Integrating Human Resource Information System into Educational Institutions: A Framework for Digital Culture Adaptation

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Abstract:

The application of technology in human resource management in the education sector aims to improve efficiency, transparency, and accountability in managing school personnel data. This study aims to analyze the application of technology in human resource management in the education sector, focusing on using the Personnel Management Information System and the Human Resource Information System to improve efficiency, transparency, and accountability in managing personnel data in schools. This study uses a qualitative design with a case study approach. Data were collected through interviews, observations, and document analysis, then analyzed using qualitative data analysis techniques through three stages: data reduction, data presentation, and data verification. The study results indicate that applying technology through the Personnel Management Information System and the Human Resource Information System can improve efficiency, transparency, and professionalism in human resource management in education. However, the main challenges are the uneven distribution of infrastructure and limited digital skills in remote schools. This study implies the importance of continuous digital skills training for educators and improving technological infrastructure in schools, especially in remote areas, to support the practical application of technology in human resource management in education.

Keywords: *Technology Implementation, Human Resource Management, Digital Skills*

Abstrak:

Penerapan teknologi dalam manajemen sumber daya manusia di sektor pendidikan, bertujuan meningkatkan efisiensi, transparansi, dan akuntabilitas pengelolaan data kepegawaian di sekolah. Penelitian ini bertujuan untuk menganalisis penerapan teknologi dalam manajemen sumber daya manusia di sektor pendidikan, dengan fokus pada penggunaan sistem informasi manajemen kepegawaian dan sistem informasi sumber daya manusia untuk meningkatkan efisiensi, transparansi, dan akuntabilitas dalam pengelolaan data kepegawaian di sekolah. Penelitian ini menggunakan desain kualitatif dengan pendekatan studi kasus. Data dikumpulkan melalui wawancara, observasi, dan analisis dokumen, kemudian dianalisis menggunakan teknik analisis data kualitatif melalui tiga tahapan: reduksi data, penyajian data, dan verifikasi data. Hasil penelitian menunjukkan bahwa penerapan teknologi melalui sistem informasi manajemen kepegawaian dan sistem informasi sumber daya manusia dapat meningkatkan efisiensi, transparansi, dan profesionalisme dalam manajemen sumber daya manusia di pendidikan. Namun,

tantangan utama adalah ketidakmerataan infrastruktur dan keterbatasan keterampilan digital di sekolah-sekolah terpencil. Penelitian ini mengimplikasikan pentingnya pelatihan keterampilan digital berkelanjutan bagi pendidik serta peningkatan infrastruktur teknologi di sekolah, terutama di daerah terpencil, untuk mendukung penerapan teknologi yang efektif dalam manajemen sumber daya manusia pendidikan.

Kata Kunci: *Penerapan Teknologi, Manajemen Sumber Daya Manusia, Keterampilan Digital*

INTRODUCTION

In the digital era, the application of technology in human resource management (HR) in educational institutions has a significant impact (Kutieshat & Farmanesh, 2022; Sadiq et al., 2022), but the gap between theory and practice in implementing this system is still an important issue. Although many theories claim that technology can improve the efficiency and effectiveness of HR management, practices in the field often need help with resistance to change, limited technological skills, and data security issues. Various studies, such as those conducted by Zervas & Stiakakis (2024) and Bampasidou et al. (2024), show that although the application of information technology (IT) in HR in the education sector can increase efficiency, significant challenges in the form of digital skills gaps and data security risks still hinder the optimization of the benefits of technology. In addition, research by Nicolás-Agustín et al. (2022) and Alzadjali et al. (2023) states that although digital HR systems can improve decision-making and employee satisfaction, resistance to technological change is often found in educational institutions. Therefore, there is a gap between the theory that optimizes the role of technology in HR and the reality on the ground, which is still overshadowed by technical and social implementation issues and requires more attention in research.

Previous studies have identified several practical challenges in implementing HR management technology in education, including resistance to change (Shankar & Nigam, 2022; Malhotra et al., 2021), sensitive data security issues, and lack of technology skills among teaching staff (Vahdat, 2022; Saniuk et al., 2023). Although the benefits of implementing HR information systems have been proven, such as increased administrative efficiency and ease of staff data management, there still needs to be more in their implementation, especially in schools that face technical and cultural constraints. This indicates the need for more attention to the aspects of technical readiness and cultural adaptation in the educational environment so that technology can be implemented effectively (Manca & Delfino, 2021; Wang et al., 2023).

