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CHARTING THE EVOLUTION OF E-INVOICING RESEARCH: A GLOBAL BIBLIOMETRIC REVIEW OF PUBLICATIONS TRENDS.

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ABSTRACT

Electronic invoicing (e-invoicing) has emerged as a crucial component of digital transformation strategies across the public and private sectors. However, scholarly investigations into this domain remain fragmented. This study conducts a comprehensive bibliometric analysis to trace the global evolution of e-invoicing research, identify leading contributors, and uncover thematic patterns. Using a structured search of the Scopus database, 398 records were initially retrieved and subsequently refined to 375 documents through data cleaning and standardization. Analytical tools such as Scopus Analyzer and VOSviewer were employed to examine co-authorship networks, keyword co-occurrence, and citation dynamics. The findings reveal a notable rise in publication activity after 2015, with significant growth from 2021 to 2024. Moreover, China, Germany, Brazil, and the United States (US) lead in publication output, while Finland and the United Kingdom (UK) demonstrate high citation impact and collaborative strength. Prominent themes identified include digital invoicing systems, Electronic Data Interchange (EDI), and blockchain technology, indicating a strong convergence between technological innovation and regulatory frameworks. The analysis also highlights key contributors to the field and the most influential studies, providing insights into the research community's structure. Despite the increasing volume of publications, the results indicate limited international collaboration and a concentration of studies within specific thematic clusters. This bibliometric review contributes to understanding how e-invoicing research has developed over time and offers a foundation for future investigations into its adoption, implementation, and governance. In addition, the study underscores the need for broader interdisciplinary research to enhance the maturity and practical relevance of the field.

***JEL classification**: M15, O33*
***Keywords**: e-Invoicing; adoption; SME.*

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1. INTRODUCTION

Electronic invoicing (e-invoicing) represents a transformative shift in how businesses handle billing processes, transitioning from traditional paper-based methods to digital formats. This shift is a technological upgrade and a significant step towards enhancing operational efficiency, reducing costs, and improving compliance. In particular, E-invoicing involves the electronic transmission of invoice data between suppliers and buyers, ensuring real-time processing and integration with various financial systems. The adoption of e-invoicing has been driven by its potential to streamline business operations, reduce manual errors, and facilitate faster payment cycles. Moreover, it plays a crucial role in the broader context of digital transformation, contributing to developing smart government initiatives and the digital economy (Chen, Wu, & Miau, 2015; Gunaratne & Pappel, 2020; Rocha, 2022).

The significance of e-invoicing extends beyond operational efficiencies to encompass broader economic and regulatory impacts. For governments, e-invoicing systems are instrumental in reducing tax fraud and increasing revenue collection, as evidenced by the experiences in Latin America and Europe (Rocha, 2022). For businesses, particularly Small and Medium-Sized Enterprises (SMEs), e-invoicing can lead to substantial cost savings, improved cash flow management, and enhanced business relationships (Agostini & Naggi, 2010; Sandberg, Wahlberg, & Pan, 2009). Despite these benefits, the adoption rates among SMEs remain relatively low, highlighting the need for further research into the barriers and facilitators of e-invoicing adoption. Factors such as organizational readiness, external pressures, and perceived benefits play critical roles in influencing the acceptance of e-invoicing (Hernández-Ortega & Serrano-Cinca, 2009; Sandberg, Wahlberg, & Pan, 2009). Additionally, the integration of emerging technologies like artificial intelligence (AI) and robotic process automation presents new opportunities for enhancing the efficiency and automation of e-invoicing systems (Gunaratne & Pappel, 2020).

The evolution of e-invoicing research reflects the dynamic nature of the digital economy and the continuous advancements in Information and Communication Technologies (ICTs). Bibliometric analyses reveal that research on e-invoicing is gaining momentum globally, with significant contributions from countries like China, the United States (US), and various European nations (Bach, Van Dat, & Hoang, 2025). The development of comprehensive frameworks, such as the Adaptive E-Invoicing Rollout (AER) Framework in Malaysia, underscores the importance of structured approaches to e-invoicing implementation (Hong, Samad, & Shibghatullah, 2024). These frameworks facilitate compliance with regulatory requirements and enhance fiscal transparency and economic efficiency. As the digital landscape evolves, future research is expected to focus on the integration of blockchain, big data analytics, and artificial intelligence to further optimize e-invoicing processes and address emerging challenges (Poppe, Vrolijk, & van Asseldonk, 2024; Xiong & Tang, 2020). The ongoing exploration of these themes will provide valuable insights for policymakers, businesses, and researchers, driving the worldwide continuous improvement and widespread adoption of e-invoicing systems.

