

Digital Transformation in Public Financial Management: Comparative Insights from SAARC and Developed Economies

By: ICMA Research and Publications Department

Digital transformation is reshaping public financial management across the SAARC region, with each country charting its own path to modernize accounting, finance, and tax collection systems.

- **Afghanistan** has computerized its revenue collection and payroll processes through its e-Government program, with over 73% of civil servants since 2003 are now paid digitally.
- In **Bangladesh**, the Digital Bangladesh Vision has increased mobile money account ownership to nearly 56% in 2023 [Source: GSM State of the Industry Report on Mobile Money 2024] and promoted the adoption of accounting software like Tally ERP 9 and QuickBooks. Initiatives such as the a2i program and the biometric platform Porichoy are streamlining tax collection and reducing corruption.
- **Bhutan**, under its Digital Drukyl initiative, is prioritizing mobile finance, QR code transactions, and integrated digital identity systems to improve service delivery and financial inclusion in rural areas.
- **India** leads the region with transformative solutions such as Aadhaar, which eliminated over 90 million fake beneficiaries, saving the government \$40 billion by reducing leakages, which previously accounted for 2% of GDP annually. While, as of June-2024 UPI has facilitated 241 billion financial transactions.
- **Nepal** is actively upgrading its Integrated Tax System, utilizing tools like Electronic Fiscal Devices and blockchain pilots to reduce VAT evasion.
- **Pakistan's** Raast, launched in 2021, facilitates real-time digital payments and enhances tax collection through AI-powered systems like IRIS.
- **Sri Lanka** is advancing digital public platforms by deploying systems like LankaPay and cloud-based accounting tools to modernize tax collection and financial reporting.

By drawing insights from developed economies—where **Austria's AI-driven tax audits** boosted revenue by EUR 185 million in 2023, **Poland's machine-learning models** reduced its VAT gap from EUR 6.6 billion in 2017 to EUR 1.7 billion in 2021, and **Italy's VeRa algorithm** prevented EUR 6.8 million in fraud in 2022—SAARC countries can further enhance their digital frameworks. Strengthening digital infrastructure, bolstering cybersecurity, and integrating AI-driven risk-based auditing and fraud detection can significantly improve transparency, compliance, and revenue collection, fostering a more efficient, inclusive, and modern digital economy.

Case of SAARC Countries



Afghanistan

Afghanistan has made progress in adopting digital technologies for accounting, finance, and tax collection despite ongoing challenges. The e-Government program has digitized revenue collection, tax payments, banking, and public office correspondence, while electronic payroll systems now ensure that civil servants receive salaries digitally. Mobile money services and Digital Financial Services (DFS) are expanding under regulations for Electronic Money Institutions (EMIs), and the Afghan Payment System aims to streamline transactions. However, limited digital infrastructure, low financial literacy, and cybersecurity concerns remain challenges. Efforts to improve digital skills and expand e-learning platforms like AfghanX are underway. While progress continues, further investment in infrastructure, regulations, and public trust is needed for a successful digital transition.



Bangladesh

Bangladesh is rapidly digitalizing accounting, finance, and tax collection under its Digital Bangladesh Vision, driving economic growth. Businesses across key sectors are adopting accounting software to improve efficiency and compliance, though adoption remains gradual. Mobile money platforms like bKash, Rocket, and Nagad have boosted financial inclusion, with mobile money accounts rising from 3% in 2014 to 28% in 2019 and 54% in 2021. FinTech innovations, including the DFS Lab and the Regulatory FinTech Facilitation Office (RFFO), support citizen-centered financial solutions, while biometric verification platforms like Porichoy enhance security. Digital public platforms such as Union Digital Centers (UDCs) and the Bangladesh National Digital Architecture (BNDA) facilitate seamless governance, tax compliance, and service delivery. The digitization of tax services through the a2i program and the National Household Database (NHD) has streamlined processes, reducing bureaucracy and corruption.

Businesses are increasingly adopting accounting software such as Tally ERP 9 for affordability, QuickBooks for cloud-based features, Xero for advanced bank reconciliation, Zoho Books for integration with other Zoho tools, and Sage 50cloud for medium-sized enterprises. Local solutions like BD Accounting, Aptus Accounting Software, and Insight Accounting Software cater to specific needs. Cybersecurity measures, including the e-GOV CIRT, along with infrastructure advancements like 4G/5G expansion and submarine cables, support secure financial transactions.

