

Cross-Industry Approaches to Ambidextrous Procurement: A Comparative Analysis of Innovation, Compliance, and Sustainability in Bangladesh

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Abstract

This study examines how Bangladeshi firms handle two opposing needs when it comes to procurement: exploiting using existing methods to stay efficient, follow rules, and control costs, while exploring new technologies, suppliers, and ways to be sustainable. This balance is described as procurement ambidexterity. The article compares 16 well-known Bangladeshi companies across five sectors: Agro, fast-moving consumer goods, pharmaceuticals, plastics, and ready-made garments. Firms were assessed using two five-level frameworks: the Procurement Maturity Framework (PMF) and the Vendor Onboarding Framework (VOF). Four additional dimensions were examined: digitalization, innovation, sustainability, and compliance. The analysis used Fisher's exact test, Spearman's correlation, Kendall's tau, chi-square tests, Cramer's V, Mann-Whitney U tests, and the Kruskal-Wallis test.

The findings are mixed. Procurement maturity is positively connected with digital advancements when the full range is used. Innovation-driven supplier onboarding occurs only among firms at the highest maturity level, although not every highly mature firm practices it. Higher-maturity companies also have a broader focus on Sustainable Development Goal (SDG) alignment, but this relationship is not statistically significant. Procurement maturity differs significantly across sectors, while the four individual lens scores do not. Compliance is also connected with procurement maturity but does not independently predict innovation-driven onboarding. Overall, the findings suggest that having a high level of procurement maturity is a necessary step towards achieving ambidextrous procurement, but it's not enough on its own to get there.

Keywords: procurement ambidexterity, procurement maturity, supplier onboarding, digitalization, sustainability, compliance, Bangladesh

1. Introduction

Procurement is not just about getting the best price and placing orders anymore. It now involves supplier development, innovation, risk management, digital transformation, and sustainability. This expanded role creates a basic tension. This means procurement teams have a lot on their plate. They need to make their current processes better, but at the same time, they're always on the lookout for new suppliers, new technologies, and new solutions to stay ahead of the game.

The literature describes these challenges through the concepts of exploitation and exploration. Exploitation means implementing and refining known processes, capabilities, and solutions. Exploration is experimenting with new alternatives and discovering new knowledge through suppliers, markets, technologies, and external partners. When a procurement team

can do both of these things at the same time, rather than just focusing on one, it becomes really effective. This is called being ambidextrous (Gualandris et al., 2018).

This balance is difficult because the two activities require different priorities. On one hand, there's exploitation, which is all about standardizing things, being in control, and getting things done quickly and efficiently. On the other hand, you have exploration, which requires trying new things, being okay with not knowing what will happen, and investment before returns are certain. Purchasing departments therefore act in the middle between cost pressure and innovation pressure. They must reduce costs and protect supply continuity while creating conditions in which suppliers can contribute ideas and new capabilities (Andersen et al., 2020).

Research on organizational ambidexterity shows that the field includes several related forms, including structural, contextual, and sequential approaches. But what's interesting is that research hasn't shown a clear link between these balances. It seems that the industry, how the organization is set up, who's leading it, and how fast things are changing around it all play a role in whether exploration or exploitation should be prioritized. (Chakma et al., 2024).

Bangladesh's procurement landscape is shaped by old regulatory traditions, slow reform, and persistent governance challenges, making efficiency and innovation difficult to achieve. In such a system, procurement units must balance refinement of existing processes with exploration of new, digital and transparent approaches. The challenge is visible among Bangladeshi small and medium-sized enterprises. A survey of 367 firms found that 41.1% still relied mainly on manual supply-chain processes, while 34.1% used basic digital tools and 21.0% had adopted advanced tools such as ERP systems, analytics platforms, or cloud-based solutions (Hai et al., 2024). Cost, infrastructure, technical expertise, and resistance to change remain important barriers. This makes procurement ambidexterity especially critical in Bangladesh, where strengthening both capability sets can directly support better performance, digitalization, innovation, and sustainable development. Previous studies show that, with the advent of the Internet of Things, Schneider Electric's purchasing function realized that, in order to stay ahead of the learning curve, it needed to discover start-ups that could bring value to its clients (exploration). At the same time, the function also realized that it needed to implement new purchasing processes and new forms of organizing their integration in the existing supply network (exploitation), having its purchasing and other functions survey early ideas and prototypes from tier-one suppliers (exploration) has helped Toyota acquire the technical knowledge required to reduce new product development times and enhance manufacturability (exploitation) (Gualandris et al., 2018). These are only examples of digitalization and innovation through ambidexterity but the pressure to build a sustainable future is also a critical issue. In the case of Bangladesh, the concept of balancing exploitation and exploration is rather new but not unheard of. Some industry sectors are performing quite well in the global market. But whether they're using ambidextrous approaches in their procurement department or not, if so, then to what extent and how is that impacting the overall industry is also another objective of this research.

Innovation procurement requires a similar shift. The European Commission recommends using functional requirements and suitable award criteria so that suppliers can propose different ways of meeting a defined need. The use of variants can allow innovative solutions to compete with conventional alternatives without excluding lower-risk bids (European Commission, 2021). Early supplier involvement can improve product and process development, but it also creates risks related to dependence, information exchange, supplier capability, and intellectual property (Dourado et al., 2024).

Therefore, this study examines cross-industry approaches to ambidextrous procurement in Bangladesh, comparing how firms balance compliance and sustainability while progressing in digitalization and innovation. Basically, we created two simple frameworks that work the same way, with 5 levels each. One measures how deep your procurement processes and analytics are, and the other measures how open or selective you are when bringing in new suppliers. As per company evidence from annual reports, websites, certifications, and initiatives, we code the data into three lens scores regarding Digitalization, Innovation, and Sustainability to compare different sectors.

To address this, five hypotheses are developed:

- H1: Firms with higher procurement maturity are more likely to use advanced digital tools.
- H2: Innovation-driven supplier onboarding occurs only among firms with the highest procurement maturity.
- H3: Higher procurement maturity is associated with broader alignment with the Sustainable Development Goals.
- H4: Procurement maturity and vendor-onboarding practices differ across industries.

- H5: Stronger compliance capability is associated with higher procurement maturity and innovation-driven supplier onboarding.

2. Literature Review and Conceptual Framework

2.1 Procurement ambidexterity

Procurement ambidexterity is the ability to pursue exploratory and exploitative activities at the same time. Exploratory procurement includes supply-market intelligence, technology scouting, supplier innovation workshops, collaboration with start-ups, and the search for unfamiliar solutions. Exploitative procurement includes supplier qualification, cost reduction, process standardization, performance monitoring, and the refinement of established practices (Gualandris et al., 2018).

Purchasing departments also support organizational ambidexterity in different ways. Andersen et al. (2020) identify contextual, structural, and sequential forms. In contextual ambidexterity, purchasing employees shift between cost-management and innovation tasks within the same role. In structural ambidexterity, different teams or sub-functions focus on different activities. In sequential ambidexterity, the organization moves between periods of exploration and exploitation.

These forms are not mutually exclusive. A firm may use standard category teams for routine procurement, specialized groups for innovation sourcing, and cross-functional teams for strategic suppliers. The appropriate form depends on supplier criticality, organizational design, and the complexity of supplier involvement (Andersen et al., 2020).

	Sequential ambidexterity	Structural ambidexterity	Contextual ambidexterity
OA at purchasing department level	the purchasing department supports either exploration or exploitation activities, separated by periods of stability and change	A. Purchasing department primarily pursues exploitative purchasing activities and support supply exploration taken on by other departments B. Purchasing department is internally separated in functions dealing with explorative and exploitative sourcing activities	Purchasing employees participate in teams active in both exploration and exploitation
Case examples from the literature	Mikkelsen and Johnsen (2019)	Schiele (2010) Adler et al. (1999)	Aoki and Wilhelm (2017)

Figure 1. A typology of ambidexterity at the purchasing-department level, adapted from the literature.

The supply-chain literature gives a similar conclusion. Supply-chain ambidexterity can improve performance when firms combine lean methods for efficiency with agile methods for responsiveness. But this relationship depends on information sharing, collaboration, innovation capability, and the ability to adapt to changing market conditions (Suharto, 2023). Green supply-chain research also suggests that organizational ambidexterity can act as a bridge between green supply-chain management and competitive advantage (Al-Khawaldah et al., 2022).

2.2 Procurement maturity

Procurement maturity describes the extent to which procurement processes are formalized, integrated, measured, and able to support strategic goals. Low-maturity procurement is generally regarded as manual, low in compliance, and weakly documented. Higher-maturity procurement uses digital systems, supplier KPIs, traceability, sustainability-linked sourcing, and predictive analysis.

Maturity should not be treated as a simple measure of organizational size. A large firm may still have fragmented supplier data or weak onboarding controls. However, a smaller firm may develop a focused procurement system in response to customer, regulatory, or export-market requirements. This connects with research showing that analytics capability creates value only when management, technology, talent, and business strategy work together (Aker et al., 2016).

