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Principal Leadership Strategy in Optimizing Human Resource Management to Improve the Quality of Elementary Schools in Cluster I Trumon Tengah, South Aceh in the Digital Era

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A B S T R A C T

This study aims to analyze the leadership strategies of school principals in optimizing human resource management to improve the quality of education in the digital era. The research method used is a qualitative approach with a descriptive research type. The sample of this study consisted of 20 respondents. The study was conducted at Krueng Batee Public Elementary School and Ie Jeureuneh Public Elementary School UPT IV located in Cluster I Trumon Tengah, South Aceh Regency. Data collection techniques were carried out through observation, in-depth interviews, and documentation studies. Data analysis techniques used an interactive model that includes data reduction, data presentation, and drawing conclusions. The results of the study indicate that participatory leadership increases teacher involvement and responsibility, while transformational leadership strengthens motivation and awareness of innovation and technological adaptation. Teachers' digital competence is in the developing category and the digitalization of human resource management has not been optimally integrated. Adaptive principal leadership, supported by the development of digital competence and technology-based management systems, plays an important role in improving the quality of education in the digital era.

1. Introduction

Education plays a fundamental role in developing superior, character-based, and competitive human resources in the era of globalization. A nation's progress is strongly influenced by the quality of its education system, which prepares individuals not only with intellectual abilities but also with moral, social, and 21st-century competencies relevant to the needs of modern society (Ngarawula & Roseli, 2025; Suhartini & Hasibullah, 2025). Schools as formal educational institutions function as strategic spaces for developing these competencies through effective

learning processes and professional management systems. The success of schools in carrying out their educational functions is highly dependent on the quality of management of all elements within the institution, particularly human resources who play a direct role in the implementation of educational activities (Díez et al., 2020; Pusvitasari, 2021). Teachers, education staff, and school leaders collectively determine the effectiveness of learning processes, administrative management, and the achievement of educational goals.

Human resource management in schools therefore becomes a strategic component in improving educational quality. Effective management of human resources ensures that teachers and education staff can perform their roles optimally in supporting teaching and learning activities. The principal plays a central role in this process by directing, motivating, and developing the potential of school personnel so that their performance aligns with the school's vision and mission (Drago-Severson, 2012; Sulastri et al., 2021). Leadership strategies implemented by principals influence how human resources are empowered, developed, and evaluated to support continuous school improvement. Previous studies emphasize that effective school leadership contributes significantly to organizational performance, teacher motivation, and the overall quality of education he principal's leadership strategy in managing Human Resources professionally and sustainably (Müller et al., 2020; Stronge & Xu, 2021). Principals are therefore required not only to manage administrative functions but also to act as instructional leaders who foster collaboration, encourage innovation, and build a productive organizational culture within the school environment.

The rapid development of information and communication technology has transformed many aspects of educational management and learning practices. The digital era requires schools to adapt to technological changes in order to improve efficiency, transparency, and effectiveness in managing educational processes (Bilan et al., 2023; Sarkar, 2012). The integration of digital technology into school administration, personnel management, and learning activities has become increasingly important in modern educational institutions. Technology-based management systems can support data-driven decision making, improve communication among school stakeholders, and enhance the monitoring of teacher performance and student learning outcomes (Aryani et al., 2025; Sari et al., 2024). Consequently, school principals must possess not only managerial competence but also digital leadership capabilities that enable them to guide schools in adapting to technological change. Digital-based human resource management is considered an important strategy for developing modern, accountable, and responsive educational organizations (Kambur & Yildirim, 2023; Muttaqien et al., 2023; Rojak, 2025).

Despite these developments, the implementation of digital transformation in schools often faces various challenges, particularly in rural areas where infrastructure, technological resources, and digital competencies may be limited. Elementary schools in Cluster I Trumon Tengah, South Aceh Regency, represent educational institutions that are experiencing such challenges. Preliminary observations indicate that these schools have demonstrated a commitment to improving educational quality through the development of teacher performance and

school management practices. The integration of digital technology into human resource management and learning processes has not been fully optimized. Some teachers still experience difficulties in operating digital platforms such as e-Rapor and Dapodik, resulting in administrative processes that remain partly manual. Limited technological facilities, insufficient digital training opportunities, and inconsistent internet connectivity also contribute to the slow adoption of digital systems within school management practices.

