

Building a Data-Driven Tax System in Pakistan

Tax administrations across the globe are under mounting pressure. Economic volatility, rising debt, and growing public demands have created unprecedented fiscal challenges. Traditional tax systems—grounded in annual paper filings, manual audits, and isolated databases—are no longer capable of generating sustainable revenues.

The transformation is being driven by data. In both advanced and emerging economies, data integration, real-time monitoring, and advanced analytics are being utilized to expand fiscal capacity without increasing tax rates.

The shift is clear: tax administrations are evolving into data-driven institutions. From the United States and the United Kingdom to China, India, and Bangladesh, governments are adopting integrated data systems and risk-based enforcement to close compliance gaps and broaden the tax base. Pakistan, with its persistently low tax-to-GDP ratio of around 9%, now stands at a decisive juncture. To achieve fiscal stability, it must follow the global trend and place data at the core of its tax reform strategy.

Global Best Practices in Tax Digitization

- 1) United States- Data Matching for Compliance:** The US Internal Revenue Service (IRS) has built a compliance framework around data matching. Employers, financial institutions, and investment platforms submit wage and income data (Forms W-2, 1099, 1098) directly to the IRS. AI-powered algorithms match these records with taxpayer filings, and discrepancies trigger instant notices or targeted audits. Processing over 5 billion information returns annually, this system achieves a compliance rate of over 93% for wage income. Pakistan can embed similar data integration to make evasion structurally difficult.
- 2) United Kingdom- Risk Profiling through Multi-Source Data:** HM Revenue & Customs (HMRC) uses Connect, an advanced analytics platform that integrates data from over 30 sources, including bank accounts, property registries, overseas asset declarations, and even social media activity. Connect assigns risk scores to taxpayers, allowing high-risk cases to face targeted audits while reducing random

checks. This multi-source integration enables more precise and fair enforcement.

- 3) China- Real-time Digital Enforcement:** China's State Taxation Administration operates one of the largest real-time compliance systems. All VAT invoices are issued electronically and validated instantly. The system

connects customs, banking, and e-commerce platforms, with AI monitoring billions of transactions. With a tax-to-GDP ratio above 18%, China proves that real-time automation significantly improves compliance even in large and complex economies.

- 4) India- GSTN and Continuous Monitoring:** India's Goods and Services Tax Network (GSTN) integrates filings, e-way bills, and invoice matching into a single platform. Invoices are uploaded in real time and cross-checked automatically between sellers and buyers. Discrepancies generate alerts, preventing false claims. Since 2017, these reforms have added about 1.5–2% of GDP in tax revenues. This highlights the value of standardized, transparent, and scalable compliance systems.
- 5) Bangladesh- Gradual Digital Progress:** Bangladesh's National Board of Revenue (NBR) is gradually adopting digital tools. Electronic fiscal devices (EFDs) now record retail sales and link them to VAT systems. Work is underway to integrate VAT and income tax databases, though progress remains slow. Still, even partial implementation has helped raise Bangladesh's tax-to-GDP ratio to around 11% in 2023.

Gradual reforms still deliver results if integration is sustained.



Muhammad Ammad Ansari, ACMA
Manager Litigation and Audit
Sui Southern Gas Company
Limited (SSGCL)

Table 1: Tax-to-GDP Ratios and Data Integration Status (2023–24)

Country	Tax-to-GDP (%)	Data Integration Level	Key Tool(s)
US	27	Advanced	IRS Data Matching, AI anomaly detection
UK	33	Advanced	Connect, multi-source risk profiling
China	18	High	Real-time e-invoicing, AI compliance
India	17	Medium–High	GSTN, e-way bills, invoice matching
Bangladesh	11	Developing	EFDs, VAT–Income Tax integration
Pakistan	9	Low	POS, Track-and-Trace, partial NADRA data

Pakistan: Milestones, Bottlenecks, and Potential

Pakistan has expanded e-filing platforms. In 2023, over 4.5 million taxpayers filed electronically. While modest in percentage terms, this reflects a functional digital base. Point of Sale (POS) integration in retail records transactions in real time. Though initially limited to large retailers, it sets a model for broader expansion. Track-and-Trace for tobacco, sugar, and beverages creates production and sales trails, reducing underreporting. Frameworks are in place for wider sector application. Initial agreements with NADRA, SBP, and SECP allow cross-verification of taxpayer data. These form the legal base for real-time integration.

