



**PROCUREMENT DIGITALIZATION WITH ODOO ERP:
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Abstract

This study aims to analyze the procurement business process of a private airline company in Indonesia, evaluate the effectiveness of the Odoo ERP system in supporting procurement activities, and identify the challenges encountered during its implementation. A descriptive qualitative case study approach was employed. Data were collected through semi-structured interviews, participant observation, and document analysis involving personnel directly engaged in procurement activities. The data were analyzed using thematic analysis. The findings indicate that Odoo ERP has improved procurement administration, document management, transparency, and data accuracy while facilitating procurement monitoring through a centralized database. However, the implementation remains partially constrained by manual procedures, incomplete cross-departmental integration, and occasional technical issues. The study highlights that the effectiveness of procurement digitalization depends not only on technological capabilities but also on organizational readiness and system integration. By providing evidence from the airline industry in Indonesia, this study contributes to the growing literature on ERP-enabled procurement digitalization and offers practical insights for organizations seeking to enhance procurement performance through integrated information systems.

Keywords: E-Procurement; Enterprise Resource Planning; Odoo ERP; Procurement Effectiveness; Airline Industry



INTRODUCTION

The rapid advancements in information technology have transformed business operations and decision-making processes. Digitalization has become a key driver of organizational efficiency, enabling faster, more integrated, and data-driven processes while enhancing competitiveness in dynamic business environments (Ardiansyah, 2022). One notable outcome of this transformation is the adoption of Management Information Systems (MIS), particularly Enterprise Resource Planning (ERP) systems, which integrate various business functions into a centralized platform, improving operational efficiency, reducing redundancy, and increasing organizational transparency (Hutahaeen, 2024; Mandola et al., 2024).

Globalization has intensified the need for digitalization, particularly in the aviation industry, where companies must remain adaptable in an increasingly competitive and interconnected market. In this case, an Indonesian private airline faces ongoing pressure to enhance operational efficiency and service quality, with procurement playing a critical role in supporting fleet operations and business continuity. To address these challenges, the company implemented Odoo (On-Demand Open Object), an open-source ERP system, to integrate and optimize procurement activities. Odoo offers flexibility, scalability, and cost efficiency, but successful ERP implementation also requires organizational readiness, employee training, process alignment, and effective cross-departmental collaboration (Oktaviyana et al., 2023).

Based on the author's observations during an internship at the company, it was found that although the Odoo ERP system has been implemented, several obstacles remain in its execution. These obstacles include users' limited understanding of the system's features, suboptimal use of certain modules, and a lack of coordination between work units involved in the procurement process. This condition indicates a gap between the expected system design and its actual implementation in the field.

Drawing on this background, this study examines the digitalization of procurement through the implementation of the Odoo ERP system in an Indonesian private airline company. The study aims to evaluate the effectiveness of the system in enhancing operational efficiency and productivity while identifying challenges that may hinder its successful implementation. Furthermore, it seeks to provide practical recommendations for improving system utilization and organizational outcomes. To achieve these objectives, the study addresses three research questions: (1) How is the procurement process



managed within the company? (2) How effective is the Odoo ERP system in supporting procurement activities? and (3) What challenges arise during its implementation, and how can they be addressed?

LITERATURE REVIEW

E-Procurement

Procurement has evolved from traditional transactions to technology-driven systems such as electronic procurement (e-procurement) (Cris, 2023). E-procurement utilizes information and communication technologies to support procurement activities and improve efficiency, effectiveness, transparency, and accountability (Andrianto, 2007; Sutedi, 2012). Covering the entire procurement cycle, from needs identification to supplier payment, it is supported by digital tools such as e-auctions, e-catalogues, and electronic certification systems (Kumar & Ganguly, 2020). These technologies streamline procurement processes while enhancing information accessibility and transaction traceability.

The success of e-procurement depends not only on technology adoption but also on adherence to fundamental procurement principles. According to Martono & Simanjuntak (2021), these principles include delivery accuracy, timely fulfillment, compliance with quality standards, quantity conformity, and reliable supplier selection. Applying these principles helps organizations reduce procurement errors, improve operational efficiency, and minimize supply disruptions. Therefore, e-procurement should be viewed not merely as a technological solution but as a strategic approach that strengthens transparency, accountability, and trust throughout the procurement process.

