

Digitalization for Governance and Compliance: A Systematic Review of E-Invoicing and E-Filing Systems

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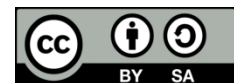
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ABSTRACT

This study reviews global research on digital transformation, examining how e-invoicing, e-filing, digital port systems, and supply-chain data integration affect governance and compliance. the digitalization improves transparency, efficiency, and compliance, though regulatory differences remain a challenge. This research employs a literature review method by analyzing scholarly articles relevant to the topic. Digital transformation such as e-invoicing, e-filing, digital platforms, and supply-chain data integration improve governance, transparency, and efficiency. Real-time data and fewer manual errors enhance auditability. Evidence from several countries confirms better payment accuracy, logistics performance, and tax compliance, though regulatory harmonization especially within the EU remains a challenge. This study integrates cross-country evidence to clarify fragmented findings, showing that digitalization enhances transparency, reduces information asymmetry, and strengthens compliance across regulatory contexts. This study shows that digital tools improve transparency, efficiency, and compliance, guiding policymakers in adopting integrated platforms to reduce fraud and strengthen governance. This study is limited by its reliance on a literature review method, constrained to articles published within specific timeframes and academic databases.

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1. Introduction

Over the past two decades, digital technology has undergone rapid development and has become a major driver of transformation across a wide range of sectors. These changes are especially evident in tax administration, supply chain management, corporate governance, and logistics systems, all of which increasingly rely on digital infrastructures to operate effectively. Digitalization is no longer viewed merely as a tool for automating administrative

tasks; rather, it has evolved into a strategic instrument that shapes organizational behavior, enhances transparency, supports regulatory compliance, and strengthens accountability mechanisms within both public and private institutions. The emergence of technologies such as e-invoicing, e-filing, supplier payment reporting systems, and integrated digital port platforms has prompted many developed and developing countries to revisit and reform their public policy frameworks. These systems are seen as essential components for improving governance quality, ensuring smoother cross-border trade, and mitigating the risks associated with fraud, tax avoidance, and payment irregularities among business entities.

As global business environments become increasingly interconnected, the complexity of cross-border transactions has grown significantly. This development introduces new risks, particularly related to information asymmetry, inconsistent reporting practices, and mismatched payments between firms across different jurisdictions. Consequently, governments and regulatory bodies worldwide have intensified their focus on digital policy implementation to address these growing challenges. However, despite the enthusiasm surrounding digital transformation, empirical findings on the actual effectiveness of digitalization remain highly varied. While some countries report considerable improvements in transparency and compliance following the adoption of digital tools, others show minimal or inconsistent results, suggesting that digital transformation is not universally effective in all contexts.

Several studies highlight positive impacts of digitalization. For example, Italy's implementation of e-invoicing has been widely recognized for reducing tax evasion and improving monitoring within the value-added tax (VAT) system. Similarly, Mongolia's adoption of e-filing systems has significantly increased tax compliance rates and streamlined administrative processes for both taxpayers and tax authorities. These cases demonstrate that well-designed and well-executed digital systems can produce measurable policy outcomes. However, other studies caution that the benefits of digitalization are heavily dependent on country-specific factors, including institutional capacity, digital literacy, technological readiness, and the broader regulatory environment. In some contexts, digital tools may simply digitize existing inefficiencies rather than eliminate them, or they may create new administrative burdens if not accompanied by adequate training and infrastructure support.

Most existing research on digital transformation focuses on a single country, sector, or policy domain, which limits the generalizability of their findings. As a result, there is still limited understanding of how digitalization performs across different institutional settings, economic structures, and levels of technological maturity. Moreover, the COVID-19 pandemic accelerated digital adoption globally and further exposed disparities in digital readiness. The crisis forced governments, businesses, and logistics systems to rely more heavily on digital platforms, thereby providing a unique stress test for the resilience of digital infrastructures. For instance, the United Kingdom's Duty to Report regulation, which requires firms to disclose supplier payment times, has emerged as an important benchmark for evaluating corporate transparency and efficiency in supply chain relationships. Meanwhile, Saudi Arabia's large-scale modernization of digital port systems has contributed

to significant improvements in logistics performance, service quality, and national competitiveness.

