

A Scoping Review Approach: Analysis of the Development and Challenges of Tax Compliance in the Digital Era

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ABSTRACT

The rapid development of digital technology has transformed tax administration systems worldwide by improving efficiency, transparency, and compliance monitoring, while also creating new challenges related to the digital economy such as cross-border transactions and platform-based business models. This study aims to analyze the development, determinants, challenges, and research gaps of digital tax compliance using a qualitative descriptive approach with a scoping review method, based on literature from international journals and institutional reports published between 2020 and 2025. The findings indicate that digital tax compliance is influenced by three main factors: behavioral factors (tax morale and trust), technological factors (system usability and digital infrastructure), and institutional factors (governance and regulatory frameworks). In addition, several challenges are identified, including the digital divide, system complexity, data privacy concerns, and institutional limitations, particularly in developing countries. The study also finds that existing literature remains fragmented and lacks an integrated framework. Therefore, this study proposes the Integrated Digital Tax Compliance Model (IDTCM) as a comprehensive framework to better understand tax compliance in the digital era and to provide insights for policymakers and future research.

Keywords : Digital Tax Compliance; Digital Transformation; Behavioral Factors; Technological Factors; Institutional Factors

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1. INTRODUCTION

The rapid advancement of digital technology has fundamentally transformed various sectors, including taxation systems across the globe. Governments have increasingly adopted digital solutions such as electronic filing (e-filing), electronic invoicing (e-invoicing), and data-driven tax administration systems to enhance efficiency and transparency. According to OECD [19], digital transformation has enabled tax authorities to improve compliance monitoring and reduce administrative costs while increasing revenue collection efficiency.

However, the emergence of digital economic activities has also introduced new challenges for tax systems. Cross-border transactions, platform-based business models, and intangible assets have made it more difficult for tax authorities to identify and tax economic activities accurately. As highlighted by Deveraux et. al. [4], traditional tax frameworks are no longer sufficient to address the complexities of the digital economy, leading to the development of new international tax policies such as the Global Minimum Tax and Digital Services Tax.

In this context, tax compliance has evolved beyond traditional enforcement-based approaches. Modern tax compliance is increasingly influenced by behavioral, technological, and institutional factors. Kirchler et al. (2022) emphasize that taxpayer behavior, particularly tax morale and trust in government,

plays a crucial role in determining compliance levels [13]. Meanwhile, technological advancements such as artificial intelligence and big data analytics have improved the ability of tax authorities to detect fraud and enhance compliance enforcement [9].

Despite these advancements, significant challenges remain, particularly in developing countries. Issues such as limited digital infrastructure, low levels of digital literacy, and weak institutional frameworks hinder the effectiveness of digital tax systems. According to World Bank (2022), many developing countries struggle to fully implement digital tax systems due to resource constraints and governance issues [31].

Furthermore, existing literature on digital tax compliance remains fragmented. Most studies focus on specific aspects such as technology adoption or behavioral factors, without integrating these perspectives into a comprehensive framework. A recent study by Alm and Torgler highlights the need for a more holistic understanding of tax compliance that incorporates multiple dimensions [1].

Given these challenges and research gaps, this study aims to provide a comprehensive analysis of digital tax compliance through a systematic literature review approach. By synthesizing recent studies, this research seeks to identify key determinants, emerging trends, and research gaps in the field of digital taxation.

The research questions addressed in this study are as follows:

1. How has research on digital tax compliance evolved in recent years?
2. What are the main factors influencing digital tax compliance?
3. What challenges and opportunities arise in implementing digital tax systems?
4. What research gaps exist in the current literature?

This study is expected to contribute to the academic literature by providing a comprehensive synthesis of digital tax compliance research and proposing an integrated conceptual framework. Additionally, the findings are expected to provide practical insights for policymakers, particularly in developing countries such as Indonesia, in designing effective digital tax policies.

2. LITERATURE REVIEW

A. *Tax Compliance Theory*

1) Definition of Tax Compliance

Tax compliance refers to the extent to which taxpayers meet their legal obligations in reporting income, calculating tax liabilities, and paying taxes on time. According to Alm and Torgler, tax compliance is not merely a legal obligation but also a behavioral phenomenon influenced by psychological, social, and institutional factors [1]. Similarly, Gupta et al. define tax compliance as a function of both enforced compliance (driven by audits and penalties) and voluntary compliance (driven by trust and moral values) [9] [13].

2) Types of Tax Compliance

Tax compliance can be categorized into:

a) Voluntary Compliance

Refers to taxpayers' willingness to comply without enforcement. This is influenced by tax morale, trust in government, and perceived fairness [1].

b) Enforced Compliance

Refers to compliance driven by audits, penalties, and legal enforcement mechanisms (Allingham & Sandmo model revisited in modern literature).

c) Digital Compliance

A newer concept referring to compliance facilitated through digital systems, automation, and real-time reporting [9].

3) Slippery Slope Framework

The Slippery Slope Framework explains tax compliance through two main dimensions:

- a) Power of authorities (enforcement)
- b) Trust in authorities (legitimacy)

Kirchler et al. argue that optimal tax compliance occurs when both trust and power are balanced. In digital taxation, technology enhances enforcement power but must be complemented by trust to ensure voluntary compliance [13].