Enterprise Resource Planning (ERP) Systems and Odoo ERP

Enterprise Resource Planning (ERP) systems represent one of the most influential technological innovations in modern organizations, transforming business operations from function-oriented activities into integrated process-based systems (Kilic et al., 2014). ERP integrates multiple business functions into a centralized database, enabling efficient information sharing, reducing data redundancy, and improving operational accuracy (Butar et al., 2021). Through process automation and real-time information availability, ERP systems support faster decision-making, strengthen organizational control, and enhance collaboration among internal and external stakeholders (Auliani, 2023). Furthermore, ERP implementation contributes to improved efficiency, productivity, process standardization, and resource optimization, thereby



supporting organizational competitiveness and long-term business performance (Febrianto & Soediantono, 2022).

Among various ERP solutions, Odoo has gained widespread adoption due to its open-source architecture, flexibility, and cost efficiency. The system integrates multiple business functions, including procurement, inventory, finance, human resources, customer relationship management, and project management, within a unified platform (Rahmi et al., 2021). Its modular design enables organizations to customize functionalities according to operational needs, while real-time data sharing and process automation enhance coordination, improve data accuracy, and reduce manual errors (Blount et al., 2016; Wijaya et al., 2023). These capabilities make Odoo an effective solution for procurement digitalization and integrated business management.

ERP-Based Procurement Process

Procurement involves identifying organizational needs, requesting goods or services, selecting suppliers, purchasing, receiving goods, and recording transactions. In an ERP environment, these activities are integrated into a centralized system that supports information sharing and cross-departmental coordination. Odoo ERP facilitates procurement management through interconnected modules such as Purchase, Inventory, and Accounting, enabling systematic data management and improved transaction traceability. By digitalizing procurement workflows, the system enhances data accessibility, monitoring capabilities, and operational efficiency compared with conventional manual procurement processes.

The procurement process in Odoo ERP generally begins with a material or purchase request, followed by stock verification, purchase requisition approval, purchase order creation, vendor selection, goods receipt, and inventory recording. The integration of these activities enables real-time information flows, reduces data duplication, and supports procurement monitoring and reporting. According to Laudon & Laudon (2022), ERP functions as an integrated platform that connects organizational processes and improves coordination across business units. Therefore, the effectiveness of ERP implementation is highly dependent on the degree of integration achieved among departments and operational functions within the organization (Rahayu et al., 2025).



Effectiveness of Procurement Digitalization

Digitalization refers to the transformation of manual processes into automated and integrated workflows through the application of technology, with the objective of improving efficiency, reducing errors, and facilitating faster decision-making (Shaleh, 2024). In procurement activities, digitalization is especially important because procurement processes typically involve extensive documentation, multiple approval stages, and coordination among various organizational units. The adoption of digital procurement systems enables organizations to streamline workflows, improve information accessibility, and provide transparent and traceable records that support accountability and monitoring (Arham & Sofa, 2023; Juliana & Manggalou, 2025).

ERP systems such as Odoo represent a practical form of procurement digitalization by integrating procurement activities into a unified platform. Through automated and interconnected processes, ERP systems enhance data accuracy, streamline approval procedures, facilitate monitoring, and improve transparency through real-time transaction recording (Syamsuddin et al., 2023). According to Arham & Sofa (2023), the effectiveness of procurement digitalization can be evaluated through three dimensions: process simplification and acceleration, transparency and accountability, and procurement monitoring support. These dimensions provide the analytical framework for assessing the effectiveness of Odoo ERP implementation in this study.

Research Framework

This section outlines the conceptual framework guiding the analysis of procurement digitalization through Odoo ERP implementation in a private airline company in Indonesia. The analysis focuses on understanding the procurement business process, identifying the extent of digitalization within procurement activities, evaluating the effectiveness of Odoo ERP implementation, and exploring challenges encountered during system utilization. The effectiveness assessment is guided by the framework proposed by Arham & Sofa (2023), which measures procurement digitalization through process simplification and acceleration, transparency and accountability, and procurement monitoring support. In addition, the study compares current procurement practices with the characteristics of an integrated digital procurement system to identify gaps and improvement opportunities. The research framework is shown in Figure 1.

