

Enhancing Public Sector Agility Through Digital Transformation: A Technology-Organization-Environment Perspective

Aysha Youssef

Doctor of Business Administration (DBA), Teesside University
Middlesbrough, United Kingdom
email: s3108647@live.tees.ac.uk

Abstract— Digital transformation has become a strategic priority for governments seeking to strengthen service delivery, institutional responsiveness and sustainable innovation. However, public sector organizations often struggle to translate digital investments into sustained agility because technology is shaped by leadership, culture, governance and environmental conditions. This paper examines how digital transformation may influence organizational agility in UAE public sector organizations through the Technology-Organization-Environment (TOE) perspective. As the wider doctoral study is ongoing, this camera-ready version reports interim, anonymized evidence only and does not present final thesis findings, a final coding structure or a finalized framework. Drawing on 17 anonymized semi-structured interviews and a structured literature review, the preliminary analysis suggests that agility is not produced by technology alone, but by governed alignment between technological capabilities, organizational readiness and environmental legitimacy. The paper offers a provisional TOE-based analytical model to guide further analysis of public sector agility through digital technologies.

Keywords—public sector agility; TOE perspective; digital transformation; government organizations.

I. INTRODUCTION

Public sector organizations operate in environments shaped by rapid technological change, complex policy demands, rising citizen expectations and pressure to provide more responsive services. Digital government is no longer limited to digitizing existing administrative processes; it increasingly involves the redesign of service delivery, data-informed decision-making and new forms of interaction between government and society [4][5]. In the UAE, digital government is also connected to national ambitions for service excellence, innovation, sustainable development and future readiness [7][11].

Despite this progress, digital transformation does not automatically generate organizational agility. Technology is enacted through structures, routines, interpretations and human agency rather than operating as an independent solution [2]. Digital transformation research similarly emphasizes that technology adoption must be supported by organizational change, leadership commitment, strategic alignment and learning to create meaningful outcomes [4][5].

The research issue addressed in this paper is the gap between digital transformation as technological investment and agility as an institutional capability. Public organizations may introduce dashboards, automation, robotic process automation, artificial intelligence and digital portals while retaining hierarchical approval paths, fragmented data, risk-

averse routines and limited cross-functional authority. In such cases, digital tools may accelerate information flow but not necessarily improve decision speed, coordination, adaptation or innovation.

Organizational agility refers to the capability to sense, interpret and respond to changing conditions while maintaining continuity and accountability [3]. In public sector settings, agility is especially challenging because governments must balance responsiveness with legality, transparency, equity, security and institutional stability [6]. This means that agility in government cannot be understood as unrestricted speed. Rather, it must involve disciplined adaptation: rapid responsiveness within clear governance boundaries.

This paper adopts the Technology-Organization-Environment (TOE) framework because it explains transformation as the result of technological, organizational and environmental conditions rather than technology alone [1]. The technological dimension captures digital systems, data, automation, artificial intelligence and interoperability. The organizational dimension captures leadership, culture, skills, decision rights and governance routines. The environmental dimension captures regulation, cybersecurity expectations, national strategies, citizen needs and institutional pressures. Recent extensions of TOE also show that the framework can be adapted to digital transformation contexts by incorporating contextual capabilities and orientations beyond the original adoption focus [8].

The provisional contribution of this paper is threefold. First, it repositions TOE from an adoption-oriented framework toward an agility-oriented lens for public sector digital transformation. Second, it uses selected anonymized interview evidence illustratively to show how technological, organizational and environmental conditions interact in government contexts. Third, it proposes a provisional TOE-based model of governed alignment that will be refined after completion of the wider doctoral analysis.

The remainder of this paper is structured as follows. In Section 2, the literature on public sector digital transformation, organizational agility and TOE is reviewed. In Section 3, the methodology, sample, interview protocol and analysis procedures are described. In Section 4, preliminary findings are presented through TOE-coded themes and interview evidence. In Section 5, the theoretical and practical implications are discussed. In Section 6, the conclusion and future work are presented.

II. LITERATURE BACKGROUND

This section reviews the literature informing the study. It focuses on digital transformation in the public sector, organizational agility as a dynamic capability and the rationale for using TOE to examine agility through digital technologies.

A. Digital Transformation in the Public Sector

Digital transformation in the public sector involves changes in organizational processes, service models, decision practices and relationships with citizens and stakeholders [4]. It is broader than the implementation of information systems because it affects the way public institutions organize, collaborate and create public value. Vial argues that digital transformation creates change through the combined effects of digital technologies, organizational responses and strategic consequences [5].

