



Enterprise Architecture for Digital Transformation in a Fragile State: Evidence from a Mixed-Methods Case Study of Afghanistan

Bilal Himmat^{1*}, Amir Kror Shahidzay¹, Mohammad Rashid Sapai¹

¹ Computer Science Faculty, Kabul University, Kabul, Afghanistan.

Received: June 30, 2026

Revised: August 15, 2026

Accepted: August 27, 2026

Published: August 31, 2026

Corresponding Author:

Bilal Himmat

info@csf.edu.af

DOI: [10.29303/jppipa.v12i8.16244](https://doi.org/10.29303/jppipa.v12i8.16244)

Open Access

© 2026 The Authors. This article is distributed under a (CC-BY License)



Abstract: Digital transformation (DT) programmes in fragile states routinely produce fragmented systems, duplicated investment, and outcomes that diverge from strategic intent. Enterprise architecture (EA) is the discipline conventionally prescribed for these pathologies, yet its established frameworks presuppose institutional stability, deep specialist labour markets, and formal governance, none of which characterise a post-conflict economy. This paper reports a pragmatic, convergent parallel mixed-methods case study of Afghanistan that triangulates a survey of 105 public and private sector professionals with seven in-depth interviews with senior leaders. The results expose an adoption paradox: only 16.2% of surveyed organisations maintain a formal EA function, while the minority that do report markedly stronger outcomes in standardisation ($M = 4.18$), innovation enablement ($M = 4.00$), and technology risk reduction ($M = 3.94$). Organisations without EA rate long-term technology planning lowest of all measured items ($M = 2.84$). DT implementation intensity correlates strongly with perceived DT success ($r = .654$, $p < .001$), while sector membership predicts neither success ($t(80) = -0.57$, $p = .572$) nor EA adoption ($\chi^2(1) = 0.045$, $p = .832$), indicating a system-wide rather than sector-specific deficit. The dominant barriers are human and contextual rather than technical: a shortage of skilled professionals ($M = 3.66$) sustained by brain drain, and political and economic instability ($M = 3.65$). Committed senior leadership emerged as the single decisive enabler. The paper argues that TOGAF, Zachman, and FEAF are mismatched to this environment at the level of embedded assumption, and proposes “EA-Lite,” a practitioner-derived model that is lightweight, value-driven, politically savvy, and leadership-centric, together with a revised conceptual framework for leveraging EA in fragile states.

Keywords: Developing countries; Digital transformation; Enterprise architecture; Fragile states; Mixed-methods research; Public sector information systems; TOGAF.

Introduction

Digital transformation (DT) is now understood less as a technology programme than as a fundamental rethinking of an organisation's strategy, processes, and value propositions through digital means (Saha, 2019). The operational and strategic complexity this generates is the reason enterprise architecture (EA) exists as a discipline. EA supplies the organising logic and the holistic blueprint that keeps technology investment tethered to business strategy, so that transformation

proceeds coherently rather than chaotically (Bernard, 2012; Ross, Weill, & Robertson, 2006). The proposition that EA drives successful DT is close to an article of faith in the practitioner literature. Its empirical basis, however, comes almost entirely from stable, resource-rich economies.

The stakes are different in a developing country. There, DT is pursued not merely for optimisation but for national leapfrogging: addressing entrenched deficits in governance, health, and economic inclusion (Saha, 2019). Those same initiatives are typically undermined by the very fragmentation EA is meant to prevent,

How to Cite:

Himmat, B., Shahidzay, A. K., & Sapai, M. R. (2026). Enterprise Architecture for Digital Transformation in a Fragile State: Evidence from a Mixed-Methods Case Study of Afghanistan. *Jurnal Penelitian Pendidikan IPA*, 12(8), 88–103. <https://doi.org/10.29303/jppipa.v12i8.16244>

namely uncoordinated ad hoc projects that consume scarce capital and fail. A tension follows directly from this. The context with the most to gain from successful DT is usually the least equipped to manage its complexity, which makes the potential role of EA a question of practical consequence rather than academic interest alone.

Afghanistan sharpens that tension to a point. Decades of conflict have been followed by substantial donor-funded investment in e-governance and telecommunications, yet the resulting portfolio remains poorly coordinated, constrained by political volatility, unreliable infrastructure, and severe shortages of skilled staff (Saha, 2019). Earlier architectural assessments of Afghan e-government progress reached similar conclusions (Nasrat, 2020; Sapai, 2024). The outcome is a landscape of digital fragmentation in which the transformative potential of technology remains locked. Whether a structured discipline such as EA can be adapted to this environment, and what form such an adaptation would take, is the question this paper addresses.

Problem Statement

Afghan ministries are working to improve citizen services and private firms are pursuing efficiency and competitiveness, but technology adoption in both sectors is predominantly tactical and reactive rather than strategic and integrated (Saha, 2019). The consequences are predictable: fragmented systems that cannot exchange data, duplicated effort that wastes constrained budgets, and a persistent gap between technology projects and core strategic priorities (Dang & Pekkola, 2016; Ross et al., 2006). Project failure rates are high, technical debt accumulates, and the link between technological investment and delivered economic or social value weakens.

The theoretical remedy is well documented. EA is the discipline that imposes coherence on complexity and converts technology investment into strategic value (Bernard, 2012; Ross et al., 2006). Classical EA frameworks, however, are constructed on assumptions of institutional stability, available capacity, and resource availability. Their actual impact and value proposition in a volatile context such as Afghanistan are poorly understood and largely unverified. That gap in evidence leads to EA being either ignored or misapplied, which in turn allows the strategic misalignment and fragmentation it was designed to resolve to persist.

Research Gap

The gap this study addresses operates on three levels. *Contextual.* The majority of EA and DT scholarship originates in stable, developed nations (Emin, Budiardjo, & Santoso, 2024). Rigorous academic

treatment of EA in a fragile or post-conflict state is scarce (Saha, 2019). The distinction matters, because such environments face challenges beyond those of a typical developing country, including extreme political instability, security constraints, and catastrophic human capital flight.

Conceptual. A theoretical distance separates highly structured, resource-intensive frameworks such as TOGAF from the dynamic, resource-scarce reality of public sector work in developing contexts (Dang & Pekkola, 2016; Saha, 2019). Lightweight models that adapt EA principles for conditions of uncertainty and scarcity are largely absent from the literature (Shaanika & Iyamu, 2014).

Empirical. Although a link between EA adoption and DT outcomes is widely asserted, robust mixed-methods evidence from a fragile state is lacking. Practitioner perceptions of the challenges, successes, and necessary adaptations of EA in such settings have not been systematically collected or analysed.

Research Questions

The study is guided by one main question: what is the role and impact of enterprise architecture in driving effective digital transformation within the context of Afghanistan? Four sub-questions structure the inquiry.

RQ1. What key contextual factors, including drivers, challenges, and critical success factors, shape the adoption and value creation of EA in Afghan organisations?

RQ2. How are established EA principles and frameworks being applied or adapted within the operational and strategic context of Afghan organisations?

RQ3. What is the impact of applying EA principles on mitigating common barriers to DT, such as project fragmentation and strategic misalignment?

RQ4. What are the core components of a context-relevant conceptual framework for leveraging EA to drive DT in a fragile state?

Contributions

This paper makes four contributions. First, it provides the first mixed-methods empirical characterisation of EA practice in Afghanistan, combining a survey of 105 professionals with seven interviews with senior public and private sector leaders. Second, it documents and statistically examines an adoption paradox: formal EA is almost absent, yet where its principles are applied the reported benefits are substantial and specific. Third, it develops a structured critique of TOGAF, the Zachman Framework, and FEAF, arguing that the mismatch with a fragile state is not one of degree but of embedded assumption. Fourth, it derives from practitioner testimony an adapted model,

termed "EA-Lite," and integrates it into a revised conceptual framework for EA-driven DT in fragile environments.

