Reconfiguring Tourism Services: The Role of Modularity and Human Resource Readiness in Digital Platform Architecture

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ABSTRACT

Digital transformation in public sector organizations requires strategic alignment between technological innovation and institutional readiness. Objective: This study examines the diffusion of public sector information system innovations through the Resilient and Adaptive Digital Platforms (RADP) application by analyzing adoption drivers and organizational barriers. Method: A qualitative case study embedded within an ADDIE development-evaluation framework was conducted across three public service departments, engaging 15 key administrative and IT stakeholders through semi-structured interviews, observation, and document analysis. Results: Findings reveal that primary adoption drivers include perceived operational usefulness (reducing manual processing time by up to 40%) and strong leadership endorsement, whereas key barriers encompass technical complexity, limited user training, behavioral resistance, and server infrastructure instability. Conclusion: System adoption succeeds when technical application design aligns directly with daily public service workflows and is backed by structural administrative support. Implication: Public sector digital transformation initiatives must evaluate technical readiness and administrative culture as interacting forces to facilitate sustainable technology integration.

I. INTRODUCTION

The digital transformation of public sector organizations has positioned modern information systems as fundamental mechanisms for service delivery, operational efficiency, governance transparency, and organizational adaptability. However, implementing these digital solutions represents substantial financial and administrative commitments. Public institutions increasingly regard specialized platforms—such as the Resilient and Adaptive Digital Platforms (RADP) system—as strategic instruments for institutional reform, yet their actual adoption remains uneven across bureaucratic contexts (Kitsios et al., 2023; Pradana et al., 2022).

This unevenness is particularly evident in public sector environments where technological innovations are expected to enhance performance while simultaneously navigating rigid bureaucratic procedures, entrenched legacy routines, and systemic resource constraints. In practice, implementing public sector information systems is rarely a straightforward software deployment; rather, it constitutes a complex process of organizational change management (Fan et al., 2022; Lemmettylä & Kinnunen, 2025).

Despite growing scholarly interest, critical questions remain regarding which specific constraints most acutely impede technology adoption in public administration and how these inhibiting factors interact with broader organizational conditions (Marei et al., 2023; Sujana et al., 2024). At the same time, empirical evidence demonstrates that well-managed digital innovations can optimize workflow integration, elevate public service delivery quality, lower error rates, and improve administrative user satisfaction (Lemmettylä & Kinnunen, 2025; Mensah et al., 2022). Recent reviews indicate that leadership engagement, active stakeholder involvement, interface usability, and contextual fit serve as vital enablers of digital innovation adoption.

A distinct research gap exists because existing literature predominantly addresses digital transformation at a broad conceptual level, whereas fewer empirical studies investigate the structural diffusion process of public sector information system innovations through the simultaneous evaluation of driving and inhibiting factors (Lemmettylä & Kinnunen, 2025). The novelty of this study lies in offering a dual-lens socio-technical framework that synthesizes drivers and barriers into a single adoption-focused evaluation of the RADP platform within a public administration setting. Rather than merely enumerating isolated success criteria, this study conceptualizes innovation diffusion as a dynamic process shaped by interacting enabling forces and structural constraints (Madaki et al., 2024; Palm, 2022).

This study demonstrates that successful technology adoption relies not only on software availability, but also on leadership commitment, end-user technical readiness, routine workflow compatibility, and institutional backing. Consequently, the diffusion of public sector information system innovations must be evaluated as an ongoing alignment between organizational readiness and systemic implementation barriers. The objective of this research is to analyze the key drivers and barriers influencing the adoption of the RADP application platform and to clarify how these dynamic forces dictate diffusion outcomes within public sector organizations.

II. METHODOLOGY

This study utilizes a qualitative case study design to investigate the diffusion dynamics of the Resilient and Adaptive Digital Platforms (RADP) application within a live public sector organizational environment. A qualitative case study design is particularly appropriate because it enables an in-depth examination of contemporary phenomena within their real-world organizational context, where adoption drivers, user resistance, and institutional pressures operate concurrently (Khairiyah et al., 2026; Yin, 2023). To structure the evaluation of the RADP application from initial user needs assessment to functional deployment, this study incorporates the standard ADDIE framework (Analysis, Design, Development, Implementation, and Evaluation) as an empirical inquiry matrix (Rinawan et al., 2024). The researcher served as the primary instrument of qualitative inquiry, conducting field observations and direct data collection.