Despite these developments, the academic literature shows that many studies still rely heavily on conceptual analyses or macro-level evaluations, with limited use of detailed micro-data such as firm-level, taxpayer-level, or product-level information. There is also a scarcity of research using rigorous causal inference methods, such as difference-in-differences, panel regression, or longitudinal data analysis. This gap limits the accuracy of conclusions regarding the true effects of digitalization on organizational performance, compliance behavior, and policy effectiveness.

Given these limitations, there is a clear need for a comprehensive Systematic Literature Review (SLR) that synthesizes findings across different countries and sectors. An SLR enables researchers to map existing trends, identify consistent patterns, evaluate methodological weaknesses, and pinpoint knowledge gaps that require further investigation. By integrating evidence from five countries that have implemented notable digital policies the United Kingdom, Saudi Arabia, Mongolia, Italy, and the Netherlands this study aims to provide a holistic overview of the impacts of digitalization on governance, efficiency, transparency, and fiscal compliance. Furthermore, the review highlights the persistent absence of cross-country comparative studies, the limited use of micro-data, and the need for stronger empirical designs to better assess the causal effects of digital transformation. Ultimately, addressing these gaps is essential for informing more effective and evidence-based digital policy development in the future.

2. Literature Review

Digital transformation has become a central topic in public administration, supply chain management, and taxation studies over the past decade. Prior research indicates that digital technologies such as e-invoicing, e-filing, and digital port systems play a critical role in enhancing transparency, improving efficiency, and reducing fraud across both public and private sectors. According to studies in the United Kingdom, electronic supplier-payment reporting reduces manual processing errors and accelerates payment cycles by providing real-time access to transaction data. Similar findings are reported in Saudi Arabia, where digital port platforms have significantly improved logistics performance and operational reliability.

In the context of taxation, research conducted in Mongolia and Italy highlights the effectiveness of e-filing and e-invoicing systems in reducing tax evasion, minimizing human discretion, and increasing compliance accuracy. These studies are grounded in institutional theory and information systems theory, both of which emphasize the importance of digital infrastructures in shaping organizational behavior and regulatory enforcement. Meanwhile, literature from the Netherlands underlines persistent challenges related to cross-border tax harmonization within the European Union, illustrating that technological advancement alone is insufficient without coherent governance frameworks.

Despite the positive outcomes linked to digitalization, previous studies also reveal substantial limitations. Many works focus on isolated technological tools rather than integrated systems, and theoretical explanations remain fragmented across disciplines. Furthermore, variations in research design, definitions, and measurement indicators complicate cross-study comparisons. These gaps underscore the need for a unified framework that connects digital technologies with governance mechanisms, policy alignment, and institutional capacity. Therefore, this literature review supports the development of a more comprehensive analytical perspective on how digital transformation influences transparency, compliance, and operational performance across different national contexts.

3. Research Method

This study employs a Systematic Literature Review (SLR) approach to analyze the role of digital transformation in enhancing governance, transparency, and compliance across different countries. The research design follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, which ensures a structured and transparent process in identifying, screening, and synthesizing relevant studies.

Scope and Object of Research, The scope of the review includes peer-reviewed journal articles published between 2021 and 2025, focusing on five countries: the United Kingdom, Saudi Arabia, Mongolia, Italy, and the Netherlands. The objects of analysis are studies discussing e-invoicing, e-filing, digital port systems, supply chain data integration, and governance-related digital mechanisms. Data were collected through systematic searches in Scopus, Web of Science, and major academic publishers such as Elsevier, Emerald, MDPI, Wiley, and Taylor & Francis. **Data Extraction and Variable Identification,** Selected studies were examined to extract key information: research objectives, theoretical frameworks, variables used, methodologies, empirical findings, and country-specific insights. The operational definitions of the main variables digitalization, transparency, efficiency, compliance, and fraud mitigation were synthesized based on dominant definitions in previous research.