Government organizations face distinctive transformation conditions. They operate within formal accountability systems, policy mandates, audit requirements and data protection obligations. Consequently, public sector digital transformation must reconcile innovation with compliance, transparency and continuity. This makes the public sector a valuable context for examining whether digital tools create agility or only automate existing routines.

B. Organizational Agility and Adaptive Governance

Organizational agility is closely related to dynamic capability theory, particularly the capacity to sense change, seize opportunities and reconfigure resources [3]. In government, this capability supports adaptive governance, crisis response, service redesign, policy adjustment and future readiness. However, public sector agility differs from private sector agility because the goal is not only competitive advantage, but also public value, legitimacy and service continuity.

Adaptive governance literature stresses the need to combine responsiveness with stability and accountability [6]. Participants in this study echoed this view by describing agility as disciplined adaptation rather than unrestricted speed. This framing is important because public organizations must act quickly while protecting sensitive data, observing legislation and maintaining citizen trust.

C. Technology-Organization-Environment Perspective

The TOE framework provides a holistic basis for examining digital transformation because it considers technological, organizational and environmental factors together [1]. This is particularly relevant to public sector agility, where digital systems interact with leadership behavior, culture, skills, regulation, cybersecurity, national priorities and citizen expectations.

The extended TOE literature also supports the adaptation of TOE to newer digital transformation contexts. Nguyen, Le and Vu extend the framework by adding contextual orientations and capabilities that improve explanatory power in digital transformation settings [8]. This paper builds on that logic by using TOE not only to explain adoption, but also to analyze post-adoption agility outcomes. In other words, the

question is not simply whether a technology is adopted, but whether it strengthens sensing, decision-making, coordination and adaptive service delivery.

III. RESEARCH METHODOLOGY

This section summarizes the methodological approach, empirical sources, participant selection, interview protocol and analytical steps used to generate the preliminary evidence reported in this paper.

A. Research Design and Data Sources

The study adopts an exploratory qualitative design as part of an ongoing Doctor of Business Administration research project on agility in UAE public sector organizations. The qualitative approach is appropriate because the study seeks to understand how senior professionals interpret digital transformation, organizational readiness and agility in practice rather than test predefined statistical relationships.

Two sources inform this paper. First, a structured literature review was conducted across public administration, organizational change, agility and digital transformation literature to identify definitions, models, gaps and theoretical foundations. Second, semi-structured interviews were conducted with senior professionals in UAE public sector contexts. The paper reports preliminary findings from 17 anonymized participant accounts. Because the research is qualitative, response distribution is reported as thematic recurrence rather than statistical generalization.

TABLE I. RESEARCH DESIGN AND SAMPLE.

Research approach	Exploratory qualitative study informed by systematic literature review
Empirical source	17 anonymized semi-structured interviews
Participant profile	Senior or specialist roles in strategy, technology, finance, foresight, legislation, institutional excellence, project management and service delivery
Sampling logic	Purposive selection of participants with direct exposure to digital transformation or agility-related work
Analysis method	Thematic analysis mapped inductively and deductively to TOE dimensions
Ethical protection	Participants and entities anonymized; identifiable demographic and organizational details removed

B. Interview Protocol and Analytical Procedure

The interview protocol was designed to elicit evidence on agility practices rather than abstract opinion only. Participants were asked to define agility, describe digital and artificial intelligence initiatives, explain changes in work and decision-making, identify implementation barriers, discuss leadership and culture and reflect on future public sector agility. Examples included questions such as: How do you

define organizational agility in a government context? Which digital tools or systems have supported faster response or decision-making? What challenges have emerged in technology adoption? How do leadership, culture, regulation and national direction influence agility?

Interviews were recorded and transcribed for analysis. Thematic analysis followed iterative familiarization, open coding, theme grouping and comparison against the TOE framework [9]. Trustworthiness was strengthened through anonymization, transcript review where available, iterative coding, comparison with literature and attention to credibility, dependability and confirmability principles [10][12].

TABLE II. PRELIMINARY THEMATIC DISTRIBUTION ACROSS 17 INTERVIEWS.

Theme	Indicative preliminary recurrence and illustrative evidence
AI, analytics and automation	Indicative recurrence: participants cited dashboards, RPA, risk engines, portals, Copilot and internal AI platforms.
Leadership and change readiness	Indicative recurrence: sponsorship, empowerment, cross-functional teams, learning culture and resistance management.
Governance, cybersecurity and data	Indicative recurrence: data quality, confidentiality, controlled AI, legal boundaries and system integration.
Public value and service impact	Indicative recurrence: reduced visits, elderly service users, faster services and societal value of AI.