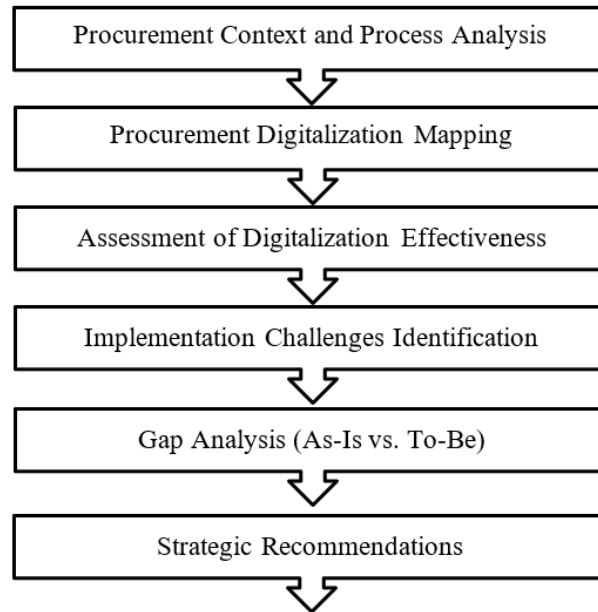


Figure 1.
Internship Framework Model

RESEARCH METHOD

This study employed a descriptive qualitative case study approach to examine the implementation of the Odoo ERP system in supporting procurement digitalization within a private airline company in Indonesia. A case study design was selected to provide an in-depth understanding of procurement processes, system utilization, and implementation challenges in their actual organizational context. Data were collected through semi-structured interviews, participant observation, and document analysis. Informants were selected using purposive sampling based on their direct involvement in procurement activities and Odoo ERP implementation, including personnel from the Business Support and General Affairs, Procurement, and Asset Management functions.

Data were analyzed using thematic analysis based on Miles' et al. (2014) framework, consisting of data reduction, data display, and conclusion drawing. The analysis examined procurement activities and the extent of digitalization through Odoo ERP implementation. Procurement digitalization effectiveness was evaluated using the dimensions proposed by Arham & Sofa (2023), namely process simplification and acceleration, transparency and accountability, and procurement monitoring support. In addition, implementation challenges were identified through thematic coding of interview transcripts, observation notes, and documentary evidence. A gap analysis comparing current practices (As-Is)



and expected conditions (To-Be) was subsequently conducted to formulate recommendations for improving procurement digitalization.

RESULTS AND DISCUSSION

Data Description

The findings were derived from semi-structured interviews, participant observation, and document analysis involving personnel directly engaged in procurement activities and Odoo ERP implementation. The data were analyzed using thematic analysis through manual coding with open and selective categorization techniques (Shown in Table 1). Guided by the research questions, the coding process identified key themes related to procurement digitalization effectiveness and implementation challenges.

Table 1.
List of Main Codes Used in Thematic Analysis

Informant Code	Description
K-KP	Represents employees' perception that the use of Odoo ERP simplifies their work, reduces manual processes, and makes the procurement workflow more structured and systematic.
K-EP	Covers how Odoo ERP improves process efficiency, such as accelerating document creation, easing data access, and saving working time.
K-DT	Describes improvements in data accuracy, reduced input errors, and recording consistency through an automated system.
K-TR	Describes transparency and accountability in the procurement process, such as ease of tracking data, input time, and procurement activity monitoring.
K-IN	Indicates that system integration is not yet optimal, as Odoo ERP has not been connected to all divisions, resulting in remaining manual processes.
K-KS	Covers obstacles encountered in using the system, both technical (errors, slow performance) and user adaptation to the new system.
K-EF	Represents perceptions of the system's overall effectiveness in supporting monitoring, reporting, and control of the procurement process.

Source: Data Processed (2025).



This section presents the results and discussion based on the research framework (Figure 1). The findings evaluate the implementation of Odoo ERP in supporting procurement digitalization, particularly in terms of efficiency, transparency, and monitoring. The discussion links empirical evidence with relevant theories and previous studies to address the research objectives.

Informant Description

Data were collected through semi-structured interviews, participant observation, and document analysis. The primary data source was an interview with a procurement staff member (W1) directly involved in Odoo ERP implementation and procurement operations (see Table 2). The interview explored procurement efficiency, transparency, data accuracy, monitoring support, and implementation challenges. To ensure credibility, triangulation was conducted using field observations and organizational documents, including procurement procedures, workflow records, and Odoo ERP documentation.

Table 2.

Key Informant's Profile

Description	Information
Code	W1
Role/Department	Procurement Staff /Business Support and General Affairs
Work Experience	9 years
Data Collection Context	Direct semi-structured interview

Source: Data Processed (2025)

Interview Results

The interview findings indicate that the implementation of Odoo ERP has contributed positively to procurement operations within the company. According to the key informant (W1), the system has improved the structure and consistency of procurement activities compared with the previous Excel-based approach. Procurement records are stored in a centralized database, making information easier to access, monitor, and manage. The system also facilitates the preparation of procurement documents, particularly Purchase Orders (POs), while reducing repetitive administrative activities such as manual data entry, document recapitulation, and record management.