Enterprise Architecture: From Documentation to Strategy

EA has no single fixed definition, and its meaning has shifted substantially over three decades. Early treatments framed it as an IT management technique concerned chiefly with analysis and documentation of systems and infrastructure (Bernard, 2012). The arrival of large frameworks, most prominently TOGAF and its Architecture Development Method (ADM), introduced a structured and repeatable process for designing an entire enterprise, linking business processes through to network infrastructure (The Open Group, 2022).

The decisive reframing came with the argument that EA is not an IT problem but a strategy problem: it is the organising logic that makes execution of a business plan possible (Ross et al., 2006). That move from a technical to a strategic frame remains the defining tension in the field, and it underpins subsequent claims that EA provides the blueprint anchoring digital solutions to strategy (Saha, 2019). Formal modelling work has meanwhile emphasised that architectural value lies less in perfecting any single layer than in managing the relationships between layers (Dietz et al., 2009).

A further evolution is under way. The methodical, documentation-heavy tradition is increasingly treated as a liability under conditions of rapid digital change, giving rise to agile enterprise architecture, which favours collaborative and incremental development over comprehensive up-front design (Emin et al., 2024; Bente, Bombosch, & Langade, 2012). For the purposes of this study, EA is therefore treated as a strategic planning discipline whose defining requirement in a fragile state is adaptiveness: providing sufficient guidance, in the form of principles and standards, to steer technology and business processes toward organisational goals under continuous change.

Architectural Domains

Frameworks decompose the enterprise into a small number of domains. Naming varies, but the substance is consistent (Bernard, 2012; The Open Group, 2022). Business architecture identifies strategy, governance, organisation, and key processes, and is the domain through which strategic intent is translated into operational capability (Ross et al., 2006). Data architecture describes logical and physical data assets and their management, and is the precondition for the analytics capability that DT depends on (Saha, 2019). Application architecture covers individual systems and their interactions, and is where new digital technologies are integrated with legacy estates (Zimmermann et al.,

2018). Technology architecture describes the infrastructure, networks, and platforms supporting the other layers; in many developing countries this domain is shaped primarily by inherited constraints (World Bank Group, 2025).

Two further domains are non-negotiable in a public sector setting. Security architecture matters because the protection of citizen data is a precondition of legitimacy (Lestari, Wijaya, & Chandra, 2025; Shukla, George, Tiwari, & Kureethara, 2022). Governance architecture establishes the human decision-making structures that determine whether the blueprint is used at all rather than shelved (The Open Group, 2022).

Established Frameworks and Their Embedded Assumptions

TOGAF offers a comprehensive method with strong process and governance focus, but its scale is widely reported as burdensome, and applying it in a developing country generally requires substantial tailoring to local capacity (The Open Group, 2022; SAP LeanIX, 2025; Saha, 2019). The Zachman Framework functions as an ontology, a classification matrix crossing interrogatives with stakeholder perspectives; it guarantees coverage but prescribes no process and depends on supplementary material to be operational (Bernard, 2012). FEAF was developed to improve interagency interoperability within the United States federal government and rests on common reference models; its value for public sector architecture is real but presupposes a centralised authority able to enforce standards (Bernard, 2012). Beyond these, method-oriented and agility-oriented alternatives continue to proliferate (Bente et al., 2012; Sparx Systems, 2023), and specialised variants have emerged, including a digital transformation architecture framework built on a business intelligence approach with layers for technology infrastructure, operations management, digital strategy, and governance (Rezaie, Mirzahosein, & Rasouli, 2022). Systematic reviews of implementation methodologies confirm both the abundance of approaches and the weak evidence base for choosing among them (Rouhani, Mahrin, Nikpay, Ahmad, & Nikfard, 2015), and measurement of EA outcomes remains an acknowledged research gap (Ilin, Levina, Abran, & Iliashenko, 2017; Niemi et al., 2013).

The implication drawn consistently in the literature on developing economies is that no single framework provides the answer, and that selection, simplification, and adaptation are necessary rather than optional (Saha, 2019).

Digital Transformation

DT is a deep and strategic change to an organisation's performance, culture, and value propositions through the adoption of digital

technologies, processes, and competencies across every level of the organisation (Saha, 2019; Salesforce, 2025). Reviews of the field emphasise that its drivers are as much competitive and regulatory as technological (Fadhlurrahman, 2024; Lin, 2024), and that emerging capabilities, particularly artificial intelligence, are reshaping what transformation is expected to deliver (Oyekunle & Boohene, 2024). Work on small and medium enterprises in developing economies has shown that maturity models designed for large firms translate poorly, and that contextual conceptual models are required (Chernumroong, Sureephong, & Janchai, 2021).

In developing countries DT carries an additional burden of expectation. It is treated as an instrument of socio-economic policy, aimed at broadening access to public services and increasing economic inclusion, rather than as a purely commercial exercise (Saha, 2019; World Bank Group, 2025).

The EA-DT Nexus

The mechanism by which EA is said to facilitate DT is reasonably well specified. Architecture provides a stable and modular foundation on which digital initiatives can be assembled, reducing the integration cost of new technologies and containing the risk of legacy entanglement (Zimmermann et al., 2018). Empirical studies report organisational benefits from EA adoption in the form of standardisation, cost reduction, and improved decision quality (Saleem & Fakieh, 2020), and a recent global analysis found a positive association between EA maturity and DT success (Alghamdi & Mario, 2024). Work on digitalisation and EA management, however, is careful to note that benefits are accompanied by significant challenges, including governance overhead and the difficulty of demonstrating value (Möhring, Keller, Schmidt, Sandkuhl, & Zimmermann, 2023).

The relationship is not one-directional. Digital change is forcing EA itself to evolve toward agility, incremental delivery, and closer coupling to business outcomes (Emin et al., 2024; Sararuch, Wannapiroon, & Nilsook, 2023). Public sector variants have moved in a similar direction, incorporating citizen feedback as an input to architectural design (Singh, Lynch, & Helfert, 2024) and adapting reference models to smart government programmes (Lestari et al., 2025).

EA and DT in Developing and Fragile States

Evidence from developing economies is thinner but consistent in its emphasis. Skills constitute the binding constraint: architecture initiatives in developing countries routinely fail for want of trained practitioners, and the pipeline for producing them is weak (Shaaniika & Iyamu, 2014). Sector studies from Malaysia illustrate

both the appetite for EA and the difficulty of sustaining it (Mailasan, Karim bin Mohamad, & Abu, 2019). In the public sector specifically, root cause analysis identifies organisational and political factors, rather than technical ones, as the principal source of EA failure (Dang & Pekkola, 2016). A complementary explanation frames EA management failure as a loss of legitimacy: where architecture is not perceived as relevant to immediate organisational problems, it is abandoned regardless of technical quality (Kohansal, Rolland, & Khodambashi, 2022). Institutional theory offers a lens for interpreting the resulting patterns of imitation and coercive standard-setting, particularly where donor agencies act as the source of legitimate models (DiMaggio & Powell, 1983).

For Afghanistan itself, the empirical record is limited to a small number of studies assessing e-government progress from an architectural standpoint (Nasrat, 2020; Sapai, 2024). None of these combine quantitative breadth with qualitative depth, and none address the adaptation of EA method to fragility as such.

Three observations follow from this review. The theoretical case for EA as an enabler of DT is strong but was constructed under assumptions that a fragile state violates. The barriers reported in developing contexts are dominated by human, organisational, and political factors rather than technical ones. And the literature calls repeatedly for lighter, more adaptive architectural practice without specifying what such practice would consist of in a specific fragile setting. The study reported here is designed to supply that specification empirically.

