Bibliometric Analysis of Digital Tax Administration

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ABSTRACT

The rapid expansion of the digital economy has encouraged governments worldwide to modernize taxation systems through digital tax administration. This study aims to map the intellectual structure, research trends, and collaboration patterns within the field of digital tax administration using a bibliometric approach. Data were collected from the Scopus database and analyzed using VOSviewer to generate network, overlay, and density visualizations, as well as co-authorship, institutional, and country collaboration analyses. The findings reveal that taxation, tax administration, and the digital economy form the core themes of the literature, reflecting a strong integration between fiscal policy and digital governance. Recent research trends show increasing attention toward emerging technologies such as artificial intelligence, blockchain, and big data, indicating a shift toward innovation-driven tax systems. Collaboration patterns highlight the dominant contributions of several countries and institutions, while emerging economies are gradually expanding their presence in the field. The results suggest that digital tax administration research is evolving toward a technology-oriented and globally interconnected paradigm, emphasizing efficiency, transparency, and sustainable governance in modern taxation systems.

Keywords: Digital Tax Administration, Taxation, Digital Economy, Bibliometric Analysis, VOSviewer

1. INTRODUCTION

Digital transformation has reshaped the landscape of public sector services, prompting governments around the world to adopt digital solutions for core administrative functions. Among these, tax administration has experienced significant shifts, moving from traditional paper-based and face-to-face interactions to platforms that integrate information technology, automation, and data analytics to enhance efficiency and transparency [1]. The term digital tax administration refers to the application of digital tools and systems — including electronic filing, real-time data exchange, online payment, and artificial intelligence — to support tax collection, compliance monitoring, and taxpayer services [2]. This evolution responds to growing demands for streamlined tax processes, cost reduction, and improvement of compliance rates. As governments face increasingly complex economic activities — including cross-border e-commerce and digital services — the need for effective digital tax systems becomes more pressing [3].

The last decade has witnessed rapid advancements in digital infrastructure, spurring a global wave of reforms in tax administration. Many revenue authorities have introduced electronic tax return systems, integrated taxpayer portals, and sophisticated risk assessment tools to track compliance and detect anomalies [4]. Digital tax administration offers a range of benefits: reduced processing time for tax returns, improved accuracy of taxpayer information, enhanced accessibility for taxpayers, and strengthened enforcement through data-driven insights [5]. For example, the use of e-invoicing and automated reporting has enabled tax authorities to monitor transactions in real time, thereby reducing opportunities for underreporting and fraud. Scholars argue that such innovations can improve the fairness and transparency of tax systems, leading to higher voluntary compliance among taxpayers.

Despite widespread implementation, the adoption of digital tax administration varies significantly across regions and government jurisdictions. High-income countries tend to have more

advanced digital platforms, supported by robust ICT infrastructure and extensive institutional capacity [5]. In contrast, developing economies face unique challenges, such as limited technological readiness, insufficient digital literacy among taxpayers, and regulatory constraints that hinder comprehensive digital transformation [6]. These disparities raise critical questions about equity and inclusiveness in the global digital tax landscape. Moreover, the COVID-19 pandemic accelerated digital adoption in many countries, revealing both the resilience and vulnerabilities of existing tax systems (Olsen, 2021). Governments were compelled to enhance remote access services and introduce digital compliance mechanisms, driving an unprecedented pace of reform.

The scholarly interest in digital tax administration has grown in tandem with these global developments. Researchers have examined the technological, organizational, and behavioral aspects of digital tax systems, addressing issues such as taxpayer acceptance, system interoperability, cybersecurity risks, and performance outcomes. Bibliometric studies, which analyze publication trends, research networks, and thematic evolution, have become valuable tools for understanding the knowledge structure of emerging fields. Such analyses help identify influential authors, institutions, and geographic hotspots of research activity, as well as gaps that warrant further investigation. In the context of digital tax administration, a bibliometric lens can reveal how scholarly attention has intersected with policy priorities over time.

