



## ORGANIZATIONAL READINESS FOR SAP S/4HANA MIGRATION IN MINING ASSET MANAGEMENT

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Submitted: 19 April 2026, Accepted: 26 April 2026, Published: 3 May 2026

### Abstract

The migration from SAP ECC to SAP S/4HANA has become a critical agenda for organizations seeking to strengthen digital integration and operational efficiency. However, ERP transformation initiatives frequently encounter organizational readiness challenges, particularly within asset-intensive industries characterized by complex operational workflows. This study aims to analyze organizational readiness for SAP S/4HANA migration within the Operations Maintenance Division of a mining company in Indonesia by integrating the ADKAR framework and Critical Success Factors (CSF). The study employed a qualitative single case study approach involving 14 informants from strategic, tactical, and operational levels. Data were collected through semi-structured interviews, Focus Group Discussions (FGDs), participatory observation, and document analysis, and subsequently analyzed using thematic analysis. The findings reveal that organizational readiness was shaped by the interaction between technological preparedness, leadership support, communication effectiveness, user involvement, and operational workflow adaptation. Strategic-level informants demonstrated stronger awareness regarding the urgency of digital transformation, whereas operational users expressed greater concerns related to workflow complexity and administrative burden. User participation during System Integration Testing (SIT) and User Acceptance Testing (UAT) contributed significantly to improving adaptation and system acceptance. This study contributes to the ERP transformation literature by demonstrating the relevance of integrating ADKAR and CSF frameworks in understanding organizational readiness within asset-intensive industries undergoing large-scale digital transformation.

**Keywords:** SAP S/4HANA migration; organizational readiness; ADKAR; Critical Success Factors; ERP transformation; digital transformation; mining industry

### A. INTRODUCTION

Digital transformation has become a strategic priority for organizations seeking to improve operational efficiency, data integration, and organizational competitiveness in technology-driven industries. One of the most widely adopted forms of digital transformation is the implementation of Enterprise Resource Planning (ERP) systems to support integrated, real-time, and standardized business processes. ERP systems enable organizations to integrate multiple business functions, including finance, procurement, supply chain, human resources, and maintenance management, within a unified platform, thereby improving decision-making quality and operational effectiveness (Aloini et al., 2007; Rajnoha et al., 2014).

In recent years, the migration from SAP ECC to SAP S/4HANA has emerged as one of the most significant ERP transformation initiatives across industries. SAP S/4HANA was developed as a next-generation ERP platform based on in-memory computing technology that offers greater flexibility, real-time data integration, enhanced user experience through SAP Fiori, and faster analytical capabilities compared to SAP ECC (Pokala, 2023; Kulkarni Babasaheb Ambedkar & Kulkarni, 2024). Furthermore, the discontinuation of SAP ECC support has intensified the urgency for organizations to migrate in order to maintain system sustainability and business continuity.

Nevertheless, ERP implementation and migration initiatives continue to face complex organizational challenges. Previous studies have shown that ERP implementation failure is not

solely caused by technical limitations, but is also influenced by user resistance, insufficient organizational readiness, ineffective change communication, and limited user involvement throughout the transformation process (Aloini et al., 2007; Salas, 2023; Khaw et al., 2023). Within the context of SAP S/4HANA migration, organizations must manage not only technological changes, but also modifications to workflows, business processes, and coordination mechanisms across organizational functions (Mahraz et al., 2024; Kumar Khatri et al., 2023).

Organizational readiness has therefore become a critical determinant of ERP transformation success. Weiner (2009) conceptualized organizational readiness as a collective organizational commitment and shared belief regarding the capability to implement change effectively. In digital transformation contexts, readiness extends beyond technological preparedness and encompasses individual readiness, organizational support, leadership commitment, communication effectiveness, and users' ability to adapt to revised operational processes (Armenakis et al., 1993; Balluck et al., 2020).

Within the mining industry, ERP migration presents greater complexity compared to many other sectors because operational activities are highly asset-intensive, geographically dispersed, and strongly dependent on equipment reliability and maintenance coordination. Mining operations also require real-time operational integration, rapid decision-making, and continuous workflow synchronization across multiple operational sites. Consequently, changes introduced through SAP S/4HANA migration may directly affect maintenance workflows, operational traceability, equipment management, and coordination among operational units. These characteristics make organizational readiness particularly important in mining industry ERP transformation initiatives.

Previous studies have discussed organizational readiness and Critical Success Factors (CSF) in ERP implementation. However, most studies remain focused on technical implementation aspects or employ quantitative approaches to measure organizational readiness levels (Rajnoha et al., 2014; Salas, 2023). Research specifically integrating the ADKAR framework and Critical Success Factors (CSF) to examine organizational readiness in SAP S/4HANA migration remains limited, particularly within asset-intensive industries such as mining. Furthermore, prior studies rarely explore readiness differences across organizational levels, despite evidence suggesting that digital transformation is often perceived differently by strategic-level management, tactical-level coordinators, and operational users (Wynn et al., 2024).

