



Reimagining Procurement in Pakistan: Data Analytics, AI and Human-Centred Decision-Making

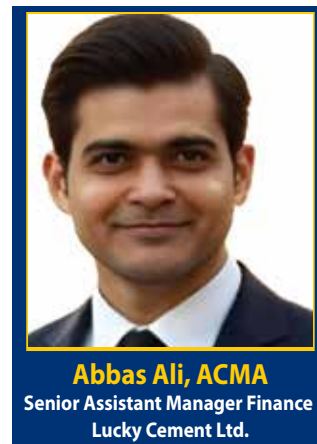
Introduction

Obtaining products and services at the best price is not only the goal of procurement; making profits, managing working capital, operational efficiency, vendor association, tax compliance, and financial risk all are impacted. Pakistan's projected procurement spending demonstrates its potential economic significance, and the World Bank has emphasized the global scope of public procurement (World Bank, 2018). Contract management, supplier rivalry, purchasing efficiency, and fraud prevention can all benefit greatly from even small improvements. Digital procurement adapts the basis of judgment. Organizations can use transactional data to compare prices, spot trends, appraise suppliers, and identify differences instead of mainly depending on individual experience and past performance. Therefore, the main objective is not whether procurement should go digital, but rather how AI and digital systems can improve decision-making without surrendering professional judgment, accountability, and governance. Instead of presenting original empirical research, this paper uses a conceptual and practitioner-oriented approach, synthesizing publicly available regulatory, institutional, and industry data.

Karachi and Pakistan's Procurement Context

A critical context for understanding the potential of digital procurement is provided by Karachi. The city has a diverse procurement environment surrounding trade, infrastructure, transport, healthcare, water and health, construction, logistics, technology, and professional services since it is Pakistan's main commercial and industrial hub. FY2025–2026, the Sindh government announced a growth budget of Rs. 1.018 trillion, which comprised Rs. 85.5 billion for significant Karachi projects under the Local Government Department (Government of Sindh, 2025). Numerous suppliers, contracts, invoices, payments, and procurement decisions are involved in this expense. Analytics can find variations in prices paid for comparable products, suppliers who regularly fulfill delivery commitments, suppliers with high rejection rates, underutilized contracts, odd purchasing patterns, and chances for supplier consolidation in industries like cement, textiles, and FMCG, where Karachi-based manufacturers purchase high-volume raw materials, packaging, freight, and

energy-related services. For instance, there would be a potential value of Rs. 200 million for a hypothetical 2 percent efficiency improvement on an annual procurement expenditure of Rs. 10 billion. This computation shows the financial importance of procurement analytics for Karachi's industrial base, but it is not a reported savings.



Pakistan's Digital Procurement Transformation

With EPADS, Pakistan has entered a new stage of digital procurement. According to PPRA, during FY2024–2025, EPADS 1.0 processed transactions totaling more than Rs. 1.4 trillion, with 51,000 suppliers and over 10,000 public-sector organizations registered. Additionally, PPRA reported administrative cost savings of about Rs. 20.52 billion. With supplier registration, beneficial ownership verification, electronic invoicing, digital payments, electronic bid submission, system-based bid evaluation, and contract-management capabilities, EPADS 2.0 broadens this model (PPRA, 2026). By July 2026, 18,909 vendors and 1,824 procuring agencies had registered with EPADS 2.0; since February 2026, about 7,000 procurements had been finished. The reported integration with FBR, NADRA, SECP, PEC, provincial revenue authorities, and DRAP is noteworthy due to the growing connections between procurement data and corporate information, tax records, regulatory databases, and oversight mechanisms. Thus, in addition to traditional purchasing skills, future procurement professionals will need to be proficient in ERP, taxation, analytics, digital controls, and artificial intelligence.

From Procurement Data to Evidence-Based Decisions

Large amounts of data are produced by digital systems, but data by itself cannot produce value. When trustworthy data is transformed into proof to back up a choice, value is created.