To date, however, research synthesis in digital tax administration remains scattered. While individual case studies and comparative analyses provide rich insights into specific technologies or country experiences, there is a need for a systematic mapping of the broader intellectual landscape. This mapping can support researchers, policymakers, and practitioners in understanding how the field has evolved, which topics are most studied, and where potential research frontiers lie. Bibliometric analysis offers an evidence-based approach to answer these questions by quantitatively tracing publication outputs, citation patterns, and thematic networks within the literature. As digital tax administration continues to evolve in response to technological innovation and shifting fiscal environments, understanding its scholarly progression becomes pivotal for shaping future research agendas [7].

Furthermore, the intersection of digital tax administration with broader trends — such as e-governance, data governance, and artificial intelligence — suggests an interdisciplinary research terrain. Studies have begun to explore how machine learning can enhance revenue forecasting, how blockchain may secure transaction records, and how digital platforms can facilitate taxpayer engagement. These emerging topics reflect the dynamic nature of the field, underscoring the need for a holistic research synthesis that goes beyond descriptive reviews. Bibliometric techniques, by capturing co-occurrence of keywords, co-citation networks, and evolution of themes, can illuminate the structural and developmental patterns of knowledge creation in digital tax administration [7].

This study positions itself within this growing research frontier by offering a comprehensive bibliometric analysis of the literature on digital tax administration. By systematically analyzing publication trends, influential works, collaborative networks, and thematic evolution, the research aims to provide a panoramic view of the field's intellectual architecture. Ultimately, such a synthesis not only maps what is known but also highlights areas that warrant deeper theoretical and empirical exploration as digital tax systems continue to transform fiscal governance globally.

Despite increasing scholarly interest and practical adoption of digital tax administration, the literature remains fragmented, with no comprehensive bibliometric study that systematically maps the knowledge structure, identifies key research themes, and traces the evolution of scholarly

discourse in this field. As a result, researchers and policymakers lack a consolidated understanding of where the field stands, which topics are central or emerging, and how collaborative patterns shape knowledge production, thus limiting strategic direction for future research and evidence-based policy formulation. The objective of this study is to conduct a systematic bibliometric analysis of the scientific literature on digital tax administration to uncover publication trends, influential authors and institutions, thematic clusters, and the evolution of research topics over time.

2. METHODS

This study employs a bibliometric research design to systematically analyze the scientific literature on digital tax administration. Bibliometric analysis is a quantitative method used to evaluate patterns in academic publications, citation structures, and thematic development within a specific field of study. The approach enables the identification of research trends, influential authors and institutions, collaboration networks, and emerging topics. The study adopts a descriptive and evaluative design, focusing on mapping the intellectual structure and development trajectory of digital tax administration research over time. By using quantitative indicators such as publication counts, citation frequencies, co-authorship networks, and keyword co-occurrence, this study provides an objective overview of scholarly production in the field.

Data for the analysis are collected from Scopus. The search strategy uses relevant keywords including "digital tax administration," "electronic tax system," "e-taxation," "tax technology," and related terms to ensure broad coverage of the topic. The inclusion criteria consist of peer-reviewed journal articles, conference papers, and review articles published in English within a defined time frame. After applying screening procedures to remove duplicates and irrelevant records, the final dataset is exported in compatible formats for bibliometric analysis. Descriptive statistics are first applied to examine annual publication trends, leading journals, countries, and institutional contributions.

The bibliometric analysis is conducted using VOSviewer, which facilitates visualization of citation networks, co-authorship patterns, and keyword co-occurrence maps. Citation analysis is used to identify the most influential publications and authors, while co-citation analysis helps uncover the intellectual foundations of the field. Additionally, keyword co-occurrence analysis is performed to determine major research themes and detect emerging topics within digital tax administration studies. Network visualization techniques are applied to illustrate relationships among authors, institutions, and countries.

