

# The Implementation of Information Technology in Enhancing the Effectiveness of Human Resource Management at DISMAN 2 Mandau

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## Abstract

Digital transformation has compelled educational institutions to realign their human resource management (HRM) strategies with the rapid advancement of information technology (IT). This study aims to comprehensively explore the implementation of IT in enhancing the effectiveness of human resource management at SMAN 2 Mandau. A descriptive qualitative approach was employed, with data collected through in-depth interviews, direct observation, and documentation. The informants consisted of the principal, vice principals, teachers, administrative staff, and school operators. The findings indicate that the implementation of IT remains partial and has not yet been fully integrated into the overall HR management system. Major obstacles include the limited digital literacy of educators and administrative personnel, the suboptimal utilization of digital management applications such as e-office systems, and insufficient managerial support in strengthening the technological ecosystem. These challenges hinder the optimal integration of digital tools into daily administrative and strategic HR processes. Despite these limitations, the use of IT demonstrates significant potential in supporting operational efficiency, enhancing accountability, streamlining workflow processes, and fostering an adaptive and responsive organizational culture. The study highlights that digital systems can contribute to more transparent personnel management, improved data accuracy, and more efficient communication among stakeholders. The findings underscore the importance of synergy among human resource competency development, adequate technological infrastructure, and strong institutional commitment as essential prerequisites for successful digital transformation. This research is expected to serve as a strategic reference for schools in formulating technology-based HR management policies aimed at improving institutional quality and competitiveness in the evolving educational landscape.

**Keywords** : Information Technology, Human Resource Management, Digital Transformation, Digital Literacy, School Governance

## I. Introduction

The digital revolution has generated profound transformations across multiple sectors of society, including education. The increasing demand for educational systems that are adaptive and responsive to technological advancement has become a pressing necessity, particularly in the domain of human resource management (HRM). As formal educational institutions, schools are expected to strategically integrate information technology (IT) into their managerial frameworks in order to enhance efficiency, effectiveness, transparency, and accountability in the management of human resources, which constitute a central pillar of educational success.

Contemporary human resource management extends far beyond administrative routines and clerical functions. It has evolved into a strategic organizational process aimed at aligning human capital with institutional goals and long-term development agendas. Within the educational context, HRM encompasses workforce planning, recruitment and selection of educators and administrative staff, placement and assignment, professional development, performance appraisal, career progression, and, when necessary, separation processes. Each of these functions requires systematic coordination and reliable data management. The structured and systematic utilization of information technology has the potential to significantly enhance the effectiveness, accuracy, and responsiveness of these processes.

Information technology offers a wide range of digital platforms and school management information systems (SMIS) that facilitate data-driven decision-making. Applications such as e-office systems, digital attendance monitoring, electronic performance management systems, integrated reporting platforms, and centralized personnel databases represent tangible manifestations of IT integration in HR management. When implemented comprehensively, these systems can streamline administrative workflows, reduce redundancy, minimize human error, and provide real-time access to critical organizational data. Consequently, IT functions not merely as a supporting tool, but as a strategic enabler that strengthens institutional governance and organizational performance.

Nevertheless, the implementation of IT in HR management within educational institutions is not without challenges. Disparities in digital literacy among educators and administrative personnel, limited managerial engagement, resistance to organizational change, and inadequate technological infrastructure remain common barriers in the process of digital transformation. These constraints often result in partial or fragmented implementation, thereby limiting the transformative potential of technological innovation. Such conditions underscore the necessity of empirical investigation to understand contextual realities and to formulate solutions that are both strategic and practically applicable.

SMA Negeri 2 Mandau, as one of the prominent public secondary schools in Bengkalis Regency, has initiated efforts to adopt technological tools to support administrative and managerial activities. Various technological facilities and systems have been introduced to modernize school operations. However, preliminary observations and interviews with key stakeholders indicate that the utilization of IT systems particularly e-office platforms and digital management applications has not yet reached optimal integration. The continued reliance on manual procedures and the limited provision of structured technology-based training for educators and administrative staff reflect an ongoing transitional phase rather than a fully realized digital ecosystem.

These limitations potentially hinder operational efficiency and may negatively affect the quality of managerial decision-making, administrative services, and the integration of human resource data. In many instances, fragmented data systems reduce the capacity for strategic planning and evidence-based policy formulation. Therefore, the implementation of IT in HR management must be conceptualized not merely as a technical adjustment, but as a comprehensive strategic transformation. Such transformation necessitates synergy among human resource capacity development, institutional policy reinforcement, technological infrastructure enhancement, and strong organizational commitment.