B. Digital Taxation

1) Definition of Digital Taxation

Digital taxation refers to the taxation of economic activities conducted through digital platforms, including e-commerce, digital services, and platform-based business models. According to Devereux et al., digital taxation emerged as a response to the challenges posed by the digital economy, where value creation is not always tied to physical presence [4].

2) Characteristics of Digital Economy Taxation

The digital economy has several key characteristics:

- Borderless transactions
- Intangible assets dominance
- Platform-based business models
- Data-driven value creation

These characteristics complicate tax administration and require new regulatory frameworks [19].

3) Global Digital Tax Policies

Recent developments include:

- a) Digital Services Tax (DST)
Imposed on revenues generated by digital companies in specific jurisdictions.
- b) OECD Pillar One and Pillar Two
 - Pillar One: reallocates taxing rights
 - Pillar Two: introduces global minimum tax

According to OECD (2023), these reforms aim to address base erosion and profit shifting (BEPS) in the digital economy [19].

C. Digital Taxation

1) Concept of Digital Tax Compliance

Digital tax compliance refers to the use of digital systems to facilitate, monitor, and enforce taxpayer compliance. This includes:

- e-filing systems
- e-invoicing
- real time reporting
- automated tax calculations

According to Gupta & Nagadevara, digital systems improve compliance by reducing human error and increasing transparency [9].

2) Benefits of Digital Tax Systems

Digitalization provides several advantages:

- Increased efficiency in tax administration
- Reduced compliance costs
- Improved data accuracy
- Enhanced fraud detection using AI

World Bank notes that digital tax systems significantly improve revenue collection in developing countries when properly implemented [31].

3) Challenges in Digital Tax Compliance

Despite its benefits, several challenges persist:

- Digital divide (infrastructure gaps)
- Low digital literacy
- Data privacy concerns
- Resistance to technology adoption

These challenges are particularly significant in emerging economies [31].

D. Determinants of Digital Tax Compliance

1) Behavioral Factors

Behavioral factors include:

- Tax Morale
- Trust in Government
- Perceived Fairness

Alm and Torgler emphasize that taxpayers are more likely to comply when they perceive the tax system as fair and trustworthy [1].

2) Technological Factors

Technological factors include:

- Ease of use tax systems
- System reliability
- Automation level
- Integration of data systems

According to Gupta and Nagadevara, user-friendly digital systems significantly improve compliance rates [9].

3) Institutional Factors

Institutional factors include:

- Governance quality
- Transparency
- Regulatory Framework
- Enforcement Mechanisms

OECD (2023) highlights that strong institutions are essential for the success of digital tax systems [19].

E. Previous Studies

Recent studies show consistent findings:

- Digitalization improves tax compliance [19]
- AI enhances fraud detection [19]
- Behavioral factors remain critical [1]

However, several gaps remain:

- Lack of integrated frameworks combining all factors
- Limited studied in developing countries
- Insufficient focus on long-term impacts of digital taxation

3. METHOD

A. Research Design

This study employs a descriptive qualitative approach using a Scoping Review methodology. Unlike systematic literature review (SLR), a scoping review aims to map the breadth, scope, and nature of research on a particular topic without restricting to highly specific inclusion criteria.

According to Arksey and O'Malley, a scoping review is appropriate when [2]:

- The research area is complex and emerging

- The objective is to identify research gaps
- The aim is to map key concepts and evidence

Given the rapid evolution of digital taxation, the scoping review approach is suitable for capturing diverse perspectives, including behavioral, technological, and institutional dimensions.

B. Data Sources

This study collects secondary data from reputable academic and institutional sources, including:

- Scopus-indexed journals
- Google Scholar
- ScienceDirect
- International policy reports ([19], [31])

The selection of these databases ensures comprehensive coverage of global and national research on digital tax compliance.

C. Search Strategy

The search strategy uses combinations of keywords such as:

- “digital tax compliance”
- “tax digitalization”
- “e-tax system”
- “tax administration digital transformation”
- “tax compliance behavior”

The literature search focuses on publications between 2020–2025, reflecting the most recent developments in digital taxation.

D. Inclusion and Exclusion Strategy

Inclusion Criteria:

- Peer-reviewed journal articles
- International and national publications
- Studies related to digital taxation and tax compliance
- Publications between 2020–2025

Exclusion Criteria:

- Non-academic articles
- Studies not directly related to taxation
- Duplicate publications

E. Data Extraction and Charting

Selected articles are analyzed using data charting techniques, including:

- Author and year
- Research method
- Key findings
- Variables studied
- Country context

This process allows systematic mapping of the literature.

F. Data Analysis Technique

This study uses thematic analysis consisting of:

- 1) Descriptive Analysis
 - Trends in publication year

- Geographic distribution
 - Research methods used
- 2) Thematic Mapping
Grouping findings into major themes:
- Behavioral factors
 - Technological factors
 - Institutional factors
- 3) Gap Identification
Identifying:
- Under-researched areas
 - Inconsistencies in findings
 - Future research opportunities

G. Research Framework

Based on the literature review and research methodology, this study develops a conceptual mapping:

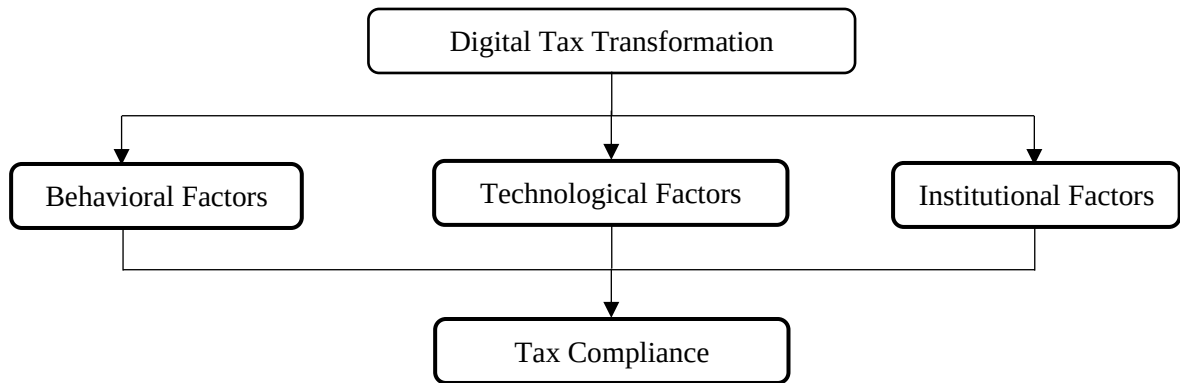


Figure 1. Conceptual Framework

4. RESULT AND DISCUSSION

A. Overview of Literature

The scoping review identified a significant increase in publications related to digital tax compliance between 2020 and 2025. This trend is largely driven by the acceleration of digital transformation following the COVID-19 pandemic, which forced tax authorities worldwide to adopt digital solutions.

According to OECD (2023), digital transformation in tax administration aims to integrate taxation seamlessly into taxpayers' natural systems, thereby improving compliance and reducing administrative burdens [19]. Similarly, World Bank (2022) highlights that digital tax systems enhance transparency and efficiency, particularly in developing countries [31].

Furthermore, Gupta and Nagadevara emphasize that digital tools such as artificial intelligence (AI) and big data analytics have significantly improved tax enforcement mechanisms, enabling real-time monitoring and fraud detection [9].

B. Scoping Review Results

The following table summarizes key articles included in this scoping review:

Table 1. Summary of Scoping Review Articles from the year 2020 to 2025

No	Author(s)	Year	Country	Method	Key Findings
1	Alm & Torgler	2021	Global	Review	Tax morale affects compliance
2	OECD	2023	Global	Report	Digital tax improves efficiency
3	World Bank	2022	Global	Report	Digitalization increases revenue
4	Gupta & Nagadevara	2022	India	Quantitative	AI improves fraud detection
5	Kirchler et al.	2022	Europe	Conceptual	Trust & power influence compliance
6	Devereux et al.	2021	OECD	Policy	Digital tax reform needed
7	Torgler	2021	Global	Empirical	Trust increases compliance
8	James et al.	2022	UK	Mixed	Digital tax reduces errors
9	Bird & Zolt	2021	Global	Review	Developing countries face challenges
10	Okello	2021	Africa	Case Study	Infrastructure limits adoption
11	Mustapha & Obid	2021	Malaysia	Quantitative	E-filing improves compliance
12	Setyowati et al.	2022	Indonesia	Empirical	Digital tax increases compliance
13	Slemrod	2020	USA	Review	Compliance depends on enforcement
14	Dwenger et al.	2020	Germany	Experiment	Behavioral factors significant
15	Gangl et al.	2021	Austria	Survey	Trust improves compliance
16	Tambun & Kopong	2022	Indonesia	Quantitative	E-tax increases compliance
17	Nasution et al.	2023	Indonesia	Empirical	Digital system improves reporting
18	Pratama	2022	Indonesia	Case Study	SMEs face digital barriers
19	Kurniawan	2021	Indonesia	Survey	Tax literacy affects compliance
20	OECD	2021	Global	Report	Digitalization enhances monitoring
21	IMF	2022	Global	Report	Digital tax reduces evasion
22	Deloitte	2023	Global	Report	AI improves tax audit
23	EY	2022	Global	Report	Automation reduces compliance cost
24	PwC	2023	Global	Report	Digital tax transformation ongoing
25	OECD	2024	Global	Report	Pillar Two implementation
26	OECD	2020	Global	Report	Digital tax challenges
27	World Bank	2021	Global	Report	Infrastructure gap issue
28	Gupta et al.	2023	India	Empirical	Tech adoption improves compliance
29	Rahman et al.	2022	Indonesia	Survey	Trust influences compliance
30	Sari et al.	2023	Indonesia	Quantitative	Digital services tax impact

The results presented in Table 1 demonstrate that research on digital tax compliance has experienced significant growth between 2020 and 2025, reflecting the increasing importance of digital transformation in tax administration globally. The reviewed studies originate from diverse geographical contexts, including developed countries (such as the United States, United Kingdom, and OECD member states) and developing economies (such as Indonesia, India, and African countries). This diversity indicates that digital tax compliance is a global concern, although its implementation and challenges vary across different institutional and economic environments. Reports from international organizations such as OECD and World Bank further confirm that digitalization has become a strategic priority in enhancing tax system efficiency and compliance [19], [31].