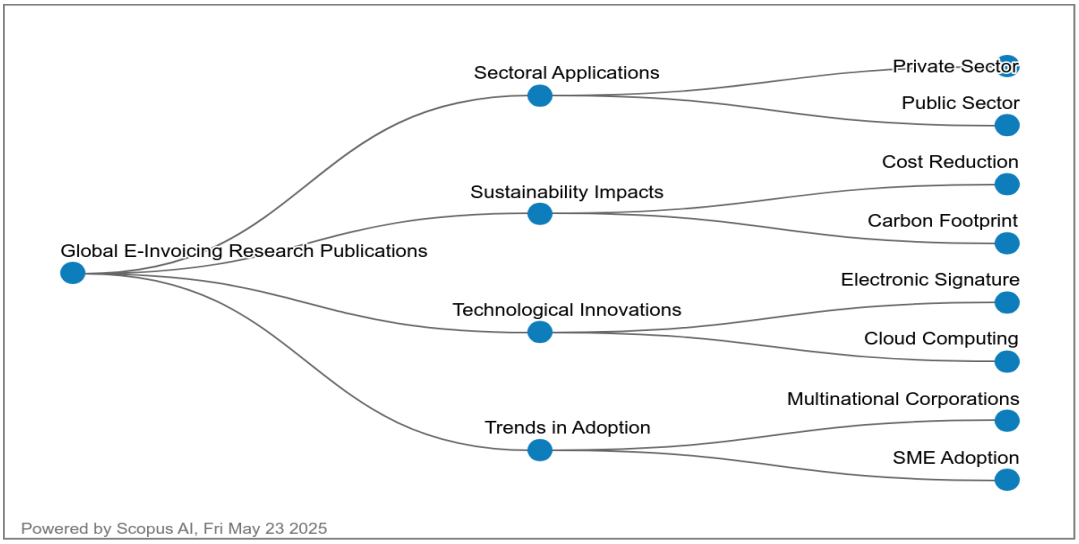

Figure 1: Conceptual map for an overview of e-invoicing

2. RESEARCH QUESTION

RQ1: What are the research trends in e-invoicing studies according to the year of publication?
RQ2: Who and how much has been published (Top 10) in the area concerning the authors?
RQ3: Who are the top 10 authors based on research citations?
RQ4: Where are the top 10 countries based on the number of publications?
RQ5: What are the popular keywords related to the study?
RQ6: What is the co-authorship collaboration between countries?
RQ7: What are the predominant theories and methodologies utilized in e-invoicing studies?

3. METHODOLOGY

Bibliometric analysis entails systematically collecting, organising, and interpreting bibliographic information derived from academic publications (Alves, Borges, & De Nadae, 2021; Assyakur & Rosa, 2022; Verbeek et al., 2002). While it includes fundamental metrics such as identifying key journals, publication timelines, and prolific authors (Wu & Wu, 2017), it also incorporates more advanced techniques like document co-citation analysis to uncover deeper patterns in the literature. A robust literature review demands a thorough and iterative process of refining keywords, retrieving relevant studies, and conducting detailed evaluations. This ensures the development of a well-rounded bibliography and supports the production of trustworthy findings (Fahimnia, Sarkis, & Davarzani, 2015). Accordingly, the review emphasized high-impact publications for their potential to reveal significant theoretical underpinnings within the field. To uphold data integrity, Scopus was selected as the main database (Al-Khoury et al., 2022; di Stefano, Peteraf, & Veronay, 2010; Khiste & Paithankar, 2017). Additionally, to maintain quality, the study only considered articles published in peer-reviewed academic journals (Gu et al., 2019).

4. DATA SEARCH STRATEGY

Scopus was selected as the primary database for conducting the bibliometric analysis due to its extensive coverage of peer-reviewed publications and its reputation for indexing high-quality research. A structured search was performed using the following keyword string within the title, abstract, and keyword fields ("electronic invoicing" OR "e-invoicing" OR "e-invoice" OR "electronic invoice" OR "digital invoice" OR "real-time invoicing"). This combination of terms was selected to capture a wide range of terminology commonly used in the context of e-invoicing. Note that no filters were applied regarding publication year, document type, or subject area to ensure inclusivity and comprehensiveness in data collection. The search yielded a total of 398 documents, which constituted the final dataset for the bibliometric analysis. This dataset enabled a detailed examination of publishing trends, influential authors, prominent journals, and key thematic developments in the area of e-invoicing.

5. DATA ANALYSIS

VOSviewer was developed by Nees Jan van Eck and Ludo Waltman at Leiden University in the Netherlands (van Eck & Waltman, 2010, 2017). It is a widely adopted software tool designed to facilitate bibliometric analysis through clear and interactive visualizations. Renowned for its user-friendly interface, the software enables researchers to explore scientific literature by constructing network maps, identifying clusters, and producing density visuals. It also supports the analysis of co-authorship patterns, co-citation links, and keyword co-occurrence, offering valuable insights into the structural dynamics of research fields. With its adaptability and continuous updates, VOSviewer is particularly effective in handling extensive bibliographic datasets. Its ability to compute bibliometric indicators, tailor visual outputs, and integrate data from multiple sources makes it an essential tool for researchers aiming to uncover relationships and trends within complex academic landscapes.

A key strength of VOSviewer lies in its ability to convert complex bibliometric data into accessible visual formats, such as network maps and density plots. The software is particularly effective in visualizing relationships through clustering techniques and examining keyword co-occurrence patterns. Its intuitive design makes it suitable for both beginners and seasoned researchers, allowing for seamless navigation of bibliographic landscapes. Ongoing enhancements to the tool ensure it remains a leading option for bibliometric exploration. VOSviewer supports detailed metric analysis and offers flexible visualization options, making it compatible with various data types, including co-authorship and citation networks. This versatility reinforces its value as an essential instrument for scholars seeking nuanced insights into evolving academic fields.