In this study, maturity is measured through the Procurement Maturity Framework, which ranges from Level 1, Ad Hoc, to Level 5, Adaptive.

Level	Label	Description
1	Ad Hoc	Procurement is mainly manual, with no formal KPIs, undocumented onboarding, and no meaningful digital tools.
2	Basic	The firm uses some ERP functions or basic digital forms, but procurement processes and supplier selection remain poor.
3	Structured	Vendor selection processes are defined, digital forms or basic ERP systems are used, and some supplier KPIs and sustainability practices exist.
4	Strategic	The firm uses ERP with analytics, supplier KPIs, sustainability-linked sourcing, traceability, and supplier compliance tracking.
5	Adaptive	Procurement is digitally integrated and uses predictive analytics, SDG-linked KPIs, open-innovation onboarding, and circular procurement practices.

Table 1. Procurement Maturity Framework (PMF).

2.3 Vendor onboarding and innovation

Supplier onboarding is one of the main points where exploitation and exploration meet. Onboarding controls protect the firm from potential risks. But overly restrictive onboarding might rule out innovative suppliers and small start-ups that do not yet have long operating histories.

The Vendor Onboarding Framework used in this study ranges from unrestricted/open onboarding to closed, innovation-driven onboarding. At Level 5, suppliers are invited through a formal innovation criteria and must satisfy impactful technology, sustainability, and compliance criteria.

Level	Label	Description
1	Open	Vendors can be onboarded with minimal checks and limited documentation.
2	Moderate	Vendors must meet basic legal and operational requirements.
3	Controlled	Vendors pass defined quality, compliance, and reference checks before approval.
4	Restricted	The firm prefers proven, strategic, certified suppliers and long-term relationships.
5	Closed and innovation-driven	Suppliers are invited through an innovation gate and assessed against technology, sustainability, and compliance requirements.

Table 2. Vendor Onboarding Framework (VOF).

The framework does not imply that the most restrictive system is always the best. A closed system may reduce operational risk but also restrict access to new knowledge. Its value depends on whether the innovation gate identifies new solutions rather than simply reinforcing existing supplier relationships. Schiele (2012) shows that technically capable suppliers may still refuse intensive collaboration if the buyer does not offer sufficient strategic value. Early supplier involvement can also create information-system and coordination problems. Particularly when firms use incompatible databases, software, and management systems (Dourado et al., 2024).

2.4 Digital transformation and analytics capability

Digital transformation is not the same as purchasing new software. It involves changes in information systems, organizational routines, business models, skills, and relationships with external partners. Research on emerging-market firms describes digital transformation as a process of sensing market opportunities, acquiring digital technologies, and leading organizational change (Shu & Srimuang, 2023). Dynamic capabilities help firms sense opportunities and seize them as conditions change (Ellström et al., 2021).

The technology-organization-environment perspective also shows that digital adoption is shaped by technology conditions, organizational readiness, competitive pressure, perceived trends, and government support (Nguyen et al., 2022). In Bangladesh, these factors are visible in the uneven adoption of digital tools among SMEs and the limited readiness for AI-based supply-chain applications (Hai et al., 2024; Sharif et al., 2024).

2.5 Sustainability, transparency, and institutional pressure

Sustainable procurement considers the environmental and economic effects of purchases over their life cycle. ISO 20400 recommends that organizations identify sustainability priorities, assess suppliers, integrate sustainability into sourcing and contracts, and use the improvement to strengthen performance (CDP & Bureau Veritas, n.d.).

The SDG lens gives firms a related process for action. It suggests evaluating the full value chain, identifying positive and negative impacts, selecting indicators, setting measurable goals, and embedding responsibility across functions (GRI, UN Global Compact, & WBCSD, n.d.). This approach is relevant to procurement because many important impacts occur upstream in raw materials, supplier operations, labor conditions, and logistics.

Institutional pressures also shape sustainable procurement. Coercive pressure comes from regulators and buyers. Conventional pressure comes from professional standards and industry expectations. Mimetic pressure comes from firms copying practices that appear successful. Research on the Bangladeshi RMG sector uses institutional theory to explain how these pressures influence sustainable business performance (Mohua & Yusoff, 2021). Kauppi and Luzzini (2021) similarly show that institutional pressures can be measured as distinct forces within supply-chain contexts.

Transparency links procurement practice to consumers and other stakeholders. When companies disclose supplier information, labor conditions, environmental impacts, and corrective actions, they make supply-chain performance more visible. This can influence consumer judgments about sustainable consumption, although transparency does not by itself guarantee responsible performance (Chowdhury et al., 2023).

The RMG sector demonstrates why social sustainability must remain central. Research on social violations in Bangladesh highlights continuing concerns about wages, working hours, workplace safety, gender-based violence, and the enforcement of labor standards (Ashbin et al., 2024). These concerns can become procurement risks when global buyers evaluate suppliers on social compliance and responsible sourcing.

3. Methodology

3.1 Research design

This study uses a comparative design based on publicly available information. The sample consists of 16 popular Bangladeshi firms in five sectors: Agro, FMCG, pharmaceuticals, plastics, and ready-made garments. Data were collected from annual reports, sustainability reports, company websites, certifications, public initiatives, news coverage, and industry profiles.

Each firm was scored using the PMF and VOF frameworks. Four additional lens scores were assigned: digitalization and innovation were both measured on a 0 to 5 scale; sustainability, measured by the number of reported SDGs or SDG-linked initiatives; and compliance, measured on a 0 to 4 scale.

The design is transparent, but it should not be interpreted as equivalent to a large probability sample or a survey of the Bangladeshi procurement population.

Company	Sector
Kazi Farms	Agro
Paragon Group	Agro
ACI Ltd.	FMCG
Akij Food & Beverage	FMCG

Company	Sector
City Group	FMCG
Meghna Group of Industries	FMCG
Pran-RFL Group	FMCG
BEXIMCO Pharma	Pharma
Renata Ltd.	Pharma
Square Pharma	Pharma
Gazi Group	Plastics
RFL Plastics	Plastics
Ananta Group	RMG
DBL Group	RMG
Fakir Apparels	RMG
Ha-Meem Group	RMG

Table 3. Sample firms by sector ($n = 16$).

3.2 Measurement of digitalization

Digital tools were divided into two categories. Basic digitalization included ERP systems, request-for-quotation applications, supplier portals, management information systems, and basic cybersecurity tools. Advanced digitalization included cloud systems, Internet of Things applications, sensors, automation, artificial intelligence, and other advanced technologies.

A firm was coded as advanced if it reported at least one advanced digital tool. Procurement maturity was first divided into low maturity, PMF Levels 1 to 3, and high maturity, PMF Levels 4 to 5. This binary split reduces the information contained in the five-level maturity scale, so the study also calculated Spearman's correlation using the full PMF scale.

3.3 Measurement of innovation-driven onboarding

Innovation-driven onboarding was coded as a binary variable. A firm received a score of 1 when it used a Level 5 VOF system involving invitation-based onboarding and an innovation window.

The analysis tested two claims. First, every VOF-5 firm should also be PMF-5. Second, not every PMF-5 firm should be VOF-5. Exact binomial confidence intervals were calculated for these proportions.

3.4 Measurement of sustainability and compliance

Sustainability was measured using the number of SDGs, SDG-linked KPIs, and sustainability initiatives reported by each firm. Most firms reported between four and twelve aligned SDGs. Capping the score at five would have placed most observations at the maximum and removed much of the variation.

Compliance was scored from 0 to 4 using documented procurement KPIs and scorecards, formal certifications, regulatory or third-party audit evidence, and supplier compliance tracking. .

3.5 Statistical analysis

The analysis used Fisher's exact test for the low-maturity and high-maturity digitalization comparison. Spearman's correlation and Kendall's tau were used for ordinal relationships. Chi-square tests and Cramer's V were used to examine sector differences in PMF and VOF. Mann-Whitney U tests compared low- and high-maturity firms, while Kruskal-Wallis tests compared the four lens scores across sectors.

Because the sample contains only 16 firms and several sector-by-framework cells have very low expected counts, significance tests should be analyzed cautiously. So, effect sizes and descriptive patterns are considered alongside p-values.

4. Results

4.1 Relationships among procurement maturity and the four lenses

Procurement maturity is positively connected with vendor-onboarding selectivity. The correlation between PMF and VOF is $\rho = 0.62$, $p = 0.010$. Procurement maturity is also positively associated with digitalization, with $\rho = 0.53$ and $p = 0.036$. The relationship with compliance is weaker and marginal, with $\rho = 0.45$ and $p = 0.080$. The relationships with innovation and sustainability are positive but not statistically significant, with $\rho = 0.39$ and $p = 0.132$ for innovation, and $\rho = 0.41$ and $p = 0.116$ for sustainability.

The four lens scores are only weakly correlated with one another. This suggests that digitalization, innovation, sustainability, and compliance capture different dimensions of procurement practice rather than measuring one single underlying capability.