Furthermore, the table highlights the variety of research methodologies employed, including conceptual studies, empirical quantitative research, case studies, and institutional reports. This methodological diversity suggests that digital tax compliance is a multidimensional research area that cannot be fully understood through a single approach. Empirical studies (e.g., [9]; [26]) generally find that digital systems and technological innovations, such as artificial intelligence and e-filing, significantly improve compliance levels. Meanwhile, conceptual and behavioral studies (e.g., [1]; [13]) emphasize the importance of trust, tax morale, and perceived fairness in influencing taxpayer behavior.

In addition, the findings summarized in Table 1 reveal that digital tax compliance is consistently influenced by three main dimensions: behavioral, technological, and institutional factors. While technological advancements enhance efficiency and monitoring capabilities, their effectiveness is highly dependent on institutional quality and taxpayer behavior. For instance, studies in developing countries (e.g., [22]; [24]) indicate that limitations in digital infrastructure and low tax literacy can hinder the effectiveness of digital tax systems. Therefore, the table not only provides a mapping of existing research but also highlights the need for an integrated approach that combines technology, governance, and behavioral insights to achieve optimal tax compliance in the digital era.

C. Trends in Digital Tax Compliance Research

1) Digitalization as a core strategy

The literature consistently identifies digitalization as the central strategy in modern tax administration. Governments worldwide have increasingly adopted digital tools such as e-filing, e-invoicing, and real-time reporting systems to improve transparency and reduce compliance gaps. According to OECD (2023), digital transformation enables tax administrations to embed taxation processes into taxpayers' natural systems, thereby minimizing manual intervention and reducing compliance burdens [19]. This shift not only enhances efficiency but also increases the accuracy and timeliness of tax reporting.

Moreover, empirical studies confirm that digital tax systems significantly improve compliance rates by reducing opportunities for tax evasion. For instance, IMF (2022) reports that digitalization enhances transaction traceability, making it more difficult for taxpayers to conceal income. Similarly, James et al. (2022) find that the implementation of digital reporting systems reduces human error and improves data consistency. In developing countries, however, the effectiveness of digitalization is often constrained by infrastructure limitations and uneven access to technology, as highlighted by World Bank [30].

2) Integration of Artificial Intelligence

Another significant trend is the integration of artificial intelligence (AI) and big data analytics into tax administration systems. These technologies enable tax authorities to process large volumes of data, identify anomalies, and conduct risk-based audits more efficiently. According to Gupta and Nagadevara (2022), AI-driven tax systems significantly improve fraud detection capabilities by identifying patterns that are difficult to detect through traditional methods. This represents a shift from reactive enforcement to proactive compliance monitoring [9].

In addition, professional reports such as Deloitte and PwC emphasize that AI enhances the effectiveness of tax audits by reducing human bias and increasing analytical accuracy [8], [23]. Big data analytics also allows tax authorities to integrate data from multiple sources, including financial institutions and digital platforms, thereby strengthening enforcement mechanisms. However, the adoption of AI also raises concerns related to data privacy, ethical considerations, and cybersecurity risks [18]. These challenges highlight the need for robust regulatory frameworks to ensure responsible use of technology in tax administration.

3) Shift Toward Voluntary Compliance

A notable shift in the literature is the transition from enforcement-based compliance to voluntary compliance driven by trust and behavioral factors. Traditional tax systems relied heavily on audits and penalties, but recent studies suggest that such approaches are less effective in the long term. Alm and Torgler argue that voluntary compliance, supported by tax morale and trust in government, plays a more sustainable role in improving compliance levels [1]. This perspective is further supported by the Slippery Slope Framework, which emphasizes the balance between enforcement power and trust [13].

Empirical evidence also supports this shift. Gangl et al. find that taxpayers are more likely to comply when they perceive the tax system as fair and transparent [8]. In the context of digital taxation, user-friendly systems and transparent processes can enhance taxpayer trust and encourage voluntary compliance. Studies in Indonesia, such as Rahman et al. confirm that trust in tax authorities significantly influences taxpayer behavior [24]. However, this shift requires not only technological improvements but also institutional reforms to build credibility and accountability within tax administrations.

D. Thematic Analysis

1) Behavioral Factors

Behavioral factors are consistently identified as one of the most critical determinants of tax compliance, even in highly digitalized tax environments. These factors include tax morale, trust in government, perceived fairness, and social norms. According to Alm and Torgler, tax morale—defined as the intrinsic motivation to pay taxes—plays a central role in shaping voluntary compliance [1]. Taxpayers are more likely to comply when they perceive taxation as a civic duty rather than a coercive obligation.

Furthermore, trust in government is a key variable influencing compliance behavior. Kirchler et al. through the Slippery Slope Framework, argue that trust and power must coexist to achieve optimal compliance [13]. While digital systems strengthen enforcement power, they must also enhance transparency and fairness to build trust. Empirical findings from Gangl et al. show that higher levels of trust significantly increase voluntary compliance, reducing the need for costly enforcement mechanisms [8].

In the context of developing countries, behavioral factors become even more significant due to institutional constraints. Studies such as Kurniawan and Rahman et. al. indicate that low tax literacy and weak trust in tax authorities can hinder the effectiveness of digital tax systems [14], [24]. Additionally, OECD (2020) emphasizes that taxpayer perceptions of fairness and equity are crucial in digital tax environments, where increased transparency may also lead to greater scrutiny of government performance [18]. Therefore, behavioral factors not only influence compliance directly but also determine how taxpayers respond to technological and institutional changes.