The remainder of this paper is organised as follows. The Method section sets out the philosophy, case study strategy, mixed-methods design, sampling, instruments, and analytic approach. The Result and Discussion section reports the quantitative and qualitative findings, their integration, and their interpretation, including the derivation of a revised conceptual model and the study's limitations. The Conclusion answers the research questions directly and proposes directions for further work.

Method

Philosophy and Reasoning

The study adopts a pragmatist philosophy. Pragmatism is not committed to a single account of reality and therefore permits the combination of methods best suited to the research problem (Creswell & Poth, 2018). Because a complete picture of the EA-DT relationship in Afghanistan requires both a measure of how widespread particular practices are and an explanation of why they take the form they do, pragmatism supplies the warrant for a mixed design.

Reasoning is abductive. The study begins deductively, using the constructs identified in the literature review to design the instruments, but remains open to empirical patterns that existing theory cannot accommodate. Where such patterns appear, the analysis moves inductively to modify the theory. Abduction, understood as the search for the best available explanation of the data, is the appropriate logic for a case study that seeks both to apply and to refine theory in a setting for which that theory was not designed.

Case Study Strategy

The design is a single, holistic case study, following the definition of a case study as an empirical inquiry investigating a contemporary phenomenon in depth within its real-world context, particularly where the boundary between phenomenon and context is unclear (Yin, 2018). Three features of the research problem make this appropriate. The questions are explanatory rather

than purely descriptive, asking how and why EA does or does not function in this setting. The context is an active variable: donor influence, ministerial turnover, and informal power structures shape technology strategy in ways that quantitative data alone cannot capture. And the unit of analysis is the national setting taken as an integrated whole, encompassing public and private organisations, national policy, and professional culture. A single case was chosen over a multiple-case design to prioritise depth, which is the appropriate first step for an under-researched topic.

Convergent Parallel Mixed-Methods Design

The case study is operationalised through a convergent parallel design, in which quantitative and qualitative data are collected and analysed independently and concurrently and then merged for interpretation (Creswell & Poth, 2018). Figure 1 summarises the design.

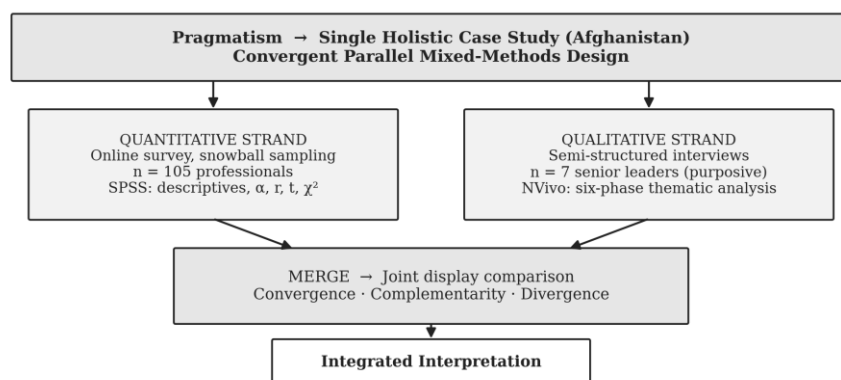


Figure 1. Convergent parallel mixed-methods design used in the study.

The rationale is threefold. Triangulation allows convergence between the two strands to strengthen the validity of conclusions, which matters in a setting where survey responses may be guarded for political reasons and interview narratives act as a check on them. Complementarity allows each strand to address a different facet of the same phenomenon: the survey establishes the prevalence of a practice, the interviews explain the mechanism behind it. Completeness follows from their combination.

Population, Sampling, and Participants

The target population comprised professionals in Afghan public and private sector organisations with direct involvement in, or strategic oversight of, EA or DT initiatives. Roles included chief information officer, chief

technology officer, head of IT, enterprise architect, IT and project managers, and senior business leaders responsible for citizen-facing strategy.

No reliable sampling frame exists for this population, since centralised and current professional registries are unavailable. Non-probability sampling was therefore a necessary adaptation to that infrastructural reality rather than a matter of convenience. Interview participants were selected purposively as information-rich cases, using four inclusion criteria: direct involvement in at least one major DT project; at least three years of experience in a senior strategic, managerial, or architectural role; representation across public, semi-government, and private organisations; and willingness to discuss experience in detail. The survey used purposive

selection followed by snowball referral through professional networks, which was the only practical route to reach a dispersed and relationship-based professional community. The attendant risk of homophily bias is acknowledged in the Limitations subsection.

The qualitative target was six to ten interviews, governed by data saturation (Braun & Clarke, 2006);

seven were conducted, at which point no new themes were emerging. The quantitative target was a minimum of 100 valid responses, a threshold chosen as realistic under Afghan field conditions and sufficient for the descriptive and exploratory inferential statistics planned. A total of 105 valid responses was obtained. Table 1 profiles the interview participants, who are identified throughout by anonymized code.

Table 1. Profile of Interview Participants

Participant code	Sector	Role
Private_Telecom_Analyst	Private (telecommunications)	Senior IT analyst
Public_IT_Expert	Public (technology ministry)	Systems expert
Private_IT_Developer	Private (IT services)	Software developer
SemiGov_Telecom_Manager	Semi-government (telecommunications)	General manager / head of department
SemiGov_Sports_Manager	Semi-government (sports body)	IT and IS manager
Public_Finance_Developer	Public (finance ministry)	Senior software developer
Public_Gov_Specialist	Public (high-level government office)	IT/IS specialist

N = 7. Codes preserve anonymity as required by the ethics protocol.

Instruments and Pilot Testing

Two instruments were developed. The semi-structured interview guide contained opening orientation questions, primary questions mapped to each research sub-question, probing questions, and closing questions, all open-ended to elicit detailed responses. The questionnaire comprised four sections: participant demographics; EA maturity and practices; drivers and challenges for DT; and the perceived value and impact of EA on DT outcomes. All attitudinal items used five-point Likert scales, and items were adapted from previously validated instruments in the EA and DT literature wherever possible in order to support construct validity.

A pre-test was conducted with a small convenience sample of five to seven professionals matching the target profile. Its purpose was not statistical but instrumental: to assess face and content validity, check wording and the local intelligibility of technical terms, estimate completion time, and test the survey platform. Feedback from the pre-test was used to revise the questionnaire into its final form.

Data Collection

Interview participants were approached by email and, more effectively, through warm professional introductions, since trusted intermediaries are in practice a precondition of access to senior leaders in this setting. Interviews ran 45 to 60 minutes and were audio-recorded with explicit permission after consent was reconfirmed at the start of each session. The questionnaire was hosted on a secure online platform,

distributed by email to purposively selected contacts with a request for onward referral, and left open with two reminder cycles to improve the response rate.

Data Analysis

Qualitative data were analyzed using the six-phase model of thematic analysis: familiarization, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and reporting (Braun & Clarke, 2006). NVivo was used to manage the corpus. Coding proceeded through three stages. Open coding produced descriptive codes taken directly from participants' language. Axial coding grouped these into seven conceptual categories. Selective coding refined the categories into five final themes. Table 2 documents this progression.

Table 2. From Axial Categories to Final Themes

Axial category	Final theme
1. Perceived drivers of DT	T1. The dual nature of digital transformation
2. State of EA adoption	T2. The spectrum of EA practice
3. Barriers to EA adoption	T3. The consequences of architectural planning
4. Consequences of (no) architecture	T4. The primacy of human and contextual factors
5. Contextual barriers	T5. The call for a contextualised "EA-Lite"
6. Contextual enablers	
7. Need for an adapted model	

Derived from open coding of seven interview transcripts in NVivo.

Quantitative data were analysed in SPSS. After cleaning and screening for missing values and outliers, descriptive statistics summarised the demographic

profile and the central tendency and dispersion of key variables. Inferential analysis comprised Cronbach's alpha for internal consistency, Pearson correlation for the association between DT implementation and DT success, an independent samples t-test comparing perceived DT success across sectors, and a chi-square test of independence for the association between sector and formal EA adoption.