Supplier spending, price history, delivery performance, quality, purchase orders, goods receipts, invoices, and payments can all be examined by procurement analytics. These domains assist organizations in transitioning from descriptive reporting to the detection of trends, anomalies, and possible hazards. The practical questions are simple: Which suppliers get the biggest portion of the budget? Do current prices differ significantly from past prices? Which suppliers fulfill deadlines? Where are price or quantity

category. Purchase order, supplier invoice, ERP validation, FBR digital invoice, sales tax and WHT validation, payment approval, and bank payment are the representation of the linked process. Payment delays may result from automated exceptions caused by inaccurate NTN data, tax status, tax codes, or invoice values. On the other hand, missing transactions, odd supplier behavior, inconsistent values, and possible compliance issues can all be found with the use of integrated data.

Table 1: Procurement Information, Evidence Generated, and Management Use

Procurement information	Evidence generated	Management use
Supplier expenditure and price history	Spend concentration and price variance	Sourcing strategy and price challenge
Delivery and quality performance	Timeliness, rejection and defect patterns	Supplier evaluation and development
PO, goods receipt and invoice data	Quantity, price and documentation exceptions	Three-way matching and payment control
Payment and tax information	Duplicate, unusual or inconsistent transactions	Compliance review and risk escalation
<i>Note. Author's own analysis. The table consolidates the analytical questions and control functions already identified in this article; it does not represent independently reported savings or performance outcomes.</i>		

mismatches occurring? Are there duplicate or odd payment patterns? Table 1 summarizes how each category of procurement information generates specific evidence and supports a corresponding management action.

Procurement Analytics, Accounts Payable and FBR

Accounts Payable, Finance, and Procurement shouldn't function separately. The Purchase-to-Pay cycle (Requisition, Purchase Order, Good or Service Receipt, Invoice, Tax Validation, and Payment) establishes a direct link between financial controls and commercial decisions. Unusual payment patterns, duplicate invoice numbers, incomplete documentation, invoices without approved purchase orders, invoice quantities exceeding received quantities, and invoice prices exceeding approved purchase-order prices can all be flagged by analytics. Three-way matching is strengthened and duplicate payments, overpayments, and processing errors can be decreased by integrating procurement and accounts payable data. An additional degree of control is provided by the electronic invoicing system of the Federal Board of Revenue (FBR). According to FBR, notified corporate and non-corporate registered persons are required to submit electronic invoices under S.R.O. 709(I)/2025 dated 22 April 2025 (Federal Board of Revenue, 2025), with phased implementation dates specified for each

Automation, AI and Human Accountability

Automation is becoming more and more appropriate for routine tasks like data entry, basic quotation comparison, purchase order generation, invoice matching, duplicate detection, routine reporting, and basic supplier classification. Instead of just eliminating jobs, this is better understood as job transformation. Future workers might devote more of their time to strategic sourcing, negotiations, contract management, risk assessment, cost modeling, supplier development, regulatory interpretation, AI monitoring, and exception management rather than administrative tasks. Spend analysis, risk management, supplier identification, negotiation optimization, compliance checks, fraud detection, anomaly detection, supplier evaluation, demand forecasting, market-price analysis, and contract review can all be aided by AI (Organization for Economic Co-operation and Development [OECD], 2025). Decisions about procurement, however, are not entirely mathematical. While a procurement manager is aware of recent financial, quality, or capacity issues that are not shown in the data, a supplier might have a solid track record. As a result, an AI recommendation might make sense statistically but be unsuitable for business. Data representativeness and quality are also important factors for AI systems.

Biased historical data may favor certain suppliers or replicate current flaws. Additional risks include vendor lock-in, out-of-date regulations, limited transparency, and skills gaps. The risk can be stated as follows: Poor data quality, mismatched systems, and skill shortages; wrong decisions and large-scale impact because automated logic can be applied at scale. Therefore, human review, documented approval, and audit controls are crucial for strategic or high-value decisions. AI-assisted decision-making, not AI-owned decision-making, should be the guiding principle.

Building or Acquiring AI Capability

Businesses should carefully consider whether to create in-house AI systems or depend on outside vendors. Although widely available tools can be reasonable and applied, there are confidentiality and safety risks when uploading private procurement data. While enterprise solutions may offer more control, they may also lead to vendor dependence. Customization and control over complex data may be possible with an internal platform, but infrastructure, cybersecurity, data science, and maintenance investments are essential. In addition to Pakistan's varying data protection regulations, organizations should consider data position, cross-border transfer, and concealment implications when processing or hosting data outside of Pakistan. Keeping AI should not be the only goal. Control, confidentiality, and accountability should be upheld. Whenever possible, companies should avoid excessive vendor lock-in, maintain control over crucial procurement information, and make sure that decisions made with AI support can be reviewed.