Bibliographic datasets containing details such as publication year, article title, author names, journal source, citation counts, and keywords were extracted in PlainText format from the Scopus database, covering publications from 2004 to December 2024. These datasets were processed using VOSviewer version 1.6.20, enabling the visualization and analysis of scientific networks through its clustering and mapping capabilities. Unlike traditional methods such as Multidimensional Scaling (MDS), VOSviewer positions items in a low-dimensional space where the distance between two elements reflects their degree of similarity or relatedness (van Eck & Waltman, 2010). While VOSviewer shares conceptual similarities with MDS (Appio, Cesaroni, & Di Minin, 2014), it distinguishes itself using the Association

Strength (AS_{ij}) for normalizing co-occurrence data, a technique more suited to bibliometric relationships. The association strength is computed as (Van Eck & Waltman, 2007):

$$AS_{ij} = \frac{C_{ij}}{w_i w_j},$$

where Cij represents the observed frequency of co-occurrence between items *i* and *j*, while w_i *and* w_j denote the total occurrences of items *i* and *j*, respectively. This value reflects the ratio between the actual co-occurrence and the expected frequency, assuming statistical independence between the items (Van Eck & Waltman, 2007).

6. RESULTS AND DISCUSSION

6.1 What are the research trends in e-invoicing studies according to the year of publication?

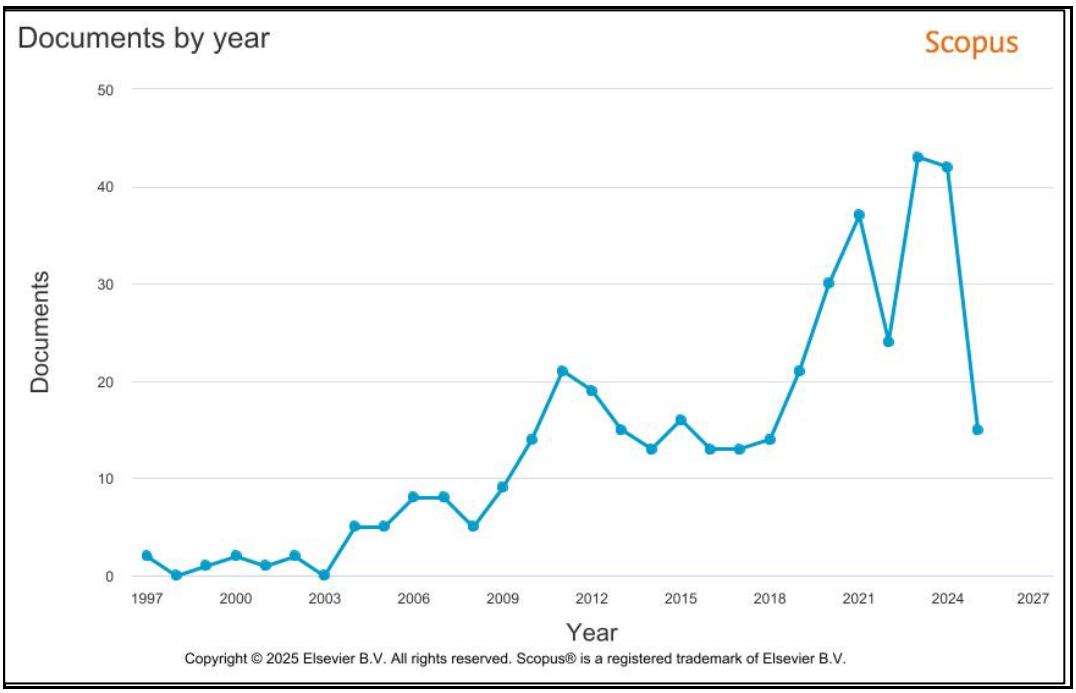

Figure 2: Plotting document publication by years

Table 1: Number of publications by year

Year	Number of Publications	Percentages (%)	Year	Number of Publications	Percentages (%)
2025	15	3.77	2011	21	5.28
2024	42	10.55	2010	14	3.52
2023	43	10.80	2009	9	2.26
2022	24	6.03	2008	5	1.26
2021	37	9.30	2007	8	2.01
2020	30	7.54	2006	8	2.01
2019	21	5.28	2005	5	1.26
2018	14	3.52	2004	5	1.26
2017	13	3.27	2002	2	0.50
2016	13	3.27	2001	1	0.25

2015	16	4.02	2000	2	0.50
2014	13	3.27	1999	1	0.25
2013	15	3.77	1997	2	0.50
2012	19	4.77			

The evolution of e-invoicing research has demonstrated a significant upward trajectory over the past two decades, particularly from 2010 onwards. While the early years (1997–2009) present minimal scholarly attention, with annual publications rarely exceeding single digits, the field began gaining more visibility and academic interest after 2010. This shift likely coincides with the growing adoption of digital technologies and regulatory reforms promoting e-invoicing systems across various jurisdictions. Notably, the years 2011 and 2012 recorded 21 and 19 publications, respectively, reflecting a budding interest in the subject matter. However, it was not until the post-2015 period that a more consistent and marked increase became evident.

From 2016 to 2021, a steady growth trend can be observed. Each year, within this period, 13 and 37 publications were contributed, indicating a maturing research domain. The sharp rise in 2021, with 37 publications (9.30%), and the subsequent peak years of 2023 (43 publications, 10.80%) and 2024 (42 publications, 10.55%) suggest that e-invoicing has transitioned into a mainstream academic discourse. This spike may be attributed to global digitization trends, the implementation of real-time invoice reporting mandates in several countries, and the broader push for tax digitalization post-COVID-19. Furthermore, increased government interventions, especially in regions like Europe and Latin America, may have intensified scholarly investigations into the effectiveness, adoption, and policy implications of e-invoicing systems.

As of 2025, with 15 publications already recorded (3.77%) in the first part of the year, the field appears to maintain its momentum. This ongoing activity implies that e-invoicing continues to be a relevant and dynamically evolving research area, likely driven by emerging technologies such as blockchain, artificial intelligence, and cross-border interoperability frameworks. Overall, the bibliometric data highlights a robust and expanding body of knowledge, reflecting both technological progress and academic responsiveness to changes in business and regulatory environments worldwide.

