefulness; Technology Acceptance Model

INTRODUCTION

The digital transformation of public services has encouraged governments across countries to adopt electronic systems, with the Technology Acceptance Model (TAM) becoming the most widely used theoretical framework for explaining user acceptance through its two core constructs, perceived usefulness and perceived ease of use (Davis, 1989). The Electronic Service Quality (E-S-QUAL) framework has also become an important reference for evaluating electronic service quality through four dimensions efficiency, fulfillment, system availability, and privacy (Parasuraman et al., 2005) and is frequently applied in conjunction with TAM (Ahmad et al., 2020). However, despite the rapid expansion of digital government initiatives, one fundamental question remains empirically unanswered: to what extent have digital public services become part of the mainstream TAM and E-S-QUAL literature, or do they remain at the periphery of a research landscape dominated by commercial and educational contexts.

TAM has evolved through various theoretical extensions, ranging from TAM2 (Venkatesh & Davis, 2000) to the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). More recently, it has expanded to the study of generative artificial intelligence acceptance, including ChatGPT (Ma et al., 2024), demonstrating that the field continues to evolve rapidly, although this development has not necessarily been accompanied by corresponding progress in Public Administration research.

Several bibliometric studies have mapped TAM research and the digitalization of the public sector separately without comparing their relative positions. Gupta et al. (2022) analyzed 8,207 TAM related documents indexed in Scopus (1990–2020) and identified usefulness, trust, and adoption as the dominant research themes, but did not measure the proportion of studies focusing on the public sector. Study (Ibrahim et al., 2023) mapped the literature on e-government and public trust in Indonesia, yet examined the field only

internally without positioning it within the broader TAM research landscape. Study (Mensah et al., 2022) identified information quality and efficiency as the primary determinants of public value in e-government in China, while Ishola et al. (2025) confirmed that information and communication technology research in Nigerian Public Administration remains relatively limited compared with research conducted in commercial sectors. Collectively, these studies confirm the limited application of TAM in the public sector from within the e-government literature itself. However, none has quantitatively demonstrated this limitation by comparing the relative position of the digital public service cluster with the overall intellectual structure of TAM and E-S-QUAL research, representing the methodological gap addressed by this study (Azkiya & Labibah, 2023).

This study offers a novel contribution by comparatively and quantitatively positioning the digital public service/e-government cluster against other dominant TAM research clusters using the VOSviewer approach, as applied by (Permana & Maani, 2024). Accordingly, this study aims to identify the relative position of digital public services within the intellectual structure of Technology Acceptance Model and Electronic Service Quality research through bibliometric mapping, thereby providing an evidence-based foundation for Public Administration scholars to identify more strategic directions for future research. This study aims to identify the relative position of digital public service within the intellectual structure of TAM and E-S-QUAL research through bibliometric mapping.

METHODS

This study employed a quantitative bibliometric approach to systematically map the development of scholarly publications concerning the Technology Acceptance Model (TAM), Electronic Service Quality (E-Service Quality), and their relationship with digital public services. Bibliometric analysis was selected because it enables researchers to quantitatively examine publication productivity, thematic evolution, and intellectual structures within a particular research domain through statistical techniques applied to scientific literature (Donthu et al., 2021). In line with the research objective, this approach was used to identify the position of digital public services within the broader discourse on technology acceptance and electronic service quality. The bibliographic data were retrieved using Harzing's Publish or Perish version 8.19, which accesses metadata indexed by Google Scholar. Data collection was conducted from May to June 2026 using the keywords "Technology Acceptance Model," "Electronic Service Quality," "Digital Public Service,"

"Perceived Usefulness," and "Perceived Ease of Use." The search process was restricted to journal articles, conference papers, and other scholarly publications published between 2016 and 2026, resulting in a total dataset of 1,000 documents that served as the basis for subsequent analysis.

The collected metadata, including titles, authors, publication years, abstracts, citations, and keywords, were exported and processed using VOSviewer version 1.6.21 to visualize the relationships among research themes and identify emerging trends in the field (van Eck & Waltman, 2010). The analysis focused on keyword co-occurrence, which is widely used in bibliometric studies to explore conceptual structures and thematic connections among publications. The binary counting method was applied to ensure that each keyword was counted only once within a single document, regardless of its frequency of occurrence. Furthermore, a minimum threshold of five occurrences was established to filter and select the most relevant keywords for network construction. Based on this criterion, 211 keywords met the threshold and were subsequently grouped into eight thematic clusters representing the dominant topics in the literature. The analytical process included data cleaning, keyword standardization, network visualization, cluster interpretation, and trend analysis to provide a comprehensive understanding of the evolution of research on the Technology Acceptance Model, Electronic Service Quality, and the strategic position of digital public services within the contemporary academic landscape.

RESULTS

Among the 211 keyword items, "usefulness" emerged as the most dominant node, with 613 occurrences and a Total Link Strength (TLS) of 4,370, indicating that this construct is the primary focus of the literature and exhibits the strongest connections with various research topics. And then use (522), technology acceptance model (513), ease (413), adoption (218), and service quality (173).