Integration was performed through joint display analysis, in which quantitative and qualitative results are arranged side by side by theme so that convergence, complementarity, and divergence can be read directly. Divergence was treated as analytically productive rather than as a defect, since a mismatch between official rhetoric and on-the-ground practice is itself a finding in this context.

Rigour and Ethics

For the quantitative strand, content validity was supported by the literature review and expert pre-test feedback, construct validity by adaptation of previously validated items, and reliability by Cronbach's alpha against the conventional 0.70 threshold. For the qualitative strand, trustworthiness was addressed against the four established criteria (Lincoln & Guba, 1985): credibility through prolonged engagement, peer debriefing with the supervisor, and negative case analysis; transferability through thick description of context and participants; dependability through a documented audit trail; and confirmability through reflexivity, supported by a research journal.

The study followed the ethical framework of Kabul University. Survey consent was obtained through an information sheet and implied by voluntary submission; interview consent was obtained verbally from a standardised script before recording began. Participation was voluntary and withdrawable at any point. Confidentiality was treated as an absolute requirement rather than a formality, because in this setting expressing views on institutional effectiveness can carry professional risk; all identifying information was removed and participants are reported only under codes. Digital data were held on encrypted storage accessible only to the researcher, and data collection was conducted with attention to local norms of professional hierarchy and communication.

Result and Discussion

Respondent Profile

The 105 valid survey responses were distributed across sectors as follows: public or government, 47.6%; private, 30.5%; non-governmental or non-profit, 16.2%; and semi-government, 5.7%. Organisation size was concentrated in the 51–250 employee band (44.8%),

followed by 251–1000 employees (24.8%) and more than 1000 employees (18.1%). Experience was weighted toward the early and middle career: 34.3% reported 3–5 years, 21.9% reported 0–2 years, 21.0% reported 6–10 years, 15.2% reported 11–15 years, and 7.6% reported more than 15 years. Role distribution included IT/IS specialists (17.1%), IT or project managers (16.2%), and C-level executives (16.2%), with the remainder distributed across lower-frequency categories.

Scale Reliability

All three multi-item scales met or exceeded the conventional reliability threshold, as shown in Table 3.

Table 3. Internal Consistency of Survey Scales

Scale	Items	α	Level
Extent of DT implementation	6	0.901	Excellent
Success of DT outcomes	5	0.876	Good
Challenges to DT	7	0.795	Acceptable

Extent and Perceived Success of Digital Transformation

Table 4 reports the extent of DT implementation. Activity is concentrated on foundational work. Modernising legacy systems recorded the highest mean ($M = 3.68$), followed by developing new digital products and services ($M = 3.65$) and digitising core operational processes ($M = 3.51$). The two most advanced capabilities scored lowest: use of data analytics for decision-making ($M = 2.88$) and implementation of cloud-based solutions ($M = 2.83$).

Table 4. Extent of Digital Transformation Implementation

Initiative	M	SD
Modernising legacy systems	3.68	0.81
Developing new digital products/services	3.65	0.89
Digitising core operational processes	3.51	0.99
Enhancing customer/citizen engagement	3.23	0.99
Utilising data analytics for decision-making	2.88	1.00
Implementing cloud-based solutions	2.83	0.98

$N = 105$. Scale: 1 = not at all, 5 = to a very large extent.

Two readings follow. Substantively, most of what is described as digital transformation in this sample is surface-level modernisation rather than data-driven or platform-based change. Distributionally, the standard deviations sit close to 1.00 on nearly every item, indicating that experience is highly uneven: a minority of organisations are advancing while many are static. There is no single national trajectory.

Perceived success followed a related pattern. Internally focused outcomes score highest, with improving operational efficiency at $M = 3.65$ and

fostering a culture of innovation at $M = 3.59$. The lowest-scoring outcome is achievement of strategic business or mission goals ($M = 3.24$). The pattern is consistent with the implementation data: organisations are using technology to resolve immediate operational problems more successfully than they are using it to advance strategic objectives.

Prevalence of Formal Enterprise Architecture

The clearest single result in the survey concerns prevalence. Of 105 respondents, 79.0% reported that their organisation has no formal EA practice or function, 16.2% reported that it does, and 4.8% did not know. Respondents in organisations without a formal practice ($n = 88$) were asked to indicate the reasons, selecting all that applied. Table 5 reports the frequencies.

Table 5. Reasons Cited for the Absence of a Formal EA Practice

Reason	Frequency
Lack of awareness or understanding of what EA is	83
Not seen as a priority by senior leadership	75
Lack of skilled professionals or experts in EA	69
Perceived as too complex or bureaucratic for our needs	45
Insufficient budget or financial resources	36
We use other informal planning methods that work for us	9

$N = 88$. Multiple selections permitted.

The ordering matters more than the headline figure. Budget, the constraint most often assumed to dominate in a low-income setting, ranks second from last. The two leading reasons are cognitive and political: leaders do not know what EA is, and do not regard it as a priority. The barrier is located in institutional attention rather than in financial capacity.

Perceived Effectiveness Without Formal EA

Table 6. Perceived Effectiveness of Technology Activities Without Formal EA

Statement	M	SD
Effective methods ensure projects support strategy	3.15	0.99
We manage complexity when integrating new technology	3.10	1.03
We are successful at standardising technologies	3.01	0.99
We have clear processes for major investment decisions	2.92	1.05
We are satisfied with our long-term planning approach	2.84	1.01

$N = 88$. Scale: 1 = strongly disagree, 5 = strongly agree. The result indicates awareness of the deficit without possession of the vocabulary to name it. Respondents in these organisations recognise that major technology

decisions are being taken without a forward map, which is the condition under which fragmented estates accumulate.

The 88 respondents in organisations without formal EA were asked to rate their existing technology planning practices. Responses were uniformly lukewarm, as Table 6 shows, and the lowest-rated item in this section was satisfaction with the approach to long-term technology planning and governance ($M = 2.84$).

Perceived Value Where Formal EA Exists

The 17 respondents in organisations with a formal EA function report a different experience. Table 7 combines their assessment of EA's role with their assessment of its contribution to DT outcomes. Agreement is strongest for standardisation ($M = 4.18$) and well-defined change processes ($M = 4.12$); the largest perceived contribution to DT is enabling innovation ($M = 4.00$), followed by integration of new and legacy technology, risk reduction, and delivery acceleration (each $M = 3.94$).

Table 7. Perceived Role and DT Contribution of EA (Subgroup With Formal EA)

Item	M	SD
Role: EA has led to standardisation	4.18	0.81
Role: Well-defined change processes	4.12	0.93
Role: Project teams accountable to EA	4.00	1.00
Role: EA links business and technology strategy	3.94	0.66
Role: IT investments evaluated against EA	3.88	0.93
Role: EA improved data sharing	3.88	0.93
DT contribution: Enabling innovation	4.00	0.87
DT contribution: Integrating new and legacy technology	3.94	0.75
DT contribution: Reducing technology risk	3.94	0.83
DT contribution: Accelerating project delivery	3.94	0.66
DT contribution: Aligning DT with strategy	3.76	0.97

$N = 17$. Role items: 1 = strongly disagree, 5 = strongly agree. Contribution items: 1 = not at all, 5 = to a very large extent.

Reported Challenges to Digital Transformation

When all 105 respondents rated obstacles to their DT efforts, the highest-ranked were the shortage of skilled digital and strategic professionals ($M = 3.66$) and the broader political and economic environment ($M = 3.65$), followed by insufficient financial resources and funding ($M = 3.40$). Inadequate national IT infrastructure, unclear government policy, organisational culture, and cybersecurity risk ranked below these. The leading constraints are therefore human and environmental rather than technical.