These research gaps indicate that organizational readiness in SAP S/4HANA migration requires a more comprehensive understanding, particularly regarding how readiness evolves across organizational levels and how organizational factors function as both enablers and barriers during digital transformation processes. Therefore, this study aims to analyze organizational readiness for SAP ECC to SAP S/4HANA migration within the Operations Maintenance Division of a mining company in Indonesia through the integration of the ADKAR framework and Critical Success Factors (CSF).

This study contributes theoretically to the ERP transformation and organizational readiness literature by providing a cross-level qualitative understanding of organizational readiness and by integrating the ADKAR framework with Critical Success Factors (CSF) within SAP S/4HANA migration contexts. In addition, this study provides practical contributions for organizations undertaking ERP transformation, particularly in designing adaptive change management strategies, strengthening user involvement, and managing workflow adaptation within asset-intensive industries characterized by high operational complexity.

## B. LITERATURE REVIEW

### 1. Digital Transformation and ERP Migration

Digital transformation has become a strategic issue that significantly influences organizational sustainability and competitiveness. In asset-intensive industries such as mining, digital transformation is not merely associated with technology adoption, but also involves changes in operational structures, business process integration, maintenance systems, and data-driven decision-making practices. One of the most significant forms of digital transformation within organizations is the implementation and migration of *Enterprise Resource Planning* (ERP) systems, particularly toward next-generation platforms such as SAP S/4HANA.

ERP refers to an integrated system designed to connect various organizational functions, including operations, maintenance, finance, supply chain, and human resources within a unified database environment (Pokala, 2023). ERP implementation enables organizations to improve operational efficiency, strengthen data transparency, and enhance coordination across business functions. Over time, ERP systems have evolved into more adaptive and real-time platforms through the development of SAP S/4HANA.

SAP S/4HANA offers several advantages compared to conventional ERP systems, including *in-memory computing*, integration with the *Internet of Things* (IoT), advanced analytics, and a more intuitive SAP Fiori user interface (Kulkarni Babasaheb Ambedkar & Kulkarni, 2024). These capabilities allow organizations to process data in real time, thereby improving operational responsiveness and decision-making quality. Consequently, migration toward SAP S/4HANA is increasingly viewed as an important component of long-term digital transformation strategies.

Despite these advantages, previous studies indicate that ERP implementation and migration projects continue to experience relatively high failure rates. Salas (2023) argued that many ERP implementation failures are not primarily caused by technological limitations, but rather by organizational issues such as user resistance, insufficient managerial support, ineffective communication, and low readiness for change. This finding suggests that the success of ERP migration depends not only on technological readiness, but also on the organization's ability to manage change effectively.

In the context of SAP S/4HANA migration, organizations face more complex challenges because migration processes involve business process redesign, data restructuring, and behavioral adaptation to new digital workflows. Kumar Khatri et al. (2023) explained that major ERP migration challenges commonly include historical data quality, legacy system compatibility, workforce readiness, and organizational capability in managing cross-functional change. Therefore, organizational readiness has become an important issue in ensuring successful ERP migration during the digital transformation era.

### 2. Organizational Readiness for Change

The concept of *organizational readiness for change* has developed as one of the key determinants of successful organizational transformation. Weiner (2009) defined organizational readiness as the collective commitment and shared belief among organizational members regarding their capability to implement intended changes. Organizational readiness reflects the extent to which individuals and groups possess the motivation, competence, and support necessary to execute change effectively.

Within digital transformation contexts, organizational readiness extends beyond technological preparedness and includes psychological, cultural, structural, and behavioral dimensions. Armenakis et al. (1993) argued that organizations with higher levels of readiness are generally more capable of reducing resistance to change, increasing user participation, and accelerating adaptation toward new systems.

Previous ERP implementation studies have consistently shown that low organizational readiness is among the primary causes of digital transformation failure. Rajnoha et al. (2014) found that many organizations encounter ERP implementation difficulties due to limited user involvement, ineffective change communication, and inadequate organizational culture readiness. Similarly, Khaw et al. (2023) emphasized that resistance to change frequently emerges because users do not fully understand the benefits of new systems and lack clarity regarding organizational transformation objectives.

In mining industries, organizational readiness becomes even more complex due to geographically dispersed operations, strong field-oriented work cultures, and heterogeneous workforce structures involving both permanent employees and contractors. Such conditions require organizations to adopt more adaptive and context-sensitive change management approaches. Consequently, organizations need analytical frameworks capable of identifying change readiness at both the individual and organizational levels.

### 3. ADKAR Model

The ADKAR model (*Awareness, Desire, Knowledge, Ability, Reinforcement*) was developed by Hiatt and Creasey (2012) as a change management framework focusing on individual behavioral transformation. The model proposes that successful organizational change largely depends on successful individual change across five interconnected dimensions.

The first dimension is *awareness*, which refers to individuals' understanding of the reasons and urgency for organizational change. In ERP migration contexts, awareness relates to users' understanding of the risks associated with legacy systems and the benefits of SAP S/4HANA implementation.

The second dimension is *desire*, which reflects individuals' willingness to support and participate in organizational change initiatives. Desire is influenced by personal motivation, perceived benefits of transformation, and trust toward organizational leadership.