2) Technological Factors

Technological factors represent the backbone of digital tax compliance, encompassing system usability, digital infrastructure, data integration, and automation. The adoption of digital tax systems such as e-filing, e-invoicing, and real-time reporting has significantly transformed the way taxpayers interact with tax authorities. According to OECD (2023), digital tax systems reduce administrative burdens by automating processes and minimizing human error, thereby improving compliance efficiency [19].

One of the most important aspects of technological factors is system usability. Gupta and Nagadevara highlight that user-friendly systems increase taxpayer participation and reduce errors in tax reporting [9]. Similarly, Setyowati et al. find that digital tax systems in Indonesia improve compliance by simplifying procedures and enhancing accessibility [26]. This aligns with findings from EY (2022), which state that automation reduces compliance costs and encourages taxpayers to adopt digital systems [7].

In addition, the integration of advanced technologies such as artificial intelligence (AI) and big data analytics has further strengthened tax administration capabilities. Deloitte notes that AI enables tax authorities to conduct risk-based audits and detect anomalies more effectively [8]. However, despite these advantages, technological challenges remain. World Bank (2021) highlights that inadequate digital infrastructure and unequal access to technology create a digital divide, particularly in developing countries [30]. Moreover, concerns related to data security and privacy, as emphasized by OECD (2020), may reduce taxpayer trust in digital systems. Therefore, while technology enhances compliance, its effectiveness depends on accessibility, usability, and public acceptance [18].

3) Institutional Factors

Institutional factors play a crucial role in determining the success of digital tax systems. These factors include governance quality, regulatory frameworks, transparency, and administrative capacity. According to Bird and Zolt, strong institutions are essential for effective tax administration, as they ensure that policies are implemented consistently and fairly [3]. Without robust institutional support, even the most advanced digital systems may fail to achieve their intended outcomes.

Regulatory clarity is another important aspect of institutional factors. The rapid development of the digital economy has created challenges for existing tax regulations, necessitating new policies such as Digital Services Tax (DST) and the OECD's global tax reforms. Devereux et al. (2021) argue that adapting tax regulations to the digital economy is critical for maintaining tax fairness and preventing base erosion and profit shifting [4]. Similarly, OECD (2023) emphasizes that coordinated international efforts are required to address the complexities of digital taxation [19]. In developing countries, institutional weaknesses often limit the effectiveness of digital tax systems. World Bank (2022) notes that issues such as limited administrative capacity, lack of coordination, and weak governance structures hinder the implementation of digital tax reforms [31]. Studies in Indonesia, such as Nasution et al., indicate that institutional support, including training and policy enforcement, is necessary to ensure the successful adoption of digital tax systems [16]. Furthermore, transparency and accountability are critical for building taxpayer trust, which in turn enhances compliance. As highlighted by OECD (2020), digitalization must be accompanied by institutional reforms to ensure that technological advancements translate into improved tax compliance outcomes [18].

E. Challenges in Digital Tax Compliances

1) Digital Divide

One of the most critical challenges in digital tax compliance is the existence of a digital divide, particularly between developed and developing countries. The digital divide refers to unequal access to digital infrastructure, internet connectivity, and technological resources required to participate effectively in digital tax systems. According to the World Bank (2021), many developing countries still face significant limitations in broadband access, digital infrastructure, and technological readiness, which directly affect the implementation of digital tax systems [30]. This disparity creates unequal compliance capabilities among taxpayers, especially small and medium-sized enterprises (SMEs) and individual taxpayers in rural or underdeveloped areas. Furthermore, the digital divide is not limited to infrastructure but also includes disparities in digital literacy. OECD (2020) highlights that even when digital systems are available, taxpayers may lack the necessary skills to use them effectively [18]. This issue is particularly evident in emerging economies, where education and training on digital taxation remain limited. Studies such as Pratama show that SMEs often struggle to adapt to digital tax systems due to limited knowledge and technological skills, leading to lower compliance rates or reliance on intermediaries [22]. As a result, the benefits of digitalization, such as efficiency and transparency, may not be fully realized across all segments of society.

In addition, the digital divide can exacerbate inequality in tax compliance enforcement. Tax authorities may focus more on digitally visible taxpayers, while those outside the digital system remain under-monitored. This creates potential distortions in tax fairness and enforcement. Therefore, addressing the digital divide requires not only infrastructure investment but also capacity-building programs, digital education, and inclusive policy design to ensure equitable participation in digital tax systems.

2) Complexity of Digital System

While digital tax systems are designed to simplify tax administration, they can paradoxically introduce new forms of complexity, particularly for certain groups of taxpayers. Modern digital tax systems often involve multiple platforms, real-time reporting requirements, and integration with various financial and accounting systems. According to James et al. (2022), although digitalization reduces manual errors, it can increase procedural complexity, especially during the transition phase from traditional to digital systems.

This complexity is particularly burdensome for SMEs and individual taxpayers who may lack the resources or expertise to navigate digital systems effectively. Pratama finds that many SMEs in developing countries face difficulties in understanding digital tax procedures, leading to increased compliance costs and potential errors [22]. Similarly, EY (2022) reports that while automation reduces long-term compliance costs, the initial adoption phase often requires significant investment in training, software, and system integration [7].