To operationalize the ADDIE framework within this qualitative case study, a total of 15 key informants were purposively selected across three municipal public service departments: the Department of Population Administration (n=6), the Regional Information and Communications Office (n=5), and the Public Service Bureau (n=4). Informants included department heads, administrative workflow officers, system administrators, and frontline service personnel. All 15 participants engaged in the initial Analysis phase to define functional requirements and operational constraints. Subsequently, a subgroup of 12 key informants participated in the formative and summative Evaluation phase following pilot deployment.

The research execution followed the five ADDIE phases systematically: (1) Analysis: Investigating user operational requirements, manual administrative bottlenecks, baseline IT literacy, and system constraints; (2) Design: Designing user interface layouts, system logic, navigation structures, and wireframes for the RADP application; (3) Development: Coding functional modules, integrating internal administrative databases, and executing internal software testing; (4) Implementation: Deploying the RADP application prototype in a controlled pilot setting across the target departments; and (5) Evaluation: Assessing system usability, operational impact, end-user feedback, and adoption barriers.

Figure 1 illustrates the systematic operational workflow of the RADP application prototype, detailing the user interaction sequence from authentication access to data processing and output reporting.

Data validity and qualitative trustworthiness were established through data source triangulation, member checking, and audit trails (Ahmed, 2024; Khairiyah et al., 2026; Sari et al., 2019). Specifically, data source triangulation was conducted by cross-verifying semi-structured interview transcripts against internal administrative procedural documentation, direct field observation logs, and automated system usage logs from the RADP pilot platform.

III. RESULTS AND DISCUSSION

The application development and evaluation process yielded a functional prototype of the Resilient and Adaptive Digital Platforms (RADP) system through the ADDIE framework phases. Data collected during the Analysis stage confirmed that target administrative users required an intuitive, streamlined digital platform capable of reducing repetitive manual entry and aligning directly with daily operational tasks.

To categorize the empirical data collected during the qualitative interviews and observations, reflexive thematic coding analysis was performed following standard procedures (Braun & Clarke, 2021). Initial open codes were generated from verbatim interview transcripts and field notes, which were subsequently synthesized into axial

codes representing primary drivers and barriers. Table 1 summarizes the core empirical themes identified through this thematic analysis.

As detailed in Table 1, five primary themes emerged from the empirical analysis: perceived usefulness, managerial support, compatibility, resistance to change, and infrastructure constraints. The findings demonstrate that public sector personnel exhibit higher willingness to adopt digital innovations when the system provides clear, immediate relief from administrative burdens.

Further synthesis of the empirical data revealed a direct interaction between facilitating factors (drivers) and inhibiting factors (barriers) during system implementation. Table 2 outlines these dynamic drivers and barriers alongside their observed impact on adoption outcomes.

Table 2 illustrates that technology adoption in public sector settings is continuously shaped by opposing institutional forces. While ease of use and leadership support drive system acceptance, technical complexity, inadequate training, and infrastructural instability act as significant inhibitors. These empirical insights align with core principles of innovation diffusion theory (Rogers, 2003), confirming that adoption rates accelerate when innovations demonstrate clear relative advantage and high compatibility with existing organizational routines.

Figure 2 presents the Diffusion Analytics Dashboard of the RADP platform, developed to monitor adoption metrics during limited environment usability testing across the three participating departments. The dashboard displays aggregated metrics including total processed cases, adoption stage distributions, key operational opportunities, and hindering factors within a unified analytical interface.

Figure 3 displays the Recommendations Module interface of the RADP platform, which automatically generates contextual administrative guidelines and policy briefs based on user-selected sector parameters, innovation types, and adoption constraints. This module provides actionable feedback to guide public sector managers during software rollout.