3. RESULTS AND DISCUSSION
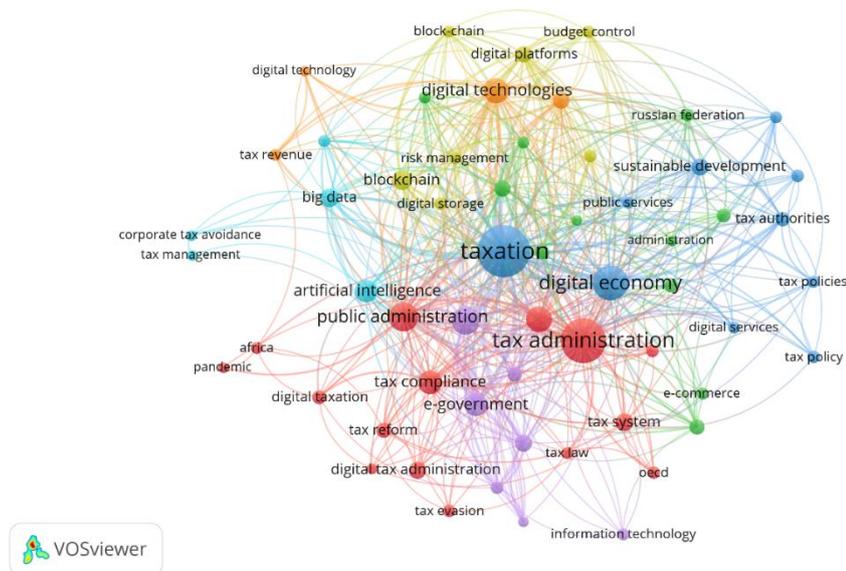
3.1 Network Visualization

Figure 1. Network Visualization
Source: Data Analysis Result, 2026

Figure 1 illustrates the intellectual structure of research on digital tax administration by mapping the co-occurrence of keywords. The term "taxation" appears as the central and most dominant node, indicating that the literature is fundamentally rooted in broader taxation discourse rather than being an isolated technological field. Closely connected terms such as digital economy, tax administration, and public administration demonstrate that the research area is highly interdisciplinary, bridging fiscal policy, governance, and digital transformation. The density of links suggests a mature and rapidly expanding research domain where technological innovation is strongly embedded in administrative reforms.

A prominent cluster revolves around digital technologies, including keywords such as blockchain, big data, artificial intelligence, and digital platforms. This cluster highlights the increasing role of advanced analytics and automation in improving tax administration processes, such as compliance monitoring, fraud detection, and data-driven decision making. The proximity between artificial intelligence and public administration indicates that scholars increasingly conceptualize digital tax systems not merely as technical infrastructures but as strategic governance tools aimed at enhancing efficiency and transparency in public sector operations.

Another significant cluster relates to digital economy and policy governance, represented by terms such as tax policy, tax authorities, sustainable development, and public services. This reflects a growing scholarly interest in how digital tax administration contributes to broader policy objectives, including fiscal sustainability and equitable taxation within digital markets. The integration of sustainable development themes suggests that digital taxation is increasingly discussed within global policy frameworks, particularly concerning fair taxation of digital businesses and cross-border economic activities.

The visualization also reveals a compliance and regulatory reform cluster characterized by keywords such as tax compliance, e-government, tax reform, and tax evasion. This indicates that much of the literature focuses on how digitalization influences taxpayer behavior and regulatory effectiveness. The presence of terms like digital taxation and tax system implies that researchers are examining structural transformations in administrative procedures, including the shift toward online reporting systems, automated audits, and integrated government platforms designed to reduce non-compliance. The network highlights emerging research directions through connections with risk management, budget control, and e-commerce. These linkages suggest that digital tax

administration is evolving beyond traditional revenue collection toward a broader ecosystem involving economic digitalization and financial governance.

3.2 Overlay Visualization

Figure 2. Overlay Visualization
Source: Data Analysis Result, 2026

Figure 2 presents the temporal evolution of research themes in digital tax administration by showing how keywords have developed over time. Earlier research trends, represented by darker blue tones (around 2020–2021), focused primarily on foundational aspects such as tax policy, information technology, tax systems, and institutional frameworks. These topics reflect the initial phase of digital tax administration studies, where scholars concentrated on regulatory structures, administrative modernization, and the integration of basic IT infrastructures into public sector taxation systems.