Correlation matrix across the two maturity scales and four lenses

Spearman's rho across all 16 firms. * $p < 0.05$ ** $p < 0.01$

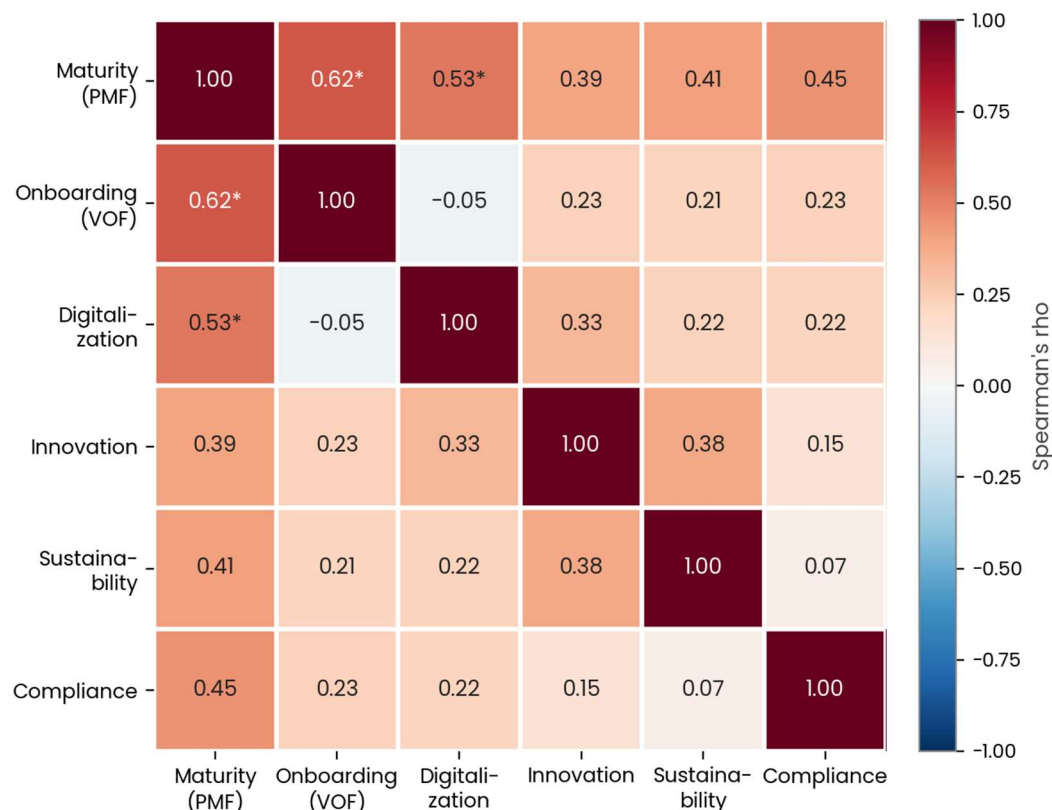


Figure 2. Spearman correlation matrix across procurement maturity, vendor onboarding, and the four lens scores.

4.2 H1: Procurement maturity and digitalization

Among the six low-maturity firms, one used advanced digital tools. Among the ten high-maturity firms, six used advanced digital tools. This represents a descriptive difference of 17% compared with 60%. But the one-sided Fisher's exact test was not statistically significant, $p = 0.121$.

When procurement maturity was treated as a five-level ordinal variable rather than a binary category, the result changed. Spearman's correlation between PMF and the digitalization score was $\rho = 0.53$, $p = 0.036$. Kendall's tau was $\tau = 0.44$, $p = 0.046$.

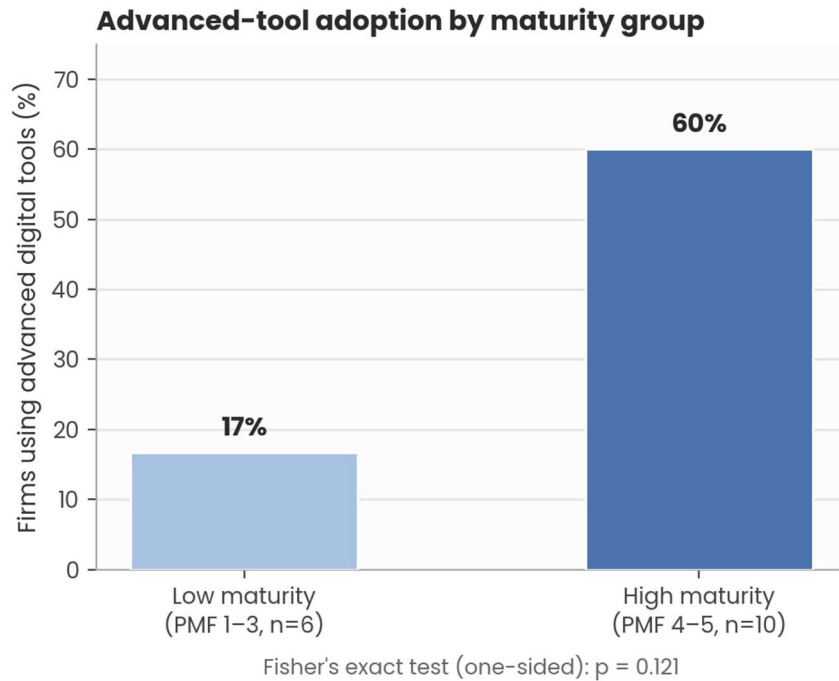


Figure 3. Advanced-tool adoption by maturity group.

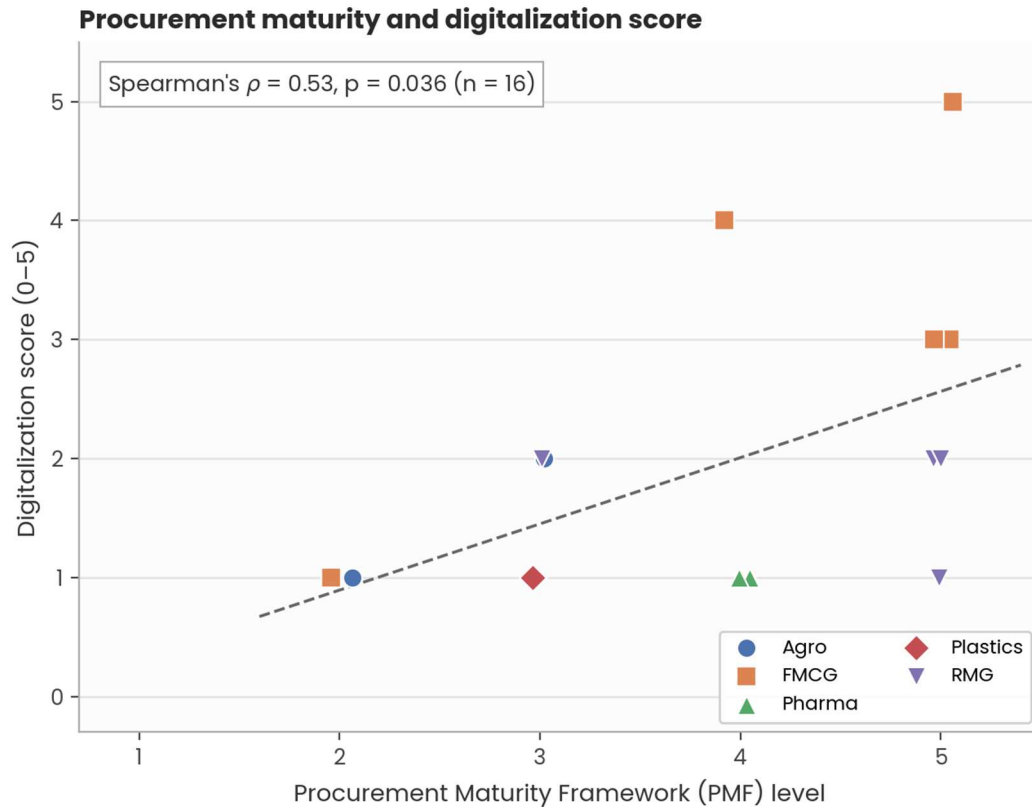


Figure 4. Procurement maturity and digitalization score.

H1 is therefore partially supported. The binary comparison does not establish a statistically significant difference, but the full analysis indicates that procurement maturity and digital advancement tend to increase together.

The practical implication is not that every firm should immediately adopt artificial intelligence, blockchain, or Internet of Things tools. Firms with lower maturity should firstly improve data quality, supplier records, process documentation, and KPI tracking. This recommendation is consistent with evidence that Bangladeshi SMEs face high costs, limited infrastructure, shortages of technical expertise, and rigidity when adopting digital tools (Hai et al., 2024).

4.3 H2: Procurement maturity and innovation-driven onboarding

Both firms classified as VOF-5 also reached PMF-5. This gives a proportion of two out of two, with an exact 95% confidence interval of [0.16, 1.00]. But only two of the six PMF-5 firms reached VOF-5, giving a proportion of one-third, with a 95% confidence interval of [0.04, 0.78]. None of the ten firms below PMF-5 reached VOF-5.