Moreover, the complexity of digital systems can lead to unintended compliance risks. Taxpayers may make mistakes due to system misunderstandings, technical errors, or unclear guidelines. OECD (2023) emphasizes that overly complex digital systems can discourage voluntary compliance, as taxpayers may perceive them as burdensome rather than helpful [19]. This highlights the importance of designing user-friendly systems that prioritize simplicity, clarity, and accessibility.

Additionally, the rapid pace of technological change can create uncertainty for both taxpayers and tax authorities. Frequent updates, system changes, and evolving regulations require continuous adaptation, which may overwhelm users. Therefore, simplifying system design and providing continuous support and guidance are essential to ensure that digitalization achieves its intended goals.

3) Data Privacy and Security Issues

Data privacy and security concerns represent a significant challenge in the implementation of digital tax systems. Digital taxation relies heavily on the collection, storage, and analysis of large volumes of taxpayer data, including sensitive financial information. According to OECD (2020), the increasing use of digital technologies in tax administration raises critical concerns about data protection, confidentiality, and cybersecurity risks [18].

Taxpayers may be reluctant to fully engage with digital tax systems if they perceive that their data is not adequately protected. PwC (2023) highlights that concerns about data breaches, unauthorized access, and misuse of information can undermine trust in digital tax systems [23]. This is particularly important because trust is a key determinant of voluntary compliance, as emphasized [1]. Without trust in data security, taxpayers may resist digitalization efforts or seek ways to avoid participation.

In addition, cyber threats pose a growing risk to tax administrations. Digital tax systems are attractive targets for cyberattacks due to the sensitive nature of the data they contain. Deloitte notes that tax authorities must invest significantly in cybersecurity measures to protect their systems from hacking, data leaks, and other threats [8]. Failure to address these risks can lead to severe consequences, including financial losses, reputational damage, and reduced taxpayer confidence.

Furthermore, there are ethical considerations related to data usage. The integration of AI and big data analytics raises questions about how taxpayer data is used, particularly in automated decision-making processes such as risk profiling and audit selection. OECD (2023) emphasizes the need for transparency and accountability in the use of such technologies to ensure that taxpayer rights are protected [19]. Therefore, addressing data privacy and security issues requires a comprehensive approach that includes legal frameworks, technological safeguards, and ethical guidelines.

4) Institutional Weaknesses

Institutional weakness is another major barrier to the successful implementation of digital tax systems, particularly in developing countries. Institutional factors such as governance quality, administrative capacity, regulatory clarity, and inter-agency coordination play a crucial role in determining the effectiveness of digital tax reforms. According to Bird and Zolt (2021), strong institutions are essential for ensuring that tax policies are implemented consistently and fairly, which in turn enhances taxpayer compliance [3].

In many developing countries, tax administrations face challenges such as limited human resources, inadequate training, and lack of technological expertise. World Bank (2022) highlights that institutional capacity constraints often hinder the adoption and management of digital tax systems [31]. For example, insufficient training of tax officials can lead to inefficient system use, errors in data processing, and delays in service delivery. Studies such as Nasution et al. in Indonesia show that institutional readiness significantly influences the success of digital tax implementation [16].

Moreover, regulatory uncertainty can create additional challenges. The rapid evolution of the digital economy requires continuous updates to tax regulations, which may lead to inconsistencies and confusion. Devereux et al. (2021) argue that unclear or outdated regulations can reduce compliance and create opportunities for tax avoidance [4]. In addition, weak coordination between government agencies can result in fragmented systems and inefficient data sharing, limiting the effectiveness of digital tax initiatives.

Transparency and accountability are also critical components of institutional strength. OECD (2020) emphasizes that digitalization alone is not sufficient to improve compliance [18]; it must be accompanied by institutional reforms that enhance governance and build taxpayer trust. Without such reforms, digital tax systems may fail to achieve their full potential. Therefore, strengthening institutions is a fundamental requirement for the success of digital tax compliance in the digital era.

F. Research Gaps

1) Lack of Integrated Frameworks

One of the most significant gaps identified in the literature is the absence of a comprehensive and integrated framework that simultaneously incorporates behavioral, technological, and institutional factors in explaining digital tax compliance. Most existing studies tend to focus on a single dimension, such as technological adoption or taxpayer behavior, without adequately considering the interaction between these elements. For instance, Gupta and Nagadevara (2022) primarily emphasize the role of artificial intelligence in improving compliance, while Alm and Torgler (2021) focus on behavioral aspects such as tax morale and trust [9] [1]. Although these studies provide valuable insights, their fragmented approach limits the development of a holistic understanding of digital tax compliance.

Furthermore, Kirchler et al., through the Slippery Slope Framework, highlight the importance of balancing trust and enforcement [13]; however, this framework does not explicitly integrate technological factors, which are increasingly central in the digital era. Similarly, institutional studies such as Bird and Zolt (2021) emphasize governance quality but often overlook how digital technologies reshape institutional capacity and taxpayer interactions [3]. This fragmentation

creates theoretical gaps, as there is no unified model that explains how behavioral, technological, and institutional factors interact dynamically in digital tax environments.

Recent literature also calls for interdisciplinary approaches that combine insights from accounting, information systems, and behavioral economics. According to OECD (2023), digital transformation in taxation requires a systemic perspective that integrates technology with governance and taxpayer behavior [19]. Without such integration, policy recommendations may be incomplete or ineffective. Therefore, future research should aim to develop comprehensive frameworks that capture the complexity of digital tax compliance and provide more robust theoretical and practical contributions.