Inferential Analysis

Three relationships were tested; results are summarised in Table 8.

Table 8. Summary of Inferential Test Results

Test	Statistic	Result
DT implementation × DT success (Pearson r)	$r(103) = .654, p < .001$	Significant
DT success by sector (independent t-test)	$t(80) = -0.57, p = .572$	Not significant
EA adoption × sector (chi-square)	$\chi^2(1) = 0.045, p = .832$	Not significant

Public sector $M = 3.32$ ($SD = 0.86, n = 50$); private sector $M = 3.43$ ($SD = 0.94, n = 32$). Formal EA adoption: public 5/46 (10.9%), private 3/32 (9.4%).

The correlation between implementation intensity and perceived success is strong, positive, and significant. Organisations undertaking a wider range of digital initiatives are the same organisations reporting better outcomes, which contradicts the fatalistic reading that effort in this environment is futile. Progress tracks the depth and breadth of investment.

The sector comparison produced no significant difference in perceived DT success. Despite pursuing transformation for entirely different reasons, public and private organisations arrive at similar outcomes. The most plausible interpretation is that the ambient constraints of the context, chiefly brain drain, political uncertainty, and resource scarcity, act as an equaliser that neither sector escapes.

The chi-square test likewise found no association between sector and formal EA adoption, with near-identical rates in the public (10.9%) and private (9.4%) sectors. The absence of EA is therefore not attributable to government inertia or private-sector neglect specifically. It is a shared blind spot across the professional ecosystem, which locates the causes at system level.

Qualitative Themes

Coding of the seven transcripts produced seven conceptual categories, refined into five final themes. Table 2 (see Method) documents the progression from axial to selective codes.

Theme 1: the dual nature of DT. The meaning of transformation varies systematically by sector. For private firms it is commercial: “For a company like ours, Digital Transformation is about survival and competitive advantage... it’s about innovation, developing new revenue streams through digital products, whether in mobile payments, content, or IoT services” (Private_Telecom_Analyst). For government it is institutional: “At our ministry, Digital Transformation is synonymous with fiscal discipline, transparency, and

efficiency” (Public_Finance_Developer). The state-owned enterprise occupies both positions at once, describing “a dual meaning... commercial viability... [and] a national mandate to expand digital access” (SemiGov_Telecom_Manager).

Theme 2: the spectrum of EA practice. Maturity ranges from formal to absent. At one end, group-influenced practice: “Yes, we do have a formal Enterprise Architecture practice. Given that we are part of a larger international group, the principles of EA have been encouraged” (Private_Telecom_Analyst). In the middle, a pragmatic system-level variant: “Yes, we have a form of Enterprise Architecture, though we may not always call it that... It’s not about enterprise-wide business processes, but it is about the architecture of our core IT assets” (Public_Finance_Developer). At the other end, absence, attributed consistently to awareness and skills: “There is a lack of awareness at the leadership level about what EA is and the value it can bring. It’s often seen as an unnecessary layer of bureaucracy. Secondly, there is a severe shortage of skilled professionals” (Public_IT_Expert).

Theme 3: consequences of architectural planning. Participants supplied paired positive and negative cases. Where architecture was applied it “prevented us from building on a shaky foundation and saved us significant rework down the line” (Private_Telecom_Analyst), and an architectural blueprint served as “common language” on a major integration project (Public_Finance_Developer). Where it was bypassed, a mobile money service that “bypassed some of the formal architectural reviews” produced a siloed product and “data reconciliation nightmares” (Private_Telecom_Analyst); an unsanctioned reporting tool produced multiple inconsistent solutions drawing on the same core system (Public_Finance_Developer); and in an organisation with no architecture at all, “each system we implement is its own island of data... As we grow, this lack of integration will become a major problem” (SemiGov_Sports_Manager).

Theme 4: the influence of context. The dominant constraint is human capacity. The technology ministry expert identified brain drain as the “number one” issue: “We train good people, and then they leave for the private sector or go abroad” (Public_IT_Expert). The shortage is specialised rather than general: “Finding experienced data scientists, cloud architects, or cybersecurity experts locally is incredibly difficult” (Private_Telecom_Analyst). Instability compounds it: “The broader economic and political environment is the most significant barrier. It creates uncertainty, which makes long-term investment decisions risky” (SemiGov_Telecom_Manager). Against these, one enabler was named unanimously: “The key enabler for any successful project has been having a strong,

committed champion at a high level, a minister or deputy minister who understands the vision and can push through the bureaucratic hurdles" (Public_IT_Expert), echoed by "Our authority is our biggest enabler. When our office issues a directive, it carries weight" (Public_Gov_Specialist). Theme 5: the call for "EA-Lite." No participant endorsed direct application of a standard framework. "You absolutely cannot apply a framework like TOGAF by the book here. It would be too slow and rigid. We have to adapt it. We focus on 'just enough' architecture. Our EA is more of a living guide than a strict set of laws" (Private_Telecom_Analyst). The label itself came from a participant: an "EA-lite" approach, focused on core principles... without the full bureaucratic weight of a

traditional framework" (SemiGov_Telecom_Manager). A further requirement emerged that has no counterpart in standard method: "in Afghanistan, a technology project is also a political project... You cannot succeed without building consensus. A framework like TOGAF doesn't have a module for that" (Public_Gov_Specialist).

Integration of the Two Strands

Table 9 presents the joint display. Convergence is strongest on the barriers to EA adoption and on the human capacity constraint; the qualitative strand is complementary rather than confirmatory on architectural consequences and on the demand for an adapted model, since the survey did not ask about framework adaptation directly.

Table 9. Joint Display: Integration of Quantitative and Qualitative Results

Theme	Survey evidence (what)	Interview evidence (why)
Low awareness and leadership priority (convergence)	Top reasons for absence of EA: lack of awareness (83/88) and not a leadership priority (75/88); Table 5	"There is a lack of awareness at the leadership level about what EA is" (Public_IT_Expert); "Technology is seen as a support function, not a strategic enabler" (SemiGov_Sports_Manager)
Digital skills shortage (convergence)	Ranked the single greatest challenge to DT, M = 3.66	Specialised rather than general: "Finding experienced data scientists, cloud architects, or cybersecurity experts locally is incredibly difficult"; systemic cause identified as brain drain
Consequences of architecture (complementarity)	With EA: standardisation M = 4.18, risk reduction M = 3.94 (Table 7). Without EA: long-term planning M = 2.84 (Table 6)	Positive: blueprint as "common language" that prevented chaos. Negative: "spaghetti architecture," "data reconciliation nightmares," "islands of data"
Need for pragmatism (complementarity)	EA "perceived as too complex or bureaucratic" cited by 45/88 (Table 5)	Universal call for "'just enough' architecture," an "EA-lite" model, and an approach that is "politically savvy"

Convergence indicates agreement between strands; complementarity indicates that one strand extends what the other establishes.

Finding 1: The Duality of DT Drivers in a Fragile State

Digital transformation in Afghanistan is not a single phenomenon. Its rationale, vocabulary, and success criteria differ systematically between sectors, and the survey composition (47.6% public, 30.5% private) allows the split to be observed on both sides. For private firms the driver is commercial survival, which is consistent with their emphasis on developing new digital products and services (M = 3.65) and on fostering innovation as a success measure (M = 3.59). For public organisations the driver is institutional: building fiscal discipline, transparency, and public trust, which aligns with the prominence of operational efficiency (M = 3.65) and the digitisation of core processes (M = 3.51).

The divergence is not a contradiction but a structural feature of DT in a developing economy, where the same technologies are expected to serve commercial and socio-economic ends simultaneously (Saha, 2019). The state-owned enterprise in this sample must

reconcile both mandates within one organisation. The practical implication for architecture is direct: any EA effort must first establish which of these two value logics it is serving, because the measures of architectural success differ accordingly. Standard frameworks, which assume a unitary enterprise strategy, provide no mechanism for this.

