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Evaluating Digital Transformation within Integration Limitations using Desk-Based Analytical Case Study

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Abstract
Digital transformation in developing regions frequently encounters challenges, including inadequate infrastructure, limited system integration, and uneven digital literacy. These constraints are especially significant in local government institutions where policy readiness and system interoperability remain low. This study evaluates the effectiveness of hybrid records management as a strategy for facilitating digital transformation, despite limitations in integration. A desk-based analytical case study was conducted on the M'mbelwa District Council in Malawi, using a mixed-method exploratory design. Qualitative analysis applied the TOE Framework, UTAUT/TAM, and the Records Continuum Model, while quantitative validation used the DeLone and McLean Information Systems Success Model. The findings show that, despite the absence of formal IoT policies, the council effectively utilized basic devices, such as computers, mobile phones, and notebooks, for daily data recording and archival management. Staff capability was measured at 50 percent intermediate and 30 percent advanced, with 100 percent daily usage. Security measures included passcode protection and regular backups. Quality scores reached 4.5 out of 5 for information relevance and 4.3 out of 5 for user satisfaction, while efficiency improved by about 25 percent. The archives lifecycle, covering creation, capture, organization, and transfer to the National Archives, was implemented effectively, although disposal procedures were absent. This study demonstrates that hybrid records management can bridge the digital divide and sustain public services in low-resource contexts. The results make theoretical contributions to the digital transformation literature and provide practical guidance for policymakers facing similar infrastructural and policy challenges.

Keywords: *Digital Transformation, Hybrid Records, Integration, Digital Divide, E-Government.*

I. INTRODUCTION

Many countries, especially in rural or developing areas, face obstacles related to the availability and access to adequate technological infrastructure, such as fast internet and devices, which hinder the widespread deployment of online services (Loconte et al., 2024; Morabito et al., 2023). The integration of information systems across various government agencies often presents challenges due to differing technologies, policies, and organizational cultures (Blouin et al., 2025). Disparities in technology access and digital literacy can cause certain groups to be left behind due to a lack of training, uncertainty, or fears of losing control (Muhammad et al., 2025; Padoni et al., 2024). These challenges underscore the pressing need for targeted interventions that can bridge infrastructure gaps and promote digital literacy in underserved regions.

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The M'mbelwa District Council in Malawi has implemented digital transformation through hybrid records management practices (Harrington et al., 2020; Zheng, 2024). They utilize various gadgets for data collection, including public documents, and employ a hybrid medium for archives. The archives use electronic data and paper (Li et al., 2025). They do not have a policy or guidelines regarding the usage of new technologies such as IoT (Al-Ansi et al., 2024). Staff at M'mbelwa District Council were mainly found to have acquired knowledge of records management practices through on-the-job training (Malik et al., 2025). With skills ranging from moderate to poor in records management, the implementation of IoT will also require additional training for staff to be able to effectively utilize this technology (Padoni et al., 2024).

When adopting technology, certain risks must be addressed. The technology risks identified in the risk management framework are IoT Management, the risk of adopting new technologies, and user data security (Chang & Chen, 2025; Ding & Yang, 2025; Schmitt et al., 2019; Ullah et al., 2021). There are four limitations in the development of a digital maturity model, namely the lack of empirical research, the disconnection from technology adoption theory, the limited focus on environmental dimensions, and an ambiguity in measurement (P. Senna et al., 2023; Pricopoaia et al., 2025). It can be concluded that environmental factors are often ignored in the assessment (P. Senna et al., 2023; Xiong et al., 2025). Therefore, the author tries to measure the success level of archives integration in information systems using the DeLone and McLean model theory on how to measure the level of success of information systems in terms of system quality, information quality, usage, user satisfaction, individual impact, and organizational impact (DeLone & McLean, 2003; Mphahlele et al., 2025).

It is important to use theoretical frameworks such as TAM, TOE Framework, and DeLone and McLean Success Model in evaluating the readiness factors that influence technology adoption in organizations (Ali et al., 2024; Dash et al., 2023). Frequent failures in digital transformation projects stem from immature strategies (Dash et al., 2023; Oztaskin et al., 2024). For this reason, an assessment is needed based on the determinants of information system success (Ali et al., 2024; Malik et al., 2025). Based on this theory and method, the author will use research on Hybrid Records Management practices at M'mbelwa District Council in Malawi as an example to evaluate the level of success in digital transformation within integration limitations.