In addition, Shet et al. (2021) and Chowdhury et al. (2023) highlighted that although technology can increase transparency and accountability in HR management, many schools need more training and technical support to adapt these systems. Other studies have shown that organizational culture factors, such as the tendency to maintain traditional working methods, are significant barriers to adopting new technologies (Leso et al., 2023; Leal-Rodríguez et al.,

2023). In addition, problems related to integrating existing information systems with new technologies often cause operational difficulties in the field.

These results indicate the need for a more holistic approach in planning and implementing HR management technology in the education sector, considering technical readiness, adequate training support, and strategies to overcome resistance to cultural change in the school environment. Therefore, although technology offers great potential to improve HR management, its implementation must be carried out by paying attention to natural conditions in the field to be accepted and utilized optimally.

The novelty of this research lies in its focus on adapting digital culture in the application of technology in human resource management (HR) in education. This study emphasizes the importance of changing organizational culture in schools when adopting technology, which does not depend solely on the application of information systems and technological devices but also on the readiness and involvement of all parties in the school, including educators, administrative staff, and school leaders.

This study aims to analyze the application of technology in human resource management (HR) in the education sector, with an emphasis on the use of the Personnel Management Information System (SIMPEG) and the Human Resource Information System (HRIS) to improve efficiency, transparency, and accountability in managing personnel data in schools. These objectives are very relevant to the need for the modernization of human resource management in the education sector, especially in efforts to improve the efficiency and transparency of personnel management. Through this study, it is hoped that practical solutions can be found that are by local conditions, which can later be implemented to improve the quality of HR management in the education sector in the area, as well as contribute to the development of technology-based education policies that are more inclusive and adaptive to changing times.

RESEARCH METHOD

This study uses a qualitative research design with a case study approach. The selection of this design is based on understanding the dynamics of technology implementation in Human Resource (HR) management in the education sector in Bersujud City, Tanah Bumbu Regency, South Kalimantan. The case study design was chosen because it can provide detailed and contextual insights into specific practices that occur in the field, including challenges, obstacles, and successes experienced by educational institutions in implementing technology such as the Personnel Management Information System (SIMPEG) and Human Resource Information System (HRIS). This study aims to describe the existing phenomenon and explore the factors influencing the implementation of the technology in a specific local context.

The unit of analysis in this study is schools in Bersujud City, Tanah Bumbu Regency, South Kalimantan Province, which implement a technology-based HR management system. Bersujud City was chosen because it is trying to improve the efficiency and transparency of educational HR management

through digital technology as part of bureaucratic reform. In this city, there is variation in the application of technology, ranging from schools that have fully adopted digital systems to those that still rely on manual methods. This study explores the differences in practices and challenges in implementing technology in the education sector, which is expected to contribute to developing education policies at the regional and national levels.

The data collection process in this study was carried out through three main methods: interviews, observations, and documentation. Interviews were conducted with the head of the education office, school principals, educators, and administrators to explore their views on the application of technology in education HR management, the challenges faced, and the impact of using digital systems such as SIMPEG and HRIS. Observations were conducted in several schools that were the research locations to record directly how the technology system was applied in daily administrative activities and to observe the interaction between users and the system. The documentation collected included policy data, activity reports, and recordings of training activities and the use of technology in these schools. The primary sources of information were obtained from informants consisting of related officials at the Education Office, school principals, educators, and administrative staff, as well as related documents obtained from government agencies and schools.

Data collected through interviews, observations, and documentation were analyzed using a qualitative data analysis model consisting of three stages: data reduction, data display, and data verification (Martins et al., 2024; Alanezi, 2024; Kurtaliqi et al., 2024). At the data reduction stage, researchers filter information relevant to the focus of the research and organize the data to facilitate further analysis. At the data display stage, the reduced data will be presented as a matrix or diagram to visualize the relationship between the variables studied, such as technology implementation, challenges faced, and supporting factors. The final stage, data verification, is carried out to ensure the validity of the findings by comparing various sources of information and conducting consistent analysis of the existing data. Researchers use a consensual approach at this stage, where findings from various sources will be analyzed in depth to reach more valid and accountable conclusions (Gattrell et al., 2024).