From a socio-technical perspective, the RADP application serves as an adaptive platform that enhances organizational resilience and service continuity within public sector governance (Mensah et al., 2022; Uren & Edwards, 2022). Resilience in public administration reflects an organization's capacity to withstand operational disruptions and modernize workflows using digital infrastructure. The qualitative findings underscore that digital platforms achieve strategic relevance not merely through technical sophistication, but through their capacity to accommodate administrative routines, mitigate bureaucratic friction, and overcome infrastructure limitations.

Table 3 conceptualizes the structural alignment between the empirical findings, key theoretical variables, and the specific functional attributes of the RADP application platform.

The theoretical alignments outlined in Table 3 reinforce that public sector information systems operate as socio-technical mechanisms. When digital tools are designed to reflect the practical realities of public service environments, they foster organizational adaptability, mitigate user resistance, and drive sustainable innovation diffusion.

Table 1. conceptualizes the structural alignment

Theme	Objective Finding	Meaning for the Study
Perceived usefulness	Users stated that the system reduced manual work and improved processing speed by up to 40%.	The innovation is seen as practically beneficial in daily public service operations.

Managerial support	Leaders encouraged staff to use the system and monitored implementation progress.	Leadership acts as a key enabler of diffusion and organizational adoption.
Compatibility	Users felt the system fit existing work routines after initial procedural adjustments.	Adoption is stronger when the innovation aligns with established organizational practice.
Resistance to change	Some senior administrative staff preferred legacy manual filing procedures.	Behavioral resistance slows innovation diffusion across operational units.
Infrastructure constraints	Users reported periodic server instability and delayed technical support.	Technical readiness remains a major structural barrier to successful adoption.

Drivers	**Barriers**	**Effect on Adoption**
Ease of use	System complexity	Simpler systems encourage adoption, while complex interfaces reduce user willingness.
Operational efficiency	Limited training	Perceived efficiency increases interest, but lack of structured training weakens implementation.
Leadership support	Resistance to change	Organizational backing strengthens adoption, while behavioral resistance delays diffusion.
Service transparency	Infrastructure limitations	Transparency improves institutional acceptance, but weak infrastructure creates service inconsistency.

Variable	**Conceptual Meaning**	**Relation to the Application**
Innovation Diffusion	The process through which an innovation spreads within an organization or social system.	Explains how the platform is introduced, understood, and gradually adopted by administrative users.
Public Sector Information Systems	Digital systems used to support administration, coordination, and public service delivery.	Represents the institutional domain in which the application operates.
Technology Adoption	The decision and willingness of users to integrate a digital system into active daily practice.	Demonstrates whether the platform is accepted and routinely utilized by public sector staff.
Drivers and Barriers	Interacting factors that facilitate or inhibit the institutional deployment of an innovation.	Encompasses perceived usefulness, managerial support, bureaucratic inertia, and hardware limitations.
E-Government	The application of digital technology to enhance public governance and service quality.	Provides the strategic context for evaluating the application as a tool for digital administration.
Resilience	The capacity of an organization to maintain function and continuity during operational disruptions.	Reflected in the platform's ability to maintain service continuity and automated tracking.
Adaptability	The capacity of a system or organization to adjust to shifting operational requirements.	Reflected in the platform's flexible user role management across different public service departments.

IV. CONCLUSIONS

This study concludes that the diffusion of public sector information system innovations is determined by the continuous interaction among system usability, leadership commitment, and infrastructural readiness. Empirical evaluation of the Resilient and Adaptive Digital Platforms (RADP) application reveals that strong drivers—such as perceived operational usefulness and active managerial support—significantly accelerate technology adoption. Conversely, systemic barriers including technical interface complexity, insufficient user training, behavioral resistance, and server instability severely constrain implementation progress. Digital e-government platforms achieve maximum efficacy when their technical workflows are directly aligned with daily administrative routines and backed by proactive structural support.

Based on these findings, public sector administrative leaders should prioritize comprehensive, continuous user training programs alongside infrastructure upgrades prior to full-scale platform deployment. Future research should expand upon these insights by conducting comparative multi-organizational studies across different levels of government to establish broader generalizability regarding contextual adoption dynamics in public administration.

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