6.2 Who and how much has been published (top 10) in the area concerning the authors?

The Scopus data on top authors in e-invoicing research reveals that Penttinen, E. leads the field with a total of ten publications, accounting for 2.5% of the total dataset. This significant output suggests a strong and consistent focus on the topic, likely positioning Penttinen as a key thought leader and contributor to the development of this research area. The second most prolific author, Cha, S.C., has produced five documents, representing 1.3% of the total. This is followed by a group of authors who each contributed four publications (1.0%), including Breitner, M.H., Cuylen, A., and Di Oliveira, V., among others. This distribution underlines a relatively concentrated group of scholars who have repeatedly contributed to the field.

While most authors in the list have an equal output of four documents, the gap between the top contributor and the rest suggests that Penttinen's work may be foundational or particularly influential. Multiple authors with equal publications indicate a healthy and diverse contributor base, reflecting both sustained individual research agendas and the collaborative nature of e-invoicing research. The relatively

small percentage figures also imply that the field remains broad and interdisciplinary, with contributions from a wide range of researchers rather than being dominated by a small core group.

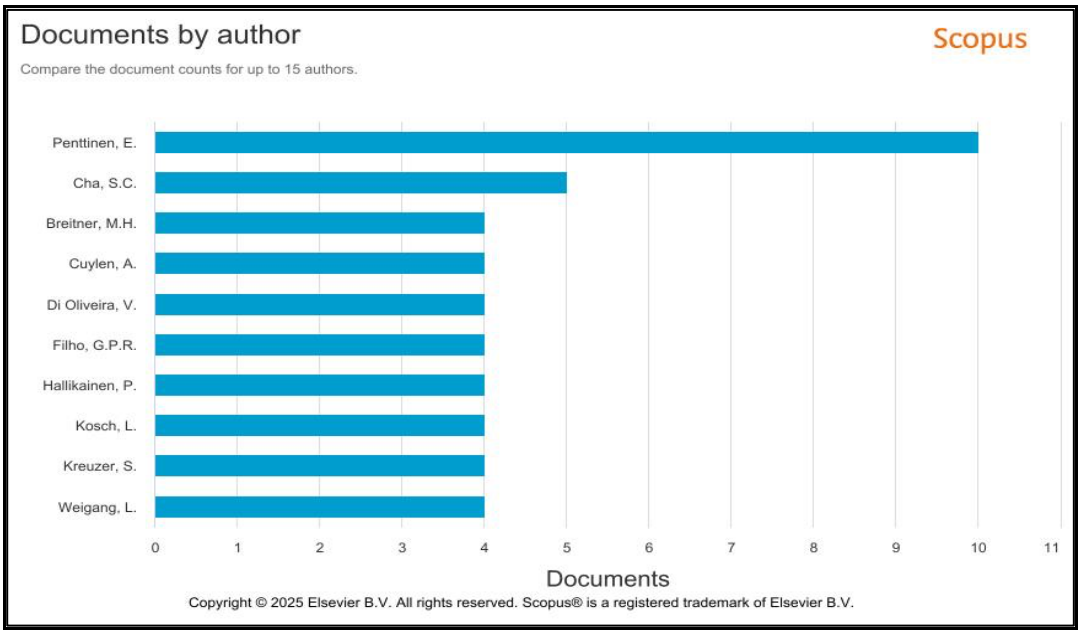

Figure 3: Top 10 authors based on the number of publications

Table 2: Publication contributions of leading authors on e-invoicing research

Author Name	Number of Documents	Percentages
Penttinen, E.	10	2.5
Cha, S.C.	5	1.3
Breitner, M.H.	4	1.0
Cuylen, A.	4	1.0
Di Oliveira, V.	4	1.0
Filho, G.P.R.	4	1.0
Hallikainen, P.	4	1.0
Kosch, L.	4	1.0
Kreuzer, S.	4	1.0
Weigang, L.	4	1.0

6.3 Who are the top 10 authors based on citations by research?

Based on the Scopus Analyzer data, the top ten most cited papers in the field of e-invoicing and related areas reflect a diverse and multidisciplinary research interest. The most cited article, authored by Albayrak et al. (2013), has 266 citations. The study explored environmental concern and consumer skepticism in green purchasing, a topic indirectly related to e-invoicing through sustainability and digital transformation. Following closely is Lian (2015) with 199 citations, whose work directly addressed cloud-based e-invoice service adoption in Taiwan. This study is particularly influential, representing a direct empirical investigation into e-invoicing

adoption and reflecting the growing academic interest in the technological and organizational factors influencing digital tax systems.

Several of the top-cited works emphasize theoretical foundations and behavioral factors. Korkman et al. (2010), with 100 citations, examined e-invoicing through the lens of value co-creation and market practices, bridging service-dominant logic with practical adoption. Subsequently, Hernández-Ortega (2011), with 90 citations, focused on post-use trust in technology acceptance, a critical concept when examining long-term e-invoicing system usage. Meanwhile, Hardesty et al. (2002) and Dahlberg and Öörni (2007) provided behavioral insights into consumer perceptions and habits, suggesting how psychological factors influence payment methods, including e-invoicing. These studies underscore the significance of integrating behavioral science into discussions of technology acceptance.

