

Artificial Intelligence and Sustainable Procurement in the UAE

Presentation Overview

- | | |
|----|---|
| 01 | Research Background & Problem |
| 02 | Research Aims & Questions |
| 03 | Literature Review & Theoretical Foundations |
| 04 | Methodology |
| 05 | Key Findings |
| 06 | The AISP Framework |
| 07 | Policy Implications & Conclusion |

Research Background

60–80%

of product lifecycle
emissions come from
supply chains

**UAE Net Zero
2050**

National strategy
driving sustainability
commitment

**5 Key
Barriers**

Identified in UAE
procurement
implementation

The UAE Context

- The UAE has embraced ambitious sustainability targets including Net Zero 2050 and the Circular Economy Policy 2031.
- Despite strong policy commitment, organizations face weak operational capabilities, poor data analytics, and limited supplier transparency.
- AI technologies — machine learning, NLP, and predictive analytics — offer a pathway to bridge this implementation gap.
- This study examines how AI can operationalize and accelerate sustainable procurement in the UAE.

Research Aims & Questions

Primary Research Question

What can be the role of integrating Artificial Intelligence in the procurement processes of companies in the UAE in enhancing sustainable procurement?

Secondary Research Questions

SQ1 Which AI technologies and functions are most relevant to sustainable procurement in the UAE?

SQ2 What are the impediments and facilitators to using AI towards sustainability in the UAE?

SQ3 What role can AI play in facilitating sustainability, supplier evaluation, and circular/ethical sourcing?

SQ4 What organizational strategies and frameworks support AI-enabled sustainable procurement?

Literature Review & Theoretical Foundations

AI Capability Theory

Guida et al. (2023): AI enhances procurement via task automation, decision precision & supplier risk intelligence.
Gidiagba et al. (2025): ML as strategic capability.

Sustainable Procurement Theory

Lau (2023): Sustainability Disclosure Index.
Kozuch (2024): Green procurement links to performance gains.
Bag et al. (2025): Circular & ethical procurement.

Institutional Theory (UAE)

DiMaggio & Powell (1983): Coercive, mimetic & normative isomorphism.
Al Nuaimi (2019; 2020): Policy-practice gap in UAE.
Alhammadi (2024): UAE oil & gas AI adoption.

Key Research Gaps Identified

- No integrated UAE framework combining AI and sustainable procurement | No quantitative empirical evidence from the Gulf region | Workforce readiness gap under-researched

Methodology

Qualitative Strand

- 15 semi-structured interviews
- Procurement, ESG & AI professionals
- UAE industry — Dubai & Abu Dhabi
- 30–45 minutes, face-to-face & Teams
- Thematic Analysis (Braun & Clarke, 2006)
- Member checking with 12/15 participants
- NVivo for coding & analysis

Quantitative Strand

- Structured Likert-scale survey (Qualtrics)
- n = 94 UAE procurement professionals
- 6 sectors represented
- Descriptive statistics + Pearson correlation
- One-way ANOVA for sectoral differences
- Cronbach's alpha ≥ 0.75 (all scales)
- IBM SPSS Statistics

Research Philosophy: Pragmatism | Design: Concurrent Triangulation Mixed-Methods

Key Findings — Quantitative

$r = 0.67$

AI Capability ↔
Sustainability Maturity
($p < 0.01$)

45%

Variance in sustainability
maturity explained
by AI capability ($r^2 = 0.45$)

$r = 0.72$

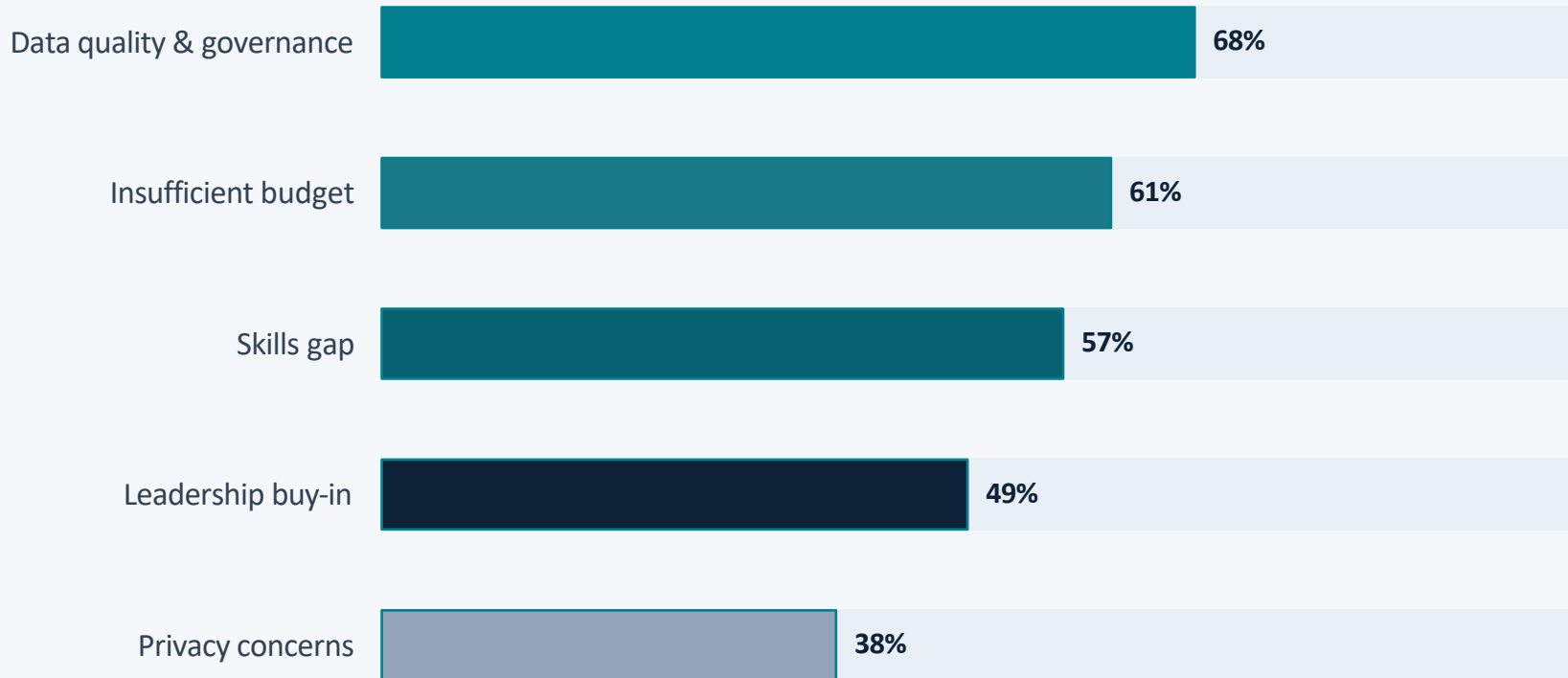
Procurement Digitalization
↔ AI Capability
($p < 0.01$)