Moving toward the middle period (2021–2022), the visualization shows a shift toward governance and technological integration, with keywords such as public administration, digital economy, blockchain, and big data becoming more prominent. This indicates that the literature began to emphasize data-driven governance and the role of advanced digital technologies in transforming tax administration. The increased connectivity among these terms suggests a growing recognition that digital taxation is not only a fiscal issue but also part of broader digital transformation agendas within governments and economic systems.

More recent themes, highlighted in green to yellow tones (2023–2024), reveal emerging research directions centered on sustainable development, tax authorities, artificial intelligence, tax compliance, and digital technologies. These trends suggest that current studies are increasingly forward-looking, focusing on automation, AI-driven compliance monitoring, and sustainability-oriented governance. The appearance of these newer keywords implies a transition from structural and policy-oriented discussions toward innovation-driven and impact-oriented research, signaling that digital tax administration is evolving into a strategic tool for achieving efficient, transparent, and sustainable fiscal ecosystems in the digital era.

3.3 Citation Analysis

Table 1. The Most Impactful Literatures

Citations	Authors and year	Title
73	[8]	A conceptual framework for digital tax administration - A systematic review
57	[9]	Digital technology and carbon emissions: Evidence from China
41	[10]	Possibilities of Using Technologies in Digital Transformation of Sustainable Development
40	[11]	Allowing users to pick and choose: A conjoint analysis of end-user preferences of public e-services
39	[12]	Digital taxation, artificial intelligence and Tax Administration 3.0: improving tax compliance behavior – a systematic literature review using textometry (2016–2023)
35	[13]	Robot adoption and enterprise R&D manipulation: Evidence from China
34	[14]	The impact of big data tax collection and management on inefficient investment of enterprises — A quasi-natural experiment based on the golden tax project III
31	[15]	Equalization taxes and the EU's 'digital services tax'
29	[16]	How does digital tax administration affect R&D manipulation? Evidence from dual machine learning

Source: Scopus, 2025

3.4 Density Visualization

Figure 3. Density Visualization
Source: Data Analysis Result, 2026

Figure 3 highlights the most intensively studied themes within the digital tax administration literature by showing areas with high keyword concentration. The brightest and most dominant hotspots appear around "taxation," "tax administration," and "digital economy," indicating that these concepts form the core intellectual foundation of the field. Their central placement suggests that research largely focuses on how digital transformation reshapes tax governance, administrative efficiency, and fiscal policy within evolving economic systems. Closely surrounding terms such as public administration, tax compliance, and e-government reinforce the idea that digital tax administration is deeply embedded in broader public sector modernization efforts.

Beyond the central themes, moderate-density areas emerge around technological innovation and policy-oriented discussions, including digital technologies, blockchain, big data, artificial

intelligence, and sustainable development. These clusters indicate growing scholarly attention to the role of advanced technologies in enhancing transparency, risk management, and regulatory oversight. However, the relatively lower density of certain emerging topics, such as digital platforms and budget control, suggests that while innovation-driven research is expanding, it remains less developed compared to foundational governance themes.
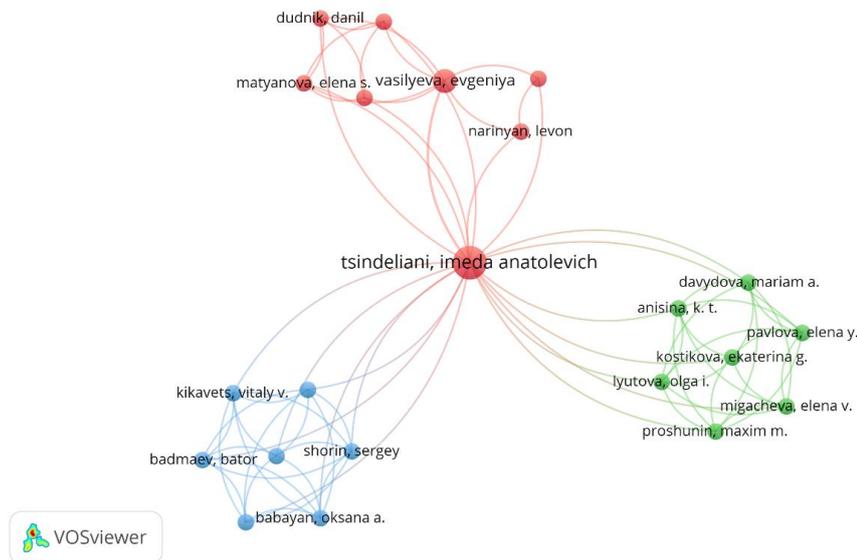
3.5 Co-Authorship Network