Previous studies indicate that the success of IT implementation in educational management is strongly influenced by individual readiness, organizational culture, leadership commitment, and institutional support mechanisms. Digital leadership, in particular, plays a crucial role in fostering an innovation-oriented environment and encouraging stakeholder participation in technological adoption. Consequently, analyzing the implementation

of IT at SMAN 2 Mandau requires a holistic approach that integrates technological, human, managerial, and cultural dimensions.

This study aims to describe and critically analyze the implementation of information technology in enhancing the effectiveness of human resource management at SMAN 2 Mandau. The primary focus includes examining the extent to which IT is utilized in HR managerial activities, identifying obstacles encountered during the implementation process, and exploring strategic measures that may strengthen and sustain the digital transformation of HR systems within the institution.

The findings of this research are expected to contribute conceptually to the advancement of technology-based educational management theory and practically to provide strategic guidance for educational institutions seeking to develop more effective, efficient, and adaptive HR management systems. Furthermore, this study aspires to enrich the academic discourse on digital transformation in Indonesian educational governance, particularly in the context of strengthening institutional competitiveness and sustainability in the digital era.

## 2. Literature Review and Hypotheses Development

### 2.1 Information Technology in Human Resource Management

The rapid advancement of information technology (IT) has significantly transformed organizational management practices, including human resource management (HRM). Technology is no longer positioned merely as a supporting administrative tool but has evolved into a strategic driver that shapes organizational performance and competitiveness. Stone et al. (2015) emphasize that technological development reshapes HR functions, ranging from recruitment and selection to performance management and employee development. In the educational context, IT integration enables schools to transition from manual administrative systems toward data-driven and digitally structured management processes.

According to Peppard and Ward (2016), strategic information systems management requires alignment between organizational objectives and technological infrastructure to generate sustainable value. When IT is effectively aligned with HR strategies, it enhances operational efficiency, improves information accuracy, and strengthens decision-making quality. Mustafa (2020) and Wawan (2024) further argue that technology-based HRM enhances organizational responsiveness and supports institutional modernization in the era of digital transformation.

Within educational institutions, HRM encompasses workforce planning, performance appraisal, professional development, attendance monitoring, and personnel data administration (Nuraeni, 2019). The integration of digital platforms such as e-office systems, electronic performance management (e-Kinerja), and digital attendance systems represents a concrete manifestation of IT-driven HRM reform. Such integration facilitates transparency, accountability, and streamlined administrative processes.

Based on this theoretical foundation, the following hypothesis is formulated:

H1: Information technology implementation positively influences the effectiveness of human resource management.

### 2.2 Effectiveness of Human Resource Management

Organizational effectiveness refers to the extent to which an institution achieves its objectives efficiently and productively (Steers, 1985). In HRM, effectiveness is reflected in improved productivity, optimized workforce performance, transparent reporting systems, and efficient administrative processes. Ravianto (2014) highlights that productivity measurement is closely linked to systematic management and structured operational processes.

In the educational sector, effective HRM contributes to improved teacher performance, better coordination among staff, and enhanced service quality. Lestari et al. (2022) assert that effective human resource management significantly improves employee performance outcomes. Therefore, IT-based systems that support data accuracy, reporting speed, and workflow integration are expected to strengthen HR effectiveness in schools.

The DeLone and McLean (2003) Information Systems Success Model explains that system quality, information quality, and service quality directly influence user satisfaction and organizational impact. When digital HR systems provide accurate, reliable, and accessible information, they enhance managerial control and decision-making efficiency. Thus, the second hypothesis is proposed:

H2: The quality of information systems positively affects the effectiveness of human resource management.

### 2.3 Digital Literacy and Technology Acceptance

Despite the potential benefits of IT implementation, successful adoption depends significantly on users' readiness and digital competence. Budhwar et al. (2023) highlight that in the age of advanced digital technologies,

organizations must develop digital skills to remain competitive. Similarly, Kelvin (2024) notes that digital transformation presents both challenges and opportunities for human resource development.

The Technology Acceptance Model (TAM) suggests that perceived usefulness and perceived ease of use determine technology adoption. When educators and administrative staff lack digital literacy or perceive digital systems as complex, resistance to change is likely to occur. Heeks (2002) also observes that many information system initiatives fail in developing contexts due to inadequate human readiness and insufficient institutional adaptation. Therefore, digital literacy becomes a moderating or enabling factor in IT-driven HRM effectiveness. Based on this perspective, the following hypothesis is formulated:

H3: Digital literacy positively influences the effectiveness of information technology implementation in human resource management.