Bottlenecks

FBR platforms (POS, IRIS, Track-and-Trace) operate separately. There is no central data warehouse consolidating information from NADRA, SBP, SECP, and provinces. Duplicate CNIC-linked records, outdated addresses, and incomplete corporate ownership data reduce the reliability of analytics. Limited analytics training means advanced tools are underused. Manual audit selection remains dominant. Integration faces pushback from vested interests resisting transparency. Taxpayers perceive FBR as inefficient, discouraging voluntary compliance.

Data-Driven Tax Reforms for Pakistan

To overcome these bottlenecks, Pakistan must transition from fragmented initiatives to a cohesive, data-driven ecosystem. Global experience illustrates that integrated data governance, real-time analytics, and risk-based enforcement can expand the tax base and improve compliance without raising tax rates.

- 1) Data Governance:** A Corporate Data Office (CDO) within the FBR could unify the management of

tax-relevant datasets, harmonize standards, and improve integration. The UK's HMRC Connect platform merges over 30 datasets, showing how effective centralized governance can be. Pakistan could potentially close compliance gaps worth 0.5% of GDP through such reforms.

- 2) Data Quality:** The taxpayer registry contains duplicates, outdated addresses, and incomplete corporate ownership information. India's GSTN cleaned over 1.8 million forged registrations through systematic validation. Pakistan could replicate this by integrating with NADRA and SECP, unlocking 0.5–1% of GDP in gains.
- 3) Third-Party Integration:** While Pakistan has agreements with NADRA, SBP, and SECP, these lack real-time execution. Integration with utilities, provincial tax systems, and telecom operators is also inadequate. In the US, the IRS processes over 5 billion third-party information returns annually, making evasion structurally difficult. Pakistan could generate 1.5–2% of GDP by developing secure APIs for seamless integration.
- 4) National Tax Intelligence Platform:** A centralized warehouse could consolidate FBR, NADRA, SBP, and SECP data. China's State Taxation Administration integrates VAT invoices, customs, and banking data in real time, supporting an 18% tax-to-GDP ratio. A similar BI system in Pakistan could generate 0.5–0.8% of GDP.
- 5) Risk Profiling:** AI can replace manual audit selection with targeted, high-accuracy enforcement. HMRC's AI-driven risk engine flags most high-risk taxpayers before audits, improving efficiency. Pakistan could see 0.8–1% of GDP in gains by adopting this model.

Table 2: Pakistan's Reform Status

Area	Current Status	Gap
Data Governance	Partial	No Corporate Data Office
Third-Party Integration	Partial	No real-time APIs with NADRA, SBP, SECP
Data Quality	Weak	Duplicate and outdated taxpayer data
Risk-Based Auditing	Low	Manual audit selection dominates
Advanced Analytics	Minimal	Limited AI or machine learning tools

- 6) **Data Literacy:** Advanced systems require trained officers who can interpret analytics. India's GST rollout succeeded partly due to capacity building for officers. Pakistan could add 0.3–0.5% of GDP by strengthening analytical skills.
- 7) **Advanced Analytics:** Machine learning can detect fraud patterns at scale—false invoicing, underreporting, and shell companies. India's AI-powered GSTN prevented fraudulent claims worth USD 6 billion. Similar deployment in Pakistan could secure 0.8–1% of GDP.
- 8) **Emerging Technologies:** Blockchain can secure high-risk sectors like real estate, imports, and excise. Estonia's blockchain-backed tax system ensures tamper-proof records. Pakistan could combine blockchain with cloud scalability to protect 0.2–0.3% of GDP.

Collectively, these measures could raise Pakistan's tax-to-GDP ratio from the current 9% to 14–15% over five years without increasing tax rates. The transformation lies in leveraging data and technology to maximize existing potential.