Figure 4. Author Visualization
Source: Data Analysis Result, 2026

Figure 4 reveals several collaborative clusters within the digital tax administration research field, with Tsindeliani, Imeda Anatolevich positioned as a central and highly connected author, indicating a strong influence and bridging role among different research groups. The red cluster reflects a tightly linked collaboration network involving authors such as Vasilyeva, Evgeniya and Nariyan, Levon, suggesting a focused scholarly community working on related themes. Meanwhile, the green and blue clusters represent additional collaborative groups that appear more internally connected but less linked to each other, highlighting the presence of semi-independent research streams.
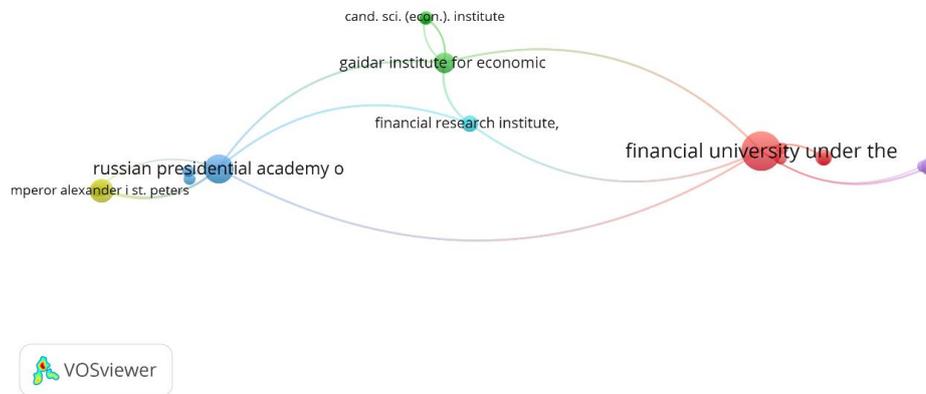
Figure 5. Affiliation Visualization
Source: Data Analysis Result, 2026

Figure 5 indicates that research on digital tax administration is concentrated within a relatively small group of academic institutions, with Financial University under the Government of the Russian Federation emerging as the most central and influential organization. Its strong connections with institutions such as the Gaidar Institute for Economic Policy, Financial Research Institute, and the Russian Presidential Academy of National Economy and Public Administration suggest a dominant regional collaboration structure, likely reflecting policy-oriented and governance-focused research traditions. The presence of fewer cross-regional institutional links implies that collaboration remains somewhat localized, highlighting an opportunity for broader international partnerships to expand the diversity and global impact of digital tax administration research.
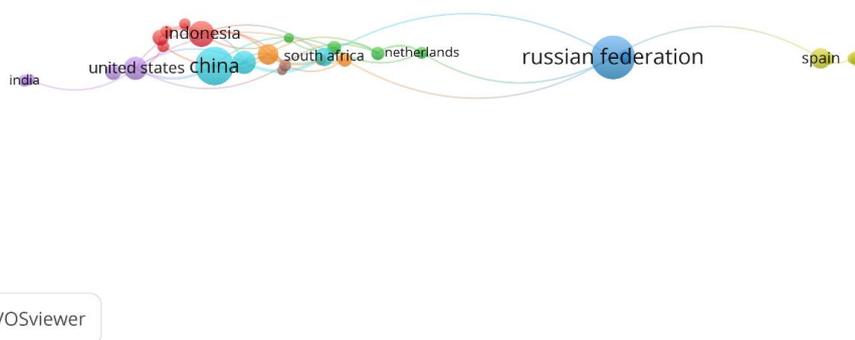
Figure 6. Country Visualization
Source: Data Analysis Result, 2026

