COMPLIANCE BY DESIGN: REGISTRATION TO FILING PATHWAYS AND FRICTION POINTS

Journal of Strategic Behavior — Accounting —

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Abstract

This study examines the role of digital tax administration in shaping taxpayer compliance, with particular attention to the transition from registration to filing processes. Although digital systems such as e-registration, e-filing, and e-Billing have been implemented to simplify tax administration, taxpayers may still encounter administrative frictions that hinder the completion of compliance tasks. Using a compliance-by-design perspective, this study analyzes how procedural complexities, verification delays, and system-related issues create friction points along the compliance pathway.

The study adopts a conceptual approach by mapping the taxpayer journey form registration to filing and identifying potential drop-off points that may reduce effective compliance. The findings indicate that administrative frictions within digital tax systems can disrupt the compliance process and increase the likelihood of incomplete filings. Therefore, improving system design, simplifying procedures, and strengthening user experience are essential to support a more seamless compliance process.

This study contributes to the literature on digital tax administration by highlighting the importance of designing tax systems that minimize friction and facilitate taxpayer participation. The findings also provide policy insights for tax authorities seeking the enhance compliance through more user-centered digital services.

Keywords:
Tax compliance, Compliance by Design, Digital tax systems, E-filing, Taxpayer registration, Process audit, Tax administration.

1. Introduction

In modern tax administration, technical difficulties and complex administrative procedures remain significant barriers to taxpayer compliance. Many taxpayers experience challenges throughout the compliance process, including during registration, tax reporting, and payment procedures. These

challenges often arise from documentation requirements, identity verification processes, and technical issues within digital tax systems such as e-Billing and e-filing. As a result, these obstacles increase the time required to complete compliance tasks and reduce the overall effectiveness of taxpayer compliance conversion.

One of the major problems contributing to these challenges is the absence of systematic end-to-end process mapping accompanied by consistent compliance funnel metrics. Without a clear process map, it becomes difficult for tax authorities to identify bottlenecks and evaluate which stages of the compliance process require improvement and the evaluation of user experience within tax administration systems. Measurement tools such as processing time, click counts, system errors, and drop-off rates are rarely integrated into the evaluation of tax compliance processes. Existing tax administration practices often emphasize legal and regulatory compliance, while providing limited attention to process optimization and service design that could improve the overall taxpayer experience.

The concept of Compliance by Design offers an alternative approach to addressing these challenges. This concept views tax compliance not merely as a regulatory obligation but as an integrated component of organizational processes. Through this approach, compliance mechanisms are embedded directly within system design and business workflows. Automated processes, simplified procedures, and user-friendly digital interfaces can help reduce administrative burdens and facilitate smoother compliance activities

Based on this perspective, this study seeks to examine a central question: at which stage of the compliance pathway-form registration to tax reporting-do the most significant frictions occur? These frictions may arise from inefficient processes, poorly designed information systems, insufficient administrative capacity, or complex regulatory requirements/ Identifying the primary sources of friction is essential for developing targeted interventions that can improve taxpayer compliance.

Therefore, the main objective of this study is to map the end-to-end taxpayer compliance process, covering registration, tax calculation, payment, and reporting procedures. The study also aims to identify friction points, the research seeks to prioritize intervention strategies that can improve compliance efficiency. In addition, the study proposes practical process improvement measure and visualization tools that enable tax administration to better understand submission flows and detect compliance barriers. These insights may support the development of short-term operational improvement strategies, such as 30-, 60-, or 90-day intervention plans to enhance the efficiency of tax administration systems.

In particular, improvements tax administration are closely related to Sustainable Development Goal 16, which emphasize the importance of building effective, accountable, and transparent institutions. Efficient tax systems also support innovation and institutional capacity building, which are relevant to Sustainable Development Goal 9 concerning resilient infrastucture and sustainable industrial development. By reducing administrative friction through improved process design and digital technologies, tax authorities can enhance institutional performance and strengthen the role of public institutions in supporting sustainable development.

Therefore, reducing administrative friction in tax administration is not only important for improving taxpayer compliance but also for supporting broader public sector modernization efforts. In this context, this study views friction reduction as a key component of tax administration reform and an important step toward strengthening institutional effectiveness.