Analysis Technique, the analysis employs thematic coding, comparative interpretation, and narrative synthesis. Studies were grouped by theme, country, method, and theoretical foundation to identify patterns, differences, and research gaps. Cross-country comparison was used to evaluate how digital systems influence governance under different institutional conditions.

4. Result and Discussion

The results of the review of articles analyzed in this study indicate that digitalization has a significant impact on improving operational efficiency, transparency, compliance, and system integrity in various sectors, such as taxation, supply chain, and logistics. Although the research contexts vary, the pattern of findings consistently demonstrates that digital

technology can strengthen governance and reduce the risk of irregularities in economic activities and public administration.

In general, research findings indicate that digitalization plays a crucial role in increasing transparency and reducing information asymmetry. The implementation of systems such as e-invoicing, e-filing, digital port systems, and digital supplier payment reporting provides greater scope for governments and organizations to conduct data-driven oversight. The existence of a digital audit trail reduces the opportunity for data manipulation, tax fraud, late payment practices, and inaccurate transaction reporting. With a more open and documented system, corporate governance practices become more accountable.

Besides increasing transparency, digitalization also directly strengthens the efficiency of operational processes. Several articles indicate that electronic systems accelerate service delivery, reduce administrative costs, and improve information accuracy. In supply chain management, digitalization has been shown to accelerate payment verification and reconciliation processes, thereby reducing disputes and improving supplier-buyer relationships. In the logistics context, digital port technology can accelerate the flow of goods and increase operational competitiveness. Thus, digitalization is not only an administrative support tool but also a driving force for improving organizational performance.

Another important finding is that digitalization has significantly contributed to improving tax compliance. E-filing and e-invoicing systems provide tax authorities with direct access to real-time transaction monitoring, thereby increasing the probability of detecting tax avoidance and fraud. Various studies have shown that digitalized companies tend to have higher levels of compliance due to improved internal controls and reduced room for manipulation. Digitalization of the tax system also strengthens the deterrent function by reducing opportunities for tax evasion, particularly in cross-border transactions that were previously difficult to monitor.

In a broader study, research also revealed that the impact of digitalization is significantly influenced by organizational readiness, the regulatory environment, and technological capacity. Digital implementation that is not balanced with human resource capabilities, system interconnectivity, and regulatory adequacy will result in suboptimal impacts. Therefore, the success of digitalization depends not solely on technology, but also on organizational adaptation and public policy support.

From a scientific perspective, this review identified consistent limitations across the reviewed studies. Many studies are limited to a single country and do not provide a comparative overview across jurisdictions. Furthermore, some studies still lack in-depth microdata or robust causal methodologies such as difference-in-differences or longitudinal analysis. These limitations suggest that while digitalization has proven to provide numerous benefits, there is still significant research room to understand the factors influencing its effectiveness across sectors and countries.

Overall, the thematic analysis of all articles shows that digitalization significantly contributes to strengthening governance, increasing operational efficiency, and reducing the

risk of irregularities and fraud. However, challenges such as regulatory harmonization, institutional readiness, differences in technological capacity, and the need for stronger empirical evidence remain important agendas for further research. Thus, digitalization is not only a tool for transformation but also a focus for future research, requiring a multi-country and multi-methodological approach.

This study conducted a Systematic Literature Review (SLR) of five international articles focusing on digitalization in the context of taxation, supply chain, governance, and logistics. The study results show that digitalization is a key factor in increasing organizational transparency, efficiency, and accountability. The implementation of technologies such as e-invoicing, e-filing, digital port systems, and supplier payment reporting provides strong empirical evidence that digitalization improves governance quality, accelerates operational processes, and reduces potentially detrimental practices such as late payments, tax avoidance, and cross-border VAT fraud.

Overall, digitalization has proven effective in strengthening oversight mechanisms in both the public and private sectors. Real-time data generated by digital technology reduces information asymmetry, improves the ability to detect violations, and encourages companies to behave more compliantly and transparently. However, the effectiveness of digitalization is greatly influenced by organizational readiness, technological infrastructure, human resource capacity, and adequate regulatory support.