Recent contributions also highlight the intersection of e-invoicing with digital governance and innovation. Bellon et al. (2022) analyzed Value Added Tax (VAT) compliance improvements through digitalization in Peru, gathering 53 citations in a short time, indicating high relevance and academic impact. Similarly, Setyowati et al. (2020) investigated blockchain applications in VAT systems, reflecting the trend toward decentralized and secure digital tax infrastructure. The presence of interdisciplinary studies, such as those published in computer science and public health journals, demonstrates that the core of e-invoicing research remains rooted in information systems and economics. However, its implications and applications are far-reaching and increasingly interlinked with global technological and policy developments.

Table 3: Publication contributions of leading authors on the e-invoicing study

Authors	Title	Year	Source title	Cited by
Albayrak, Aksoy and Caber (2013)	The effect of environmental concern and scepticism on green purchase behaviour	2013	Marketing Intelligence and Planning	266
Lian (2015)	Critical factors for cloud-based e-invoice service adoption in Taiwan: An empirical study	2015	International Journal of Information Management	199
Korkman, Storbacka Kaj and Harald (2010)	Practices as markets: Value co-creation in e-invoicing	2010	Australasian Marketing Journal	100
Hernández-Ortega (2011)	The role of post-use trust in the acceptance of a technology: Drivers and consequences	2011	Tech novation	90
Hardesty, Carlson and Bearden (2002)	Brand familiarity and invoice price effects on consumer evaluations: The moderating role of skepticism toward advertising	2002	Journal of Advertising	72
Dahlberg and Öörni (2007)	Understanding changes in consumer payment habits - Do mobile payments and electronic invoices attract consumers?	2007	Proceedings of the Annual Hawaii International Conference on System Sciences	56
Bellon et al. (2022)	Digitalization to improve tax compliance: Evidence from VAT e-Invoicing in Peru	2022	Journal of Public Economics	53
Camacho et al. (2008)	Strong accumulators from collision-resistant hashing	2008	Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence	43

			and Lecture Notes in Bioinformatics)	
Setyowati et al. (2020)	Blockchain technology application for value-added tax systems	2020	Journal of Open Innovation: Technology, Market, and Complexity	40
Nanney et al. (2016)	Application of the Healthy Eating Index-2010 to the hunger relief system	2016	Public Health Nutrition	37

6.4 Where are the top 10 countries based on the number of publications?

The geographic distribution of e-invoicing research reveals significant global participation, with China emerging as the most prolific contributor. With 52 publications, China leads the landscape, likely reflecting its aggressive digital transformation policies, the implementation of electronic tax administration systems, and its position as a global manufacturing and trade hub. Germany follows with 35 publications, underscoring the strong emphasis placed on Industry 4.0 and digital public infrastructure within the European Union. Both countries exemplify how national digital strategies and regulatory reforms can fuel academic interest and scholarly output in e-invoicing and related technologies.

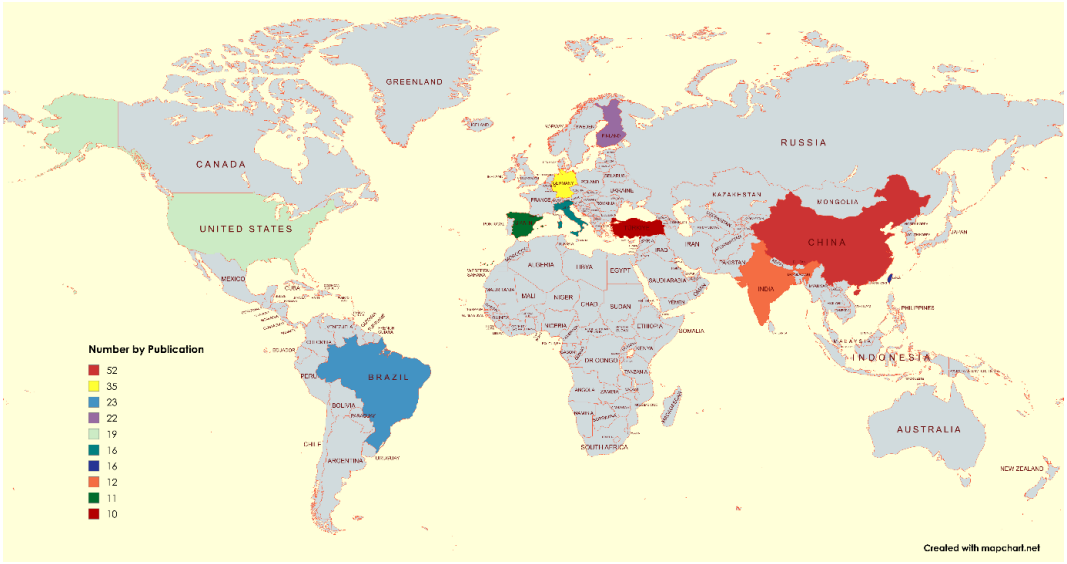

Figure 4: Top 10 authors based on the number of publications

Emerging economies and innovation-driven regions are also prominently featured. Brazil and Finland, with 23 and 22 publications respectively, highlight diverse motivations behind e-invoicing research. In particular, Brazil's emphasis may stem from its well-established electronic fiscal document systems (e.g., NF-e), which are often referenced in tax digitalization studies. Finland, on the other hand, reflects the Nordic countries' strong research ecosystem in digital governance and public sector innovation. The US, though a global tech leader, appears with 19 publications, possibly reflecting a more fragmented e-invoicing regulatory environment compared to centralized mandates in countries like China or Brazil.