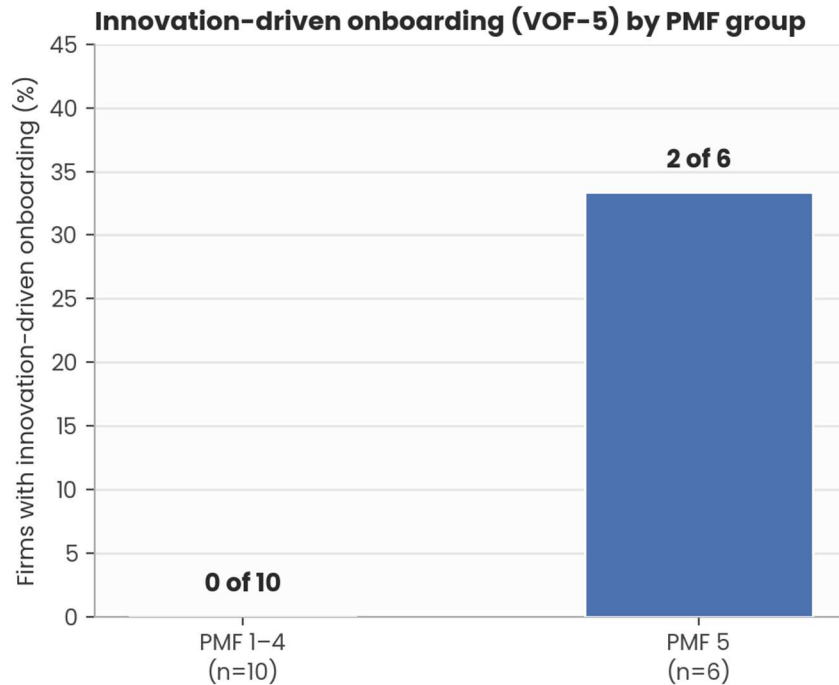


Figure 5. Innovation-driven onboarding (VOF-5) by PMF group.

H2 is supported. The highest level of procurement maturity appears to be necessary for innovation-driven onboarding in this sample, but it is not sufficient. A mature procurement system creates the organizational and digital foundation for innovation. It does not automatically create the supplier relationships, incentives, trust, and internal coordination needed to attract innovative suppliers. Firms that seek supplier innovation must offer strategic fit, effective communication, fair treatment, and relationship value. Without these conditions, technically capable suppliers may reserve limited innovation resources for more attractive buyers (Schiele, 2012).

4.4 H3: Procurement maturity and sustainability

High-maturity firms have an average alignment with 7.0 SDGs, compared with 5.5 SDGs among low-maturity firms. The direction is consistent with H3, but the one-sided Mann-Whitney U test was not statistically significant, $p = 0.112$. The Spearman correlation between PMF and SDG alignment was also not statistically significant, $\rho = 0.41$ and $p = 0.116$.

SDG alignment by procurement maturity

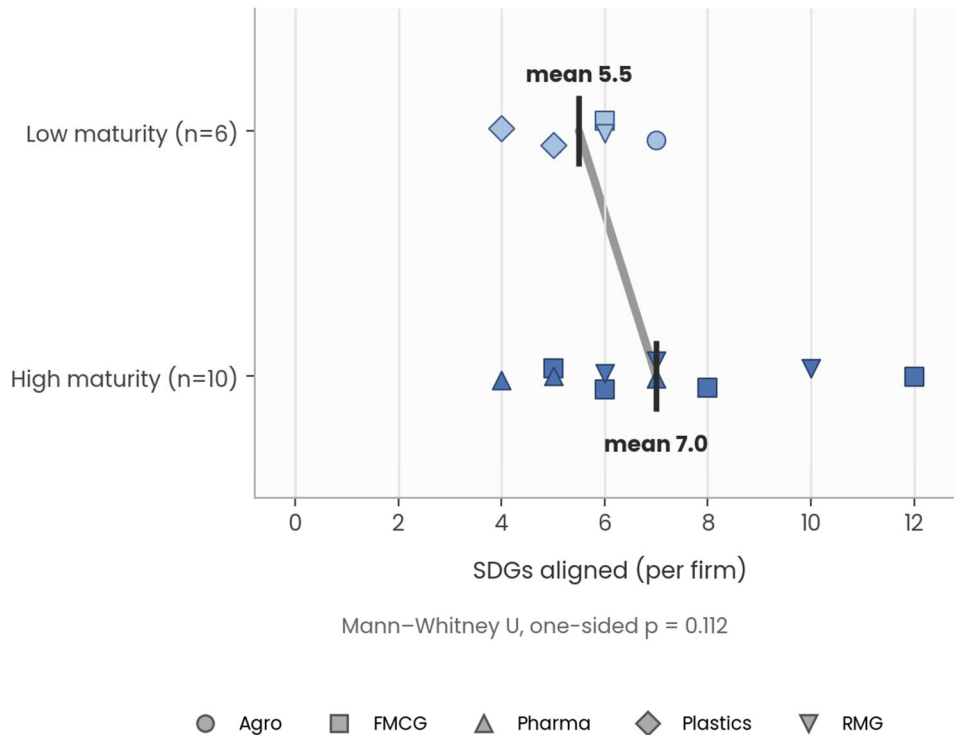


Figure 6. SDG alignment by procurement-maturity group.

H3 is therefore directionally supported but not statistically confirmed. Higher procurement maturity may help firms adopt sustainability into supplier KPIs, traceability systems, contract management, and purchasing decisions. But the present sample is too small to establish this relationship with confidence.

The results support a practical shift from broad sustainability statements to measurable procurement indicators. For example, energy use can be linked to SDG 7, water use to SDG 6, waste reduction to SDG 12, and labor conditions to SDG 8.

4.5 H4: Cross-industry differences

Procurement maturity differs significantly across the five sectors. The chi-square statistic is $\chi^2 = 24.20$, with 12 degrees of freedom and $p = 0.019$. Cramer's V is 0.71, which indicates a large association. Vendor onboarding also varies across sectors, although the result is less conclusive: $\chi^2 = 24.17$, with 16 degrees of freedom, $p = 0.086$, and Cramer's V = 0.61.

The sector-level results are more significant when comparing the four individual lenses. None of the Kruskal-Wallis tests is statistically significant. Digitalization has $H = 8.36$ and $p = 0.079$. Innovation has $H = 7.13$ and $p = 0.129$. Sustainability has $H = 5.52$ and $p = 0.238$. Compliance has $H = 0.47$ and $p = 0.976$.

Sector	Digitalization	Innovation	Sustainability	Compliance
Agro	1.50	2.00	6.00	1.00
FMCG	3.20	3.60	7.40	1.60
Pharma	1.00	2.00	5.33	1.33
Plastics	1.00	1.00	4.50	1.50
RMG	1.75	4.25	7.25	1.75

Table 4. Sector means across the four lenses.

Sector means across the four lenses

None of these differences are statistically significant by Kruskal–Wallis at $n=16$.

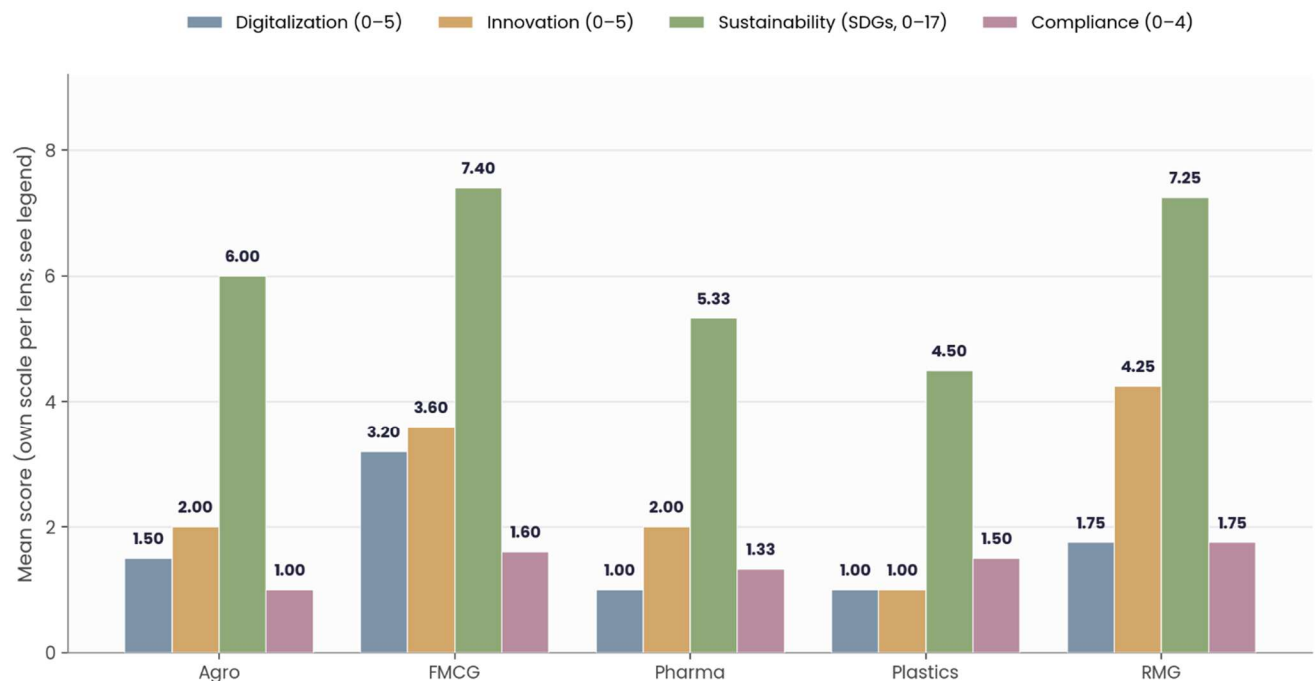


Figure 7. Sector means across the four lenses.