In the future, these results can be used for strategic decision planning in an effort to implement digitial transformation within integration limitations. For example, the implementation of Surabaya population administration & civil registration systems (Viontita & Mahendrawathi, 2024), service innovation challenges in the UAE (Abuzanjal & Bashir, 2024), and a national-level analysis of e-government online services based on fsQCA and NCA (Chen & Chen, 2024;

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Muhammad et al., 2025; Oztaskin et al., 2024). By following the method's standard more closely, a greater portion of the gap can be addressed. Such improvements will also foster a more inclusive and resilient digital ecosystem, ensuring that technological advancements benefit all segments of society (Pricopoaia et al., 2025; Xiong et al., 2025).

II. RESEARCH METHOD

A. Sample Data

The author chose sample data from hybrid records management practices at M'mbelwa District Council in Malawi. Using a desk-based analytical case study as secondary data, the author examines the usability of digital transformation in hybrid records management for low-infrastructure environments. The study has implemented digital transformation within the limitations of the government system's integration, utilizing a hybrid approach to records management. They are using computers, phones, and notebooks to record data and manage archives. Table 1 shows the data stored, the tools, and the storage place (Ullah et al., 2021).

Table 1. Data Stored, Tools, and The Storage Place

Data Stored	Tools	Storage Place
• Reports • Emails • Minutes • Leave applications • Receipts • Government circulars • Policy manuals • Requisitions • Assets registers • Government regulations • Instructions • Financial records • Operational records • Staff appraisal • Memoranda • Appointment letters • Attendance reports • Correspondences • Bank checks • Contract documents • Payrolls • Invoices • Inventory controls • Purchase and sales orders • Tax returns • Fax	• Office computers • ERMS • Personal computers • Notebooks without carbon copies • Official receipt books • Notebooks with carbon copies • Personal cell phones	• My office • Registry office • Storeroom • Office files • Office shelves • Office drawers • Office folders • Registry office facilities • Office metallic • filing cabinets • Office tables • Office open cupboards • Office boxes • Office floors • Office corridors

B. Qualitative Exploratory

Qualitative exploration delves into problems, needs, and dynamics that may not be apparent in standard qualitative methods. Allows for the discovery of factors needed to highlight

quantitative confirmatory methods more accurately. This approach provides flexibility in uncovering insights that may not be visible through structured methodologies alone. It is beneficial when dealing with complex organizational environments, such as hybrid records management, where both human and technological factors interact in unpredictable ways. The following theories in data collection:

1. TOE Framework

Checking technical factors (IoT management in hybrid records management practices), organizational factors (new technology adaptation risk in hybrid records management practices), and environmental factors (user data security in hybrid records management practices) using a benchmarking Table. This framework enables a holistic evaluation of readiness for digital transformation by integrating these three perspectives. It helps identify the strengths and weaknesses of the current system, guiding targeted improvements. Applying the TOE Framework ensures that both internal and external factors influencing adoption are systematically addressed.

2. UTAUT / TAM

Connecting variables found with the real purpose of integrating archives into information systems in hybrid records management practices using a benchmarking Table. This theoretical lens clarifies how perceived usefulness, perceived ease of use, and behavioral intentions affect adoption. It also highlights the role of user attitudes and organizational culture in shaping technology acceptance. Through this model, it becomes possible to link user perceptions directly to measurable integration outcomes.

C. Quantitative Confirmatory

By statistical analysis, this method enhances the validity of the result using qualitative data. Determining relationships among factors to aid in strategic decisions. By confirming qualitative data using quantitative processes, researchers can strengthen the conclusions. This two-method approach ensures that observed patterns are not coincidental but are supported by quantifiable data. The following theories are used for data research:

1. DeLone & McLean IS Success Model.

Evaluating the quality of the information system and its impact on efficiency, security, and user satisfaction in hybrid records management practices using a benchmarking table. This model offers a structured approach to evaluating system quality, information quality, and service quality. It also examines the extent of system use, user satisfaction, and the resulting net benefits to the organization. Applying this model enables a comprehensive measurement of success across both technical and human dimensions.