The third dimension is *knowledge*, referring to individuals' understanding of how change should be implemented. In ERP implementation, knowledge includes understanding new business processes, operational procedures, and SAP S/4HANA system functionalities.

The fourth dimension is *ability*, which represents individuals' capability to apply change effectively within day-to-day work activities. Ability is influenced not only by training, but also by practical experience, organizational support, and operational preparedness.

The final dimension is *reinforcement*, referring to organizational efforts aimed at sustaining change over time through evaluation systems, managerial support, rewards, and implementation monitoring.

The ADKAR model has been widely adopted in digital transformation studies because it provides a systematic explanation of behavioral change processes. Al Furqon (2025) found that the knowledge and ability dimensions frequently become major obstacles in ERP implementation within mining organizations due to digital competency disparities across organizational levels. Therefore, the ADKAR model is considered relevant for analyzing individual readiness in SAP S/4HANA migration projects.

### 4. Critical Success Factors (CSF)

In addition to individual readiness, ERP implementation success is also influenced by organizational factors commonly referred to as *Critical Success Factors* (CSF). The concept was initially introduced by Rockart (1979) to identify key factors determining organizational success in achieving strategic objectives.

Within ERP implementation contexts, previous studies have identified several critical factors influencing digital transformation success, including top management support,

communication quality, user involvement, training quality, project management effectiveness, technological infrastructure readiness, and organizational culture (Sun et al., 2015). These factors function either as enablers or barriers throughout the implementation process.

Top management support is consistently recognized as one of the most influential factors in ERP implementation because it relates to resource allocation, change legitimacy, policy direction, and leadership involvement throughout transformation processes. Effective organizational communication also plays an important role in building shared understanding and reducing user resistance toward new systems.

User involvement represents another important factor because ERP implementation directly affects employees' daily operational activities. Organizations that involve users from the early stages of implementation generally demonstrate higher levels of system acceptance compared to organizations that rely entirely on top-down implementation approaches.

Training and competency development are also essential in supporting ERP implementation readiness. Role-based training enables users to understand new business processes more contextually, thereby improving operational confidence and system usability.

Wynn et al. (2024) further demonstrated that non-technical dimensions such as transformational leadership, communication quality, and employee involvement increasingly determine ERP implementation success in the digital era. These findings reinforce the importance of integrating individual change perspectives with organizational enabling factors in understanding ERP migration readiness.

#### 4. Research Framework

Based on the theoretical review presented above, this study integrates the ADKAR model and *Critical Success Factors* (CSF) framework as the primary analytical foundation for understanding organizational readiness in SAP ECC to SAP S/4HANA migration. This approach is employed because the success of digital transformation is influenced not only by technological readiness, but also by individual readiness and organizational support in managing change.

The ADKAR model is used to analyze individual readiness for change through five primary dimensions, namely *awareness*, *desire*, *knowledge*, *ability*, and *reinforcement*. These dimensions help explain how individuals understand the urgency of change, develop motivation to support transformation, acquire knowledge regarding new systems, develop operational capabilities, and sustain new behaviors after implementation.

Meanwhile, the *Critical Success Factors* framework is used to identify organizational factors influencing ERP implementation success. These factors include management support, organizational communication, user involvement, training, infrastructure readiness, and organizational support toward transformation processes. This perspective helps explain how organizational environments may function either as supporting factors or barriers during SAP S/4HANA migration.

The integration of ADKAR and CSF enables this study to analyze organizational readiness more comprehensively by simultaneously connecting individual behavioral dimensions and organizational enabling factors. This approach is considered particularly relevant within mining industries characterized by high operational complexity, geographically dispersed work environments, and heterogeneous workforce structures.

Through this research framework, the study seeks to identify the level of organizational readiness toward SAP S/4HANA migration while also explaining the major factors influencing digital transformation success within the Operations Maintenance Division of the mining industry.



### C. METHODS

This study adopted a qualitative approach employing a descriptive-exploratory single case study design. The selection of this approach was grounded in the nature of the research problem, which examines a complex contemporary phenomenon, namely the digital transformation process through the migration from SAP ECC to SAP S/4HANA within a real-world operational setting in the mining industry. In this context, the boundaries between the phenomenon under investigation and its organizational environment cannot be distinctly separated. Accordingly, the case study approach enabled an in-depth exploration of organizational readiness, change dynamics, and the organizational factors influencing the implementation of ERP transformation initiatives within an asset-intensive industry context.

The study focused on the Operations Maintenance Division of a mining company in Indonesia that is currently undertaking a SAP ECC to SAP S/4HANA migration program. This division was selected because it serves as the primary user of the Enterprise Asset Management (EAM) module and is responsible for managing more than 20,000 operational assets that directly support the company's production continuity. The research was conducted during the pre-implementation phase, encompassing the Preparation, System Integration Testing (SIT), and User Acceptance Testing (UAT) stages between August 2025 and February 2026.