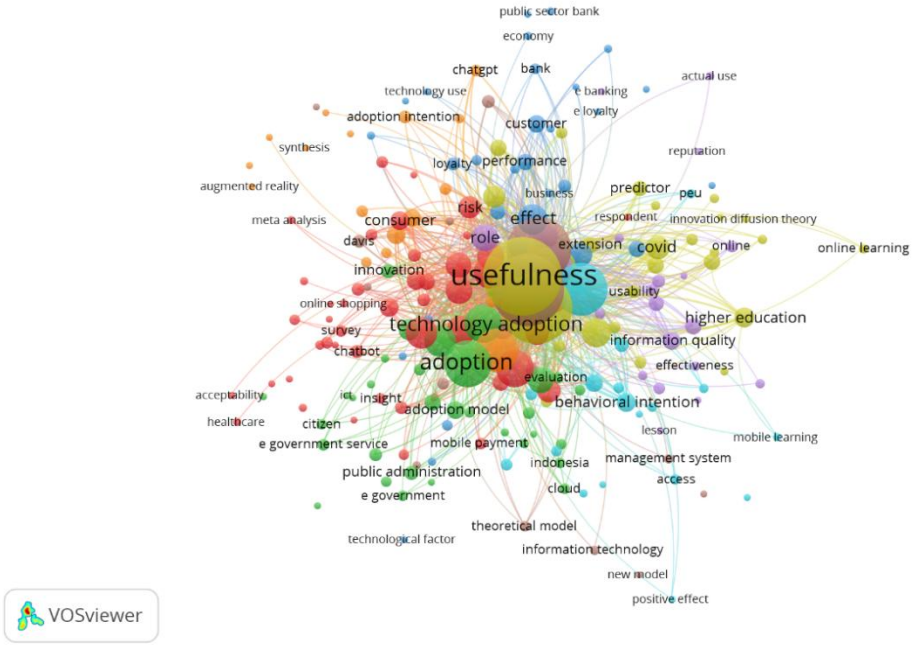


Figure 1. Network Visualization

As shown in Figure 1, the co-occurrence network reveals that "usefulness" occupies the central position (*network hub*) with the largest node size and is strongly connected to keywords such as "technology acceptance model," "use," "ease," "technology adoption," "adoption," and "behavioral intention." This central position indicates that *usefulness* is not only the most frequently occurring keyword but also serves as the primary bridge linking various research themes within the TAM literature. Its high TLS further confirms that this construct maintains extensive relationships with other keywords, reinforcing its role as the core conceptual foundation in technology acceptance research.

The network visualization also demonstrates that the eight clusters are closely interconnected rather than forming completely isolated groups. This pattern suggests that TAM research has evolved into a multidisciplinary field encompassing diverse contexts, including business, education, digital services, healthcare, and government, while remaining anchored by the core TAM constructs. Keywords such as "technology acceptance model," "adoption," "technology adoption," "behavioral intention," and "use" function as bridging nodes across clusters, reflecting the high level of integration among different research domains.

Table 1. Cluster Analysis Based on VOSviewer Mapping Results

Cluster	Number of Keyworrd	Occurrence Total	Theme
1	47	1.376	Technology Acceptance & User Behavior
2	33	926	Technology Adoption & Public Sector
3	31	571	Customer Satisfaction & Digital Platform
4	27	1.809	Core Constructs of TAM & Higher Education
5	21	546	Service Quality & Information System Quality
6	19	558	Integration TAM–Theory of Planned Behavior
7	17	400	UTAUT & Adoption of Generative Technology
8	16	1.120	Theoretical Foundations of the Classic TAM & Mobile Banking

More specifically in Table 1, each cluster represents a distinct research focus, ranging from technology acceptance and user behavior, technology adoption in the public sector, customer satisfaction, the core TAM constructs, service quality, integration with behavioral theories, to the application of TAM in generative technologies and mobile banking. The diversity of these themes indicates that TAM has been widely applied across multiple domains, although the principal constructs, particularly *usefulness* and the *Technology Acceptance Model*, continue to serve as the central links connecting the different research clusters.

Nevertheless, keywords associated with the public sector exhibit considerably lower frequencies than the core TAM constructs. Individually, "public administration" appeared only **22** times, "government" 18 times, "e-government" 13 times, and "citizen" 13 times, which is substantially lower than "usefulness" (613) and "adoption" (218). These findings indicate that TAM research remains predominantly concentrated in business, banking, education, and digital service contexts rather than in public administration. This pattern suggests that significant opportunities remain for extending TAM research within the context of digital public services.

The average publication year analysis further indicates that "chatgpt" (2023) and "online learning" (2021) represent the most recent research themes, whereas "davis" **(**2019) and "mobile banking" (2018) reflect the earlier stages of TAM research development. This temporal shift suggests that the research focus has gradually evolved from conventional digital service applications toward studies on artificial intelligence and broader digital transformation.