Other notable contributors include Italy and Taiwan (16 each), India (12), Spain (11), and Turkey (10). These countries collectively represent a mix of regulatory maturity and research-driven initiatives. Taiwan's inclusion reflects its strong ICT sector and early adoption of cloud-based invoicing systems. At the same time, India's contributions may be linked to the Goods and Services Tax Network (GSTN) and its

push for e-invoice mandates. The presence of Spain and Turkey also illustrates increasing academic attention from Southern and Eastern Europe. Overall, this global spread signals that e-invoicing is a universally relevant topic, driven by both regulatory imperatives and the broader shift toward digital economies.

6.5 What are the popular keywords related to the study?

The keyword co-occurrence analysis from VOSviewer highlights "e-invoicing" as the dominant research focus in the network, with 155 occurrences and a total link strength of 147, signifying its centrality and strong interconnection with other major concepts. This prominence confirms e-invoicing as a key thematic anchor in the literature, serving as the foundation for various interdisciplinary discussions. Surrounding terms suggest that e-invoicing is closely linked with both technological infrastructure and policy-related components such as digitalization, tax administration, and information security. This indicates the multi-layered nature of its adoption and implementation.

Among the most frequently co-occurring terms, "electronic data interchange" (EDI) stands out with 24 occurrences and the highest link strength beyond the core keyword, reflecting the foundational role of EDI systems in enabling early forms of e-invoicing. Additionally, keywords such as "blockchain" (16 occurrences) and "interoperability" (14 occurrences) highlight emerging innovations and continuing challenges in system integration, data consistency, and trust. Meanwhile, the presence of "e-government" (15 occurrences) further emphasizes the crucial role of public sector initiatives and regulations in shaping the e-invoicing ecosystem. This is particularly true in countries where digital tax reforms are gaining momentum.

In the context of business and finance, the appearance of terms like "e-business," "e-commerce," and "accounting" suggests that the academic discourse also heavily engages with the operational and commercial implications of e-invoicing. These terms bridge the technological aspects with real-world applications, indicating that e-invoicing is about compliance and efficiency, data integration, and financial reporting. Finally, including "digitalization" and "information security" underscores broader concerns about infrastructure readiness and cybersecurity. Notably, it is vital for scaling e-invoicing across sectors and jurisdictions. This network reveals that e-invoicing research is positioned at the intersection of governance, technology, and business process innovation.

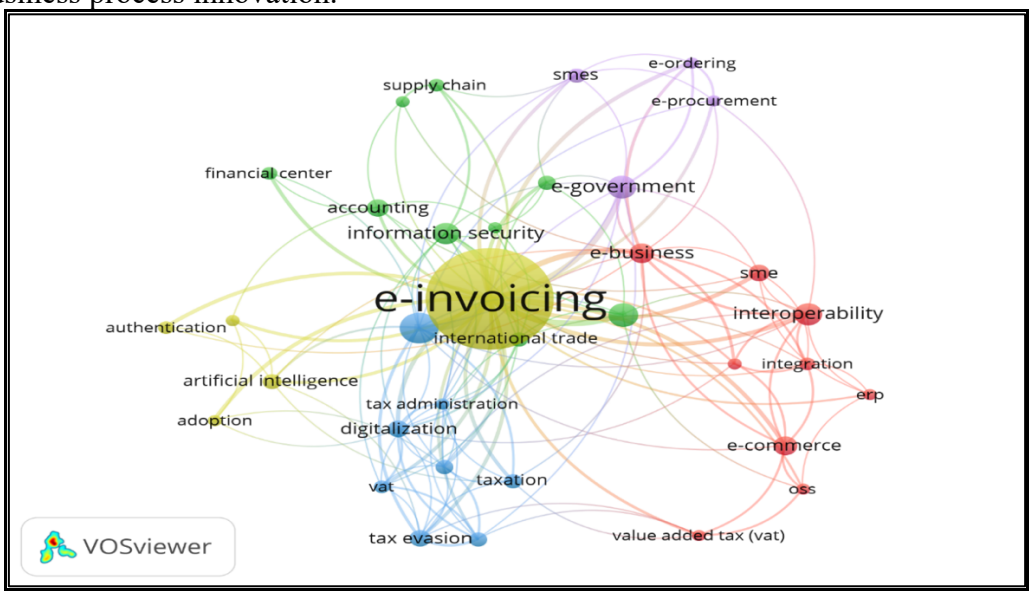

Figure 5: Network visualization map of keywords' co-occurrence

Table 4: Top 10 most frequent and connected keywords in the e-invoicing study.

Keyword	Occurrences	Total Link Strength
e-invoicing	155	147
electronic data interchange	24	32
blockchain	16	17
e-government	15	21
interoperability	14	21
information security	13	16
e-business	12	31
e-commerce	11	18
accounting	10	9
digitalization	9	20

6.6 What is co-authorship, and what are the countries' collaborations?

The country collaboration network generated from VOSviewer highlights varying degrees of international co-authorship and research connectivity in e-invoicing literature. The US leads in both scholarly output and influence, with 19 documents and 285 citations, as well as the highest total link strength of 9. This indicates a relatively active collaboration with other countries and high citation impact, despite not being the most prolific in terms of publication count. Similarly, the United Kingdom (UK), with only nine documents, demonstrates a notable link strength of 7, suggesting effective collaboration and influence relative to its output volume. These findings reflect the strategic role of Anglophone countries in shaping global e-invoicing discourse through impactful and cooperative research.