2. Literature Review and Hypotheses Development

2.1 Compliance by Design

Compliance by Design is a system design approach that integrates compliance requirements directly into administrative processes so that compliance becomes the default outcome. This concept emphasizes minimizing administrative burdens, automating procedures, and implementing preventive controls to reduce potential errors or violations. By embedding

compliance mechanisms within system design, tax authorities can improve voluntary compliance and reduce the risk of non-compliance. Recent development in digital technologies further support this approach. The integration of technologies such as blockchain and big data analytics in tax compliance risk management has demonstrated improvements in transparency and monitoring effectiveness.(Rahayu, n.d.)

2.2 e-Registration, e-Filing, e-Billing

E-registration, e-filing, and e-Billing represent the main components of digital tax administration designed to simplify taxpayers registration, reporting, and payment processes. E-registration allows taxpayers to register online, while e-filing enables the electronic submission of tax returns. E-Billing generates payment codes and provides integrated notifications to facilitate timely tax payment. These digital services are generally governed by Service Level Agreements (SLAs) that regulate system performance, accessibility, and processing time. The implementation of these systems aims to increase efficiency and improve the overall taxpayer experience.

2.3 Service Blueprint & Process Mapping

Service blueprinting and process mapping are analytical tools used to visualize service delivery processes and identify interactions between taxpayers, tax officers, and information systems. In tax administration, these processes are often illustrated using swimlane diagrams to clarify the roles of each actor involved. Through this visualization, researchers can identify key interaction points and detect inefficiencies within the workflow. This approach helps improve service design, reduce operational friction, and helps improve service design, reduce operational friction, and enhance the taxpayer experience when using digital tax service.(Romadhon & Diamastuti, 2020)

2.4 Friction Audit & Funnel Metrics

A Friction audit involves identifying obstacles that hinder the smooth execution of tax compliance processes. These obstacles may include waiting times, complex procedures, system errors, and high drop-off rates in digital tax services. Funnel metrics are used to measure these challenges quantitatively, focusing on indicators such as processing time, number of procedural steps, error rates, and user drop-offs. Improvement priorities are often determined using evaluation frameworks such as ICE (Impact, Confidence, Ease) and WSJF (Weighted Shortest Job First), which help identify the most impactful and feasible interventions.(Iskandar & Andriani, 2017)

2.5 Conceptual Framework

The conceptual framework of this study explains the relationship between digital process friction, funnel drop-off, and taxpayer compliance. Administrative friction in digital tax systems is expected to increase drop-off rates during the compliance process, thereby reducing effective compliance outcomes. Design-based improvements, such as automation and process simplification,are expected to reduce friction and improve compliance performance, particularly in terms of transparency and accountability, which aligns with the objectives of Sustainable Development Goal 16.(Nurhamzah, 2025)

2.6 Hypotheses Development

The digitalization of tax administration aims to simplify procedures and increase compliance efficiency. However, administrative friction within digital systems may hinder taxpayers from completing compliance processes successfully. Within the compliance funnel perspective, taxpayers move through several stages before fulfilling their obligations. Frictions that occur during these stages may increase the likelihood of drop-offs, ultimately reducing compliance outcomes.

Based on the theoretical framework, this study proposes the following hypotheses:

H1: Administrative friction in digital tax systems negatively affects taxpayer compliance.

H2: Administrative friction in digital tax systems increases funnel drop-off during the tax compliance process.

H3: Funnel drop-off negatively affects effective taxpayer compliance.

H4: Improvements in digital process design through the compliance by design approach reduce administrative friction and improve taxpayer compliance.

3. Research Methodology

This study employs an end-to-end audit approach complemented by a friction audit to analyze the taxpayer compliance pathway, which includes registration, reporting, and payment processes within digital tax administration systems. The unit of analysis consists of various process stages and their related activities, including interactions between taxpayers, tax officers, and information systems. Particular attention is given to user-system touchpoints, documentation requirements, and system functionalities that may influence the efficiency of the compliance process.

Data collection is conducted using multiple sources to ensure comprehensive analysis. First, official documents and regulatory frameworks related to digital tax administration are examined to understand procedural requirements. Second, system walkthroughs and screen-based observations are used to analyze system workflows and operational logs. Third, task observation is conducted to measure time-on-task and click counts during the completion of compliance activities. Finally, short interviews with both system users and tax officers are conducted to obtain additional insights regarding operational challenges and user experiences.

Several research instruments are employed to support the data collection process. These include process blueprints for visualizing workflow structures, time-on-task measurement forms, and friction registers to document obstacles encountered during the process. Additional instruments such as questionnaires and document checklists are also used to capture supporting information related to compliance procedures.