Table 3: Tools & Potential Revenue Impact

Tool	Financial Impact (% of GDP)	Annual Revenue Potential (PKR)
Data Governance	0.5%	300 billion
Data Quality Improvement	0.5–1%	300–600 billion
Third-Party Integration	1.5–2%	900b–1.2 trillion
Data Warehouse & BI	0.5–0.8%	300–480 billion
Risk Profiling	0.8–1%	480–600 billion
Data Literacy	0.3–0.5%	180–300 billion
Advanced Analytics	0.8–1%	480–600 billion
Emerging Technologies	0.2–0.3%	120–180 billion

Roadmap for Implementation

A structured, phased approach is crucial for transforming Pakistan's tax system into a fully data-driven ecosystem. The roadmap must build on strong foundations, scale through integration, and mature with predictive capabilities. Each phase should deliver measurable fiscal outcomes, ensuring reforms are both sustainable and credible.

- 1) **Phase 1 (Years 1-2)- Building the Data Foundation:** The initial two years should focus on strengthening the data infrastructure. Launching a Corporate Data Office (CDO) will provide centralized oversight of all tax-relevant datasets. Cleaning the taxpayer registry, eliminating duplicates, updating addresses, and verifying ownership details through NADRA and SECP will be critical to improving data accuracy. Parallel efforts should include formalizing legal agreements for real-time data sharing with NADRA, SBP, SECP, provincial tax bodies, utilities, and telecom operators.
- 2) **Phase 2 (Years 2-3)- Integration & Infrastructure Deployment:** Once data quality is ensured, the focus should shift to integration. The launch of a National Tax Intelligence Platform (NTIP) will consolidate datasets into a unified warehouse. APIs should be developed for seamless data exchange with third-party entities. Business Intelligence (BI)

dashboards must be deployed to provide real-time compliance insights and sectoral revenue analytics.

- 3) **Phase 3 (Years 3-4)- Risk-Based Enforcement:** With the integration layer in place, enforcement should progress from manual selection to AI-powered risk profiling. Taxpayers can be assigned risk scores based on transaction histories, cross-matched data, and sector risk levels. Targeted audits should focus on high-leakage sectors such as real estate, imports, and high-turnover retail. This must ensure precise enforcement with minimal disruption to compliant taxpayers.
- 4) **Phase 4 (Years 4-5)- Predictive Analytics & Culture Change:** The final phase emphasizes creating a proactive compliance environment. Predictive models can estimate revenue risks and detect emerging compliance gaps. Pre-filled tax returns enabled by real-time third-party data will simplify filing, improve voluntary compliance, and reduce errors. Institutionalizing data literacy across the FBR will ensure that technology and analytics are fully embedded into day-to-day operations.

Collectively, this phased approach can add PKR 5–6 trillion annually to Pakistan's revenues over five years. It can raise the tax-to-GDP ratio to sustainable levels without increasing tax rates.

Conclusion

Table 4: Roadmap & Revenue Gains

Phase	Reform Action	Potential Gain (PKR)
Years 1–2	Data governance, cleaning, validation	300 billion
Years 2–3	Integration, infrastructure	600–900 billion
Years 3–4	Risk-based enforcement	900–1200 billion
Years 4–5	Predictive analytics, culture change	300–480 billion

Globally, the case is clear: the US, UK, China, India, and Bangladesh have leveraged data to transform their revenue systems. Their experiences demonstrate that integration, analytics, and risk-based enforcement deliver measurable gains. Pakistan already has the infrastructure, partial reforms, and technical capacity. What remains missing is full integration, strong governance, and sustained political commitment.

Leveraging data is no longer a choice—it is the foundation for fiscal stability, equity, and sustainable growth. With a clear roadmap, Pakistan can raise its tax-to-GDP ratio to 13–14% within five years, mobilizing PKR 3–4 trillion annually without increasing tax rates. The world has already shifted to data-driven tax systems. Pakistan's path to fiscal stability lies in fully utilizing data as a reform tool, transforming revenue mobilization from a persistent challenge into a sustainable growth engine.

About the Author: The writer is an Associate Member of ICMA and currently serves as Manager of Litigation and Audit at Sui Southern Gas Company Limited (SSGCL), Karachi. Previously, he worked as In-Charge of Taxation at the Utility Stores Corporation of Pakistan. With over 17 years of extensive experience in tax operations and litigation in Pakistan, he brings a wealth of expertise to his current role.