Regional Lesson and Future Model

An appropriate example is a Bangladesh as per world Bank Bangladesh's electronic government procurement system touched about 80% of its public procurement expenditures in 2022, up from just 2% in 2017. Furthermore, there were about 7% cost savings compared to manual paper-based procurement (World Bank, 2022, 2023). The number of registered bidders improved while the lead time for procurement reduced. The experience shows that digital procurement is more than just an Information technology project; it calls for formal change, supplier participation, dependable data, user instruction, governance, and continuing observation. Therefore, human + data + AI + governance should be used to describe the upcoming future. Data offers proof, analytics finds trends, AI predictions and proposes, procurement experts use business decision, finance and tax verify penalties, and governance creates responsibility. Automation is used to remove monotonous, low-value tasks so that professionals can focus on making higher-value decisions.

Recommendations for Pakistan

The above-mentioned study suggests that Pakistani organizations and regulators take the following measures. (1) Improve the quality of obtaining data by normalizing product classifications, supplier records,

Taxation data, and business history. (2) Integrate tax, Enterprise Resource Planning, and procurement systems to rise transparency and close settlement gaps. (3) Set human approval boundaries to permit for the automation of routine, low-risk transactions while requiring documented approval for high-value, strategic, or unusual decisions. (4) Create AI governance guidelines that address approved uses, private information, recommendations made by AI, human review, accountability, and audit trails, and ensure that significant decisions made with AI assistance are traceable and recorded. (5) Develop the skills of procurement professionals in data analytics, Excel, Power BI, ERP, taxation, and AI while keeping an eye on AI performance for bias, accuracy, security, and evolving business conditions and avoiding over-reliance on a single technology vendor.

Conclusion

With the use of FBR's digital invoicing framework, ERP systems, and EPADS, Pakistan is progressing toward a more integrated procurement environment. The goal of this transition should be to enhance decision-making's quality, speed, transparency, and dependability rather than just replace paper with software. AI is capable of analyzing vast amounts of data and identifying trends, but it can also make inaccurate recommendations when the data is biased, incomplete, or poorly managed. Automation may decrease monotonous work while raising the need for experts in technology, finance, taxation, procurement, and analytics. Future research could monitor these metrics as the system develops. One limitation of this paper is that the EPADS adoption figures cited are self-reported by PPRA at an early stage of nationwide rollout and should be interpreted as directional rather than independently audited outcomes. "Automate the routine, analyze the data, challenge the AI, and keep humans accountable for the decision" is the guiding principle. This strategy can assist Pakistan in turning procurement from a compliance-focused function into a strategic ability that improves transparency, strengthens financial and tax controls, and adds value to industries and the country's economy.

References

- Federal Board of Revenue. (2025). Digital invoicing: Frequently asked questions and technical assistance. Government of Pakistan.
- Government of Sindh. (2025). Murad reviews development portfolio 2025–26 with Rs. 1.018 trillion outlay. Government of Sindh.
- Organisation for Economic Co-operation and Development. (2025). Governing with artificial intelligence: The state of play and way forward in core government functions. OECD Publishing.
- Public Procurement Regulatory Authority. (2026). EPADS 2.0: Digital transformation of public procurement in Pakistan. Government of Pakistan.
- World Bank. (2018). Pakistan at 100: Governance and institutions. World Bank.
- World Bank. (2022). World Bank-funded project drives public procurement reform in Bangladesh. World Bank.
- World Bank. (2023). World Bank helps Bangladesh transform public procurement into a sustainable online system. World Bank.

About the Author: *Abbas Ali* is an Associate Member of ICMA and a member of ACCA, with an MBA in Finance from IQRA University. He has extensive experience in Finance, Procurement and Account Payable Management across Logistics, Textile, Aviation and FMCG sector. He currently serves as Senior Assistant Manager Finance at Lucky Cement Ltd, with professional interest in Procurement Analytics, Financial Planning, Digital Transformation and Data Driven Decision Making.