DISCUSSION

The bibliometric findings indicate that digital public services occupy a peripheral position within the overall Technology Acceptance Model (TAM) and Electronic Service Quality (E-S-QUAL) research landscape. Although public sector related keywords, including "public administration," "e-government," and "citizen," are present and continue to grow, their occurrences remain substantially lower than those of commercial constructs such as "usefulness" and "mobile banking," as well as education related topics such as "higher education." This imbalance should not merely be interpreted as a difference in publication volume; rather, it suggests that Public Administration has not yet become a central application domain in technology acceptance research, despite the rapid expansion of digital government initiatives in many countries, including Indonesia.

The dominance of the "usefulness" and "ease" nodes confirms that these two constructs have remained the principal foundation of technology acceptance research for over three decades since Davis (1989), consistent with (Adams et al., 1992). This centrality nonetheless underscores the gap central to this study: TAM literature has evolved far more rapidly in commercial and educational contexts than in digital public service. Study (Ibrahim et al., 2023) similarly found that Indonesian e-government and public trust research only expanded significantly after 2018 and is typically published outside mainstream information systems journals, while (Ishola et al., 2025) reported that ICT research in Nigerian public administration remains limited and fragmented relative to commercial technology-acceptance studies. Study (Mensah et al., 2022) further showed that e-government adoption is more often examined through public value than TAM itself, pointing to a conceptual distance between mainstream TAM research and government digital service acceptance. The emergence of the UTAUT ChatGPT cluster, with the youngest average publication year, reinforces this trend: contemporary TAM research is shifting toward generative AI acceptance (Almogren et al., 2024) rather than digital public services, suggesting the gap persists into the literature's most recent phase, even amid the rapid expansion of digital government initiatives worldwide, including in Indonesia.

This imbalance should not be viewed solely as a limitation of the existing literature but rather as a valuable opportunity. The peripheral position of digital public services within the TAM and E-S-QUAL research landscape provides substantial opportunities for Public Administration scholars to expand the application of both frameworks to issues of digital governance, citizen centered service design, and public trust in digital government, areas that

remain comparatively underexplored relative to technology acceptance research in commercial services. Furthermore, the role of the "system" node as a bridge between the core TAM cluster and the service quality cluster suggests that integrating TAM with the Information Systems Success Model (DeLone & McLean, 2003) and the Electronic Service Quality (E-S-QUAL) framework (Parasuraman et al., 2005) represents a relevant direction for enriching future studies on the acceptance of digital public services.

This study has three principal limitations. First, Google Scholar, as the primary data source, is less curated than Scopus or Web of Science (Zhu & Liu, 2020). Second, no manual screening process was conducted; therefore, all retrieved documents were analyzed without individual relevance verification. Third, the analysis was limited to keyword co-occurrence and did not include co-citation or bibliographic coupling analyses, which could provide stronger evidence regarding the peripheral position identified in this study.

CONCLUSION

The findings of this study confirm that digital public service research remains underrepresented within the broader intellectual structure of Technology Acceptance Model (TAM) and Electronic Service Quality (E-S-QUAL) research, despite the rapid expansion of digital government initiatives. Public sector related keywords, including "public administration" (22 occurrences), "e-government" (13), and "citizen" (13), appear substantially less frequently than the core TAM construct "usefulness" (613), as well as commercial contexts such as "mobile banking" and educational contexts such as "higher education." Indicate that the academic development of TAM and E-S-QUAL has continued to be dominated by business and educational perspectives, while the public sector has yet to receive comparable scholarly attention. Furthermore, the keyword co-occurrence mapping demonstrates that digital public services still occupy a peripheral position within the overall research network and have not become a central theme in discussions on technology acceptance and electronic service quality. This condition suggests that, although digital public services increasingly shape contemporary governance and citizen interactions with government institutions, substantial opportunities remain for future studies to strengthen the integration of technology acceptance and service quality theories within the context of public administration.

The principal contribution of this study lies in its ability to provide comprehensive quantitative bibliometric evidence regarding the position of digital public services within the

research landscape of Technology Acceptance Model and Electronic Service Quality, an issue that has previously been discussed primarily through qualitative assessments. By employing bibliometric mapping and keyword co-occurrence analysis, this study identifies the dominant research themes, conceptual relationships, and intellectual gaps that continue to limit the incorporation of public administration perspectives into TAM and E-S-QUAL scholarship. The findings highlight Public Administration as a promising and strategically important research niche for extending the application of technology acceptance and electronic service quality frameworks beyond their traditional focus on commercial and educational contexts. In addition, this study contributes to the growing interdisciplinary dialogue between information systems, public administration, and service management by providing a clearer understanding of how digital public services are positioned within the existing body of knowledge.

Future studies are recommended to: (1) replicate this analysis using curated databases such as Scopus or Web of Science to strengthen the validity of the findings regarding the peripheral position of digital public services; (2) develop empirical studies employing TAM and E-S-QUAL that specifically examine digital governance, citizen centered public services, and public trust in developing countries; and (3) complement keyword co-occurrence analysis with co-citation and bibliographic coupling analyses to further validate the identified research gap from the perspective of the field's intellectual citation structure.

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