RESULT AND DISCUSSION
Result
Professionalism in Education Supported by Technology

The application of technology in Human Resources (HR) management in the education sector is important for improving efficiency, transparency, and quality of personnel data management in Bersujud City. Along with the development of digital technology, the application of information systems in schools is expected to optimize administrative performance, from recruitment to performance evaluation of educators.

In an interview with the Head of the Bersujud City Education Office, he revealed that the professionalism of ASN (State Civil Apparatus) in the education sector is greatly influenced by technology-based performance

management, such as the application of the Personnel Management Information System (SIMPEG) and the Human Resources Information System (HRIS). Field observations show that although there is an increase in efficiency through the use of technology in ASN data management, there are still differences in the use of well-integrated systems across schools. Some schools, especially those that are more remote, still rely on manual systems in the personnel administration process and performance evaluation.

Researchers assess that although the use of technology in education HR management has been proven to increase efficiency and transparency, the main challenge is the gap in the application of technology in various schools. ASN professionalism depends not only on their administrative abilities but also on their ability to operate existing digital systems. Therefore, improving technological skills among ASN, especially in using SIMPEG and HRIS, is an important factor in supporting their professionalism.

The application of technology in HR management can be a very effective tool to improve the professionalism of ASN in education. However, to realize this, more intensive training and technology support are needed that are evenly distributed throughout schools so that the digital system can be accepted and utilized optimally.

Bureaucratic Reform with Technology Implementation in Education

Bureaucratic reform in the education sector aims to improve efficiency, transparency, and accountability in managing human resources (HR) and public administration in Bersujud City, Tanah Bumbu Regency. One of the strategic steps in this reform is applying information technology, such as the Personnel Management Information System (SIMPEG) and the Human Resources Information System (HRIS), which are expected to optimize school administrative processes, from recruitment to performance assessment.

Based on interviews with officials at the Bersujud City Human Resources Development and Personnel Agency (BKPSDM), they stated that bureaucratic reform in the education sector has encouraged better application of technology in the management of ASN and education administration. One of them is the use of SIMPEG for employee data integration between central and regional governments.

Next, the Principal said that digital technology, especially in SIMPEG, has made monitoring employee performance easier and speeding up administration. "This technology also allows us to avoid manual administration processes that have been time-consuming and prone to errors. With this digital system, we can focus more on improving the quality of public services and education. Field observations show that although this reform has had a positive impact, most schools still need help maximizing the potential of technology in administration, such as using digital-based applications for performance and attendance management.

The researcher sees that technology plays a significant role in bureaucratic reform in the education sector. However, uneven implementation of technology and limited training are obstacles. Although technology such as SIMPEG can improve bureaucratic efficiency without adequate infrastructure

and training, human resource management in education will remain limited. Therefore, bureaucratic reform must be accompanied by a technology policy that supports a digital-based administration system.

For bureaucratic reform to significantly improve the quality of education, technology must be an integral part of every administrative process. This optimizes efficiency and ensures transparency and accountability in human resource management in the education sector.

Challenges of Implementing Digital-Based Education in Human Resource Management

In interviews with several school principals in Kota Bersujud, they revealed that implementing digital-based education, such as School-Based Management (SBM), which uses a digital platform for performance management, recruitment, and teacher training, faces various challenges. One of the challenges is the limited and uneven distribution of technological infrastructure, especially in schools located in more remote areas. Observations in several schools showed that although most teachers know the importance of using technology, they need help accessing digital platforms due to limited devices and adequate technological training.

The data is strengthened by the results of interviews, observations, and documentation of researchers related to bureaucratic reform and technology implementation in education, which are presented in Table 1.

Tabel 1. Challenges of Implementing Digital-Based Education in Human Resource Management

Aspect	Description	Challenges	Technology Implementation Efforts
Bureaucratic Reform	The process of improving the education bureaucracy system and structure to be more efficient, transparent, and accountable.	Uneven bureaucratic structures in schools and lack of understanding of the importance of bureaucratic reform.	Implementation of policies that support digitalization and improving the quality of human resources, with a focus on administrative efficiency.
Technology Application (SIMPEG)	Using the Personnel Management Information System (SIMPEG) to manage employee data, facilitate recruitment, and increase transparency in HR management.	Limited technological infrastructure, especially in remote areas, and resistance to the use of digital systems among education staff.	Provision of hardware and training for employees, as well as development of a SIMPEG system that is easier to access and use.
HR Skills Improvement	Increasing the capacity of educators and administrative staff in operating information technology to support administrative tasks and HR management.	Low technological skills among educators, especially in rural areas or those with limited access to technology training.	Ongoing training programs in operating digital-based systems, such as HRIS and SIMPEG, as well as technology skills courses for staff.