Informants were selected using purposive sampling combined with a maximum variation sampling strategy to capture perspectives across multiple organizational levels. A total of 14 informants participated in the study, representing strategic, tactical, and operational roles within the organization. Strategic-level informants included Vice Presidents, Senior Managers, and Managers who were responsible for strategic decision-making, organizational support, and transformation governance. Tactical-level informants consisted of Superintendents, Senior Planners, Planners, and Schedulers who were directly involved in system planning and implementation activities. Meanwhile, operational-level informants included field supervisors and maintenance personnel who functioned as end-users of the SAP system in day-to-day operational activities. Informants were selected based on their direct involvement in the SAP S/4HANA migration initiative and their prior experience using SAP ECC. Data collection was concluded once the information obtained demonstrated recurring patterns and reached the point of data saturation.

Data were collected through four primary techniques, namely semi-structured in-depth interviews, Focus Group Discussions (FGDs), participatory observation, and document analysis. The interviews were guided by an interview protocol developed based on the ADKAR framework (Awareness, Desire, Knowledge, Ability, and Reinforcement) to explore individual readiness toward organizational change. FGDs were conducted to validate interview findings and to capture group dynamics as well as potential resistance toward the migration process. Participatory observation was undertaken during the User Acceptance Testing (UAT) sessions to examine users' practical ability to operate the new system within actual operational scenarios. In addition, document analysis was conducted on communication materials, training modules, UAT reports, migration logs, and other project-related documents to strengthen the triangulation process and provide contextual support for the empirical findings.

Data analysis was conducted using a thematic analysis approach by integrating the ADKAR framework and Critical Success Factors (CSF). The analytical process began with verbatim transcription of interview recordings, followed by open coding to identify emerging themes from the collected data. The identified themes were subsequently categorized and organized according to the dimensions of ADKAR and the relevant CSF components in order to examine the relationship between individual readiness and organizational factors influencing the migration process. Final interpretations were developed through cross-level comparisons among informants to obtain a comprehensive understanding of organizational readiness for

SAP S/4HANA migration. To enhance the credibility and trustworthiness of the study, source and method triangulation were applied through the comparison of findings derived from interviews, observations, FGDs, and organizational documents. In addition, limited member checking was conducted with several key informants to ensure that the interpretations accurately reflected the organizational conditions and experiences encountered during the migration preparation process.

## D. RESULTS AND DISCUSSION

### 1. Informant Profile

This study involved 14 informants representing strategic, tactical, and operational levels within the Operations Maintenance Division. Informants were selected purposively based on their direct involvement in the SAP ECC to SAP S/4HANA migration process and their prior experience using SAP ECC. The inclusion of participants across multiple organizational levels enabled the study to capture diverse perspectives regarding organizational readiness during the digital transformation process.

**Table 1: Informant Profile**

| Informant Code | Position                              | Organizational Level | Involvement in SAP S/4HANA Migration                                |
|----------------|---------------------------------------|----------------------|---------------------------------------------------------------------|
| VP1            | Vice President Operations Maintenance | Strategic            | Strategic decision-making and organizational transformation support |
| SM1            | Senior Manager Maintenance Planning   | Strategic            | Migration supervision and implementation coordination               |
| MGR1           | Manager Asset Management              | Strategic            | System integration and maintenance process governance               |
| MGR2           | Manager Reliability Engineering       | Strategic            | Operational readiness and process standardization                   |
| SUP1           | Superintendent Maintenance Planning   | Tactical             | Workflow implementation and system testing coordination             |
| SUP2           | Superintendent Asset Strategy         | Tactical             | Business process readiness and data integration                     |
| SP1            | Senior Planner                        | Tactical             | Maintenance planning and workflow adaptation                        |
| SP2            | Senior Planner                        | Tactical             | Participation in SIT and UAT activities                             |
| PLN1           | Planner                               | Tactical             | Adaptation to the new workflow and operational system usage         |
| SCH1           | Scheduler                             | Tactical             | SAP S/4HANA-based maintenance scheduling                            |
| ASP1           | Area Supervisor                       | Operational          | End-user of the SAP system in daily maintenance activities          |
| ASP2           | Area Supervisor                       | Operational          | SAP Fiori usage and workflow adaptation evaluation                  |
| TECH1          | Maintenance Personnel                 | Operational          | Execution of maintenance activities using the new system            |
| TECH2          | Maintenance Personnel                 | Operational          | Adaptation to mandatory notification and revised workflows          |

Source: Authors' survey data, 2026.

The diversity of informants across organizational levels enabled this study to identify variations in readiness perceptions between strategic decision-makers, implementation coordinators, and operational end-users. Such variations provided a more comprehensive understanding of organizational readiness in the context of SAP S/4HANA migration.

### 2. Organizational Readiness Toward SAP S/4HANA Migration

The findings indicate that organizational readiness toward SAP ECC migration to SAP S/4HANA was generally perceived positively, although several challenges remained, particularly concerning operational workflow adaptation and post-implementation reinforcement. Across organizational levels, the migration was not perceived merely as a technological transition, but rather as a broader transformation of work processes affecting coordination patterns, workflow structures, and day-to-day maintenance activities.