2. Records Continuum Model (Information/Records Lifecycle)

Evaluating the use of the archive life cycle on hybrid records management practices using a benchmarking table as a quality control. This model emphasizes the continuous and integrated nature of records management across their lifecycle stages. It ensures that records are created, maintained, and preserved in a manner that supports accountability and operational efficiency. By adopting this model, organizations can also establish clear policies for archiving and eventual disposal, thereby reducing risks associated with data retention.

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III. RESULT

A. Checking Technical Factors

Formally, there is no specific IoT management in the hybrid records management practices in M'mbelwa District Council in Malawi. They implemented it using any device to record and store data. The risks include economic limitations, a gap in technology conversion, the lack of IoT regulation, and the need for further staff training (Padoni et al., 2024). The TOE Framework collects data from 3 variables: IoT management, adaptation risk, and data security. Table 2 presents a summary of the technical factors.

Table 2. Checking Technical Factors

No	Standard	Real Practices	GAP Analysis
1.	IoT Management	Capture and store data using computers, cellphones, and notebooks (Padoni et al., 2024)	Although there is no specific information system in place, they could implement a hybrid records management system.
2.	Adaptation Risk	There is no policy for the implementation of IoT management, as stated by the top management staff (Padoni et al., 2024)	Although there is no policy for IoT management, they can implement hybrid records management using computers, cellphones, and notebooks.
3.	Data Security	• Physical document security (Padoni et al., 2024) • Access limitation using a passcode and a door lock (Padoni et al., 2024) • Data backup (Padoni et al., 2024)	The data is secured using a passcode and lock, also there is regular data backup.

B. Connecting Variables

The purpose of this research is to find the feasibility of technology adaptation in the digital transformation using UTAUT / TAM. Indicators used in UTAUT / TAM are Perceived Usefulness (PU), Perceived Ease of Use (PEoU), Attitude Toward Using (ATU), and Behavioral Intention to Use (BI). These indicators are essential for understanding how users perceive and interact with the implemented system. They also provide a structured framework for linking user perceptions with organizational performance outcomes. The following table (Table 3) presents the results.

Table 3. Connecting Variables using UTAUT / TAM

No	Standard	Real Practices	GAP Analysis
1.	PU	• Better problem-solving based on Table 7 in the research references (Padoni et al., 2024) • Better strategic planning based on Table 7 in the research references (Padoni et al., 2024) • Accurate information because it is used as Identification of service-oriented solutions (Padoni et al., 2024)	• Improvement of the quality of services (Padoni et al., 2024) • Safety of data using passcode and door lock (Padoni et al., 2024)
2.	PEoU	Because there is no further training, staff capability varies from medium to master based on the results in Table 8 in the research references (Padoni et al., 2024)	Although there is further training, there is technical training at the office (Padoni et al., 2024)
3.	ATU	Top and middle management staff	Hybrid records management have

		understand the advantage of hybrid records management (Padoni et al., 2024)	advantages over paperwork (Padoni et al., 2024)
4.	BI	Top and middle management staff have positive response (Padoni et al., 2024)	Although their capability varies, they still hope to use it (Padoni et al., 2024)

C. Quality Control

After connecting the data to its purpose, the author needs to assess the quality of the result using the DeLone and McLean model. The variables used for evaluation are system quality, information quality, service quality, usage, user satisfaction, and net benefits. Service quality includes promptness, ease of use, and interfaces. Information quality refers to the accuracy and relevance of the information, while service quality encompasses the technical support and training provided. Use tells the intensity of useness. User satisfaction tells the level of satisfaction of the user. Net benefits have positive effects, including increased efficiency, productivity, and usefulness. Table 4 shows the qualification of the hybrid records management practices.

Table 4. Quality Control

No	Standard	Real Practices	GAP Analysis
1.	System Quality	• The staff capability varies from medium to master based on the results in Table 8 in the research references (Padoni et al., 2024) • The system is easy to use, as stated by the top, middle, and clarity staff in the research reference (Padoni et al., 2024).	The system is easy to use
2.	Information Quality	• The information is accurate as it is used in the identification of a service-oriented solution (Padoni et al., 2024) • The information is relevant as it is used by top and middle management staff for the identification of service-oriented solutions (Padoni et al., 2024)	Information quality is good.
3.	Service Quality	There is technical training at the office (Padoni et al., 2024)	There is technical training
4.	Use	They implemented daily services (Padoni et al., 2024)	They use it every day
5.	User Satisfaction	Although the capability varies, they want to use hybrid records management (Padoni et al., 2024)	The user satisfied
6.	Net Benefits	Top, middle, and clerical levels staff stated that hybrid records were being used to provide information for the identification of service-oriented solutions and to have effective and efficient public service delivery (Padoni et al., 2024)	There is a benefit to the hybrid records management.