However, challenges persist such as low female participation in digital finance, rural-urban digital divides, and regulatory gaps. Future priorities include strengthening cybersecurity, implementing data protection laws, and leveraging advanced technologies to enhance financial transparency, compliance, and business efficiency in Bangladesh's evolving digital economy.



Bhutan

Bhutan is advancing digital accounting, finance, and tax collection under its Digital Drukylu initiative, with a strong focus on financial inclusion. The government is prioritizing mobile finance, digital payments, and QR code transactions, integrating banking systems with civil registration IDs for seamless customer verification, and digitizing government payments through platforms like GIFT to reduce cash reliance and enhance transparency.

E-commerce is expanding with international card payment integration, while a secure digital identity system is in development to facilitate financial transactions. Tax collection is being modernized through online payment automation, though system integration challenges persist. The government is also enhancing citizen services through digital platforms like the Government Data Hub and Data Center, backed by fiber optics and 5G expansion. Cybersecurity strategies and digital literacy programs are being strengthened, but challenges such as limited broadband access, high costs, and low digital literacy remain. Future plans include implementing a nationwide digital ID system, improving connectivity, and further streamlining public services to accelerate Bhutan's digital transformation.



India

India's adoption of digital technologies is transforming accounting, finance, and tax collection, enhancing efficiency, transparency, and inclusion. Key initiatives like Aadhaar, UPI, and AI-driven credit scoring are reshaping the financial landscape. Aadhaar's biometric authentication supports Direct Benefit Transfers (DBT), eliminated over 90 million fake beneficiaries, saving the government \$40 billion by reducing leakages, which previously accounted for 2% of GDP annually. While the Account Aggregator Framework enables secure financial data sharing, and TReDS helps MSMEs manage trade receivables. UPI processes over 241 billion financial transactions as of June-2024, complemented by the RuPay network, which handles millions of digital payments annually. Innovations like AI-driven credit scoring, Buy-Now-Pay-Later options, e-RUPI vouchers, and Jan Dhan Yojana's 75+ million zero-balance bank accounts have broadened credit access.

Tax collection has become more efficient with the centralized GSTN platform processing billions of transactions monthly, alongside e-invoicing and Aadhaar-PAN linking, which curb tax evasion. SMEs are increasingly adopting accounting automation tools such as TallyPrime (used by 70% of SMEs), Zoho Books (35%

adoption), QuickBooks (25% among startups), HostBooks, Busy Accounting, and Vyapar, contributing to a 45% rise in digital accounting adoption in 2023.

These advancements are backed by digital infrastructure like India Stack, which offers interoperable APIs, and the Government e-Marketplace (GeM), sees a potential of USD 100 billion of transactions as it gears up for an upgrade in September. Cybersecurity measures, including Cyber Surakshit Bharat and CERT-In, ensure digital safety. With 886 million active internet users as of 2024, India's digital transformation is reducing tax evasion, expanding financial inclusion, and setting a global benchmark in digital economic governance.



Maldives

The Maldives is accelerating its digital transformation in accounting, finance, and tax collection to support economic and social progress. Digital Financial Services (DFS) are expanding, with 25% of adults using mobile money and 68% engaging in digital transactions. The government is developing a nationwide real-time payment system and introducing a local card payment switch to improve transaction efficiency and reduce costs.

Larger businesses are adopting cloud-based accounting and automation, but SMEs face challenges due to poor internet connectivity. E-government platforms are streamlining digital tax payments, enhancing efficiency. Future initiatives focus on strengthening digital identity infrastructure and cybersecurity, though hurdles like limited SME adoption, interoperability issues, and high internet costs remain. Investments in infrastructure and digital literacy aim to build a more integrated and secure digital ecosystem.



Nepal

Nepal is actively integrating digital technologies to modernize its accounting, finance, and tax collection systems. The implementation of the Integrated Tax System (ITS) has streamlined tax filing, payments, and administration, enhancing compliance and transparency. Electronic Fiscal Devices (EFDs) monitor sales and VAT collection in real-time, reducing tax evasion. The Treasury Single Account (TSA) consolidates government funds into a single account, improving liquidity management.

Digital payment systems like eSewa, Khalti, and ConnectIPS facilitate cashless transactions, simplifying tax collection. The Financial Management Information System (FMIS) enhances public financial management by improving accountability and efficiency. Blockchain technology is being explored to ensure secure and transparent financial transactions in areas such as land registry, procurement, and tax collection. Mobile banking and wallets, including Prabhu PAY, IME Pay, and Nepal Telecom's Mobile Money, provide financial services to unbanked populations, increasing financial inclusion and easing tax payments.