#### 2.4 Leadership and Organizational Support in Digital Transformation

Leadership commitment plays a crucial role in determining the success of digital transformation. Robbins and Judge (2013) argue that organizational behavior and cultural readiness significantly affect change implementation. Sonmez Cakir and Adiguzel (2020) further emphasize that effective leadership fosters knowledge sharing and organizational learning, which are essential for technological adaptation.

In the context of IT governance, frameworks such as COBIT 5 stress the importance of structured acquisition and implementation processes to ensure technology alignment with organizational objectives. Without managerial support, adequate budgeting, and clear digital policies, IT initiatives tend to remain fragmented and unsustainable.

Stone et al. (2015) underline that technology adoption in HRM requires not only technical infrastructure but also leadership commitment and organizational alignment. Consequently, managerial support functions as a critical determinant in maximizing the effectiveness of IT-based HR systems. This leads to the following hypothesis:

H4: Managerial support positively influences the successful implementation of information technology in human resource management.

### 3. Method

This study adopts a descriptive qualitative approach to obtain a comprehensive understanding of the phenomenon under investigation. Data were collected through direct observation, in-depth interviews, and documentation review. Observation was conducted to capture actual practices and contextual dynamics within the research setting. In-depth interviews enabled the researcher to explore participants' perspectives, experiences, and insights in greater depth, while documentation analysis provided supporting evidence drawn from institutional records and relevant administrative materials. Data analysis was carried out using the interactive model developed by Miles and Huberman, which consists of three interconnected stages: data reduction, data display, and conclusion drawing/verification. Data reduction involved selecting, focusing, and organizing raw information into meaningful categories aligned with the research objectives. Data display was conducted through systematic presentation in narrative and thematic forms to facilitate interpretation. The final stage involved drawing conclusions and continuously verifying findings to ensure analytical consistency and coherence. To ensure the validity and credibility of the findings, the study employed triangulation and prolonged observation techniques. Triangulation was used to cross-check data from multiple sources and methods, thereby enhancing the reliability and trustworthiness of the results. Prolonged observation allowed for deeper contextual understanding and helped ensure that the findings accurately reflected the research setting, thereby strengthening the objectivity and authenticity of the study.

### 4. Result and Discussion

The findings of this study indicate that the implementation of information technology (IT) in human resource management (HRM) at SMAN 2 Mandau remains partial and has not yet been comprehensively integrated into the institutional management system. Although the school has introduced various digital platforms such as e-Office, Dapodik (Data Pokok Pendidikan), fingerprint-based digital attendance, e-Kinerja systems, and electronic document archiving their utilization has not reached an optimal or systematic level across all organizational units. The availability of technological infrastructure reflects an institutional awareness of digital transformation; however, its operational application demonstrates a transitional stage rather than a fully institutionalized digital ecosystem.

Data derived from interviews and observations reveal that many teachers and administrative staff members have not fully mastered or consistently applied the e-Office system in their daily administrative activities. Manual procedures remain dominant, particularly in report preparation and data management, where

Microsoft Word and Excel are still frequently used independently of centralized digital platforms. This persistence of conventional practices indicates that technological adoption has not yet transformed organizational routines into integrated digital workflows.

A significant contributing factor is the limited level of digital literacy among both educators and administrative personnel. Several informants acknowledged difficulties in navigating digital systems, particularly those whose academic and professional backgrounds did not emphasize information technology competencies. The absence of structured and continuous IT training programs further constrains the development of digital capabilities. In many instances, technological knowledge is acquired informally through peer assistance rather than through systematic institutional capacity-building initiatives. Such conditions suggest that technological implementation has not been accompanied by a strategic human resource development framework.

These findings resonate with the Technology Acceptance Model (TAM), which emphasizes that perceived usefulness and perceived ease of use are central determinants of technology adoption. When digital systems are perceived as complex, insufficiently user-friendly, or offering limited immediate benefits compared to established manual methods, resistance or low engagement becomes more probable. Within SMAN 2 Mandau, the limited perception of ease and practicality contributes to suboptimal utilization, despite the availability of digital infrastructure.