Germany, although contributing the second-highest number of publications (35 documents), records a lower link strength (5), suggesting that its research may be more nationally concentrated or published with fewer international collaborators. In contrast, countries like India and Spain present a more balanced profile. India has 12 publications and a link strength of 4, and Spain has 11 publications and the same link strength, indicating moderate international engagement. Moreover, Brazil, Finland, and Italy each report similar levels of global linkage (link strength = 2). However, Finland stands out for its high citation impact (333 citations), implying that its fewer international collaborations are highly influential.

Countries such as Mexico and Canada also appear on the map with modest contributions and lower link strength, underscoring emerging roles in the global research landscape on e-invoicing. The overall structure of the map suggests that while a few countries like China, Germany, and Brazil dominate in terms of quantity, Western nations, particularly the US, the UK, and Finland, have a disproportionately high impact and connectivity. This pattern underscores the significance of increasing output and fostering international collaboration to enhance visibility and academic contribution in this evolving field.

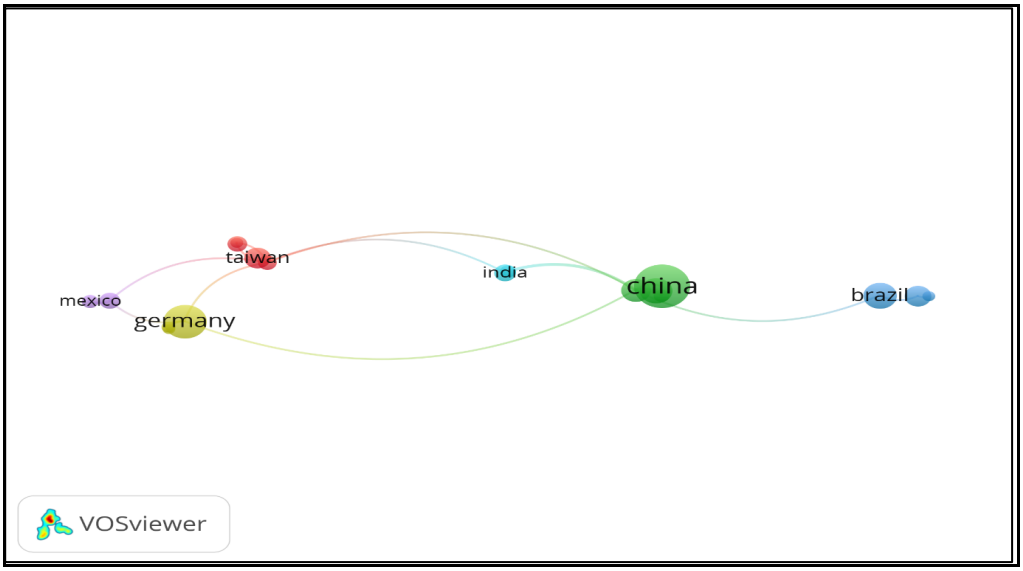

Figure 6: The countries whose authors collaborate on e-invoicing.

Table 5: Top 10 scholarly outputs and co-authorship in the e-invoicing study

Country	Documents	Citations	Total Link Strength
United States	19	285	9
United Kingdom	9	54	7
Germany	35	143	5
India	12	67	4
Spain	11	146	4
Brazil	23	93	2
Canada	5	13	2
Finland	22	333	2
Italy	16	98	2
Mexico	8	13	2

6.7 What are the predominant theories and methodologies utilized in e-invoicing studies?

This table offers a consolidated view of research examining the adoption and impact of e-invoicing across diverse contexts. Several studies are grounded in established technology acceptance theories such as the Unified Theory of Acceptance and Use of Technology (UTAUT), the Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), and the Theory of Planned Behavior (TPB), which help explain user intentions and behaviors in adopting digital invoicing systems. Other frameworks, including the Technology-Organization-Environment (TOE) model, Agency Theory, and Behavioral Tax Compliance Theory, also feature prominently, reflecting the interdisciplinary nature of this research area. While several studies are purely empirical and not theory-driven, they still offer valuable insights into e-invoicing practices and policy effects. Methodologically, the literature is dominated by quantitative approaches such as Structural Equation Modeling (SEM), regression analysis, and Difference-In-Differences (DiD), often relying on survey data or administrative tax records. A smaller body of work employs qualitative methods, including expert-based assessments and legal analyses. Collectively, these studies provide a comprehensive understanding of how e-invoicing is being adopted,

implemented, and studied across regions, highlighting both the progress made and the gaps in the digital taxation landscape.