Sector profiles across the four lenses

Each axis shown as a share of the highest-scoring sector on that lens.

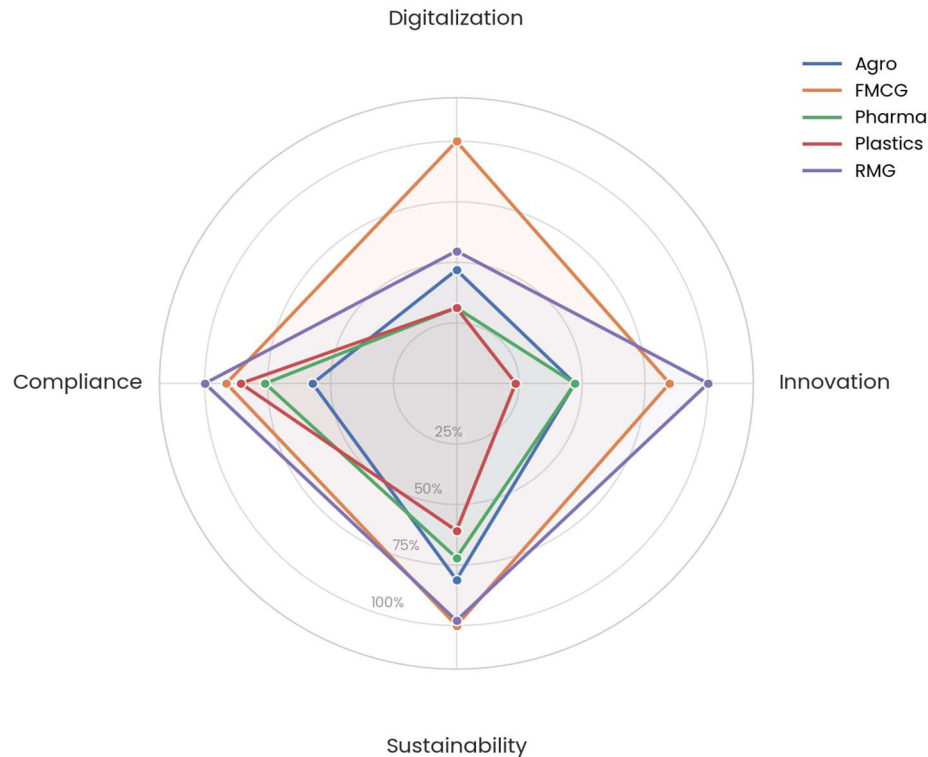


Figure 8. Sector profiles across the four lenses.

FMCG has the highest average digitalization score, and RMG has the highest average innovation score. FMCG and RMG also report the highest average sustainability alignment. Plastics and pharmaceuticals are lower across the digitalization, innovation, and sustainability dimensions. Compliance shows a much narrower range across sectors, suggesting that it may function more as a shared baseline than as a capability on which sectors strongly differ.

The FMCG result is consistent with research on urban supply chains, which emphasizes real-time visibility, logistics coordination, supplier partnerships, and environmentally sound practices when firms serve dense residential markets and face disruptions (Raihan et al., 2023). The RMG result is more complex. The sector may lead in innovation and sustainability initiatives while still facing significant social-compliance problems, meaning that visible innovation does not automatically resolve labor risks (Ashbin et al., 2024).

4.6 H5: Compliance as a precondition for advanced procurement

Compliance is marginally associated with procurement maturity. The Spearman correlation is $\rho = 0.45$, $p = 0.080$. A direct comparison between high- and low-maturity firms gives $p = 0.055$, which is close to but above the conventional 0.05 threshold. Compliance is not significantly associated with vendor-onboarding selectivity, digitalization, innovation, or SDG alignment. The corresponding results are $\rho = 0.23$ and $p = 0.386$ for VOF, $\rho = 0.22$ and $p = 0.424$ for digitalization, $\rho = 0.15$ and $p = 0.588$ for innovation, and $\rho = 0.07$ and $p = 0.805$ for SDG alignment.

The two VOF-5 firms also occupy opposite ends of the compliance scale. Ananta Group has the highest compliance score in the sample, while Fakir Apparels has a score of 1 out of 4. Both firms work with innovative and sustainability-oriented suppliers, but their routes differ. Ananta relies heavily on formal certifications and documented systems. Fakir relies more on direct sustainability partnerships.

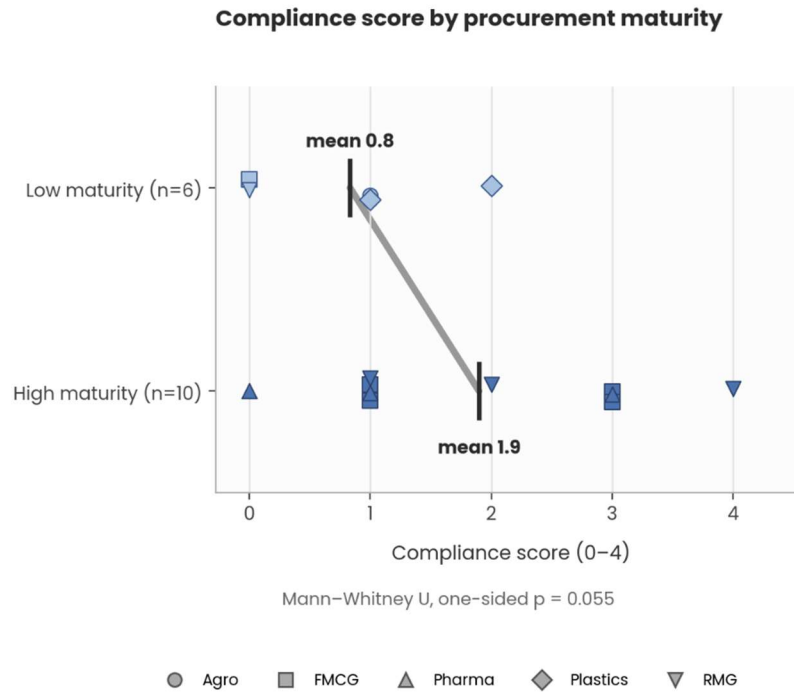


Figure 9. Compliance score by procurement-maturity group.

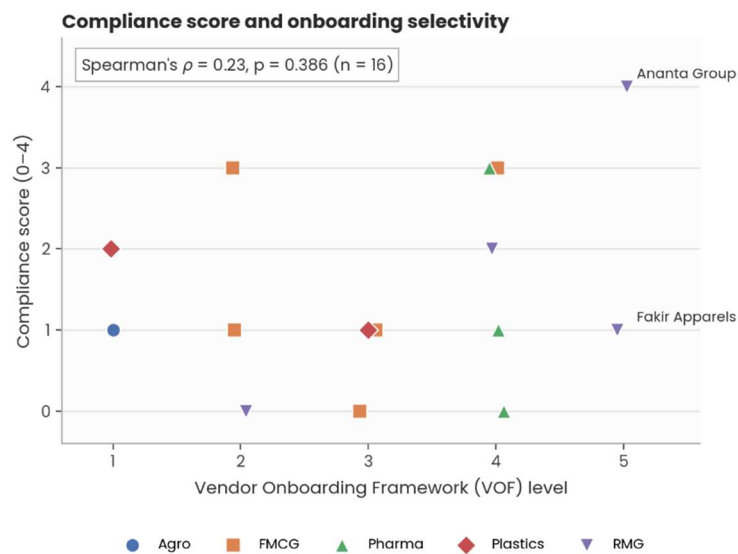


Figure 10. Compliance score and onboarding selectivity, with the two VOF-5 firms labelled.

H5 is therefore mixed. Compliance appears to develop alongside procurement maturity in the broader sample, but it does not independently explain which firms adopt innovation-driven onboarding. The measurement system may also favor formal certification and audit evidence over partnership-based forms of compliance and sustainability.

5. Discussion

The results show that procurement maturity strongly enables ambidextrous procurement. It is connected with more advanced digital tools and more selective supplier onboarding. It is also associated with a broader sustainability alignment. But maturity alone doesn't generate innovation, more sustainability, or compliance performance.