Administrative Efficiency	Applying technology to accelerate and simplify administrative processes, such as attendance, performance evaluation, and personnel data management in the education environment.	Barriers to integrating existing administrative systems with new technologies, as well as differences in school capacity in using existing technologies.	Integration of SIMPEG with other applications such as HRIS, as well as the use of web-based systems to facilitate data access and speed up administrative processes.
Transparency Improvement	Using technology to increase transparency in HR management and decision making, for example through more open performance reporting.	Lack of clear monitoring mechanisms and limited accessibility of information for the community and related parties at the regional level.	Development of a digital platform for performance reports that can be accessed by the public, as well as the implementation of a technology-based evaluation system that is easy to monitor.

Researchers identified that the main challenges in implementing digital-based education in the HR sector are the uneven distribution of infrastructure and limited digital skills among educators. The use of technology in education does not only involve hardware such as computers or internet connections, but also requires the development of digital skills for educators and education personnel so that they can make maximum use of technology. Without adequate digital skills development, the use of technology in HR management will be less than optimal.

To overcome this challenge, there needs to be a more inclusive policy, such as digital skills training for all educators, as well as improving technology infrastructure in each school. This will ensure that technology can be effectively integrated into education HR management, and contribute to more efficient and data-driven management.

Impact of Technology in Managing Information Systems for Education HR Management

The results of the study show that the implementation of SIMPEG and HRIS in Kota Bersujud has a significant impact on accelerating the administration process, facilitating the management of educator data, and increasing transparency in performance evaluation. According to Qomariah as the head of SDN Pulai Satu, she said that; "Technology adaptation in educational activities is very helpful in managing various things, especially to speed up the personnel administration process, including managing teacher and other education personnel data. In addition, this also greatly helps teachers in the process of teaching and learning activities in the classroom". Furthermore, Eko Supiyan as the administration section said that "the use of this management information system is able to speed up the personnel administration process, including managing teacher and education personnel data. This system allows data integration between regions and centers, facilitating real-time monitoring and reporting. In order for this to be realized, the human resources must be prepared well and thoroughly"

Based on the results of observations in schools, it shows that some administrative staff encountered by researchers in the field still have difficulty in using digital systems due to lack of guidance, training or sufficient understanding. In addition, several schools also complained about technical problems related to the system, such as downtime or slow access, which hindered smooth administration.

Based on this, researchers assess that although SIMPEG and HRIS offer great benefits in the efficiency of educational human resource management, the biggest challenge is the unpreparedness of human resources in operating the system. The success of technology implementation depends not only on the procurement of the right system, but also on the readiness of administrative staff and educators to utilize the technology effectively. Developing human resource capacity through continuous technology training is very important so that this technology can be used optimally.

The application of technology through the Personnel Management Information System (SIMPEG) and Human Resource Information System (HRIS) in the education sector has a significant impact on the management of Human Resources (HR), especially in the management of personnel administration and professional development of educators. This can be seen in Figure 1.
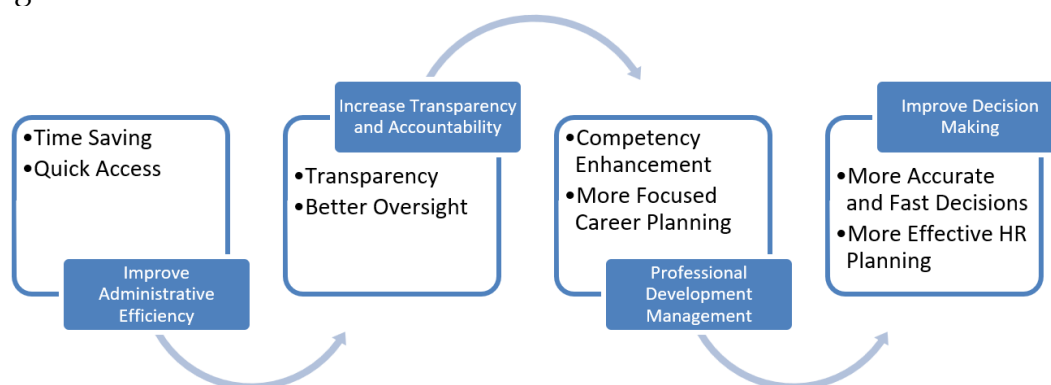
Figure 1. Impact of Human Resource Management