IV. PRELIMINARY EMPIRICAL INSIGHTS

At this stage, the preliminary interview evidence suggests that public sector agility emerges through alignment among technological capability, organizational readiness and environmental legitimacy. These insights should not be read as final thesis findings; rather, they are interim patterns used to strengthen the conference paper and demonstrate the direction of analysis. The evidence does not support a technology-deterministic view. Instead, digital tools appear to enhance agility when embedded in governance, leadership, culture and data practices.

A. Technology: From Digitization to Decision Support

Participants described digital systems as enablers of faster access to information, improved reporting and better coordination. Examples included artificial intelligence dashboards for forecasting, robotic process automation for repetitive financial tasks, predictive risk engines, legislative observatories, open data systems, digital portals and business process mapping. One participant explained that information that previously required lengthy searching can now be retrieved in seconds, while another described automation as a way to reduce manual errors and speed operational processes.

However, the technology dimension also revealed limits. Participants emphasized that artificial intelligence should support, not replace, decision-makers. They also identified data quality, cybersecurity, infrastructure readiness, interoperability and model reliability as key conditions. This suggests that technology contributes to agility when it improves sensing and decision support while remaining trustworthy and integrated into operational workflows.

B. Organization: Leadership, Culture and Cross-Functional Work

Organizational conditions were the strongest explanatory factor in the data. Leadership support, empowerment, agile structures, cross-functional teams and a learning culture repeatedly appeared as enablers. Participant 01 stated that agility requires employees to move between strategic and technical levels when project needs demand it. Participant 04 described reduced hierarchy and the use of cross-functional teams as important for flexibility. Participant 12 summarized public sector agility as disciplined adaptation, meaning rapid response while maintaining governance.

Resistance to change was also recurrent. Several participants described employees or departments that initially resisted new systems because benefits were unclear, time was limited or fear of replacement existed. Participants indicated that proof of concepts, awareness sessions, visible leadership sponsorship and evidence of tangible benefit helped reduce resistance. Therefore, agility is not simply a technical capability; it is a social and managerial capability that converts technology into coordinated action.

C. Environment: National Direction, Regulation and Public Trust

Environmental factors acted simultaneously as drivers and constraints. UAE national strategies, digital government agendas, artificial intelligence leadership roles and service-excellence expectations created pressure to transform. Participants also referred to COVID-19, heavy rain events and service expectations as examples showing the importance of readiness and continuity. These pressures pushed organizations toward mobile services, remote work, automation and data-driven decision-making.

At the same time, regulation, cybersecurity and data confidentiality defined the boundaries of acceptable agility. Participants described controlled internal clouds, on-premises artificial intelligence environments, approval committees and concern about confidential data leakage. Participant 10 emphasized that digital services and artificial intelligence must create tangible societal value rather than being adopted for technology's sake. This illustrates why public sector agility must be bounded by legitimacy, ethics and trust.

D. Cross-Dimensional Preliminary Insight: Governed Alignment

The emerging cross-dimensional insight is that agility appears strongest when the three TOE dimensions are

aligned. Digital tools become agility mechanisms when leaders define priorities, data are reliable, employees are capable, governance is clear and external legitimacy is protected. This alignment may explain why similar technologies can produce different outcomes across entities.

TABLE III. TOE-CODED PRELIMINARY INSIGHTS WITH ANONYMIZED PRIMARY EVIDENCE.

TOE dimension	Preliminary insight and illustrative anonymized evidence
Technology	AI, RPA and analytics may improve sensing and speed when reliable data and workflow integration are in place.
Organization	Leadership, culture and decision rights appear to shape responsiveness; participants cited sponsorship, cross-functional teams and resistance management.
Environment	National strategies, cybersecurity, legislation and public value expectations act as both drivers and boundaries for disciplined adaptation.

V. DISCUSSIONS

The preliminary analysis provides illustrative evidence for the research issue while deliberately avoiding presentation of the final thesis results. At this stage, the interview data suggest that public sector agility is not a single outcome of digital adoption. Rather, it appears to be a governed capability that develops when digital tools are connected to decision rights, culture, security, national priorities and public value.

A. Theoretical Contribution

The provisional theoretical contribution is the extension of TOE from adoption explanation to agility explanation. Traditional TOE studies tend to ask which factors influence technology adoption [1]. This paper asks how adopted technologies may contribute to organizational agility. The shift is important because an organization may adopt artificial intelligence, dashboards or automation without becoming more agile if decision rights, data governance and cultural readiness remain weak.

The provisional model in Figure 1 conceptualizes governed alignment as the mechanism through which technology, organization and environment may support public sector agility. The model highlights that artificial intelligence, automation and analytics do not directly create agility unless they are linked with data quality, leadership, skills, governance, legal compliance and public-value objectives.