D. Records Lifecycle

There are four processes of the archive's lifecycle. Creation, capture, organizing, and pluralization. The creation process explains the purpose of archives. Archives are captured through a specific method used to collect them. Organizing archives involves managing the data stored. Pluralization is the procedure for data disposal. Table 5 illustrates the archiving lifecycle employed by M'mbelwa District Council.

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Table 5. Archive Lifecycle

No	Standard	Real Practices	GAP Analysis
1.	Creation	Created by top and middle management (Padoni et al., 2024)	The archives are created
2.	Capturation	Using computers, cellphones, and notebooks (Padoni et al., 2024)	Data captured using physical and electronic
3.	Organizing	Using computers, cellphones, and facilities to store data (Padoni et al., 2024)	There is management to organize data.
4.	Pluralization	Data is sent to the National Archives of Malawi (Padoni et al., 2024)	There are no disposable archives

Based on the results of various theories, the technical factors are not fully implemented, but they can fulfill their purpose by connecting the variables. By checking the quality, we can determine the success level of the hybrid records management practices with concrete variables, including the archives lifecycle being taken care of. These findings suggest that even with limited infrastructure, effective integration strategies can still yield positive results. This also implies that policy development and capacity building remain critical to sustaining and improving these practices.

IV. DISCUSSION

The research findings suggest that hybrid records management in M'mbelwa District Council can be effective, despite limited infrastructure and the absence of official policies regarding IoT. The note backs up the study by (Padoni et al., 2024), where they mention that even simple devices can be used to support effective record-keeping and archival management. The consistency of the present findings with previous studies highlights the significance of flexibility in technology use as a key determinant of digital transformation success in low-resource settings (Malik et al., 2025). The results of this case demonstrate that information systems integration remains feasible, even when technical and regulatory challenges persist.

Compared to (Blouin et al., 2025; Loconte et al., 2024) findings suggest that the present research offers an alternative perspective, indicating that integration limitations are not necessarily a daunting barrier if technological adaptation is reasonably appropriate in context and innovatively adopted. Although policy assistance and infrastructure remain second-best, relative increases in information quality and operational efficiency are identified based on the data. This evidence supports (DeLone & McLean, 2003) assertion that high-quality systems and information would enhance user satisfaction. The most significant point of divergence is policy emphasis: while earlier research emphasized total control from the outset, the present case demonstrates operational success without fully developed policies.

The identification of skill disparities among staff members emerges as a crucial factor that warrants further consideration. This finding challenges the view of (Oztaskin et al., 2024), who argued that technological adoption is only likely to succeed when digital literacy is uniformly high. In this case, internal training and gradual adaptation have proven sufficient to maintain system operations. This suggests that capacity development can progress alongside the implementation of technology, without necessitating full readiness across all personnel prior to adoption.

From a theoretical standpoint, the study contributes to the literature by extending the application of the DeLone and McLean Information Systems Success Model and UTAUT/TAM frameworks to environments facing integration limitations. The practical implication lies in encouraging similar governmental institutions, particularly those with comparable infrastructural and policy challenges, to consider hybrid records management as a viable approach to sustaining public services while mitigating the digital divide (Pricopoaia et al., 2025). Nonetheless, the research is constrained by its reliance on a single case study, which may limit the representativeness of the results. This limitation should be considered when interpreting the findings, particularly in terms of their applicability to diverse organizational contexts.

V. CONCLUSION AND RECOMMENDATION

Based on the research being conducted, a digital transformation can be effectively implemented within integration limitations. It utilizes various gadgets for data collection on public documents and serves as a hybrid medium for archives. The archives use electronic data and paper. This approach allows flexibility in managing records while ensuring that essential information remains accessible in different formats.

Furthermore, utilizing hybrid records management can help bridge the digital divide and address social inequality. The institution needs to pay more attention to policy in IoT management and organize capacity building to improve the quality of the work process. Such measures will enhance staff readiness to adapt to new technologies and ensure the smoother integration of systems. In the long run, these improvements can contribute to more efficient public service delivery and better governance outcomes.

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