Figure 1 shows that applying technology through SIMPEG and HRIS in managing educational human resources has a significant impact, especially on efficiency, transparency, and professional development. Although challenges in infrastructure and skills remain, the benefits offered by this technology can improve the management of educational human resources, ultimately improving the quality of education at the school level and other educational institutions. Therefore, to increase the effectiveness of SIMPEG and HRIS in the education sector, a more structured ongoing training program is needed for all educators and administrators. In addition, special attention needs to be paid to system maintenance and development to overcome technical obstacles, such as connectivity problems or system errors.

Discussion

Applying human resources (HR) management technology in the education sector in Bersujud City, Tanah Bumbu Regency, has increased efficiency, transparency, and the quality of personnel administration management. This finding aligns with the theory that information technology can accelerate administrative processes and improve data accuracy (Gao, 2022; Heidari et al., 2022). Using management information systems in education activities can support and improve the professionalism of educators and education personnel, especially in the management of educational HR. This underlines the importance of equalizing technology infrastructure and training across regions through the Digital Divide theory (Liao et al., 2022; Lybeck et al., 2024).

The application of technology such as SIMPEG in personnel data management is by the theory of Digital Bureaucratic Reform, which states that technology can improve accountability and accelerate public services (Karwur et al., 2022; Suheri et al., 2023). This study strengthens the findings of previous studies, which show that the success of digital bureaucratic reform is highly dependent on the readiness of infrastructure and human resources to utilize technology (Kadarisman et al., 2022; Murtadho, 2024). Therefore, training and providing digital skills for educators and administrative staff are crucial to optimize technology implementation. This finding is relevant to the Technology Acceptance Model (TAM), which states that the acceptance of technology by users is influenced by the ease of use and perceived benefits (Natasia et al., 2022; Tao et al., 2022). This shows that to increase the use of technology in schools, more significant efforts are needed to improve educators' digital skills and strengthen access to the necessary devices.

This study supports the theory of Technology Readiness (Chang et al., 2024; Rahmat et al., 2022), which states that the success of technology implementation depends not only on hardware and software but also on the readiness of human resources to operate and utilize the technology. Therefore, to maximize the positive impact of technology in the management of educational human resources, it is essential to continue to develop human resource capacity through continuous technology training and the provision of adequate infrastructure throughout schools (Atmaja et al., 2022; Ngoc & Tien, 2023).

This study significantly contributes to the development of Islamic education management, especially in technology-based human resource management. The findings of this study enrich the understanding of how the application of technology, such as SIMPEG and HRIS, can improve the efficiency, transparency, and accountability of personnel management in Islamic education. Practically, the results of this study serve as a reference for Islamic educational institutions in adopting technology and the importance of training for educators. These findings also provide insight for policymakers to design policies that support digitalization and the development of technological competencies in improving education quality and educators' professionalism.

CONCLUSION

This study found that applying technology in Human Resource Management in the education sector, primarily through the use of Personnel Management Information Systems and Human Resource Information Systems, significantly impacts personnel administration's efficiency, transparency, and accountability. The wisdom gained is that technology-based performance management greatly influences professionalism in education. Despite the increase in administrative efficiency, the main challenge remains the gap in the application of technology between schools, especially in remote areas, as well as the limited digital skills among educators and administrative staff. Therefore, developing HR capacity through continuous training is essential to optimizing this technology's use.

This paper makes an essential contribution to updating the perspective on the application of technology in educational bureaucratic reform, focusing on digital-based HR management. The main contribution of this study lies in recognizing infrastructure challenges and digital skills as obstacles that need to be overcome to support the professionalism of educators and education more effectively. The limitations of this study lie in its limited scope to one area, namely Bersujud City, as well as in gender and age groups that are not diversified, so further research is needed with a broader sample and survey methods to obtain a more comprehensive picture, which can be used as a basis for more targeted policies at the national level.

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