The findings further reveal that Odoo ERP enhances data accuracy and transparency throughout the procurement process. Automated functions,



including tax calculations and transaction recording, help minimize human errors and improve data reliability. Procurement status, transaction history, processing time, and responsible personnel can be traced through the system, supporting greater accountability and facilitating procurement monitoring. Historical procurement records are also available and can be utilized as references for future purchasing decisions and vendor selection.

Despite these benefits, several implementation challenges remain. The informant reported occasional system slowdowns and technical errors that may disrupt daily operations. In addition, Odoo ERP has not yet been fully integrated across all organizational units, particularly finance and warehouse functions, resulting in the continued use of manual procedures and printed documents. Consequently, procurement activities currently operate under a hybrid system that combines digital and manual processes. The informant also noted that Odoo ERP does not directly accelerate the overall procurement cycle, as procurement lead times are largely determined by external factors such as vendor responsiveness and product availability. To improve system effectiveness, enhancements in cross-divisional integration, monitoring features, and automated notification functions were recommended.

Observation Results

Field observations conducted during the internship period revealed that procurement activities followed a structured workflow involving the user department, Asset Management, Purchasing, Finance, and external vendors. The procurement cycle began with a material request, followed by stock verification, purchase requisition creation, purchase order issuance, goods receipt, and distribution to the requesting unit. Observations confirmed that Odoo ERP was actively utilized in purchase requisition processing, purchase order management, inventory recording, and procurement monitoring activities.

The observations further indicated that Odoo ERP improved document management, information accessibility, and procurement traceability by centralizing procurement records within a single system. Procurement data could be accessed and monitored more efficiently than under the previous Excel-based approach. However, procurement digitalization had not yet been fully implemented across all stages. Material requests were still partially processed outside the system, while several finance- and warehouse-related activities continued to rely on printed documents and manual procedures. Consequently, the organization currently operates a hybrid procurement environment that combines digital and manual processes.



In addition, field observations identified several operational challenges, including occasional system slowdowns, incomplete integration across organizational units, and varying levels of user adaptation to the ERP environment. These findings suggest that while Odoo ERP has contributed to improving procurement efficiency, transparency, and process control, further efforts are required to achieve full system integration and maximize the benefits of procurement digitalization.

Procurement Process and Odoo ERP Implementation

The implementation of Odoo ERP represents the company's effort to improve the efficiency and effectiveness of procurement activities by replacing previously fragmented and manual procedures. Prior to implementation, procurement activities relied heavily on Microsoft Excel and internal server-based documentation. Through Odoo ERP, procurement records and transactions are managed in a more systematic, traceable, and centralized manner. The informant stated the system has improved document organization and facilitated procurement monitoring compared with the previous manual procedures.

Table 3.

Comparison of Procurement Activities Regarding Odoo ERP Implementation

Aspect	Before Odoo ERP	After Odoo ERP
Data Management	Microsoft Excel and physical documents	Data stored in an integrated ERP system
Purchase Order Creation	Manual preparation and processing	More automated and systematic process
Procurement Monitoring	Difficult to monitor in real time	Procurement status can be monitored through the system
Document Storage	Internal servers and physical archives	Documents stored and managed within the ERP system
Data Retrieval	Manual searching required	Faster and easier data retrieval



Aspect	Before Odoo ERP	After Odoo ERP
Process Transparency	Limited activity traceability	User activities recorded within the system
Risk of Data Errors	Higher due to manual input	Reduced through system automation

Source: Data Processed (2025)

Table 3 summarizes the operational improvements following Odoo ERP implementation. Compared with previous manual procedures, the system enhanced document management, monitoring, information accessibility, transparency, and data accuracy, reflecting progress toward a more integrated and efficient procurement environment.

The procurement process involves multiple stakeholders, including user departments, Asset Management, Purchasing, Finance, and external vendors. It begins with a Material Request (MR) submitted by the user department and followed by stock verification by Asset Management. If the requested item is unavailable, a Purchase Requisition (PR) is issued and processed by Purchasing through the creation of a Purchase Order (PO). After payment verification and product delivery, goods are inspected, recorded in the inventory system, stored, and distributed to the requesting unit.