The strongest result is innovation-driven onboarding. Every VOF-5 firm in the sample is PMF-5, but only one-third of PMF-5 firms reach VOF-5. The base for exploration is created by maturity, but exploration requires additional organizational choices. This pattern is visible in the two VOF-5 firms. Ananta Group, which is an RMG PMF-5 firm, combines a large, formally documented compliance and certification portfolio (BSCI, WRAP, SEDEX/SMETA, GOTS, BCI, OCS, ICS, etc.) with visible technology investment (cloud-migrated ERP, AI-enabled market intelligence, automation in denim and laundry processing), which signals the strategic fit that Schiele (2012) identifies as necessary to attract supplier-led innovation. The second VOF-5 firm, Fakir Apparels, reaches the same onboarding level through a different route: direct sustainability partnerships (the Sweden Textile Water Initiative, a certified Bio ETP plant) and process innovation (the first one-piece-flow conveyor system in Bangladesh) rather than a comparably large certification portfolio (see Appendices B, C, and D). Both firms appear to have become preferred customers in Schiele's sense, but through different combinations of capabilities.

The digitalization results also follow a similar pattern. Advanced tools are more common among high-maturity firms. But the binary comparison is not significant. However, the ordinal analysis is more appropriate because it preserves the differences between Levels 1 to 5.

Firms can begin by standardizing supplier records, improving ERP use, establishing procurement KPIs, and reducing manual data entry. Then pilot cloud systems, supplier analytics, automation, or other advanced technologies in categories where the benefits are measurable. This approach is consistent with research on AI readiness in Bangladesh, which recommends pilot programs, training, data governance, and gradual adoption (Sharif et al., 2024). Meghna Group of Industries illustrates what a fuller phased rollout can look like in practice. It reports the highest digitalization score in the sample (5 of 5), combining core ERP (SAP S/4HANA) with cloud infrastructure, IoT, automation, and customer-facing AI tools such as conversational chatbots, alongside a stated intention to expand further into blockchain and autonomous-database technology (see Appendix B). By contrast, Renata, Square Pharma, and BEXIMCO Pharma, all PMF-4 firms with substantial scale and resources, report only base-level ERP use and no additional advanced tools (Digitalization score of 1). This gap is consistent with Hai et al.'s (2024) finding that cost, technical expertise, and organizational readiness, rather than firm size alone, are the constraints on digital adoption among Bangladeshi firms. And it's also aligned with Akter et al.'s (2016) argument that analytics capability depends on alignment between management, technology, and strategy rather than on resource availability alone.

The sustainability findings are weaker statistically but important managerially. Public reporting of SDG alignment is broader among high-maturity firms. Yet reporting alone does not prove that sustainability is embedded in purchasing decisions. ISO 20400 emphasizes that sustainability must be integrated into supplier selection, sourcing strategies, contract management, and continual improvement (CDP & Bureau Veritas, n.d.). ACI Ltd. and DBL Group show the upper end of this pattern, reporting alignment with 12 and 10 SDGs respectively, spanning goals from health and gender equality to responsible consumption and partnerships for the goals (see Appendix E).

The cross-industry findings show that procurement maturity and supplier onboarding are not linearly related. However, the lens score results don't portray statistically significant sector differences. It would therefore be too strong to claim that one sector is definitively more sustainable, innovative, or compliant than another based on this sample. Pran-RFL Group's evidence fits the urban-FMCG picture described by Raihan et al. (2023), which is roughly like: IoT-based cold chain systems, QR and barcode traceability, and farmer call centers together support the real-time visibility and coordinated logistics that is required for dense, disruption-prone urban markets. Within RMG, the sector average masks a wide internal range. Ananta Group, DBL Group, and Fakir Apparels report extensive third-party audit coverage and certification; DBL alone reports 95 percent third-party audit use and Tier 1 plus extended supplier audit coverage, while Ha-Meem Group, also RMG and also PMF-3, reports no KPI, certification, audit, or tracking evidence in the compliance dataset (see Appendix

C). This spread is a reminder that a sector known for strong buyer-driven compliance pressure (Ashbin et al., 2024) does not automatically produce uniform compliance documentation across its firms.

The compliance results challenge a simple gatekeeper model. Compliance is valuable, but it does not appear to be a universal prerequisite for innovation-driven onboarding. Some firms reach innovative supplier relationships through formal certification systems. Others use direct partnerships, buyer requirements, or collaborative programs that are not captured fully by a narrow compliance score. Ananta Group and Fakir Apparels again illustrate this directly: both reach the same, highest onboarding level through visibly different compliance profiles, one built on a wide certification portfolio, the other on direct sustainability partnerships (see Appendix C), which is difficult to reconcile with a model in which a single compliance score acts as the gate to innovation-driven sourcing.

Institutional pressure may explain why firms sound alike in public but act differently internally. Regulatory pressure, buyer expectations, and imitation push firms toward sustainability disclosure, but actual implementation depends on internal capability and commitment (Kauppi & Luzzini, 2021; Mohua & Yusoff, 2021). Meghna's certifications and safety training fit that pattern. Ha-Meem doesn't: it faces the same buyer scrutiny as Ananta and DBL but shows no documented compliance evidence at all, so pressure alone clearly isn't enough.

The results also support a dynamic-capability view. Firms that can sense market changes and acquire relevant technologies are better positioned to combine efficiency with innovation. This process is important in emerging markets, where infrastructure and skills are uneven and external partnerships can provide access to missing knowledge (Shu & Srimuang, 2023). Ananta Group's trajectory, cloud migration of its ERP system, automation in denim and laundry processing, and adoption of Ozone, Tonello, and laser finishing machines, maps closely onto the sense-acquire-reconfigure sequence Shu and Srimuang (2023) describe. Akij Food & Beverage offers a useful counterpoint: despite a low overall maturity level (PMF-2) and a Basic digitalization score, it reports one of the higher innovation scores in the sample (4 of 5), driven by a bottle-to-bottle rPET recycling line and in-house ERP development through its IT subsidiary (see Appendix D). This suggests that exploration capability can emerge in specific pockets of a firm even where procurement maturity remains low.

6. Managerial Implications

The evidence suggests five priorities for Bangladeshi firms.

1. Data quality and process discipline need to come before advanced technology, not after. ERP integration, clean supplier master data, procurement KPIs, and documented workflows are the foundation everything else builds on.
2. Advanced tools work best as focused pilots, not broad rollouts. A single cloud migration, automated approval process, or traceability project teaches more than a scattered technology program spread thin across the business.
3. The business case for these pilots is already visible in the data. Ananta cut infrastructure costs by roughly half after moving its ERP to the cloud. City Group cut procurement costs by 55% through its ESG sourcing plan. RFL Plastics, despite sitting at lower maturity, still cut costs by 10% and raised supplier performance by 15%. Self-reported and unverified as these numbers are, they give a management committee something concrete to weigh against the cost of change.
4. Supplier KPIs and sustainability goals work better as one connected system than two separate ones. Energy use, water use, waste, traceability, labor conditions, and compliance can all be tracked at onboarding, not bolted on afterward as a reporting exercise.
5. A formal innovation gate turns supplier-led innovation from an accident into a process: which problems actually need new solutions, how pilot suppliers get chosen, how much risk is acceptable, and how success gets measured. Functional requirements paired with variants let suppliers propose genuinely different approaches while keeping the comparison fair (European Commission, 2021).
6. Compliance doesn't have to mean certification alone. Ananta built its onboarding credibility through a wide certification portfolio; Fakir reached the same onboarding level through direct sustainability partnerships instead. Both routes worked, which means firms don't need to treat audits as the only path to credibility. For FMCG firms, resilience planning should include real-time visibility, alternative suppliers, urban delivery coordination, and disruption-response procedures. For RMG firms, innovation and traceability should be paired with credible labor-

rights enforcement. For pharmaceutical firms, small validated pilots may be more suitable than broad experimentation. For agro and plastics firms, basic digital records and supplier KPIs should come before advanced procurement technologies.

7. Limitations and Future Research

The study has four main limitations. First, the sample contains only 16 firms. This limits statistical power and makes the results sensitive to individual observations. The findings should therefore be interpreted as exploratory rather than conclusive.

Second, the firms were scored using publicly available information. Public disclosures may not represent the full internal reality of procurement practice. Firms may underreport some activities and overstate others.

Third, several measures are based on evidence counts. A firm receives a higher score when more forms of evidence are publicly visible, but evidence visibility is not identical to capability. The sustainability score, in particular, measures reported SDG alignment rather than verified environmental or social outcomes.

Fourth, the cross-sector tables contain sparse cells. The chi-square results should therefore be treated as indicative, while effect sizes and descriptive patterns should receive greater attention.

Future research should use a larger sample and collect primary data from procurement managers, suppliers, and internal stakeholders. Longitudinal research could examine whether firms move from basic digitalization to advanced tools over time. Further research should distinguish between certification-based compliance, audit-based compliance, buyer-imposed compliance, and partnership-based sustainability capability.