At the strategic level, the migration was viewed as an organizational necessity driven by the end of SAP ECC support and the increasing demand for enterprise-wide digital integration. One strategic-level informant stated:

*“The system needs to be upgraded and further developed to support the company’s operational targets. This transformation is essential because without change, organizational plans and performance targets could be significantly hindered.”* (VP1, Vice President Operations Maintenance)

This statement demonstrates that digital transformation was perceived not only as a technological initiative, but also as a critical component of long-term business sustainability and organizational competitiveness. Awareness regarding the urgency of migration was also influenced by concerns over operational risks if the company failed to complete the transition before the SAP ECC support deadline.

At the operational level, however, the migration was more frequently interpreted in relation to its direct impact on maintenance workflows and day-to-day operational routines. Several operational users perceived SAP S/4HANA as more flexible and user-friendly than SAP ECC, particularly due to its web-based interface and accessibility across devices.

*“SAP HANA makes work easier because its web-based interface can be accessed through mobile devices.”* (ASP2, Area Supervisor)

Despite these positive perceptions, several users also viewed the new system as increasing administrative complexity. One of the most frequently discussed changes involved the introduction of mandatory notifications and a more formalized nine-phase workflow structure compared to the previous system.

*“The nine-phase workflow is now explicitly documented and standardized, whereas previously several procedures were not formally recorded.”* (SM1, Senior Manager Maintenance Planning)

These findings suggest that organizational readiness was not distributed uniformly across organizational levels. Strategic-level informants demonstrated stronger awareness regarding the urgency of digital transformation and the company’s strategic direction, whereas operational users were more concerned with the practical implications of workflow adjustments and administrative changes within their daily responsibilities.

### 3. Theme Development from Thematic Analysis

Data analysis using thematic analysis and the integration of the ADKAR framework with Critical Success Factors (CSF) resulted in several recurring themes emerging consistently across interviews, observations, and project documentation.

**Table 2. Theme Development from Thematic Analysis**

| Theme                            | Representative Meaning                                         | Supporting Evidence                                              |
|----------------------------------|----------------------------------------------------------------|------------------------------------------------------------------|
| Awareness of system obsolescence | Informants recognized that SAP ECC could no longer support the | “SAP ECC will eventually become obsolete and must be replaced by |

|                                                 |                                                                                      |                                                                                                                                     |
|-------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                                                 | organization's long-term operational requirements                                    | S/4HANA." (MGR1, Manager Asset Management)                                                                                          |
| Digital transformation as a strategic necessity | Migration was perceived as part of organizational sustainability and competitiveness | "The system needs to be upgraded to support the company's future operational targets." (VP1, Vice President Operations Maintenance) |
| Perceived operational flexibility               | SAP S/4HANA was perceived as more flexible and modern than SAP ECC                   | "The system can be accessed through mobile devices." (ASP2, Area Supervisor)                                                        |
| Increased workflow discipline                   | The new system encouraged more structured and standardized processes                 | "The nine-phase workflow is now explicitly documented." (SM1, Senior Manager Maintenance Planning)                                  |
| Concerns regarding process complexity           | New workflows were perceived as increasing administrative burden                     | Mandatory notifications and additional workflow stages were considered more complex                                                 |
| User involvement improves acceptance            | Participation in SIT and UAT enhanced user adaptation                                | Users actively involved in testing demonstrated stronger readiness                                                                  |
| Management support as an organizational driver  | Leadership involvement strengthened transformation legitimacy                        | Strategic-level informants emphasized direct managerial support                                                                     |

Source: Authors' survey data, 2026.

The identified themes demonstrate that organizational readiness was shaped through the interaction between individual readiness and organizational enabling factors. Perceived usefulness of the new system emerged as an important factor supporting acceptance, whereas workflow complexity became one of the primary concerns among operational users.

#### 4. Awareness Readiness: Understanding the Urgency of Digital Transformation

The findings revealed that most informants demonstrated relatively strong awareness regarding the urgency of SAP ECC migration to SAP S/4HANA. This awareness was primarily influenced by concerns regarding the end of SAP ECC support, the increasing demand for digital integration, and the need to improve operational efficiency in asset management. One strategic-level informant explained:

*"SAP ECC will eventually become obsolete and must be replaced by S/4HANA." (MGR1, Manager Asset Management)*

This finding indicates that awareness was developed not only through formal organizational communication, but also through users' direct experiences with the limitations of the previous system. Operational users particularly emphasized the advantages of SAP S/4HANA in terms of flexibility, accessibility, and user experience.

*"SAP HANA makes work easier because its web-based interface can be accessed through mobile devices." (ASP2, Area Supervisor)*

The findings suggest that perceived practical benefits contributed significantly to users' initial acceptance of the migration initiative. Nevertheless, awareness levels remained uneven across organizational levels. Strategic-level informants generally understood the migration within the broader context of long-term organizational transformation, while operational users tended to interpret the migration primarily as a procedural and administrative change. These differences indicate that organizational communication regarding digital transformation had not yet fully produced a shared understanding across all organizational groups.

#### 5. Desire Readiness: Motivation and Resistance Toward Migration

The findings further indicate that users' willingness to support SAP S/4HANA migration was influenced by their perceptions of system benefits, previous experiences using SAP ECC, and concerns regarding operational workflow adjustments.