Table 6: Predominant theories and methodologies in e-invoicing studies

Authors	Title	Utilized Theory	Methodology
Heinemann and Stiller (2024)	Digitalization and Cross-Border Tax Fraud: Evidence from E-Invoicing in Italy.	X	Quasi-experimental DiD design using panel regression with fixed effects.
Aliakbari Nouri and Shafiei Nikabadi (2025)	Exploring the causal relationships between factors affecting taxpayer adoption of e-invoicing: application of interval neutrosophic DEMATEL	Neutrosophic DEMATEL (MCDM + Fuzzy Logic + Cause-Effect Modeling)	INVS-DEMATEL with linguistic scaling, aggregation of expert opinions, deneutro sophication, total relation matrix construction, causal mapping.
Kotsogiannis et al. (2025)	E-Invoicing, Tax Audits and VAT Compliance	x	Quantitative Secondary data from EU Commission VAT compliance reports and audit databases Fixed effects panel regression.
Bellon et al. (2022)	Digitalization to Improve Tax Compliance: Evidence from VAT e-Invoicing in Peru	x	Quantitative Secondary administrative tax data from SUNAT.
Lee, Ochirtulga and Cui (2024)	The Effect of Adoption of an Electronic Filing System in Corporate Tax on Tax Avoidance: A Case of Mongolian Firms	Agency Theory	Quantitative Secondary data analysis using tax records and financial statements.
Nurbatsin et al. (2024)	Spatial Analysis and Technological Influences on Smart City Development in Kazakhstan	TOE Framework	Quantitative Multiple regression analysis
Bojanc, Pucihar and Lenart (2024)	E-Invoicing: A Catalyst for Digitalization and Sustainability	x	Qualitative foresight approach
Alshawi, Al-Tamimi and AL Anssari (2023)	The Impact of Electronic Invoices Adoption and Tax Regulations' Compliance on Tax Revenues in Iraq: Mediating Impact of Tax Collection Efficiency	x	Quantitative Smart-PLS SEM
Bellon, Dabla-Norris and Khalid (2023)	Technology and tax compliance spillovers: Evidence from a VAT e-invoicing reform in Peru	Behavioral Tax Compliance Theory	Quantitative Empirical analysis using event-study and RDD (Regression Discontinuity Design)
Tiwari et al. (2023)	Determinants of electronic invoicing technology adoption: Toward managing business information system transformation	TOE Framework; Diffusion of Innovation (DOI)	Quantitative SEM using SmartPLS

Qi and Che Azmi (2021)	Factors Affecting Electronic Invoice Adoption and Tax Compliance Process Efficiency	TOE Framework (Technology–Organization–Environment)	Quantitative SmartPLS 3.0 for measurement and structural model
Antón, Hernández-Trillo and Ventosa-Santaulària, (2021)	(In)Effective Tax Enforcement and Demand for Cash	Behavioral Tax Compliance Theory; Fiscal Enforcement Perspective	Quantitative DiD approach
Nguyen, Nguyen and Dang (2020)	Determinants of E-invoice Adoption: Empirical Evidence from	Integrated Model: TAM, IDT, and TPB	Quantitative EFA, CFA, SEM (AMOS)
Hagsten and Falk (2020)	Use and Intensity of Electronic Invoices in Firms: The Example of Sweden	Technology Adoption Framework; Firm-level innovation economics	Descriptive and econometric modeling
Penttinen et al. (2018)	What Influences the Choice of Business-to-Business Connectivity Platforms?	TOE Framework	Quantitative SEM
Kreuzer (2017)	Explaining Organizational Susceptibility to Coercive Pressure: Results from a Field Experiment on E-Invoicing IOIS Adoption	Institutional Theory	Quantitative Scenario-based experimental survey; Regression modeling and interaction analysis.
Poel, Marneffe and Vanlaer (2016)	Assessing the Electronic Invoicing Potential for Private Sector Firms in Belgium	Cost-Benefit Analysis; Adoption Readiness Index	Quantitative Simulated adoption impact across scenarios (high/low ICT investment); Forecast analysis using sensitivity to invoice volume and automation levels
Lian (2015)	Critical factors for cloud-based e-invoice service adoption in Taiwan: An empirical study	UTAUT2	Quantitative PLS-SEM
Hernandez-Ortega and Jimenez-Martinez (2013)	Performance of e-invoicing in Spanish firms	Resource-Based View (RBV), Contingency Theory	Quantitative Multiple regression analysis
Hernández-Ortega (2011)	The role of post-use trust in the acceptance of a technology: Drivers and consequences	TAM, Trust Theory	Quantitative SEM

7. CONCLUSION

This bibliometric study aimed to examine the global evolution of e-invoicing research and systematically map its publication trends, key contributors, thematic structures, and collaborative patterns. By addressing several core research questions, the analysis has revealed notable growth in scholarly interest, particularly from 2015 onwards. The study discovered that publication volume surged between 2021 and 2024, reflecting the increasing relevance of e-invoicing in digital transformation agendas. In particular, China, Germany, Brazil, and the US emerged as leading contributors in terms of publication output, while countries such as Finland and the UK demonstrated higher citation impact and collaborative engagement. Analysis of authorship patterns revealed that only a few researchers produced repeated contributions, indicating the

presence of a few influential figures rather than a highly saturated field. Accordingly, keyword mapping identified "e-invoicing," "electronic data interchange," and "blockchain" as dominant terms, highlighting the intersection of technological advancement, fiscal policy, and operational efficiency.

This study contributes to the field by offering an integrated overview of how e-invoicing has evolved as an academic subject, shedding light on where research efforts have been concentrated and which themes are gaining momentum. The findings also clarify the intellectual structure surrounding the topic, supporting better-informed decisions for future exploration. The data suggest that while research output is growing, there remains a need for broader interdisciplinary collaboration and greater engagement with underexplored regions and emerging technologies. From a practical standpoint, the insights presented may inform policy formulation, system design, and capacity-building initiatives for both public and private stakeholders seeking to implement or improve e-invoicing systems. The review also underscores the significance of addressing adoption barriers, particularly among SMEs, and encourages further integration of automation technologies.

Despite its contributions, the study is limited by its reliance on a single database and a focus on title-abstract-keyword fields, which may exclude relevant yet less explicitly labeled studies. Thus, future research may benefit from comparative database analyses, the inclusion of grey literature, and expanded frameworks exploring behavioral, technical, and regulatory dimensions of e-invoicing. Overall, bibliometric analysis proves to be an effective tool in uncovering research trends and gaps, offering a valuable roadmap for advancing the discourse on e-invoicing in the context of global digital transformation.

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