Leadership practices in the observed schools demonstrate different strategic approaches to addressing these challenges. At Krueng Batee Public Elementary School, the principal applies a participatory leadership approach by involving teachers in planning, implementing, and evaluating school programs. This strategy encourages teacher participation in decision-making processes and promotes a sense of shared responsibility for achieving educational goals. Participatory leadership has been widely recognized as an effective approach to increasing organizational commitment and improving collective performance because it enables members of an organization to contribute actively to institutional development (Arta et al., 2023; Laksono et al., 2024; Q. Wang et al., 2022). Meanwhile, the leadership approach at Ie Jeureuneh Public Elementary School (UPT IV) demonstrates characteristics of transformational leadership. The principal encourages innovation, motivates teachers to improve their professional competence, and promotes the use of technology in learning activities. Transformational leadership emphasizes inspirational motivation, intellectual stimulation, individualized consideration, and idealized influence in developing teacher commitment and performance (Anjilus et al., 2019; Northouse, 2023).

Although both leadership approaches demonstrate positive initiatives toward improving school quality, several aspects of human resource management remain insufficiently developed. The digitalization of administrative systems, supervision processes, and performance monitoring is still limited. Supervision activities often rely on conventional methods such as manual observation sheets and written reports, which are less efficient and do not produce integrated data that can support strategic decision-making. In addition, collaboration among teachers in developing technology-based learning practices is still emerging and requires stronger organizational support. These conditions indicate that school leadership plays a critical role in determining how effectively human resources are empowered to adapt to digital transformation in education. Leadership strategies that combine participatory engagement, transformational motivation, and digital management practices are therefore essential to improve the quality of human resource management and strengthen the capacity of schools to respond to technological changes.

Based on these considerations, this study aims to analyze the leadership strategies of school principals in optimizing human resource management to improve the quality of elementary schools in the digital era, particularly in Cluster I Trumon Tengah, South Aceh Regency.

2. Methodology

This study uses a qualitative approach with a descriptive research type. The qualitative approach was chosen because this study seeks to deeply understand the phenomenon of principal leadership in the real context of an elementary school environment. According to (Moleong, 2022), qualitative research aims to describe and interpret the meanings that emerge from the behavior, actions, and experiences of research subjects holistically. This descriptive research method was used to systematically and factually describe the principal's leadership strategies in optimizing human resource management to improve the quality of education in the digital era. This research does not attempt to test hypotheses, but rather to explain and interpret various strategies, obstacles, and efforts of principals in managing human resources in elementary education units.

The qualitative research design used in this study refers to the principles described by (Creswell, 2009; Yin, 2018), which is naturalistic, focuses on meaning, and positions the researcher as the primary instrument in understanding social phenomena. This approach is used to deeply examine the dynamics of principal leadership strategies based on the natural context of elementary schools. Qualitative design with a multi-case study model refers to previous research such as that conducted by (Akmaluddin et al., 2025; Lifaldi et al., 2024), which employs a multiple-case study to compare educational management practices across institutions. Through this design, the research focuses on cross-case analysis to identify patterns, similarities, and differences in leadership strategies for optimizing human resources in the digital age.

This research was conducted in the even semester of the 2025/2026 academic year, with a two-month implementation period, namely from December to January 2026. The research subjects in this study were principals, teachers, and education staff at two elementary education units in Cluster I Trumon Tengah, South Aceh Regency, namely Krueng Batee Public Elementary School with 12 teachers as respondents and UPT IV Ie Jeureuneh Public Elementary School with 8 teachers, totaling 20 teachers as informants. These subjects were chosen because they have direct involvement in the process of human resource management and the implementation of school policies related to improving the quality of education in the digital era.

The research stages include preparation, data collection, data analysis, and preparation of a research report. Preparatory activities include developing research instruments, obtaining permits from relevant agencies, and coordinating with school principals and teachers at the research site. Data collection is conducted through observation, in-depth interviews, and documentation. The data analysis stage is carried out simultaneously with the data collection, data reduction, data presentation, and conclusion drawing processes.

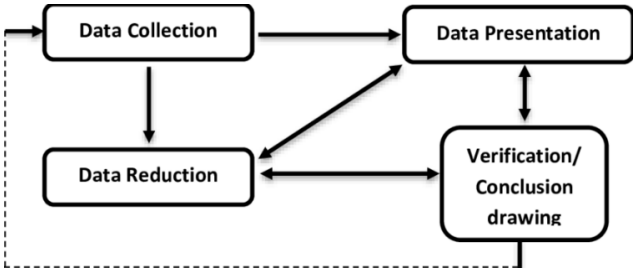

Figure 1. Data Analysis Scheme

3. Results and Discussion

Principal Leadership Strategy in Human Resource Management

Observations and interview findings reveal that the principal of Krueng Batee Public Elementary School applies a participatory leadership strategy in managing human resources. Teacher involvement appears in the process of planning, implementing, and evaluating school programs through routine meetings and internal discussions. Teachers are encouraged to express ideas related to learning improvement, task distribution, and school development programs. This participatory environment creates opportunities for teachers to contribute professional perspectives and strengthens collaborative relationships within the school organization. Statements from several teachers indicate that participation in school decision processes strengthens their professional responsibility. One teacher explained:

"*The principal always invites us to discuss school programs together. Our opinions are considered when decisions are made, so we feel responsible for implementing the programs successfully*." (Informant 1)

Such experiences illustrate how participatory leadership fosters a sense of ownership among teachers toward institutional goals. Teacher involvement in decision-making not only supports administrative coordination but also encourages professional engagement and collective responsibility in achieving school development targets. This condition reflects the characteristics of participatory leadership in which organizational members are actively involved in decision-making processes. Leadership practices that emphasize participation can increase organizational commitment and strengthen collaborative performance among members (Husni et al., 2023; Ridha et al., 2026). Findings from this study reinforce these perspectives by demonstrating that participatory leadership encourages open communication and strengthens teachers' willingness to contribute actively to school management processes.

Leadership practices at Ie Jeureuneh Public Elementary School (UPT IV) demonstrate characteristics of transformational leadership. The principal consistently communicates a shared vision for school development and encourages teachers to adopt innovative approaches in teaching and administrative tasks. Meetings and supervisory activities are often used as opportunities to motivate

teachers to improve their professional competence and to adapt to digital learning practices. Interview results indicate that teachers perceive the principal as a source of motivation who inspires professional growth. One teacher stated:

"*The principal encourages us to keep learning new technologies and to try innovative teaching strategies. This support makes us more confident in improving our teaching practices*." (Informant 2)

Such leadership practices reflect the transformational leadership model that emphasizes inspirational motivation, intellectual stimulation, and individualized consideration in improving organizational performance (Fitri & Wijayanti, 2026; Khan et al., 2025). These findings align with previous studies indicating that transformational leadership in schools contributes to teacher motivation, professional development, and the creation of a culture of continuous improvement (Baysa, 2025; Husni et al., 2022). Comparison between the two schools reveals complementary leadership dynamics. Participatory leadership strengthens collective decision-making and shared responsibility among teachers, while transformational leadership stimulates innovation and encourages continuous professional growth. These findings suggest that different leadership approaches can contribute to improving school quality when they are implemented in accordance with the institutional context and teacher needs.

Development of Teachers' Digital Competence

Findings from interviews and observations indicate that teachers in both schools have begun adapting to the use of digital technology in administrative and learning activities. Applications such as Dapodik and e-Rapor have been implemented as part of national education administration requirements. Adaptation to these systems reflects ongoing efforts by teachers to respond to the growing demands of digital-based educational management. Teachers at Krueng Batee Public Elementary School describe that digital competency development largely occurs through informal mentoring among colleagues. Senior teachers or those with higher technological familiarity often assist other teachers in operating digital systems related to administrative reporting and classroom learning documentation. One teacher explained:

"*When we encounter difficulties using the system, we usually ask colleagues who are more familiar with the application. Informal discussions help us understand how to operate the platform*." (Informant 3)

This collaborative learning process reflects a peer-support mechanism that supports gradual professional development. Peer mentoring enables teachers to share practical knowledge and develop digital confidence through daily professional interactions. Such collaborative learning environments become particularly important in schools where formal digital training opportunities remain limited. Digital competency development at Ie Jeureuneh Public Elementary School is influenced by training programs facilitated by the local Education Office. Teachers reported that these training activities introduced them to various digital learning

tools, including the use of presentation media and digital learning resources. Implementation of the training outcomes can be observed in the integration of multimedia elements in classroom instruction. Challenges remain in the form of limited internet connectivity and insufficient technological infrastructure. Such limitations influence the consistency of technology integration in daily learning practices. These contextual barriers illustrate that the development of teachers' digital competence is not only influenced by individual skills but also by institutional support and technological infrastructure.

These findings highlight the important role of school leadership in supporting sustainable digital competency development. Leadership support in facilitating training, mentoring, and technological access is considered essential for strengthening teachers' digital literacy. Previous research emphasizes that leadership commitment is a critical factor in promoting digital competence and technology integration in schools (Aslamiah & Bustari, 2026; Blau & Shamir-Inbal, 2017). Results from this study extend these perspectives by demonstrating how leadership encouragement and peer collaboration interact in supporting teachers' adaptation to digital transformation in education.