E-governance platforms like the Nagarik App offer online services for tax payments and business registration, reducing bureaucracy and improving service delivery. Cloud-based accounting software, such as Tally ERP 9 and QuickBooks Online, simplifies financial management for businesses, enhancing accuracy and accessibility of financial data. Data analytics and artificial intelligence are employed to improve decision-making and detect anomalies, increasing efficiency and reducing financial risks.

Digital identity systems, including national IDs and biometrics, secure transactions, ensure tax compliance, and reduce fraud. E-procurement, featuring e-tendering and e-auctions, boosts transparency and efficiency, curbing corruption. Automated TDS simplifies salary-based tax collection, minimizing errors and delays. Digital audit tools enhance compliance and streamline audits, while e-customs optimize revenue collection and transparency. A 2% Digital Service Tax (DST) on foreign digital services, including Apple, Google, and Netflix, generates revenue from Nepal's digital economy.



Pakistan

Pakistan is increasingly adopting digital technologies to modernize its accounting, finance, and tax collection systems. A key initiative in this transformation is Raast, Pakistan's first instant payment system, launched by the State Bank of Pakistan (SBP) in January 2021. Raast enables end-to-end digital payments among individuals, businesses, and government entities, facilitating real-time settlement of small-value retail payments such as inter-bank peer-to-peer (P2P) and person-to-merchant (P2M) transactions. This system addresses challenges like limited interoperability, high transaction costs, and security concerns, offering a cost-effective and universally accessible platform for digital payments.

The Federal Board of Revenue (FBR) employs the Integrated Risk Information System (IRIS) for risk-based auditing and compliance monitoring, while the Track and Trace System in sectors like tobacco, sugar, and cement uses digital stamps and QR codes to track production and sales, ensuring accurate tax assessments. The FBR's Data Analytics Wing leverages big data to analyze extensive financial datasets, identifying trends, risks, and opportunities to optimize tax collection.

The Public Procurement Regulatory Authority's (PPRA) e-procurement system enhances transparency and efficiency in government procurement, strengthening financial management. Likewise, digital audit tools, including Computer-Assisted Audit Techniques (CAATs), help auditors analyze large datasets, detect anomalies, and ensure compliance with financial regulations.

Digital banking and mobile wallets, including Easypaisa and JazzCash, facilitate financial transactions such as utility bill and tax payments while supporting microfinance and small business transactions, driving financial inclusion. The Asaan Mobile Account (AMA) initiative further expands access to digital banking for the

unbanked, enhancing financial tracking and tax collection.

E-governance initiatives like Punjab's e-Stamping System and Khyber Pakhtunkhwa's Citizen Portal offer digital platforms for citizens to lodge complaints and track government services, including tax-related matters, improving transparency and service delivery. Collectively, these digital advancements modernize Pakistan's financial, accounting, and tax systems, fostering efficiency, transparency, and financial inclusion.



Sri Lanka

Sri Lanka is harnessing digital technologies to modernize its accounting, finance, and tax collection systems through digital financial services, public platforms, and infrastructure enhancements. While the Central Bank has advanced payment digitization, adoption remains slow due to regulatory barriers and cash reliance. Efforts in FinTech innovation, regulatory sandboxes, and digital transactions aim to mitigate future crises.

In public service delivery, Sri Lanka is digitalizing tax collection and streamlining bureaucracy, though many transactions still require physical documents. Key initiatives like the Sri Lanka Unique Digital Identity (SL-UDI) and National Data Exchange (NDX) enhance digital identity and secure data sharing. Tax modernization is supported by software such as IRIS (Integrated Risk Information System), LankaPay for payment processing, and Sri Lanka's Taxpayer Services Portal for filing returns.

For accounting, businesses commonly use QuickBooks, Xero, and Sage Accounting, while large enterprises rely on SAP for integrated financial management. PayRoll Sri Lanka facilitates payroll processing. To support digital transformation, the government is expanding broadband access and launching digital literacy programs. Strengthening legal frameworks for data protection, cybersecurity, and promoting e-commerce and MSME digitization are also priorities. Despite challenges like low internet penetration and limited digital literacy, Sri Lanka's focus on digital public platforms, FinTech innovation, and skills development is vital for fostering an efficient and inclusive digital economy.