Figure 6 illustrates that research on digital tax administration is shaped by several geographically clustered partnerships, with the Russian Federation and China emerging as the most prominent contributors. Russia appears as a central hub connected to European collaborators such as Spain and the Netherlands, suggesting a strong regional research influence, particularly in policy-oriented and governance-focused studies. Meanwhile, China demonstrates dense collaboration with countries like the United States, Indonesia, and South Africa, indicating a broader international engagement in technological and digital economy perspectives. The presence of emerging contributors such as Indonesia reflects increasing global interest in digital tax systems within developing economies, although the overall structure suggests that international collaboration remains moderately fragmented, highlighting opportunities for stronger cross-country research integration in the future.

Discussion

The findings of this bibliometric analysis reveal that research on digital tax administration has evolved into a multidisciplinary field that integrates taxation, digital governance, and technological innovation. The keyword network visualization shows that taxation, tax administration, and the digital economy serve as the intellectual core of the literature, indicating that scholarly discussions are strongly rooted in public sector reform and fiscal policy modernization. The prominence of themes such as public administration, e-government, and tax compliance suggests that digital tax administration is widely framed as a governance transformation rather than purely a technical issue. This reflects a broader global shift toward digital public services, where tax authorities adopt technology-driven approaches to enhance efficiency, transparency, and taxpayer engagement.

The overlay visualization further demonstrates a clear temporal progression in research focus. Early studies concentrated on institutional frameworks and policy structures, while more recent work emphasizes emerging technologies such as artificial intelligence, blockchain, and big data analytics. This evolution highlights how digital tax administration has transitioned from discussions about modernization of tax systems to more advanced topics related to automation, data governance, and sustainable development. The emergence of sustainability-related keywords suggests that scholars increasingly consider digital taxation not only as an administrative reform but also as a mechanism to support fair taxation in digital markets and contribute to broader economic resilience.

The density analysis reinforces these observations by identifying a strong concentration of research around governance-related topics, particularly taxation policy, administrative reform, and digital economy frameworks. Although technological innovation is gaining attention, the relatively lower density of some emerging topics indicates that areas such as digital platforms, budget control, and advanced analytics remain underexplored. This gap signals potential opportunities for future research to examine how technological capabilities can be integrated more effectively into tax administration strategies, especially within rapidly digitalizing economic environments.

In terms of collaboration patterns, the co-authorship and institutional networks reveal that research productivity is influenced by several dominant scholarly groups and regional academic hubs. Key authors and institutions, particularly those associated with policy-oriented research environments, play a central role in connecting different clusters of knowledge. However, the institutional visualization suggests that collaborations are still relatively concentrated within specific regions, indicating a need for broader international partnerships to foster more diverse perspectives and comparative analyses across different tax systems.

The country collaboration network highlights the global landscape of digital tax administration research, where countries such as the Russian Federation and China act as prominent contributors, while emerging economies—including Indonesia—are beginning to gain visibility. This pattern underscores the growing importance of digital taxation in both developed and developing contexts, especially as governments respond to challenges posed by e-commerce, cross-

border transactions, and digital business models. Overall, the discussion suggests that digital tax administration research is transitioning toward a more technology-driven and globally collaborative paradigm, yet significant opportunities remain to expand interdisciplinary integration, enhance international cooperation, and explore innovative policy frameworks that support inclusive and sustainable digital fiscal ecosystems.

CONCLUSION

This bibliometric analysis demonstrates that research on digital tax administration has developed into a dynamic and interdisciplinary field driven by the convergence of taxation policy, public administration, and digital technological innovation. The findings indicate that while early studies focused on institutional reform and regulatory frameworks, recent trends increasingly emphasize artificial intelligence, blockchain, big data, and sustainability-oriented governance within the digital economy. Collaboration patterns reveal the influence of several dominant countries, institutions, and author networks, although global partnerships remain uneven and present opportunities for broader international engagement. The evolution of the literature reflects a transition toward data-driven and technology-enabled tax systems, highlighting the growing strategic role of digital tax administration in improving compliance, enhancing public service delivery, and supporting transparent and sustainable fiscal management in an increasingly digitalized global economy.

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