Digitalization of Human Resource Management and School Administration

Observation results indicate that the digitalization of human resource management in both schools is still developing and has not yet reached a fully integrated stage. The use of digital technology is mainly limited to mandatory administrative applications required by the national education system. Several internal management processes such as personnel documentation, attendance records, and performance archives are still managed using conventional methods. Administrative activities at Krueng Batee Public Elementary School continue to rely on printed documents for internal data management. Digital reporting systems are primarily used for external reporting to the education authorities. Such practices require additional coordination and often slow the process of retrieving institutional data needed for decision-making.

Different patterns appear at Ie Jeureuneh Public Elementary School where digital technology is more frequently used to support learning documentation and communication among teachers. Digital files are utilized to store teaching materials and record school activities. Technology utilization, however, has not yet been optimized as a strategic basis for human resource management and institutional decision-making. These findings illustrate that digital transformation in school management is still in a transitional stage. Implementation remains focused on fulfilling administrative requirements rather than developing integrated digital management systems that support strategic planning and data-based evaluation.

Leadership commitment plays a crucial role in guiding schools toward more systematic and integrated digital management practices. The concept of digital leadership emphasizes the ability of leaders to integrate technology into organizational processes to increase efficiency, transparency, and data-driven decision-making (Filina et al., 2024; Kamalia et al., 2022; Wang et al., 2025).

Findings from this study indicate that school leaders have initiated digital transformation efforts, although comprehensive implementation still requires stronger infrastructure support and continuous professional development.

Teacher Performance Supervision and Evaluation

Supervision of teacher performance in both schools is conducted through classroom observations and reviews of learning administration documents. These activities are generally scheduled periodically within the academic semester and are designed to monitor the quality of teaching practices and curriculum implementation. Teachers describe supervision activities as opportunities to receive constructive feedback for improving instructional practices. One teacher explained:

"*The supervision process helps us evaluate our teaching strategies. Feedback from the principal encourages us to improve lesson planning and classroom management*." (Informant 4)

Supervision practices are still largely conducted using conventional instruments such as observation sheets and written reports. Documentation of supervision results has not yet been integrated into digital monitoring systems that allow systematic analysis of teacher performance. These findings indicate that the supervision process has contributed positively to improving teaching quality, although opportunities exist to enhance the effectiveness of supervision through digital monitoring systems. Digital supervision systems could support more structured documentation, continuous monitoring, and more efficient evaluation of teaching performance. The role of principals as instructional supervisors remains essential in supporting teacher professional development. Educational leadership literature highlights that effective supervision practices can strengthen teacher competence and improve instructional quality when supported by systematic evaluation mechanisms (Bela & Jabar, 2025; Husni et al., 2022).

Collaborative and Innovative Work Culture

Observation and interview findings demonstrate that collaborative relationships among teachers have developed within both schools. Teachers regularly engage in discussions related to teaching practices, lesson planning, and school program implementation. Informal interactions in teacher forums often become spaces for sharing experiences and solving instructional challenges collectively. Collaborative practices at Krueng Batee Public Elementary School tend to focus on administrative coordination and the implementation of school programs. Teacher collaboration in this context supports the smooth implementation of institutional activities and strengthens teamwork within the school environment. Collaborative interactions at Ie Jeureuneh Public Elementary School show a stronger orientation toward the development of digital-based learning practices. Teachers frequently exchange ideas regarding the use of multimedia resources and digital learning tools that can enhance student engagement. Teachers describe the working climate in both schools as supportive and harmonious. A teacher expressed this perception in the following statement:

"*Communication among teachers is open, and we often help each other in preparing learning materials or solving classroom problems*." (Informant 5)

The development of collaborative and innovative work cultures is closely related to the leadership strategies implemented by school principals. Organizational culture theory emphasizes that a strong collaborative environment encourages knowledge sharing, innovation, and collective performance improvement (Azeem et al., 2021; Rini & Lestari, 2025). Findings from this study confirm that leadership strategies promoting open communication, collaboration, and professional interaction contribute significantly to strengthening collegial relationships and fostering an innovative work culture among teachers.

4. Conclusion

This study shows that the principal's leadership strategy plays a crucial role in optimizing human resource management to improve the quality of education in the digital era. Participatory leadership at Krueng Batee Public Elementary School increases teacher involvement and responsibility in implementing school programs, while transformational leadership at Ie Jeureuneh Public Elementary School strengthens motivation and awareness of innovation and technological adaptation. Teachers' digital competencies are at a developing stage with varying levels of mastery, influenced by mentoring, training, and the availability of supporting facilities. The digitalization of Human Resource management and supervision implementation are still not optimally integrated, although a collaborative work culture has been established and supports collective performance. Therefore, strengthening adaptive leadership and technology-based management systems is necessary to support the continuous improvement of educational quality.

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