Managerial and leadership factors also play a decisive role in shaping the effectiveness of IT implementation. The study identifies limited strategic commitment in terms of formal policy development, budget allocation, and comprehensive planning for digital transformation. While digital tools have been introduced, the absence of standardized operating procedures (SOPs) and a clearly articulated digital roadmap results in fragmented and sporadic application. Without institutional mandates that define expectations, monitor compliance, and integrate systems across departments, digital platforms remain supplementary tools rather than core management mechanisms.

From a socio-technical systems perspective, successful digital transformation requires alignment between technological systems, human competencies, and organizational culture. The situation at SMAN 2 Mandau illustrates an imbalance in this alignment: technological resources are present, yet human readiness and institutional governance structures have not been sufficiently synchronized to maximize their potential. The lack of consistent leadership initiatives to promote digital culture, encourage innovation, and facilitate ongoing professional development further constrains systemic integration.

Despite these challenges, the findings also demonstrate measurable benefits when IT systems are applied consistently. The utilization of Dapodik for personnel data management and attendance reporting has accelerated reporting processes, enhanced data accuracy, and simplified coordination with the local education authority. School operators reported that digital reporting reduces administrative redundancy and supports more efficient communication with external stakeholders, although technical issues such as unstable internet connectivity occasionally disrupt operations.

Similarly, the implementation of fingerprint-based attendance systems and e-Kinerja platforms has strengthened accountability and transparency in monitoring staff performance. These systems enable real-time recording of attendance and performance indicators, thereby improving supervisory control and minimizing discrepancies in data reporting. In line with the DeLone and McLean Information Systems Success Model (2003), improvements in system quality and information quality contribute positively to individual performance and organizational effectiveness.

However, the coexistence of digital and manual processes limits the broader institutional impact of these systems. Fragmented integration creates inefficiencies and reduces the transformative potential of technological innovation. For digitalization to generate sustainable improvements in HRM effectiveness, IT must be embedded within a unified and coherent management framework that integrates recruitment, performance appraisal, professional development, attendance management, and personnel data administration into a comprehensive system.

Strengthening the implementation of IT at SMAN 2 Mandau therefore requires a holistic and sustained strategic approach. This includes the formulation of clear institutional digital policies, the establishment of long-term digital transformation roadmaps, continuous professional development programs to enhance digital literacy, improved technological infrastructure, and proactive digital leadership that fosters an adaptive organizational culture. Through coordinated efforts that integrate technological, human, and managerial dimensions, IT can function as a strategic instrument for enhancing the effectiveness, efficiency, and competitiveness of human resource management in the era of digital transformation.

## 5. Conclusion

This study demonstrates that the implementation of information technology (IT) at SMAN 2 Mandau contributes positively to the effectiveness of human resource management (HRM), particularly in terms of operational efficiency, data transparency, and reporting accuracy. Digital systems such as fingerprint-based attendance, e-Kinerja platforms, and electronic personnel data management have been utilized to support faster, more structured, and more accountable administrative processes. These technological applications facilitate streamlined workflows, reduce manual redundancies, and enhance the reliability of institutional data.

However, the utilization of these technologies has not yet reached its full potential. Limitations in digital literacy among educators and administrative staff remain significant barriers to optimal adoption. In addition, the absence of comprehensive institutional policies specifically regulating the integration of IT into HRM systems has resulted in fragmented and inconsistent implementation. Without formal guidelines and strategic alignment, digital platforms tend to function as supplementary tools rather than as integral components of organizational management.

Another critical constraint affecting the effectiveness of IT implementation is the limited managerial support in the form of sustained training programs, structured technical assistance, and equitable provision of technological infrastructure. The lack of continuous professional development initiatives reduces staff confidence and competence in utilizing digital systems effectively. Moreover, inconsistencies in infrastructure availability such as internet stability and hardware adequacy further restrict the seamless integration of digital processes into daily administrative activities.

To enhance the effectiveness of IT in HRM, strategic efforts must prioritize the strengthening of human resource capacity through systematic and continuous digital literacy training. Institutional digital policies should be clearly formulated to regulate procedures, standardize system usage, and establish accountability mechanisms. Additionally, the development of an integrated information system that consolidates performance management, attendance monitoring, and personnel data into a unified platform is essential for ensuring coherence and sustainability.

Through a comprehensive and coordinated approach that integrates human, technological, and organizational dimensions, the school can foster a human resource management system that is adaptive, innovative, and aligned with the demands of digital transformation. Such alignment is essential for enhancing institutional competitiveness and ensuring long-term organizational effectiveness in the evolving educational landscape.

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