The findings indicate that Odoo ERP is primarily utilized during the Purchase Requisition (PR), Purchase Order (PO), inventory recording, and procurement monitoring stages. By centralizing procurement records, the system improves document management, transaction traceability, and administrative control. However, procurement digitalization has not yet been fully implemented across the entire procurement cycle. Material requests remain partially manual, while several finance- and warehouse-related activities still depend on physical documents and procedures outside the ERP environment. Consequently, the organization continues to operate under a hybrid procurement model, reflecting incomplete system integration. This condition contrasts with the fundamental objective of ERP systems, which is to integrate organizational functions and enable seamless information flows to enhance coordination and operational efficiency (Laudon & Laudon, 2022).



Effectiveness of Procurement Digitalization

The findings indicate that the implementation of Odoo ERP has improved the effectiveness of procurement activities through process simplification, enhanced transparency, and better monitoring capabilities. Compared with the previous Excel-based approach, the system reduced repetitive administrative tasks, such as manual data entry, document preparation, and procurement data recapitulation. The informants reported that procurement documents, particularly purchase orders, could be generated more efficiently because relevant information was already stored within the system. As a result, procurement activities became more structured and easier to manage. This finding is consistent with previous studies suggesting that ERP systems improve operational efficiency by automating routine activities, reducing administrative workloads, and standardizing business processes (Arvianto et al., 2022).

The implementation of Odoo ERP also contributed to greater transparency and accountability throughout the procurement process. Procurement status, transaction history, processing time, and responsible personnel could be tracked through the system, allowing stakeholders to monitor procurement activities more effectively. In addition, procurement records were stored in a centralized database, facilitating report generation and improving information accessibility. These features strengthened accountability because procurement activities could be reviewed and verified through documented system records. This result supports the view that digital procurement systems enhance organizational transparency and accountability by providing traceable transaction records and improving information visibility across business processes (Erkkilä, 2025).

In terms of data accuracy, the system reduced the likelihood of manual errors through automated functions and integrated data management. Based on the interview findings, Informants noted that automated tax calculations, transaction recording, and item specifications helped minimize input errors that frequently occurred in previous manual procedures. Furthermore, the availability of historical procurement data provided a valuable reference for future purchasing decisions, including vendor selection, price comparison, and specification verification. Consequently, procurement decisions became more data-driven and consistent.

The findings further revealed that Odoo ERP enhanced procurement monitoring by providing easier access to procurement information and transaction records. The availability of integrated data improved interdepartmental coordination and facilitated procurement supervision. However, the system's contribution to overall procurement speed remained



limited, as procurement lead times were influenced primarily by external factors, particularly vendor responsiveness, product availability, and delivery schedules. According to the key informant, the ERP system functioned mainly as a tool for recording, processing, and monitoring procurement data rather than accelerating procurement execution. Furthermore, the benefits of transparency and data accuracy have not yet been fully realized because several procurement-related activities continue to be performed outside the ERP environment. The persistence of manual procedures and physical documentation reflects incomplete integration across departments, particularly finance and warehouse functions, indicating that the organization continues to operate under a hybrid procurement model rather than a fully integrated digital procurement system.

Implementation Challenges

Organizational challenges were also identified during the implementation process. Although the implementation of Odoo ERP has generated considerable benefits for procurement activities, the findings indicate that several challenges continue to affect the effectiveness of its utilization. These challenges can be categorized into three main dimensions: technical, human resource, and organizational factors. From a technical perspective, system performance remains one of the primary concerns. Interview and observation results revealed that Odoo ERP occasionally experiences system lag and operational errors, particularly during periods requiring rapid access to procurement data. Such issues may disrupt daily procurement activities and reduce user satisfaction. This condition is consistent with the argument of Erkkilä (2025), who emphasizes that ERP systems require continuous customization, testing, configuration refinement, and maintenance throughout the implementation lifecycle. In complex and highly interconnected ERP environments, increasing system complexity may contribute to performance degradation, including system lag and operational errors. Therefore, these findings suggest that improvements in system performance and supporting infrastructure are still required to ensure stable operational support.

Human resource-related challenges were also identified. Although Odoo ERP is generally perceived as user-friendly, differences in users' levels of understanding and system proficiency affect the extent to which available features are utilized. Limited familiarity with certain system functions may reduce operational effectiveness and increase the likelihood of procedural errors. In addition, adaptation to the transition from manual procedures to digital workflows remains an ongoing challenge for some users. Previous studies



suggest that technology implementation processes often involve periods of uncertainty, adjustment, and learning before users can fully utilize system capabilities (Ribalta, 2024). Therefore, continuous user training and capacity-building programs are essential to improve system proficiency (Erkkilä, 2025), maximize feature utilization, and support the successful adoption of digital procurement practices.