Finding 2: An Adoption Paradox

The central empirical result of this study is a paradox. Formal EA is close to absent, reported by 16.2% of respondents, and 79.0% state that no formal practice exists. Yet where architectural thinking is applied, its value is reported as high and specific, with standardisation at M = 4.18 and innovation enablement at M = 4.00, while organisations without it rate their long-term technology planning lowest of any item measured (M = 2.84).

The qualitative data supply the mechanism behind this gap. The benefits reported by adopters correspond to concrete episodes: an architectural blueprint acting as a common language across a major integration project, and early architectural review preventing construction

on an unstable foundation and the rework that would have followed. The dissatisfaction reported by non-adopters corresponds to equally concrete failures: a mobile money product launched around architectural review that generated data reconciliation problems, parallel reporting tools drawing inconsistently on a single core system, and an organisation accumulating systems that function as isolated islands of data.

This constitutes empirical support, from an environment far outside the conditions in which the theory was developed, for the proposition that EA is a foundation for execution rather than an administrative overhead (Ross et al., 2006). The evidence suggests the principle holds under fragility and may matter more, not less, where the margin for wasted investment is smallest. It is also consistent with the finding that EA maturity is positively associated with DT success at global scale (Alghamdi & Mario, 2024) and with case evidence on organisational benefits (Saleem & Fakieh, 2020), while the low adoption rate itself illustrates the legitimacy problem identified in the EA management literature: a practice not perceived as relevant to immediate problems does not survive (Kohansal et al., 2022).

Finding 3: The Primacy of Human and Contextual Barriers

The obstacles that dominate are not technical. The shortage of skilled professionals ranked first ($M = 3.66$) and the political and economic environment second ($M = 3.65$), ahead of infrastructure, policy, culture, and security. The interviews specify what these mean operationally. The skills problem is not an absence of IT staff but an absence of the specialised roles that transformation requires, and it is reproduced continuously by brain drain rather than resolved by training. This extends the treatment of skills gaps in the developing-country EA literature (Shaanika & Iyamu, 2014): the constraint is a flow rather than a stock, so

interventions that increase the supply of trained architects without addressing retention will not close it. Instability operates through a different mechanism. It shortens planning horizons, and by doing so it attacks the premise on which architecture rests. An organisation that cannot commit to a three-year target state cannot maintain a target-state architecture, and is pushed toward exactly the reactive behaviour that produces fragmentation. This gives an empirical shape to the political and organisational root causes identified in public sector EA research (Hakimi, Parsa, & Turan, 2026; Dang & Pekkola, 2016).

Against these constraints, one enabler was named without exception: a committed champion at senior level with the authority to move a project through institutional resistance. The finding has a corollary in the survey data, where absence of leadership priority was the second most frequently cited reason for having no EA practice. Leadership therefore does not behave as one factor among several in this setting; it behaves closer to a switch. Where it is present, architectural work has a chance of proceeding; where it is absent, such work does not begin.

Finding 4: Why Standard Frameworks Do Not Transfer

The demand for adaptation was universal among participants, and the reasons they gave are structural rather than presentational. Standard frameworks are artefacts of stable, resource-rich, formally governed bureaucracies. Their assumptions are that institutional structures are coherent, that specialised human capital is available, that strategic objectives persist long enough to be architected toward, and that formal process is the legitimate route to decisions. In a fragile state each of these assumptions is not merely weakened but frequently inverted. Table 10 sets out the resulting mismatch framework by framework.

Table 10. Assumption Mismatch Between Standard EA Frameworks and a Fragile-State Context

Framework	Embedded assumption	Condition observed in this study
TOGAF	A long, methodical ADM cycle is feasible; workshops, models, and reviews can be resourced continuously; governance operates through committees and compliance checks	Planning horizons are broken by ministerial turnover and budget volatility; the scarcest resource is skilled staff, whom the process consumes; progress in practice depends on a powerful individual champion rather than a committee
Zachman	The enterprise can be described completely across a fixed matrix of perspectives and interrogatives; roles such as “planner” and “owner” are identifiable and stable	Mandates are contested across directorates and leadership changes frequently; completing the matrix documents an idealised entity rather than the organisation that exists, and positions architecture as an academic exercise, which erodes its legitimacy
FEAF	A strong central authority can impose reference models and compel interagency cooperation	Authority is dispersed across ministries, donors, and NGOs; donor-funded projects create parallel systems outside official channels, so the map omits the actors generating most of the technical debt

Derived from the integrated analysis reported above and the framework literature reviewed in the Introduction

The “EA-Lite” Model and Revised Framework

The findings converge on a single implication: the value of EA in this context is not in question, but its standard packaging is unusable. What is needed is not rejection of the discipline but its radical simplification and reorientation around the constraints that actually bind. This section develops that reorientation into an explicit model.

The preliminary conceptual framework guiding this study's design proposed a relationship between context, EA practice, and DT outcomes at a general level. The empirical findings refine that framework in three respects: the contextual layer is reduced to the factors that actually dominate, the architectural practice is respecified as “EA-Lite,” and the path from practice to outcome is decomposed into explicit mechanisms.

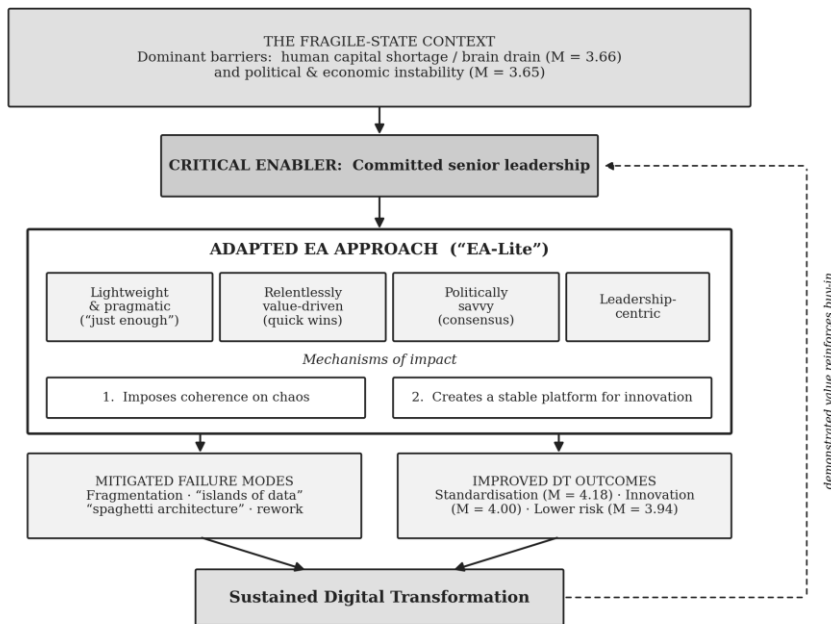


Figure 2. Revised conceptual framework for EA-driven digital transformation in a fragile state.

The Contextual Layer

The preliminary framework carried a long list of challenges common to developing countries. The data compress that list. Two barriers dominate to the point of governing every other variable: human capital shortage sustained by brain drain ($M = 3.66$) and political and economic instability ($M = 3.65$). One enabler carries comparable weight in the opposite direction: committed senior leadership. Modelling these three factors as the contextual layer is a claim about magnitude, not about the non-existence of other constraints.

Four Defining Properties of EA-Lite

1) Lightweight and pragmatic. The practice must deliver “just enough” architecture: sufficient guidance to steer decisions, and no more. This responds directly to the 45 of 88 respondents who rejected EA as too complex or

bureaucratic and to the practitioner judgement that applying TOGAF by the book would be too slow and too rigid. It is a choice of progress over completeness, and it aligns with the collaborative and incremental turn in the wider EA literature (Bente et al., 2012; Emin et al., 2024; Sararuch et al., 2023).