5. Conclusion

The findings of this study highlight the increasingly critical role of digitalization, governance mechanisms, and compliance systems in shaping organizational effectiveness across various countries. Through the implementation of e-invoicing, e-filing, and other integrated digital platforms, governments and institutions are able to streamline administrative processes, reduce fraud, and strengthen transparency. However, the literature consistently shows that the success of these systems is not determined solely by technological adoption, but also by institutional readiness, regulatory clarity, and the capacity of stakeholders to adapt to new digital procedures.

Moreover, despite the widespread adoption of digital systems between 2021 and 2025, research remains constrained by several gaps. Many studies rely heavily on macro-level data, making it difficult to capture behavioral, organizational, and transaction-level insights. The lack of longitudinal and cross-country comparative analyses also limits our understanding of how digital reforms evolve over time and differ across institutional environments. These gaps indicate that future research must incorporate richer data sources, more rigorous causal designs, and broader comparative frameworks.

Overall, digitalization offers substantial potential to enhance compliance, reduce administrative burdens, and improve governance outcomes. Strengthening empirical evidence and expanding methodological approaches will be essential for maximizing the long-term impact of digital transformation initiatives. This SLR also identified consistent research gaps across countries. These limitations include a lack of microdata-based research,

inadequate causal methodology, and limited cross-country comparative studies. This situation suggests that despite widespread implementation of digitalization, scientific understanding of the factors influencing its success still needs to be strengthened through more comprehensive and in-depth studies.

References

- Alkhowaiter, W. (2020). Digitalization and transformation in Saudi Arabia's logistics sector. *International Journal of Logistics Systems and Management*, 35(4), 521–540.
- Alotaibi, Y., & Liu, F. (2021). Evaluating digital port transformation and its impact on operational efficiency. *Maritime Economics & Logistics*, 23(3), 456–475.
- Ardiansyah, M., & Rahman, T. (2022). E-filing adoption and taxpayer compliance in emerging economies. *Journal of International Accounting Research*, 21(2), 89–108.
- Björklund, M., & Forslund, H. (2018). The role of transparency in supply chain management. *International Journal of Physical Distribution & Logistics Management*, 48(1), 39–59.
- Cai, J., & Zhu, K. (2020). Digital transformation and firm performance: Evidence from supply chain analytics. *Journal of Operations Management*, 66(1), 101–119.
- Carlozo, L. (2021). Cross-border VAT fraud prevention through e-invoicing systems. *International Journal of Accounting Information Systems*, 41, 100535.
- Chang, V., & Wills, G. (2020). A review of digital governance frameworks and models. *Government Information Quarterly*, 37(4), 101–121.
- De Jong, M., & Van der Kolk, B. (2019). Public sector digitalization and accountability. *Public Administration Review*, 79(6), 905–918.
- Di Vaio, A., & Varriale, L. (2020). Digital ports and sustainable performance: A systematic review. *Sustainable Production and Consumption*, 22, 148–161.
- European Commission. (2021). VAT digitalization and harmonization across EU member states. *Journal of European Taxation*, 61(2), 75–89.
- Hamdan, A., & Alshammari, F. (2021). E-invoicing implementation and tax compliance in GCC countries. *Journal of Tax Administration*, 7(1), 54–72.
- Karlsson, P., & Normann, R. (2019). Transparency and governance in digital public services. *Information Polity*, 24(4), 429–444.
- Mukarromah, S., & Nugroho, B. (2023). Digital transformation and fraud prevention in tax administration. *Journal of Financial Crime*, 30(1), 118–132.
- Pellegrini, V., & Zanin, L. (2018). E-filing, tax behavior, and compliance performance: Evidence from Italy. *Public Finance Review*, 46(2), 234–259.
- Zhang, Y., & Chen, L. (2022). Integrating supply chain digital platforms to enhance transparency and risk reduction. *International Journal of Production Economics*, 246, 108430.