Strategic- and tactical-level informants generally perceived the migration as an opportunity to improve data integration, operational efficiency, and maintenance process standardization. In contrast, several operational users expressed concerns regarding increased workflow complexity and the need to adapt to revised procedures. One informant explained:

*"The nine-phase workflow is now explicitly documented and standardized, whereas previously several procedures were not formally recorded."* (SM1, Senior Manager Maintenance Planning)

This statement demonstrates that the migration introduced not only technological changes, but also a more formalized and disciplined workflow structure. While some users perceived this change positively as an improvement in process control and accountability, others viewed it as increasing administrative burden and extending operational procedures.

The findings further suggest that users' willingness to support organizational change was strongly influenced by how the new system affected their daily responsibilities. In this context, user participation in training sessions, System Integration Testing (SIT), and User Acceptance Testing (UAT) played an important role in strengthening users' sense of ownership toward the migration process.

## 6. Cross-Level Organizational Readiness Based on ADKAR Dimensions

The analysis also identified differences in readiness patterns across organizational levels. Strategic-level informants demonstrated stronger awareness and desire due to their broader understanding of the company's transformation agenda, whereas operational users were more focused on practical workflow adaptation within maintenance activities.

**Table 3. Cross-Level Organizational Readiness Based on ADKAR Dimensions**

| ADKAR Dimension | Strategic Level                                                                | Tactical Level                                    | Operational Level                                 |
|-----------------|--------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| Awareness       | Strong understanding of business urgency and digital transformation objectives | Understand implementation implications            | Primarily focused on operational workflow changes |
| Desire          | Strong commitment toward organizational transformation                         | Supportive with some implementation concerns      | Mixed responses regarding process complexity      |
| Knowledge       | Strong conceptual understanding of migration objectives                        | Technical understanding developed through testing | Focused on practical adaptation                   |
| Ability         | Confident regarding organizational transition capability                       | Improved through SIT and UAT involvement          | Some users still required operational assistance  |
| Reinforcement   | Focused on sustainability and governance                                       | Emphasized coordination and support               | Expected ongoing mentoring after go-live          |

Source: Authors' survey data, 2026.

The findings indicate that organizational readiness was influenced by users' organizational position and operational experiences. The closer users were to strategic decision-making processes, the stronger their understanding of the urgency and objectives of digital transformation. Conversely, operational users were more sensitive to workflow adjustments and the practical implications of implementation on daily operational activities.

## 7. Critical Success Factors (CSF) as Organizational Enablers and Barriers

In addition to individual readiness, the findings also demonstrate that the success of SAP S/4HANA migration was influenced by several Critical Success Factors (CSF) functioning as organizational enablers and barriers.

**Table 4. Critical Success Factors (CSF) as Organizational Enablers and Barriers**

| <b>Critical Success Factor (CSF)</b> | <b>Role in Migration</b>    | <b>Evidence from Findings</b>                                                      |
|--------------------------------------|-----------------------------|------------------------------------------------------------------------------------|
| Top management support               | Enabler                     | Active leadership involvement in communicating transformation urgency              |
| Effective communication              | Enabler and partial barrier | Awareness improved, but understanding remained uneven across organizational levels |
| User involvement                     | Enabler                     | SIT and UAT participation improved adaptation readiness                            |
| Training and education               | Enabler                     | Supported users' understanding of revised workflows                                |
| Workflow complexity                  | Barrier                     | Mandatory notifications increased perceived administrative complexity              |
| Resistance to change                 | Barrier                     | Some users expressed concerns regarding workflow adjustments                       |
| Technological accessibility          | Enabler                     | SAP Fiori was perceived as more flexible and modern                                |

Source: Authors' survey data, 2026.

These findings indicate that organizational readiness in ERP migration was shaped not only by individual adaptation capability, but also by the organization's ability to establish effective communication, encourage user participation, and provide sustainable implementation support. Management commitment and user involvement emerged as the most influential factors supporting acceptance of digital transformation, whereas workflow complexity became one of the primary barriers experienced by operational users.

## 5. Discussion

The findings demonstrate that organizational readiness for SAP S/4HANA migration is shaped not only by technological preparedness, but also by the interaction between individual readiness, organizational support mechanisms, and operational work dynamics. The migration process was perceived as a multidimensional organizational transformation affecting workflow structures, coordination mechanisms, and operational routines across different organizational levels. These findings reinforce previous studies arguing that ERP transformation success is determined not solely by technical infrastructure, but also by organizational and behavioral dimensions influencing change adaptation processes (Salas, 2023; Khaw et al., 2023; Wynn et al., 2024).

Themes related to strategic urgency predominantly emerged from strategic-level informants, whereas concerns regarding workflow complexity and administrative burden were more frequently expressed by operational users. This pattern indicates that organizational readiness evolved differently across organizational levels depending on users' responsibilities, operational exposure, and involvement in transformation processes. The findings support Weiner's (2009) argument that organizational readiness reflects collective commitment and shared belief regarding organizational capability to implement change effectively. In the present study, such collective readiness was not equally distributed across all organizational groups, indicating the existence of readiness asymmetry during the migration preparation stage.