2) Relentlessly value-driven. Because the principal barrier is a lack of awareness among decision-makers, architectural practice must earn its standing through demonstrated results rather than argued benefits. This means selecting small initiatives that produce visible wins quickly, and treating each as evidence in support of the next. The requirement is a direct response to the legitimacy problem: an architecture practice that cannot show relevance to current problems will not be sustained (Kohansal et al., 2022).

3) Politically savvy. This is the property with no counterpart in standard method and the study's most distinctive contribution. Where authority is dispersed among ministries, donors, and NGOs, a technology project is simultaneously a political project. The architect's work therefore includes mapping influence, understanding donor funding cycles, sequencing deliverables to sustain sponsorship, and building consensus among parties with divergent mandates. Institutional theory provides a language for this dynamic, in which legitimate models are diffused coercively and mimetically by external funders rather than selected on technical merit (DiMaggio & Powell, 1983).

4) Leadership-centric. The practice must be intelligible to, and championable by, senior leaders. Given that leadership functions as a switch in this context, an architectural approach that cannot be explained to a minister in a few minutes has no route to adoption.

Mechanisms of Impact

The framework specifies two paths from practice to outcome. The first is the imposition of coherence: architecture supplies a shared reference that prevents duplicated systems, inconsistent data definitions, and the accumulation of unmanaged interfaces. The interview evidence for this path is direct, in the contrast between a blueprint functioning as a common language and the reconciliation problems that followed its absence.

The second path is less intuitive and was surfaced by the quantitative data. Among organisations with formal EA, the highest-rated contribution to DT was enabling innovation ($M = 4.00$), which runs against the expectation that a planning discipline constrains experimentation. The mechanism is that a predictable and standardised foundation lowers the cost and risk of experimenting on top of it. Architecture stabilises the substrate so that variation can occur safely above it, which is consistent with the argument that EA supports agility through modularity and standardisation (Zimmermann et al., 2018; Dietz et al., 2009).

A feedback relationship closes the model. Demonstrated value reinforces leadership buy-in, which is the condition for continued architectural work. This is why the value-driven property is not merely a delivery preference but a survival requirement for the practice itself.

Implications for Theory

Three theoretical contributions follow. First, the study tests the proposition that EA is a foundation for business execution (Ross et al., 2006) in an environment that violates its original scope conditions, and finds it supported: the organisations without architecture

exhibit precisely the fragmentation the theory predicts, and the minority with it report the predicted benefits. Second, it refines the barriers literature for post-conflict settings by recasting the skills constraint as a continuous outflow rather than a static gap (Shaanika & Iyamu, 2014), and by elevating political will from one factor among many to the decisive enabler (Dang & Pekkola, 2016). Third, it answers the standing call for agile and lightweight architecture (Bente et al., 2012; Emin et al., 2024) with an empirically derived specification, and adds a dimension absent from that literature: the requirement that architecture be politically savvy.

Implications for Practice and Policy

For CIOs and IT managers, the contrast between adopters and non-adopters provides an evidence base for arguing that architecture is a risk-mitigation investment rather than a discretionary cost, expressed in the concrete currency of avoided rework and avoided reconciliation failures. For practitioners, the four properties constitute an operating brief: stop attempting TOGAF by the book, deliver value early and visibly, and treat stakeholder politics as part of the architectural problem rather than an externality.

For policymakers, the results support treating EA as a foundational national capability rather than an agency-level technical option. Because the deficit is system-wide rather than sector-specific, interventions targeted at a single ministry will not address it. A lightweight national reference architecture, coupled with a requirement that donor-funded projects conform to it, would address the parallel-systems dynamic that standard federal models cannot see. Any such standard would need to be designed for the capacity that exists rather than the capacity that a reference model assumes, and would need to incorporate the security and data-governance provisions that public service delivery requires (Lestari et al., 2025; Shukla et al., 2022; Singh et al., 2024).

Limitations

Four limitations bound these findings. As a single-case study using non-probability sampling, the results support analytical generalisation to theory rather than statistical generalisation to a population. The researcher served as the primary instrument for qualitative data collection and analysis, so interpretation is subject to researcher influence; reflexivity, a research journal, and peer debriefing were used to mitigate this, and the insider position of an Afghan researcher studying Afghanistan afforded access and contextual understanding while requiring that discipline. The data are cross-sectional, which establishes association and perception but cannot establish change over time or causal direction. Finally, security and logistical

conditions constrained access, and the sample is likely weighted toward professionals based in Kabul, which may under-represent perspectives from other provinces. Snowball referral introduces a further risk that respondents resemble one another more than they resemble the population.

Conclusion

This study examined the role and impact of enterprise architecture in driving digital transformation in Afghanistan, using a convergent parallel mixed-methods case study that combined a survey of 105 professionals with seven interviews with senior leaders.

Four conclusions answer the research questions. On RQ1, the drivers of EA interest are the tangible costs of its absence rather than abstract strategic ambition, the dominant challenges are the shortage of skilled professionals ($M = 3.66$) and political and economic volatility ($M = 3.65$), and the decisive success factor is a committed senior champion. On RQ2, formal frameworks are largely not used, being judged too slow and rigid; where architectural thinking occurs it is heavily adapted toward “just enough” architecture. On RQ3, applying EA principles is associated with materially better outcomes, including standardisation ($M = 4.18$), innovation enablement ($M = 4.00$), and risk reduction ($M = 3.94$), against the lowest satisfaction with long-term planning among organisations without EA ($M = 2.84$); the mechanism reported by practitioners is that a shared blueprint functions as a common language and prevents the isolated systems that generate fragmentation. On RQ4, a workable framework for this context has four components: it must be lightweight and pragmatic, relentlessly value-driven, politically savvy, and leadership-centric.

The wider claim is that the low adoption of EA in Afghanistan is not evidence against the discipline. It is evidence against a particular packaging of it. The frameworks that dominate the field encode assumptions that a fragile state does not satisfy, and their uncritical import contributes to the incoherence they are meant to resolve. The EA-Lite specification and the revised conceptual framework presented in this paper offer an alternative that is derived from what practitioners in this environment already do when they succeed.

Four directions for further work follow. A longitudinal study tracking a small number of Afghan organisations over several years would establish how architectural practice develops and how it responds to political and economic shocks, which a cross-sectional design cannot. A comparative case study applying the revised framework in another fragile or developing state would test its transferability and support a more general

theory of architecture under non-ideal conditions. An action research project implementing EA-Lite in partnership with a ministry or firm would allow the model to be refined against live constraints. And a dedicated instrument measuring the four EA-Lite properties, deployed at larger scale, would permit statistical testing of the relationships the framework proposes.

Acknowledgments

The authors thank the 105 professionals who completed the survey and the seven senior leaders from Afghanistan's public and private sectors who gave their time for interviews. Their willingness to speak candidly on politically sensitive matters is what gives this work its empirical foundation.

Author Contributions

Conceptualization, B.H. and A.K.S.; methodology, B.H.; software, B.H.; validation, B.H., A.K.S. and M.R.S.; formal analysis, B.H.; investigation, B.H.; resources, A.K.S.; data curation, B.H.; writing—original draft preparation, B.H.; writing—review and editing, A.K.S. and M.R.S.; visualization, B.H.; supervision, A.K.S.; project administration, M.R.S.; funding acquisition, A.K.S. All authors have read and agreed to the published version of the manuscript.

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflict of interest.