2) Limited Research in Developing Countries

Another major gap in the literature is the limited focus on developing countries, despite the fact that these countries face the most significant challenges in implementing digital tax systems. Much of the existing research is concentrated in developed economies, where digital infrastructure, institutional capacity, and taxpayer awareness are relatively advanced. For example, studies conducted in Europe and OECD countries (e.g., [13]; [19]) often assume a high level of technological readiness, which may not be applicable to developing contexts.

In contrast, developing countries such as Indonesia, India, and many African nations face unique challenges, including limited digital infrastructure, low levels of digital literacy, and weaker institutional frameworks. According to the World Bank (2022), these constraints significantly affect the effectiveness of digital tax systems, often resulting in uneven compliance levels across different taxpayer groups [31]. Empirical studies in Indonesia, such as Pratama (2022) and Rahman et al. (2022), highlight that SMEs and individual taxpayers often struggle to adapt to digital tax systems due to limited knowledge and access to technology [22], [24].

Moreover, cultural and socio-economic factors in developing countries may influence tax compliance differently compared to developed economies. Torgler (2021) suggests that tax morale and trust in government vary significantly across countries, affecting compliance behavior. However, these contextual differences are often underexplored in the literature. As a result, policy recommendations based on studies from developed countries may not be directly applicable to developing contexts. Therefore, there is a need for more context-specific research that considers local conditions, institutional realities, and socio-cultural factors in developing countries.

3) Insufficient Longitudinal Studies

A further gap in the literature is the lack of longitudinal studies examining the long-term impact of digital tax systems on compliance behavior. Most existing research relies on cross-sectional data or short-term evaluations, which provide only a snapshot of the effects of digitalization. While these studies are useful for understanding immediate outcomes, they do not capture the dynamic and evolving nature of digital tax compliance over time.

According to OECD (2023), digital transformation in taxation is a continuous process that evolves with technological advancements and changes in taxpayer behavior [19]. Therefore, understanding its long-term effects requires longitudinal analysis. For example, while Setyowati et al. (2022) demonstrate that digital tax systems improve compliance in the short term, it remains unclear whether these improvements are sustained over time or whether taxpayers adapt their behavior in response to new systems [26].

Additionally, behavioral responses to digitalization may change over time. Alm and Torgler argue that initial increases in compliance may be driven by novelty or enforcement effects, but long-term compliance depends on trust and institutional credibility [1]. Without longitudinal studies, it is difficult to assess whether digital tax systems lead to sustainable improvements in compliance or merely temporary changes.

Furthermore, technological systems themselves evolve rapidly, introducing new features and capabilities that may influence compliance differently over time. Deloitte (2023) notes that

continuous innovation in AI and data analytics is transforming tax administration, making it necessary to study these changes over extended periods [8]. Therefore, future research should adopt longitudinal approaches to better understand the long-term implications of digital tax transformation.

4) Limited Focus on Taxpayer Experience

Another important gap in the literature is the limited attention given to taxpayer experience in digital tax systems. While many studies focus on compliance outcomes, technological efficiency, and institutional performance, relatively few examine how taxpayers perceive and interact with digital tax systems. This is a critical oversight, as taxpayer experience plays a key role in shaping compliance behavior.

According to OECD (2020), modern tax administration should prioritize a “taxpayer-centric approach,” where systems are designed to be user-friendly, transparent, and accessible [18]. However, many digital tax systems are still perceived as complex and difficult to use, particularly by SMEs and individual taxpayers. Studies such as Pratama (2022) indicate that users often face challenges in navigating digital platforms, which can lead to frustration and reduced compliance [22].

Moreover, James et al. (2022) highlight that user experience, including system usability and clarity of information, significantly influences taxpayer satisfaction and willingness to comply. If taxpayers perceive digital systems as burdensome or confusing, they may be less likely to engage fully with them, even if the systems are technically efficient. This suggests that technological effectiveness alone is not sufficient; user experience must also be considered.

In addition, the lack of qualitative research on taxpayer experience limits our understanding of how digital tax systems are perceived in practice. Most studies rely on quantitative data, which may not capture the nuances of user interaction and perception. World Bank (2022) emphasizes the need for more qualitative and mixed-method research to explore taxpayer perspectives in greater depth [31]. Therefore, future research should focus more on user-centered analysis to ensure that digital tax systems are not only efficient but also accessible and acceptable to taxpayers.

G. Proposed Conceptual Model

The findings of this study lead to the development of an integrated conceptual model referred to as the Integrated Digital Tax Compliance Model (IDTCM). This model is designed to address the fragmentation identified in previous literature by incorporating three key dimensions—behavioral, technological, and institutional factors—into a unified framework. Unlike prior studies that examine these dimensions in isolation, this model emphasizes the dynamic interaction among these factors in shaping digital tax compliance. According to OECD (2023), the success of digital tax systems depends not only on technological advancement but also on how these systems align with taxpayer behavior and institutional capacity [19]. Therefore, the proposed model provides a more holistic perspective that reflects the complexity of modern tax administration.