The findings further reveal that awareness regarding migration urgency was relatively strong, particularly among strategic-level informants. Awareness was mainly influenced by concerns regarding the discontinuation of SAP ECC support, increasing operational complexity, and organizational demands for integrated digital operations. One strategic-level informant stated:

*“The system needs to be upgraded and further developed to support the company’s operational targets. This transformation is essential because without change, organizational plans and performance targets could be significantly hindered.”*(VP1, Vice President Operations Maintenance)

This finding aligns with Balluck et al. (2020), who emphasized that awareness in organizational change is strongly associated with employees’ understanding of the rationale, urgency, and long-term implications of transformation initiatives. The findings also support Armenakis et al. (1993), who argued that readiness formation is influenced by organizational communication processes that shape employees’ beliefs regarding the necessity and appropriateness of change.

However, awareness was not interpreted uniformly across organizational levels. Strategic-level informants generally framed migration as part of long-term organizational sustainability and competitiveness, whereas operational users interpreted migration more pragmatically through its implications for workflow execution and administrative procedures. This difference suggests that communication regarding digital transformation had not yet fully translated strategic narratives into operationally meaningful understanding among end-users. Similar findings were reported by Wynn et al. (2024), who emphasized that communication quality and employee involvement increasingly determine ERP transformation success in contemporary digital organizations.

In terms of desire readiness, willingness to support migration was strongly influenced by perceived usefulness and operational implications of the new system. Operational users generally appreciated SAP S/4HANA because of its accessibility, flexibility, and improved user interface through SAP Fiori integration. As one operational informant explained:

*“SAP HANA makes work easier because its web-based interface can be accessed through mobile devices.”*(ASP2, Area Supervisor)

This finding supports previous literature emphasizing that ERP modernization improves operational responsiveness, data accessibility, and workflow integration through real-time digital platforms (Pokala, 2023; Kulkarni Babasaheb Ambedkar & Kulkarni, 2024). In asset-intensive industries such as mining, accessibility and operational responsiveness are particularly important because maintenance activities require rapid coordination across geographically dispersed operational environments.

Nevertheless, resistance emerged when users perceived that the revised workflow structure increased procedural rigidity and administrative burden. Mandatory notifications and the implementation of a formalized nine-phase workflow structure became one of the most frequently discussed concerns among operational users. One informant stated:

*“The nine-phase workflow is now explicitly documented and standardized, whereas previously several procedures were not formally recorded.”*(SM1, Senior Manager Maintenance Planning)

These findings are consistent with previous ERP migration studies suggesting that resistance frequently emerges not because users reject technology itself, but because digital transformation alters established routines, organizational control structures, and operational practices (Khaw et al., 2023; Rajnoha et al., 2014; Mahraz et al., 2024). Kumar Khatri et al. (2023) similarly emphasized that SAP S/4HANA migration introduces challenges related to process alignment, legacy adaptation, and workforce readiness. In the present study, workflow restructuring was simultaneously perceived as an opportunity for process standardization and as a source of operational adjustment pressure.

The findings further indicate that organizational readiness should not be interpreted as a binary condition of acceptance or resistance. Instead, readiness emerged as a dynamic

negotiation process between organizational expectations, operational realities, and users' adaptation capabilities. This interpretation strengthens the argument proposed by Weiner (2009) that readiness is socially constructed through interactions between organizational commitment and perceived implementation capability.

Another important finding concerns the role of user involvement during System Integration Testing (SIT) and User Acceptance Testing (UAT). Informants who actively participated in testing and training activities demonstrated greater confidence and adaptation capability regarding the new system. This finding is consistent with previous ERP implementation studies highlighting user participation as one of the most important determinants of implementation success because it improves psychological ownership, reduces uncertainty, and increases system familiarity (Aloini et al., 2007; Salas, 2023; Sayed et al., 2024).

Cross-level readiness differences also emerged as a central finding of this study. Strategic-level informants generally demonstrated stronger awareness, desire, and confidence regarding organizational transition capability, whereas operational users tended to evaluate migration based on its direct impact on work execution and maintenance workflows. This finding demonstrates that organizational readiness is heavily influenced by positional experiences within organizational hierarchies. Employees involved in strategic planning prioritize long-term organizational sustainability and competitiveness, while operational personnel prioritize procedural practicality and operational continuity.

The integration of the ADKAR framework with Critical Success Factors (CSF) further demonstrates that individual readiness dimensions are closely interconnected with organizational enabling mechanisms such as leadership commitment, communication quality, user involvement, training effectiveness, and reinforcement mechanisms. This finding strengthens previous studies emphasizing that ERP transformation success depends on the organization's capability to simultaneously manage technological, behavioral, and organizational dimensions of change (Salas, 2023; Wynn et al., 2024; Pereira et al., 2025).

Among the identified Critical Success Factors, top management support emerged as one of the most influential organizational enablers. Active managerial involvement strengthened organizational legitimacy toward the migration initiative and reinforced employees' perception that the transformation was strategically necessary. This finding supports prior ERP implementation literature emphasizing that leadership commitment plays a central role in reducing resistance and sustaining organizational alignment during digital transformation processes (Aloini et al., 2007; Rajnoha et al., 2014; Mahraz et al., 2024).