References

- Alghamdi, H., & Mario, C. (2024). Assessing the impact of enterprise architecture on digital transformation success: A global perspective. *Sustainability*, 16(20), Article 8865. <https://doi.org/10.3390/su16208865>
- Bente, S., Bombosch, U., & Langade, S. (2012). Collaborative enterprise architecture: Enriching EA with lean, agile, and enterprise 2.0 practices. Morgan Kaufmann. <https://dl.acm.org/doi/10.5555/2381034>
- Bernard, S. A. (2012). *An introduction to enterprise architecture*. AuthorHouse.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Chernbumroong, S., Sureephong, P., & Janchai, W. (2021). The conceptual model of digital transformation for small and medium enterprises in Thailand. In *Proceedings of the Joint 6th International Conference on Digital Arts, Media and Technology (Ecti damt & Ncon)* (pp. 336–339). <https://doi.org/10.1109/ectidamtncon51128.2021.9425755>

Field Code Changed

- Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). SAGE. Retrieved from <https://collegepublishing.sagepub.com/products/qualitative-inquiry-and-research-design-4-246896>
- Dang, D., & Pekkola, S. (2016). Root causes of enterprise architecture problems in the public sector. *Proceedings of the 20th Pacific Asia Conference on Information Systems (PACIS)*, Paper 287. <http://aisel.aisnet.org/pacis2016/287>
- Dietz, J., Hoogervorst, J. A. P., Albani, A., Aveiro, D., Babkin, E., Barjis, J., ... & Wortmann, H. (2009). Enterprise architecture at work: Modelling, communication and analysis. Springer. Retrieved from <https://link.springer.com/book/10.1007/978-3-662-53933-0>
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147-160. <https://doi.org/10.2307/2095101>
- Emin, M., Budiardjo, E. K., & Santoso, H. B. (2024). Enterprise architecture and agile approach for digital transformation: An integrated analysis approach using bibliometric and content analysis. *Preprints*. <https://doi.org/10.20944/preprints202410.0795.v1>
- Fadhlurrahman, M. A. (2024). An academic analysis of digital transformation: A comprehensive review of literature and business strategies. *Security Intelligence Terrorism Journal (SITJ)*, 1(1). <https://doi.org/10.70710/sitj.v1i1.4>
- Hakimi, M., Parsa, N. M., & Turan, M. N. (2026). Consumer trust in AI-generated advertisements: A comparative study of AI and human-created advertising content. *COMMUSTY Journal of Communication Studies and Society*, 5(1), 29-48. <https://doi.org/10.38043/commusty.v5i1.7734>
- Ilin, I., Levina, A., Abran, A., & Iliashenko, O. (2017). Measurement of enterprise architecture (EA) from an IT perspective: Research gaps and measurement avenues. In *Proceedings of the ACM International Conference Series* (Vol. F131936, pp. 232-243). <https://doi.org/10.1145/3143434.3143457>
- Kohansal, M. A., Rolland, K. H. R., & Khodambashi, S. (2022). Towards an explanation for why enterprise architecture management fails: A legitimacy lens. In *Lecture Notes in Information Systems and Organisation* (Vol. 57, pp. 217-231). Springer. https://doi.org/10.1007/978-3-031-10902-7_15
- Lestari, M., Wijaya, A. F., & Chandra, M. M. D. (2025). Enterprise architecture model for smart government implementation. *Journal of Information Systems and Informatics*, 7(1), 78-96. <https://doi.org/10.51519/journalisi.v7i1.978>
- Lin, J. (2024). Digital transformation strategies and practices for corporates. *Advances in Economics, Management and Political Sciences*, 96(1), 204-213. <https://doi.org/10.54254/2754-1169/96/2024mur0086>
- Lincoln, Y. S., & Guba, E. G. (1985). Establishing trustworthiness. In *Naturalistic Inquiry*. SAGE.
- Mailasan, J., Karim bin Mohamad, A., & Abu, A. (2019). Enterprise architecture embrace digital technology in Malaysian transportation industry. *International Journal of Engineering and Advanced Technology (IJEAT)*.
- Möhring, M., Keller, B., Schmidt, R., Sandkuhl, K., & Zimmermann, A. (2023). Digitalization and enterprise architecture management: A perspective on benefits and challenges. *SN Business & Economics*, 3(2). <https://doi.org/10.1007/s43546-023-00426-3>
- Nasrat, N. (2020). *An enterprise architecture evaluation of e-government progress: Afghanistan as a case study*. Valparaíso University. <https://scholar.valpo.edu/gas>
- Niemi, E., et al. (2013). Global Association of Enterprise Architects. *Journal of enterprise architecture*. <https://www.globalaea.org/journal>
- The Open Group. (2022). *The TOGAF® standard*. <https://www.opengroup.org>
- Oyekunle, D., & Boohene, D. (2024). Digital transformation potential: The role of artificial intelligence in business. *International Journal of Professional Business Review*, 9(3), Article e04499. <https://doi.org/10.26668/businessreview/2024.v9i3.4499>
- Rezaie, M., Mirzahosein, Z., & Rasouli, H. (2022). Developing a digital transformation architecture framework: A business intelligence approach. In *Proceedings of the 6th Iranian Conference on Advances in Enterprise Architecture (ICAEA)* (pp. 7-14). <https://doi.org/10.1109/ICAEA57644.2022.10054019>
- Ross, J. W., Weill, P., & Robertson, D. C. (2006). *Enterprise architecture as strategy: Creating a foundation for business execution*. Harvard Business School Press.
- Rouhani, B. D., Mahrin, M. N. Z. R., Nikpay, F., Ahmad, R. B., & Nikfard, P. (2015). A systematic literature review on enterprise architecture implementation methodologies. *Information and Software Technology*, 62(1), 1-20. <https://doi.org/10.1016/j.infsof.2015.01.012>
- Saha, P. (2019). *Digital transformation and the role of enterprise architecture*. ITU Publications, Thematic Reports.

- Saleem, F., & Fakieh, B. (2020). Enterprise architecture and organizational benefits: A case study. *Sustainability*, 12(19), Article 8237. <https://doi.org/10.3390/su12198237>
- Salesforce. (2025). *What is digital transformation?*. Retrieved from <https://www.salesforce.com/digital-transformation/>
- SAP LeanIX. (2025). *Enterprise architecture frameworks: Choose and implement*. Retrieved from <https://www.leanix.net/en/wiki/ea/enterprise-architecture-frameworks>
- Sapai, R. (2024). *The impact of enterprise architecture on driving digital transformation in developing countries: A study of Afghanistan*.
- Sararuch, S., Wannapiroon, P., & Nilsook, P. (2023). The development of agile enterprise architecture for digital transformation in higher education institutions. *Higher Education Studies*, 13(3), 69. <https://doi.org/10.5539/hes.v13n3p69>
- Shaanika, I., & Iyamu, T. (2014). Developing enterprise architecture skills: A developing country perspective. In *IFIP Advances in Information and Communication Technology* (Vol. 444). Springer.
- Shukla, S., George, J. P., Tiwari, K., & Kureethara, J. V. (2022). *Data ethics and challenges*. Springer.
- Singh, P., Lynch, F., & Helfert, M. (2024). Enterprise architecture for the transformation of public services based on citizen's feedback. *Digital Policy, Regulation and Governance*, 26(1), 38–54. <https://doi.org/10.1108/DPRG-11-2022-0123>
- Sparx Systems. (2023). *Guide to enterprise architecture: Enterprise Architect user guide series*. Sparx Systems.
- World Bank Group. (2025). *World Bank country and lending groups*. Retrieved from <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). SAGE.
- Zimmermann, A., Schmidt, R., Sandkuhl, K., Jugel, D., Bogner, J., & Möhring, M. (2018). Evolution of enterprise architecture for digital transformation. In *Proceedings of the IEEE 22nd International Enterprise Distributed Object Computing Workshop (EDOCW)* (pp. 87–96). <https://doi.org/10.1109/EDOCW.2018.00023>