Case of Developed Countries



Austria

In 2023, Austria increased its tax revenue by EUR 185 million using AI. The Ministry of Finance's Centre for Forecast Analytics Competence employed AI and machine-learning algorithms to analyze 34 million cases, flagging 375,000 potentially suspicious ones for further investigation, significantly improving tax audit efficiency. These algorithms enable real-time risk assessment by detecting inconsistencies and potential violations in large datasets. Additionally, AI is used to monitor businesses from registration, allowing early detection of suspicious transactions and tax irregularities.



Poland

Since 2017, Poland has leveraged AI and machine-learning models to combat VAT fraud by analyzing vast taxpayer data to detect suspicious transactions. The STIR model assists the tax authority in assessing risks, liabilities, and issuing personalized reminders to ensure timely tax payments. If VAT fraud is suspected, STIR enables authorities to block a business's bank accounts. These measures have significantly improved tax compliance, reducing Poland's VAT gap from EUR 6.6 billion in 2017 to EUR 1.7 billion in 2021.



Italy

Italy is at the forefront of using AI to detect tax violations. The VeRa algorithm enables the Italian tax authority to cross-reference financial data, including tax returns and bank accounts, to assess taxpayer risk levels and flag high-risk individuals for further scrutiny. By leveraging AI-driven analysis, Italy identified over a million high-risk cases in 2022, preventing fraud worth EUR 6.8 million.



Romania

According to the European Commission's 2021 data, Romania had one of the highest VAT gaps in Europe. To tackle this, the Romanian tax authority employs machine-learning algorithms to analyze large datasets and assess risks, while AI systems consolidate data to create comprehensive financial profiles for taxpayers. Additionally, robotic solutions automate processes, improving the accuracy of tax audits. These AI-driven initiatives contributed to a roughly 1% increase in Romania's VAT revenues in 2023.



United Kingdom

In 2008, the UK's Faster Payments Service (FPS) became the world's first real-time payment system, enabling customers to send and receive up to £250,000 instantly through various channels. It is widely used for peer-to-peer (P2P) transfers, bill payments, online transactions, and business payments. FPS faces two primary types of fraud: authorized push payment (APP) fraud, where customers are deceived into transferring money to fraudsters, and account takeover (ATO) fraud, where criminals gain unauthorized access to accounts to conduct fraudulent transactions. To combat these threats, the UK employs a multi-layered strategy, including customer education, the Confirmation of Payee (CoP) service, transaction monitoring and analytics, and fraud reporting and reimbursement measures.



Sweden

Swish, Sweden's real-time payment system launched in 2012, allows users to make payments of up to 150,000 SEK using mobile phone numbers. It is widely used for peer-to-peer (P2P), online, and merchant payments.

However, it faces challenges such as phishing and social engineering fraud, where individuals are deceived into transferring money or disclosing sensitive information. To mitigate these risks, Sweden employs a comprehensive strategy that includes customer education, the enforcement of Strong Customer Authentication (SCA), transaction monitoring and analytics, and fraud reporting and reimbursement services.

Lessons for Pakistan

1) AI-Powered Tax Compliance and Fraud Detection

- **AI for Fraud Detection:** Pakistan can adopt AI-driven models, like those used in Austria, Poland, and Italy, to analyze taxpayer data, detect anomalies, and identify suspicious transactions. Machine learning can help identify tax fraud and streamline auditing.
- **Enhanced Risk-Based Auditing:** FBR can use AI in Revenue's (FBR) Integrated Risk Information System (IRIS) to improve auditing efficiency by analyzing taxpayer patterns and trends to prioritize high-risk cases.

2) Enhancing the Raast Payment System

- **AI for Real-Time Fraud Prevention:** AI can strengthen Raast by detecting fraudulent transactions in real time, preventing phishing and social engineering scams, similar to Sweden's Swish system.
- **AI-Driven Financial Insights:** Inspired by India's AI-powered credit scoring and Aadhaar-based systems, Pakistan can use AI to assess creditworthiness, offer personalized financial advice, and promote financial inclusion, particularly for the unbanked.

3) AI and Machine Learning for Tax Collection

- **Improving Tax Compliance:** Pakistan can use AI and machine learning to enhance tax collection by integrating these technologies with IRIS. This will help identify discrepancies, detect tax fraud, and ensure timely payments, similar to Poland's STIR model and Romania's VAT monitoring system.
- **Risk-Based Auditing:** AI can assess taxpayer risk based on transaction patterns, location, and industry. This will allow the FBR to focus audits on high-risk individuals and businesses, improving compliance and reducing tax evasion.