However, the findings also indicate that workflow complexity remained one of the primary organizational barriers affecting operational readiness. While standardized workflows improved procedural discipline, traceability, and governance quality, they also increased perceptions of administrative rigidity among operational users. Similar tensions between process standardization and operational flexibility have been widely discussed within ERP transformation literature, particularly in highly operational and asset-intensive industries where procedural efficiency directly influences operational continuity (Kumar Khatri et al., 2023; Mustofa et al., 2025).

Overall, the findings suggest that successful SAP S/4HANA migration depends not only on technological preparation, but also on the organization's ability to manage change dynamics across multiple organizational levels. Continuous communication, differentiated change management approaches, user participation, adaptive learning mechanisms, and sustained post-implementation support therefore become essential components in strengthening organizational readiness during ERP transformation initiatives. These findings contribute theoretically by reinforcing the relevance of integrating ADKAR and Critical Success Factors

(CSF) frameworks in understanding ERP migration readiness within asset-intensive industries undergoing large-scale digital transformation.

## 6. Practical Implications

This study provides several practical implications for organizations undertaking SAP S/4HANA migration, particularly within asset-intensive industries such as mining. First, organizational readiness should be approached as a multidimensional process involving technological preparedness, behavioral adaptation, communication management, and organizational support mechanisms. ERP migration initiatives therefore require integrated change management strategies addressing both technical and human dimensions simultaneously (Weiner, 2009; Salas, 2023).

Second, the findings highlight the importance of differentiated communication strategies across organizational levels. Strategic narratives regarding digital transformation may not automatically resonate with operational users whose concerns are primarily related to workflow adjustments and operational execution. Organizations should therefore contextualize transformation communication according to users' functional roles and operational realities. This finding supports Wynn et al. (2024), who emphasized that communication quality increasingly determines transformation success in modern ERP environments.

Third, user involvement during implementation stages such as SIT and UAT should be strengthened to improve familiarity, reduce uncertainty, and enhance psychological ownership toward the new system. Active participation enables users to better understand workflow changes and contributes to smoother adaptation during system transition. This implication is consistent with prior ERP implementation studies emphasizing the importance of employee participation and experiential learning processes in reducing resistance toward organizational transformation (Aloini et al., 2007; Sayed et al., 2024).

Fourth, organizations should pay greater attention to post-implementation reinforcement mechanisms. The findings indicate that operational users continue to require mentoring, troubleshooting assistance, and continuous support even after implementation phases begin. Sustainable reinforcement mechanisms are therefore essential to maintain long-term system acceptance and organizational adaptation. This finding also strengthens the reinforcement dimension proposed within the ADKAR framework, which emphasizes the importance of sustaining behavioral change after implementation (Balluck et al., 2020).

Finally, organizations implementing SAP S/4HANA should carefully balance process standardization with operational flexibility. Although standardized workflows improve governance quality and process traceability, excessive procedural rigidity may increase perceptions of administrative burden among operational users. Consequently, organizations need adaptive implementation strategies capable of maintaining governance objectives without reducing operational responsiveness in highly dynamic industrial environments.

## E. CONCLUSION AND RECOMMENDATIONS

This study demonstrates that organizational readiness for SAP ECC to SAP S/4HANA migration is influenced not only by technological preparedness, but also by the interaction between individual readiness, organizational support, communication effectiveness, user involvement, and the ability to adapt to operational workflow changes. Through the integration of the ADKAR framework and Critical Success Factors (CSF), the findings reveal that readiness evolves differently across organizational levels. Strategic-level informants demonstrated stronger awareness and commitment toward the urgency of digital transformation, whereas operational users were more concerned with workflow implications, procedural complexity, and increasing administrative burden.

The findings further indicate that workflow complexity emerged as one of the primary organizational barriers during the migration process. The implementation of mandatory notifications and a formalized nine-phase workflow structure improved procedural discipline and traceability, yet simultaneously generated concerns regarding procedural rigidity among operational users. Conversely, top management support, user participation during System Integration Testing (SIT) and User Acceptance Testing (UAT), and effective training programs functioned as important organizational enablers that strengthened user acceptance and adaptation capability toward the new system.

Theoretically, this study contributes to the ERP transformation literature by demonstrating the relevance of integrating the ADKAR framework and Critical Success Factors (CSF) in understanding organizational readiness within asset-intensive industries. The findings also reinforce the argument that organizational readiness is not a homogeneous organizational condition, but rather a dynamic process shaped by positional experiences, organizational roles, and user involvement throughout digital transformation initiatives.

From a practical perspective, the findings emphasize the importance of adaptive change management strategies, contextualized communication across organizational levels, continuous user involvement during implementation stages, sustainable training programs, and post-implementation reinforcement mechanisms to support long-term organizational adaptation.

This study is subject to several limitations. The research employed a single case study approach within one operational division in the mining industry and focused primarily on the pre-implementation phase. Therefore, future studies are recommended to conduct longitudinal post-implementation investigations, expand the industrial context, and develop comparative or mixed-method approaches to obtain a more comprehensive understanding of organizational readiness in large-scale ERP transformation initiatives.

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