Future studies should also examine how procurement ambidexterity interacts with supply-chain disruptions. The FMCG literature suggests that urban distribution systems need visibility, flexibility, and coordinated logistics when access is restricted or demand changes quickly (Raihan et al., 2023). This provides a useful direction for linking procurement maturity to resilience outcomes.

8. Conclusion

This study examined ambidextrous procurement across 16 Bangladeshi firms in five sectors. The results show that procurement maturity is an important foundation for advanced procurement practice, but it is not a complete explanation of performance.

Higher maturity is associated with more advanced digitalization when the full ordinal scale is used. Innovation-driven supplier onboarding occurs only among the most mature firms in the sample, but not every mature firm reaches that stage. Higher-maturity firms also report broader SDG alignment, although the relationship is directional rather than statistically confirmed.

Procurement maturity differs across sectors, while the individual lens scores do not differ enough to support strong sector-level conclusions. Compliance rises alongside maturity in general, but it does not function as a simple gatekeeper for innovation-driven onboarding.

The central conclusion is that mature procurement is necessary but not sufficient for ambidexterity. Firms need exploitation capabilities, such as reliable processes, compliance systems, and cost control. They also need exploration capabilities, such as supplier dialogue, innovation gates, digital experimentation, and sustainability partnerships. The firms most likely to benefit are those that build both sides deliberately.

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Appendix A: Firm-Level Dataset

The table below reports the raw per-firm scores underlying every statistic and figure in this paper: sector, Procurement Maturity Framework (PMF) level, Vendor Onboarding Framework (VOF) level, and the four lens scores. This allows any result in Sections 4.1 to 4.6 to be independently recalculated.

Company	Sector	PMF	VOF	Digitalization (0-5)	Innovation (0-5)	Sustainability (SDGs)	Compliance (0-4)	Cost-Benefit (illustrative)
Kazi Farms	Agro	3	2	2	1	5	1	↑ Efficiency, ↓ waste (JIT inventory via ERP)
Paragon Group	Agro	2	1	1	3	7	1	Lower feed costs via vertical integration and in-house feed production
ACI Ltd.	FMCG	5	4	3	1	12	3	Inventory turnover ↑ 3.26
Akij Food & Beverage	FMCG	2	3	1	4	6	0	↓ Sourcing cost (recycled PET bottles)
City Group	FMCG	5	2	3	3	8	1	Procurement cost ↓ 55% (via LONGI ESG plan)
Meghna Group of Industries	FMCG	5	3	5	5	5	1	↓ Logistics costs (economic zones), ↓ processing cost (cloud data center), ↓ work hazards
Pran-RFL Group	FMCG	4	2	4	5	6	3	~70% local sourcing (2023); ↓ import costs, ↓ procurement costs, ↓ spoilage
BEXIMCO Pharma	Pharma	4	4	1	1	4	3	↑ Efficiency and agility
Renata Ltd.	Pharma	4	4	1	1	5	0	↓ Finance cost by 13.2%
Square Pharma	Pharma	4	4	1	4	7	1	Efficiency/risk control via regulated

Company	Sector	PMF	VOF	Digitalization (0-5)	Innovation (0-5)	Sustainability (SDGs)	Compliance (0-4)	Cost-Benefit (illustrative)
								GMP operations and ERP (implied)
Gazi Group	Plastics	3	1	1	1	4	2	↑ Efficiency, ↓ waste (implied, via ERP-based inventory management)
RFL Plastics	Plastics	3	3	1	1	5	1	↓ Procurement cost (10%), ↑ supplier performance (15%); only 5% capacity decline in COVID-19 vs. 15% industry average
Ananta Group	RMG	5	5	2	5	6	4	↓ Infrastructure cost (~50%), ↓ ~20 staff hours/week, ↓ ~50% user complaints (post cloud ERP migration)
DBL Group	RMG	5	4	1	5	10	2	↑ Efficiency, ↓ waste, ↓ risk (currency, reputational, technological — mitigated via foreign-currency procurement and international sales)
Fakir Apparels	RMG	5	5	2	4	7	1	↓ Waste (AI-paused production on error), ↓ sourcing cost (15% recycled cotton)

Company	Sector	PMF	VOF	Digitalization (0-5)	Innovation (0-5)	Sustainability (SDGs)	Compliance (0-4)	Cost-Benefit (illustrative)
Ha-Meem Group	RMG	3	2	2	3	6	0	↓ Vendor risk (reactive re-onboarding), ↓ high-cost procurement, credit-supplier preference when cost-effective

Table A1. Firm-level dataset (n = 16).

Note. PMF and VOF are coded on a 1 to 5 scale as defined in Tables 1 and 2. Digitalization and Innovation are evidence-count scores on a 0 to 5 scale. Sustainability is the uncapped count of SDGs (of 17) each firm reports aligning with. Compliance is an evidence-count score on a 0 to 4 scale. The detailed evidence behind each of these scores is reported in Appendices B through E.

Appendix B: Digitalization Scoring Evidence

Each firm was scored 0 to 5 on Digitalization as a count of five evidence categories: ERP use, Cloud, Sensors/IoT, Automation/AI (including FastReact), and Apps/Portals/E-commerce. The table below reports each firm's evidence flags (1 = present, 0 = absent), the resulting score, and the underlying source evidence.

Company	ERP	Cloud	IoT	Auto	Apps	Score	Evidence
Kazi Farms	1	0	0	0	1	2	Open-source ERP (via Sysnova), Linux Operating System, Egg auction app
Paragon Group	1	0	0	0	0	1	ERP, traceability tech
ACI Ltd.	1	0	1	0	1	3	IOT, digital farmer outreach, e-commerce platform, social media, SAP ERP
Akij Food & Beverage	1	0	0	0	0	1	Microsoft-based ERP system
City Group	1	0	0	1	1	3	Advanced ERP, SCM Web, Sales Web, MIS Portal, Distribution Portal, generative AI tools, mature cybersecurity threat identification and management program
Meghna Group of Industries	1	1	1	1	1	5	Ruby Live Chat for Chatbots and Conversational AI in 2020, Google Workspace (Formerly Google G-Suite) for Collaboration in 2016, SAP S/4 HANA for ERP Financial in 2019 and the related IT decision-makers and key stakeholders and intends to invest in emerging technologies such as AI, Machine Learning, IoT, Blockchain, Autonomous Database or in cloud-based ERP, HCM, CRM, EPM, Procurement or Treasury applications.
Pran-RFL Group	1	1	1	0	1	4	SAP ERP, IoT-based cold chain systems, QR/Barcode traceability, farmer advisory call

Company	ERP	Cloud	IoT	Auto	Apps	Score	Evidence
							centers, DigitalOcean Droplets for Application Hosting and Computing Services, Oracle E-Business Suite for ERP Financial
BEXIMCO Pharma	1	0	0	0	0	1	Oracle E-Business Suite ERP (in use since 2015 per market intel; Fusion Infotech case notes), Microsoft Dynamics 365 Business Central (AI enabled)
Renata Ltd.	1	0	0	0	0	1	Oracle ERP
Square Pharma	1	0	0	0	0	1	SAP ERP
Gazi Group	1	0	0	0	0	1	Odoo ERP
RFL plastics	0	0	0	0	1	1	RFQ 2.0 (A procurement app, manages vendor onboarding too)
Ananta Group	1	0	0	1	0	2	Oracle ERP+ FASTREACT, Customized ERP across departments, integrated AI (Global market intelligence Trendit)
DBL Group	1	0	0	0	0	1	Oracle ERP, EIM Software
Fakir Apparels	1	0	0	1	0	2	Sedomaster software (recipe & recipe and wet processes through ERP), ERP (Cripton Pro ERP by Pakiza Softwares), FASTREACT software (integrated with ERP for infdustrial planning), AI
Ha-Meem Group	1	0	0	1	0	2	ERP + FASTREACT

Table B1. Digitalization scoring evidence (n = 16).

Appendix C: Compliance Scoring Evidence

Each firm was scored 0 to 4 on Compliance as a count of four evidence categories: documented KPIs/scorecards, formal certifications/standards, regulatory upgrades/audits, and supplier compliance tracking/dashboards. The table below reports each firm's evidence flags, the resulting score, and the underlying source evidence (vendor base notes and compliance KPIs, separated by a vertical bar where the original source distinguished the two).