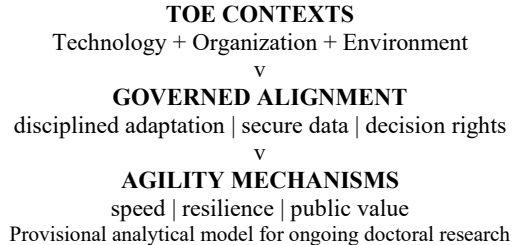


Figure 1. Provisional TOE-based governed alignment model for public sector agility.

The model provisionally reframes agility in government as disciplined adaptation. This concept emerged strongly in the interview evidence and clarifies the difference between public and private sector agility. Public sector agility means the ability to move quickly when needed while still protecting rights, data, equity, national security and accountability.

B. Practical Contribution

For practitioners, the preliminary insights suggest that public organizations should assess digital transformation through agility outcomes rather than technology deployment alone. Relevant indicators include decision-cycle speed, service continuity, public-value creation, quality of data use, employee readiness and governance reliability.

The preliminary insights also suggest four practical actions. First, artificial intelligence and automation should be linked to clear business cases and public-value outcomes. Second, entities should create safe experimentation mechanisms such as sandboxes, internal platforms and controlled proof-of-concept environments. Third, digital skills, change management and employee participation should be strengthened. Fourth, governance should be embedded into artificial intelligence workflows so that agility is accelerated without increasing unacceptable risk.

VI. CONCLUSION AND FUTURE WORK

This paper examined, as part of an ongoing doctoral study, how digital transformation may influence organizational agility in UAE public sector organizations through the TOE perspective. It addressed the problem that digital transformation often remains framed as technological implementation rather than as an organizational capability requiring alignment across technology, organization and environment.

The preliminary evidence from 17 anonymized interviews suggests that agility is not generated by technology alone. Artificial intelligence, automation, dashboards and digital platforms may support agility when connected to leadership, culture, decision rights, data quality, cybersecurity and public-value objectives. The paper therefore identifies governed alignment as a provisional analytical mechanism linking technology capability, organizational readiness and environmental legitimacy.

The study remains ongoing and has limitations. The insights presented here are interim, anonymized and illustrative; they are not the final DBA thesis findings. To protect the integrity of the ongoing thesis, the paper does not disclose the full coding hierarchy, final participant-level analysis, final framework or final conclusions. These will be reported in the thesis and, where appropriate, in subsequent publications. Future work will complete the coding analysis, refine the model and examine how digital technologies shape agility across different government functions.

REFERENCES

- [1] L. G. Tornatzky and M. Fleischer, *The Processes of Technological Innovation*. Lexington, MA: Lexington Books, 1990.
- [2] W. J. Orlikowski, "The duality of technology: Rethinking the concept of technology in organizations," *Organization Science*, vol. 3, no. 3, pp. 398-427, 1992.
- [3] D. J. Teece, G. Pisano, and A. Shuen, "Dynamic capabilities and strategic management," *Strategic Management Journal*, vol. 18, no. 7, pp. 509-533, 1997.
- [4] I. Mergel, N. Edelman, and N. Haug, "Defining digital transformation: Results from expert interviews," *Government Information Quarterly*, vol. 36, no. 4, Article 101385, 2019.
- [5] J. Vial, "Understanding digital transformation: A review and a research agenda," *The Journal of Strategic Information Systems*, vol. 28, no. 2, pp. 118-144, 2019.
- [6] M. Janssen and H. van der Voort, "Adaptive governance: Towards a stable, accountable and responsive government," *Government Information Quarterly*, vol. 33, no. 1, pp. 1-5, 2016.
- [7] OECD, *Digital Government Review of the United Arab Emirates: Towards a More Innovative and Data-Driven Public Sector*. Paris: OECD Publishing, 2021.
- [8] T. H. Nguyen, X. C. Le, and T. H. L. Vu, "An extended technology-organization-environment (TOE) framework for online retailing utilization in digital transformation: Empirical evidence from Vietnam," *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 8, no. 4, Article 200, 2022.
- [9] V. Braun and V. Clarke, "Using thematic analysis in psychology," *Qualitative Research in Psychology*, vol. 3, no. 2, pp. 77-101, 2006.
- [10] Y. S. Lincoln and E. G. Guba, *Naturalistic Inquiry*. Beverly Hills, CA: Sage, 1985.
- [11] UAE Government, "The UAE Digital Government Strategy 2025," The Official Portal of the UAE Government, 2025. Available: <https://u.ae/> [accessed: 2026.05.16].
- [12] J. W. Creswell and C. N. Poth, *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*, 4th ed. Thousand Oaks, CA: Sage, 2018.