4) Cloud-Based Accounting for SMEs

- **Encouraging Cloud Adoption:** Promoting cloud-based accounting solutions like QuickBooks and Xero can help SMEs automate financial management, enhance tax compliance, and streamline reporting.
- **Government Incentives:** Offering subsidies or incentives for digital accounting tools, similar to Bangladesh's support for Tally and Zoho Books, can accelerate SME digitalization in Pakistan.

5) AI-Enhanced Data Analytics for Financial Decision-Making

- **Advanced Financial Insights:** Leveraging big data analytics, like India's Data Analytics Wing, can help Pakistan identify market trends, optimize decision-making, and enhance financial planning for businesses and government institutions.
- **Predictive Analytics for Economic Planning:** AI can also support Pakistan's economic planning by analyzing fiscal data and forecasting trends in tax collection, inflation, and GDP growth.

6) Public Education and Cybersecurity

- **Strengthening Cybersecurity:** Pakistan can enhance digital finance security through measures like those in Bangladesh and Sweden, including stronger authentication protocols (e.g., SCA), fraud awareness campaigns, and reimbursement services for fraud victims.
- **Promoting Digital Literacy:** Following Afghanistan's example, Pakistan can invest in digital literacy programs and e-learning platforms to equip the public with the skills needed for secure and effective use of digital financial services.

Recommendations for SAARC Countries

| Country | Recommendations |
|--------------------|---|
| Afghanistan | <ul style="list-style-type: none"> • Invest in digital infrastructure for revenue and tax collection, following Austria and Romania's models. • Implement AI-driven risk assessment through pilot projects for early detection of irregularities. • Expand digital literacy initiatives like AfghanX to ensure the workforce can manage and operate advanced systems. |
| India | <ul style="list-style-type: none"> • Enhance AI and data analytics in Aadhaar and UPI for deeper fraud detection. • Strengthen cross-sector data integration to consolidate financial, tax, and identity data for real-time risk assessment. • Adopt advanced AI models from Italy and Poland for improved tax compliance. |
| Bangladesh | <ul style="list-style-type: none"> • Implement AI-driven financial fraud detection, inspired by Austria and Poland, to reduce tax leakages and improve compliance. • Expand biometric identity systems like Porichoy to streamline tax audits and secure financial transactions. • Invest in robust cybersecurity measures to protect the expanding digital financial ecosystem. |
| Nepal | <ul style="list-style-type: none"> • Utilize AI for real-time risk assessment and anomaly detection in the Integrated Tax System, inspired by Austria and Romania. • Scale up mobile banking and cloud-based accounting software (e.g., QuickBooks, Tally ERP 9) while integrating AI-driven financial decision-making tools. • Modernize tax audit processes by using AI to cross-reference data and automate audits, reducing manual errors, as seen in Poland and Italy. |
| Bhutan | <ul style="list-style-type: none"> • Implement AI-based early warning systems for tax fraud, similar to Italy's VeRa algorithm, to trigger timely audits. • Explore blockchain for secure financial transactions and transparent data sharing, following Romania's example. • Strengthen digital identity integration with financial systems for seamless customer verification and tax compliance. |
| Maldives | <ul style="list-style-type: none"> • Enhance real-time payment security, taking lessons from the UK's FPS and Sweden's Swish, to ensure secure and instant transactions. • Implement multi-layered fraud prevention, including transaction monitoring, strong authentication, and customer education to prevent phishing and social engineering scams. • Boost digital infrastructure by improving internet connectivity and digital platforms to support widespread adoption of digital financial services and tax systems. |
| Sri Lanka | <ul style="list-style-type: none"> • Integrate AI-driven tax compliance systems like those in Poland and Italy within existing platforms (e.g., IRIS, LankaPay). • Strengthen digital identity and financial data exchange via SL-UDI and NDX to support real-time tax compliance monitoring. • Expand fraud prevention strategies inspired by the UK and Sweden, including multi-layered security protocols for digital transactions. |

Conclusion

By investing in digital infrastructure, integrating advanced AI for risk-based auditing, and strengthening cybersecurity frameworks, SAARC countries can enhance compliance, transparency, and financial inclusion. Regional cooperation, combined with targeted strategies to support SMEs and marginalized communities, will be crucial in fostering resilient and

inclusive digital economies. As leaders like India and Bangladesh drive innovation, the collective adoption of global best practices will unlock significant opportunities for growth, governance, and equitable development across South Asia.

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