Company	KPI	Cert	Audit	Track	Score	Evidence
Kazi Farms	1	0	0	0	1	local and 348 international suppliers System compliance, quality management and operational maintainability
Paragon Group	0	0	1	0	1	241 distinct suppliers 100% compliant with global standards, availability, Regulatory & tax alignment (implied)
ACI Ltd.	1	1	1	0	3	GMP-certified suppliers audited Quality of incoming materials, GMP-certified checklist, Delivery accuracy
Akij Food & Beverage	0	0	0	0	0	15 indian suppliers (as international), raw material from Germany and other country of the world, 19,000 local farmers Maintaining compliance, pricing
City Group	1	0	0	0	1	Digital strict private enlisting system risk minimization, Data Quality Management, Operational Resilience

Company	KPI	Cert	Audit	Track	Score	Evidence
Meghna Group of Industries	0	1	0	0	1	15,000+ vendors overall Compliance-driven (ISO, HSE, PPE), safety training, certifications, legal documentation, hazard analysis, on time delivery
Pran-RFL Group	1	0	1	1	3	25,000+ registered suppliers including 100,000+ contract farmers and packaging/industrial vendors Traceability, quality inspection (HACCP), pesticide compliance, packaging waste tracking, and delivery tracking via SAP; QR systems used for produce trace-back
BEXIMCO Pharma	1	1	1	0	3	GMP/quality system inspected by WHO PQ (2023); global GMP accreditations (US FDA, MHRA, etc.). (Regulatory audit conformance as core KPI. Cost accuracy, GMP compliance, quality deviation, regulatory adherence
Renata Ltd.	0	0	0	0	0	Long-term, fixed vendor base Inventory provisioning, cost efficiency, and timely capitalization of expenditures
Square Pharma	0	1	0	0	1	Not disclosed but it maintains cordial and mutually beneficial interests with its international as well as local suppliers (report) GMP checklists, Delivery timing, Supplier errors
Gazi Group	1	1	0	0	2	Almost 250 international suppliers (tyres, pipes) Not disclosed, Product quality compliance (as its buyer is BREB), Cost competitiveness (lost their main buyer (BREB) partly because their product cost was higher despite good quality), GMP compliance
RFL plastics	1	0	0	0	1	Number not disclosed but both local and international suppliers available Supplier code compliance (EHS, no child labor), Legal & tax compliance, Quality & product safety, Delivery performance, Price competitiveness, Credit/payment terms (implied. Nowhere listed specifically)
Ananta Group	1	1	1	1	4	Raw materials and resources used in producing leather goods are sourced from local suppliers Carbon kpi, Compliance certifications (BSCI, WRAP, SEDEX/SMETA), Higg FEM, Higg FSLM, FOB pricing, Global Organic Textile Standard (GOTS), Better Cotton Initiative (BCI), Organic Cotton Standard (OCS), Internal Control System (ICS), and Recycled Claim Standard (RCS) (sources sustainable cotton), Product Quality & Defect Rate (as 100% export based), Regular internal audits (labor, environment, OHS) which shows compliance traceability
DBL Group	0	1	1	0	2	Uses online supplier portal, number not disclosed GMP compliance, 100% supplier audit coverage (Tier 1 & extended), 95% 3rd party audit use, vendor scoring system (Grades A–E), extremely serious about green raw materials sourcing (BCI Cotton, CmiA Cotton, Recycled Cotton, Recovertex, USA Raw Cotton (Pima), Regenerative Cotton, GOTS Organic Cotton, OCS Certified Cotton), audited certification (LEED, USGBC, ECC, Oeko-Tex Standard 100, GOTS, GRS, RCS, ISO 14001), innovative green approaches

Company	KPI	Cert	Audit	Track	Score	Evidence
Fakir Apparels	1	0	0	0	1	Number isnt disclosed but both local and international suppliers available Compliance rate, On-time delivery, Quality pass rate, Sustainability contribution, Innovation adoption rate, Environmental impact metrics , Trainng (As per buyer's requirements, Suppliers must have a policy for monitoring and controlling restricted substances, and train staff on how to implement this policy.)
Ha-Meem Group	0	0	0	0	0	Number not disclosed but both local and international suppliers available Quantity as per agreement, Quoted price vs. market survey, Commitment to PO/Agreement terms, Payment terms & credit period, Risk management & mitigation, Contribution to product development, Qualitative factors assessment

Table C1. Compliance scoring evidence (n = 16).

Appendix D: Innovation Scoring Evidence

Innovation scores (0 to 5) were assigned based on the number and nature of innovation-related initiatives each firm reports, such as automation projects, novel technologies, recycling or circular-economy initiatives, and process innovations. The table below reports the innovation items identified for each firm and the resulting score.

Company	Sector	Innovation Evidence	Score
Kazi Farms	Agro	Sensors for control of poultry shed conditions	1
Paragon Group	Agro	Farmer integration; solar power factories; recycling plants	3
ACI Ltd.	FMCG	JDA-Space Planning in ACI Logistics (Shwapno)	1
Akij Food & Beverage	FMCG	Starlinger rPET Bottle-to-Bottle Recycling Line which delivers 20–40% recycled PET; Akij's IT subsidiary; Akij Online Ltd.; develops in-house ERP software	4
City Group	FMCG	company app site for each sector; Digital Payment Solutions; Citi Token Services	3
Meghna Group of Industries	FMCG	VMware vCloud Suite and VMware NSX Data Center; Developing private economic zones (MEZ; MIEZ; CEZ) to centralize supplier ecosystems and streamline logistics; always focusing on and adapting new technology like the Internet of Things (IoT); Robotic Process Automation (RPA); image processing for implementing the technology-driven business model.	5
Pran-RFL Group	FMCG	Digital advisory support; IPM; seed treatment; plastic recovery systems; climate-smart agriculture	5
BEXIMCO Pharma	Pharma	Mostly product innovations. Microsoft Dynamics 365 Business Central for operations.	1
Renata Ltd.	Pharma	Loan restructuring and diversification of banking partnerships.	1
Square Pharma	Pharma	PIC; S certification for Penicillin line; plants built; operated to US FDA & MHRA standards	4
Gazi Group	Plastics	No procurement related innovations	1

Company	Sector	Innovation Evidence	Score
RFL plastics	Plastics	multi-supplier strategy (for polypropylene (PP))	1
Ananta Group	RMG	Cloud migration of ERP; Automation in denim & laundry; Ozone Machine; Tonello Machine; Laser Machine; E flow; Sweden Textile Water Initiative (STWI) and PaCT participation	5
DBL Group	RMG	Waste Management with Oracle ERP; In Check Variation (Verified InCheck - Level 1 review for chemical inventory credibility); EIM Software (Identifies deficiencies; supports sustainability strategies); Procuring energy; efficient machineries; Energy meters to ensure proper measurement	5
Fakir Apparels	RMG	Sweden Textile Water Initiative; Bio ETP Plant (certified Green ETP by approved by H&M); first factory in Bangladesh to introduce One piece flow conveyor belt system which is a lean concept implemented through mechanical conveyor belt that is configured to the garment SAM; a zero-climate impact dyeing process and aims to establish its first circular facility by 2025	4
Ha-Meem Group	RMG	Rooftop solar power plant; Laser machine denim wash; aims to use to advance AI and robotics (mostly manufacturing innovations)	3

Table D1. Innovation scoring evidence (n = 16).

Appendix E: Sustainability (SDG Alignment) Evidence

Sustainability was measured as the number of United Nations Sustainable Development Goals (SDGs) each firm reports aligning with in its procurement or supply chain activities, taken directly from company disclosures (uncapped, unlike an earlier capped version of this measure discussed in Section 3.4). The table below lists the specific SDGs identified for each firm and the resulting count.

Company	Sector	SDGs Aligned	Count
Kazi Farms	Agro	SDG 2, 8, 9, 12, 13	5
Paragon Group	Agro	SDG 2, 3, 4, 8, 9, 12, 13	7
ACI Ltd.	FMCG	SDG 1, 2, 3, 4, 5, 6, 8, 9, 10, 12, 15, 17	12
Akij Food & Beverage	FMCG	SDG 2, 3, 6, 8, 9, 12	6
City Group	FMCG	SDG 6, 7, 9, 12, 13, 14, 15, 17	8
Meghna Group of Industries	FMCG	SDG 2, 3, 8, 9, 12	5
Pran-RFL Group	FMCG	SDG 2, 6, 7, 8, 12, 13	6
BEXIMCO Pharma	Pharma	SDG 3, 8, 9, 12	4
Renata Ltd.	Pharma	SDG 3, 7, 8, 9, 12	5
Square Pharma	Pharma	SDG 3, 4, 7, 8, 9, 12, 13	7
Gazi Group	Plastics	SDG 7, 9, 12, 13 (implied, not declared)	4
RFL plastics	Plastics	SDG 6, 7, 8, 9, 12	5
Ananta Group	RMG	SDG 6, 7, 8, 9, 12, 13	6

Company	Sector	SDGs Aligned	Count
DBL Group	RMG	SDG 1, 3, 4, 5, 6, 7, 9, 10, 12, 17	10
Fakir Apparels	RMG	SDG 6, 7, 8, 9, 12, 13, 17	7
Ha-Meem Group	RMG	SDG 6, 7, 8, 9, 12, 13	6

Table E1. Sustainability (SDG alignment) evidence (n = 16).

Note. City Group's SDG list showed a minor discrepancy between two source workbooks used in data collection (7 vs. 8 SDGs identified). The 8-SDG figure is used throughout this paper for consistency with all reported statistics.