From an organizational perspective, the most significant issue concerns incomplete system integration across procurement-related functions. The findings indicate that several activities involving finance and warehouse operations are still conducted outside the ERP environment, requiring the use of manual procedures and printed documents. According to the primary informant, not all divisions had been fully integrated into the system, resulting in the continued use of manual documentation and coordination outside the ERP platform. Consequently, the company currently operates a hybrid procurement system that combines digital and manual processes, limiting the full realization of procurement digitalization benefits. Furthermore, monitoring activities are not yet supported through a fully integrated dashboard, requiring users to access multiple menus to track procurement progress. The absence of automated notifications for pending transactions also reduces monitoring efficiency and workflow control.

These findings indicate that the success of ERP implementation depends not only on technological capabilities but also on organizational readiness, user competencies, and the degree of process integration across departments. Therefore, further optimization efforts should address technical, human, and organizational dimensions simultaneously to maximize the effectiveness of procurement digitalization.

Strategic recommendation

Based on the findings, several strategic recommendations can be proposed to improve the effectiveness of procurement digitalization. These recommendations are derived from the interview findings and field observations, particularly concerns related to incomplete system integration, monitoring limitations, and technical performance issues identified by the key informant. First, the company should strengthen system integration across procurement-related functions, particularly finance and warehouse operations, while also digitalizing the Material Request (MR) stage to eliminate remaining manual procedures and establish an end-to-end procurement workflow. This recommendation aligns with the informant's observation that several procurement activities still require manual processing due to incomplete system



integration. Second, regular training programs should be provided to improve users' understanding of Odoo ERP features and maximize system utilization. Third, the company should enhance procurement monitoring by developing an integrated dashboard and implementing automated notification features for pending transactions. Finally, improvements in system infrastructure and periodic system evaluations are necessary to ensure stable performance, address technical issues promptly, and support continuous improvement of the procurement digitalization initiative.

CONCLUSION

This study examined the implementation of the Odoo ERP system in the procurement process of a private airline company in Indonesia. The findings indicate that Odoo ERP has contributed positively to procurement digitalization by improving administrative efficiency, enhancing document management, and increasing transparency and data accuracy. Procurement records are stored in a centralized database, enabling easier tracking of procurement status, better monitoring, and improved accountability. The system also simplifies routine administrative activities such as purchase order creation, procurement reporting, and historical data retrieval. These findings suggest that ERP implementation can support more structured and systematic procurement operations compared to previous manual procedures, consistent with previous studies highlighting the role of ERP systems in improving process integration, operational efficiency, and information management (Arham & Sofa, 2023; Erkkilä, 2025; Ribalta, 2024; Syalmah et al., 2024).

However, the study also found that the effectiveness of procurement digitalization remains constrained by several factors. Although Odoo ERP has improved internal administrative processes, procurement activities are still characterized by a hybrid workflow in which certain stages, particularly material requests and several finance- and warehouse-related activities, continue to rely on manual procedures. In addition, technical issues such as occasional system lag and errors, limited user understanding of system features, and incomplete integration across departments reduce the overall effectiveness of the ERP implementation. These challenges are consistent with prior ERP implementation literature, which emphasizes that technological readiness, user competence, and organizational integration are critical determinants of ERP success (Laudon & Laudon, 2022). The findings further indicate that the overall speed of



procurement is influenced not only by the ERP system but also by external factors, including vendor responsiveness and product availability.

This study contributes to the literature on procurement digitalization by providing empirical evidence of ERP implementation in the aviation service sector, an area that remains relatively underexplored in developing countries. The findings support the view that successful digital transformation depends not only on technological capability but also on organizational readiness, user competence, and cross-functional integration. From a practical perspective, the study highlights the importance of achieving end-to-end system integration, strengthening user training, improving monitoring features, and enhancing technological infrastructure to maximize the benefits of ERP adoption.

This study is limited to a single case organization, relying primarily on one key informant for interview data while using field observations and document analysis for triangulation. Therefore, future research may expand the scope by examining multiple organizations or industries and employing quantitative approaches to measure procurement performance improvements more objectively through indicators such as processing time, error rates, cost efficiency, and user satisfaction.

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