AI Capability & Sustainability Maturity by Sector (Mean, 5-pt Likert)



Barriers to AI Adoption — Survey Evidence

% of respondents citing each barrier (select up to 3)



Barriers align with qualitative themes — data infrastructure and skill gaps are the most critical

Key Findings — Qualitative Themes

T1 AI as a Transparency Enabler

12/15 participants identified AI as the primary tool to resolve supplier disclosure gaps. NLP and ML-based risk scoring were highlighted as key applications.

"AI that could extract, standardize, and cross-reference [supplier] data would transform what we are able to do." — Financial Services Manager

T3 Human–Machine Interface

Participants preferred AI augmentation over full automation. UAE relational procurement culture requires hybrid evaluation models that preserve human judgment.

"AI can tell you the sustainability score; it cannot tell you whether a supplier's commitment is genuine." — ESG Officer, Real Estate

T2 Organizational Readiness Barriers

Only 3 organizations self-identified as AI-ready. Fragmented ERP systems, limited budgets, and skill shortages were the dominant barriers.

"We have three non-communicating ERP systems, and sustainability data is stored in spreadsheets." — Gov. Digital Transformation Specialist

T4 Institutional Pressure as Adoption Driver

11/15 cited UAE Net Zero 2050 and Circular Economy Policy 2031 as catalysts. ESG investor pressure was a second key driver, especially in energy and finance.

"We no longer consider Net Zero abstract. It has procurement implications." — Sustainability Director, Energy

The AISP Framework

AI-Enabled Sustainable Procurement — Five Pillars

1

Digital Infrastructure Readiness

Data integration
Cloud analytics
ERP consolidation

Policy Link:

UAE AI Strategy 2031

2

Supplier Transparency Intelligence

NLP disclosure analysis
ML risk scoring
ESG cross-referencing

Policy Link:

*Circular Economy
Policy 2031*

3

AI-Assisted Sustainability Scoring

Multi-criteria evaluation
Predictive analytics
Auditable assessments

Policy Link:

Net Zero 2050

4

Regulatory Compliance Automation

RPA monitoring
Compliance dashboards
Real-time updates

Policy Link:

*Federal Procurement
Reforms*

5

Workforce Capability Development

AI literacy training
Sustainability skills
Human-AI model

Policy Link:

*UAE National AI
Strategy 2031*

Policy & Managerial Implications

For Policymakers

- Align UAE AI Strategy 2031 with Net Zero 2050 to recognise AI as a sustainability driver
- Establish minimum supplier sustainability disclosure standards aligned with GRI and CDP frameworks
- Subsidise AI procurement tools and digital infrastructure investments for public organizations
- Develop national supplier transparency portals to improve data availability across sectors

For Procurement Managers

- Invest in data infrastructure before AI tools — clean, structured data is the prerequisite
- Frame AI investment using ESG compliance and risk reduction narratives to secure leadership buy-in
- Adopt an augmentation model: AI as analytical support, not a replacement for human judgment
- Build hybrid competency profiles combining digital literacy, sustainability knowledge, and change management

Academic Contributions

First empirical evidence (Gulf context) of AI capability ↔ sustainability maturity correlation | First UAE-specific AISP Framework | Confirms workforce readiness as a critical implementation gap

Conclusion

This study demonstrates that AI is a governance as much as an efficiency tool for sustainable procurement.

The AISP Framework provides a structured, culturally adaptive five-pillar approach for UAE organizations to leverage AI in achieving their sustainability goals.

Sustainable procurement is a data, analytics, people, and institutions governance issue — and AI can address all four dimensions simultaneously.

Strong empirical support

$r = 0.67$ between AI capability and sustainability maturity

Five clear pillars

Digital infrastructure → Supplier intelligence → Scoring → Compliance → Workforce development

UAE-first framework

Grounded in UAE policy context, cultural norms & institutional reality