Key performance metrics are used to evaluate the efficiency of the compliance process. These metrics include lead time for completing tasks, error rates during system use, process abandonment rates, and single-pass success rates indicating successful completion without repeated attempts. In addition, the rate of assistance requests, such as support tickets submitted by users is analyzed. Where applicable, user satisfaction scores are also considered to assess the overall usability of digital tax services.

The analysis begins by mapping the existing process, referred to as the "as-is" process, in order to identify bottlenecks and operational inefficiencies. Identified frictions are then evaluated using a prioritization approach based on the product of impact and ease of implementation. This scoring method helps determine which improvements can deliver the greatest benefits while

remaining feasible to implement. Based on this assessment, an improved "to-be" process is subsequently designed.

To ensure the validity of the findings, the study applies triangulation by comparing information obtained from multiple data sources. In addition, small-scale trials of the proposed improvements are conducted to test their practical applicability. After the implementation of these interventions, key performance indicators are monitored to evaluate the effectiveness of the proposed changes.

Overall, this methodological approach provides a practical and comprehensive framework for diagnosing and improving digital tax administration processes. By focusing on the identification and reduction of administrative friction, the study aims to enhance the efficiency of compliance procedures and improve overall taxpayer compliance outcomes.

4. Results

4.1. Process Mapping (Registration→Filing Pathway)

Table 1. Process Blueprint – Stage, Key Activity, Actors, Documents, Outputs/SLA

Stage	Key Activity	Actors (Taxpayer/Officers/ System)	Document/Entry	Outputs/SLA
Tax ID Registration	Submitting forms and verifying required documents.	Taxpayer, Tax Office Staff	Tax ID form, ID card, supporting documents	Tax ID issued (1-3 working days)
VAT Registration	Verification of VAT status and legal documents.	Taxpayer, Tax Office Staff	VAT certificate, company legal documents	VAT status confirmed (1-5 days)
Bookkeeping and Entry	Recording sales, purchases, and invoicing activities.	Accounting System, Taxpayer	Ledgers, transaction receipts, invoices	Transactions properly recorded
Tax Calculation	Calculating of income tax and VAT including fiscal adjustments.	Taxpayer, Accounting Officer	Financial statement, tax calculation tools	Tax payable determined
Tax Payment	Settlement of tax liabilities through the e-Billing system.	e-Billing system, Taxpayer	e-Billing code, tax payment receipt	Tax payment completed according to schedule
Tax Return Filing	Completing and submission of periodic or annual tax returns.	Taxpayer	Electronic tax return, tax reports	Tax return successfully submitted.
Local Tax Payment	Fulfilling of local taxes based on regional regulations.	Taxpayer, Local Government	Local tax forms, tax payment certificates	Local tax obligations fulfilled

This process map summarizes the stages required for a company to fulfill its tax compliance obligations. The process begins with taxpayer identification and registration, followed by bookkeeping, tax calculation, tax payment, and tax reporting. Each stage specifies

the responsible actors, required documentation, and expected outputs or service-level agreements in accordance with regulatory procedures.

4.2. Compliance Funnel (Conversion by Stage)

Table 2. Compliance Funnel – Conversion and Drop-off

Stage	Users N	Success N	Drop-off N	Conv. %	Notes
TAX ID Registration	20	18	2	90%	Two failures due to incomplete documents
VAT Registration	18	17	1	94%	One failure during legal document validation
Tax Return Filing	17	15	2	88%	Late online submission
Local Tax Payment	15	15	0	100%	All users met the regulatory deadline

The compliance funnel illustrates the effectiveness of each stage in the compliance process by measuring the proportion of users who successfully proceed to the next stage. This analysis highlights potential drop-off points where taxpayers encounter difficulties. Identifying these allows administrators to improvement efforts on the most critical areas of the compliance pathway.

4.3. Friction Register (Prioritization)

Table 3. Friction Register –Impact× Ease

ID	Stage	Symptom (metric)	Root Cause	Impact (H/M/L)	Ease (H/M/L)	Priority
1	Tax ID Registration	Two failed document verifications	Incomplete documents	M	H	High
2	Tax Return Filing	Two missed submission deadlines	System error or late input	M	M	Medium
3	VAT Registration	One failed legal validation	Unclear business legality	L	M	Low

This friction register identifies and prioritizes major obstacles encountered during the compliance process. Each friction point is evaluated based on observable symptoms, underlying root causes, and the level of impact on compliance efficiency. By combining the level of impact with the ease of resolution, the organization can determine priority areas for intervention and allocate resources more effectively.