At the core of the model, behavioral factors play a fundamental role in determining how taxpayers respond to digital tax systems. Elements such as tax morale, trust in government, and perceived fairness influence whether taxpayers willingly adopt digital platforms and comply with tax obligations. Alm and Torgler argue that voluntary compliance driven by intrinsic motivation is more sustainable than compliance driven solely by enforcement [1]. This perspective is further supported by the Slippery Slope Framework proposed by Kirchler et al., which highlights that trust and power must be balanced to achieve optimal compliance [13]. In the context of digital taxation, while technology increases enforcement capability, it must also enhance transparency and fairness to build taxpayer trust. Thus, behavioral factors act as a mediating mechanism that determines the effectiveness of technological and institutional interventions.

The second component of the model, technological factors, represents the operational backbone of digital tax compliance. These include system usability, digital infrastructure, automation, and data integration. Digital technologies such as e-filing, e-invoicing, and artificial intelligence enable tax authorities to streamline processes, reduce errors, and enhance monitoring capabilities. According to Gupta and Nagadevara, the adoption of AI and big data analytics significantly improves fraud detection and compliance enforcement [9]. Similarly, Deloitte (2023) emphasizes that automation enhances efficiency and reduces administrative costs [8]. However, the model recognizes that technological effectiveness is contingent upon user acceptance and accessibility. As noted by World Bank (2021), inadequate infrastructure and digital literacy can limit the impact of digital tax systems, particularly in developing countries [30]. Therefore, technological factors are not independent drivers of compliance but interact closely with behavioral readiness and institutional support.

The third dimension, institutional factors, provides the structural foundation for the implementation and sustainability of digital tax systems. These factors include governance quality, regulatory frameworks, administrative capacity, and transparency. Strong institutions ensure that digital tax policies are implemented consistently and fairly, which in turn enhances taxpayer trust and compliance. Bird and Zolt highlight that effective tax administration requires not only sound policies but also strong institutional capacity to enforce them [3]. In addition, the rapid evolution of the digital economy necessitates adaptive regulatory frameworks, such as the OECD's global tax reforms discussed by Devereux et al. (2021) [4]. Without clear and updated regulations, digital tax systems may create uncertainty and reduce compliance. Furthermore, institutional transparency and accountability are critical for building trust, as emphasized by OECD (2020), which notes that digitalization must be accompanied by governance reforms to achieve its full potential [18].

Importantly, the proposed model emphasizes the interdependence among behavioral, technological, and institutional factors. These dimensions do not operate in isolation but influence each other in a continuous and dynamic manner. For example, advanced technological systems can enhance enforcement capabilities, but without trust in institutions, taxpayers may resist or attempt to circumvent these systems. Conversely, strong institutional frameworks can increase trust, but without user-friendly technology, compliance may remain low due to practical barriers. Alm and Torgler (2021) suggest that compliance is highest when both enforcement and trust are present, while OECD (2023) underscores that digital transformation must integrate technological innovation with institutional reform and taxpayer engagement [1], [19]. This interdependence highlights the need for a balanced approach in designing digital tax systems.

Furthermore, the model also incorporates the role of contextual factors, particularly in developing countries. As highlighted by World Bank (2022), variations in infrastructure, governance, and socio-economic conditions significantly influence the effectiveness of digital tax systems [31]. Studies in Indonesia, such as Rahman et al. (2022) and Pratama (2022), demonstrate that local conditions, including digital literacy and institutional capacity, shape how taxpayers interact with digital systems [22], [24]. Therefore, the model is not only applicable at a global level but can also be adapted to specific national contexts, making it relevant for both academic research and policy development.

In conclusion, the Integrated Digital Tax Compliance Model (IDTCM) provides a comprehensive framework that captures the complexity of digital tax compliance in the modern era. By integrating behavioral, technological, and institutional perspectives, the model addresses the limitations of previous studies and offers a more holistic understanding of compliance dynamics. This model also serves as a foundation for future empirical research, which can test the relationships among these variables and explore their implications in different contexts. As digital transformation continues to

reshape tax systems worldwide, such integrative approaches are essential for developing effective and sustainable tax policies.

5. CONCLUSION

Based on the findings of this study, several conclusions can be drawn:

1. Digital transformation has significantly improved tax administration by increasing efficiency, transparency, and monitoring capabilities. Technologies such as e-filing, e-invoicing, and artificial intelligence play an important role in enhancing tax compliance.
2. Digital tax compliance is influenced by three main factors: behavioral, technological, and institutional factors. Taxpayer trust and tax morale, supported by effective technology and strong institutions, are essential in improving compliance.
3. Despite its benefits, digital tax systems still face several challenges, including the digital divide, system complexity, data privacy concerns, and institutional limitations, especially in developing countries.
4. This study highlights the importance of an integrated approach, combining behavioral, technological, and institutional aspects, as reflected in the proposed Integrated Digital Tax Compliance Model (IDTCM).

Based on the findings and identified research gaps, several directions for future research are proposed:

1. Future studies are encouraged to empirically test the Integrated Digital Tax Compliance Model (IDTCM) using quantitative or mixed methods.
2. More research is needed in developing countries to better understand local challenges such as digital literacy, infrastructure, and institutional capacity.
3. Longitudinal studies should be conducted to examine the long-term impact of digital tax systems on taxpayer behavior.
4. Future research should also focus on taxpayer experience, including system usability and accessibility.
5. Further studies can explore the role of emerging technologies such as artificial intelligence and blockchain in improving tax compliance.

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