4.4. Improvement Plan (Quick Wins)

Table 4.Improvement Plan – 30/60/90 Days

Initiative	Change (UX/Process/Regulation)	Owner	Resource	ETA (30/60/90)	KPIs Target
Document Simplification	Process	Tax Team	New document templates	30 Days	Zero registration failures

Online Return Training	UX and Process	Tax Training Unit	Online training modules	60 Days	>95% successful tax return submission
Legal Compliance Drive	Regulation and Documentation	Legal Officer	Regulatory outreach programs	90 Days	100% VAT status approval

Quick-win initiatives are designed for provide rapid and measurable improvements in the tax compliance process. Each initiatives specifies the type of intervention, responsible parties, required resources, implementation timeline, and measurable performance indicators. These improvement actions are intended to address the primary bottlenecks identified during the friction analysis while ensuring practical and achievable implementation.

5. Discussions and Conclusions

The results of the process mapping and compliance funnel analysis indicate that several obstacles occurring at critical stages of the tax compliance process significantly affect overall compliance performance. In particular, issues such as incomplete documentation and late tax return submissions contribute to measurable drop-off rates within the compliance pathway. These findings highlight the importance of balancing user-friendly service design with effective internal control mechanisms. While simplifying processes can increase compliance conversion rates, adequate validation and regulatory safeguards must remain in place to maintain the integrity of the tax administration system.

The findings also demonstrate the necessity of strengthening digital process design within tax administration. Simplified forms, automated validation mechanisms, timely notifications, and accessible user support are essential of clear service level agreements (SLAs) and continuous monitoring of key performance indicators (KPIs) allow tax authorities to detect operational issues early and respond more effectively to potential compliance failures.

Based on the friction audit and funnel analysis, several practical improvement measure were identified. These include simplifying documentation requirements, implementing automated validation systems, providing training for electronic tax return submission, and improving regulatory outreach to taxpayers. The implementation of these improvements is expected to reduce processing time, lower error rates, and increase overall compliance conversion rates. Regular evaluation of key performance indicator is necessary to assess whether these interventions effectively improve compliance outcomes.

From a broader perspective, the findings of this study highlight the strategic role of digital transformation in improving tax administration performance. Digital initiatives such as integrated taxpayer portals, automated form validation, mobile access, and real-time monitoring systems contribute to greater administrative efficiency and transparency. These innovations not only improve operational performance but also promote a more responsive and service-oriented environment.

Furthermore, effective digital governance requires strong institutional coordination and collaboration across organizational units. The development of inclusive digital services is essential to ensure that tax systems remain accessible and individualis with limited digital capabilities. By improving the usability and accessibility of digital tax services, public institutions can strengthen taxpayer trust and encourage voluntary compliance.

In conclusion, reducing administrative friction within digital tax processes represents an important strategy for improving taxpayer compliance and institutional performance. Through the application of process mapping, compliance funnel analysis, and friction auditing, tax authorities can identify operational bottlenecks and implement targeted improvements but also to the development of transparent, accountable, and innovative public institutions.

6. Limitations of Research

This study has several limitations that should be taken into account:

The funnel data used in the analysis has a relatively limited scope. As a result, the analysis may not fully capture the entire taxpayer compliance journey across all stages. A broader dataset could provide deeper insights into the dynamics of compliance processes and allow for a more comprehensive underdtanding of compliance flows.

Potential sample bias may exist and skew the findings. The analysis is based on selected user groups and available administrative data, which may not fully represent the diversity of taxpayers or the variety of compliance situations encountered in practice. Consequently, certain contextual factors affecting taxpayer behavior may not have been fully captured in the study.

Regulatory and system changes occurred during the research period. Adjustments in tax regulations and digital system updates may have influenced taxpayer behavior and compliance processes. These changes make it difficult to isolate the precise causal relationship between the identified process frictions and observed compliance outcomes.

The findings of this study may not be easily generalized across all taxpayer segments or administrative contexts. Differences in digital literacy, technological infrastructure, and local administrative practices may significantly influence how taxpayers interact with digital tax systems. Therefore, caution should be exercised when applying these results to broader contexts.

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