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Transforming Teacher Performance Through School Management Digitalization And Data-Based Discipline Systems At Smp Negeri 03 Limboto Barat

Nina Lamatenggo, Universitas Negeri Gorontalo, Indonesia
Intan Abdul Razak, Universitas Negeri Gorontalo, Indonesia
Mamat Abas, Universitas Nahdlatul Ulama Gorontalo, Indonesia
Wiwit Zuriati Uno, Universitas Negeri Gorontalo, Indonesia
Email: nina.lamatenggo@ung.ac.id (coresponden)

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Abstract

This study aims to analyze how digital school management and data-driven discipline systems contribute to improving teacher performance at SMP Negeri 03 Limboto Barat. A descriptive qualitative method was employed, involving interviews, observations, and document analysis to explore teachers' experiences and the school's implementation processes. The findings reveal that digitalization strengthened accountability, enhanced consistency in teachers' work behavior, and improved the efficiency of administrative tasks. Teachers became more disciplined, more responsive to their professional responsibilities, and more consistent in fulfilling instructional requirements. The digital system also enabled more objective supervision and supported evidence-based decision-making within the school. Overall, the study shows that digital transformation not only improves internal school governance but also provides insights into effective performance management practices relevant to broader organizational and managerial contexts.

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A. Introduction

The rapid advancement of information and communication technologies has significantly reshaped administrative and instructional practices in educational institutions worldwide. Schools are increasingly required to transition from traditional manual administration to integrated digital management systems that ensure efficiency, transparency, and accountability. In Indonesia, the adoption of School Management Information Systems (SMIS) has accelerated in recent years, with several studies highlighting improvements in data accuracy, administrative workflow, and institutional decision-making following digital implementation (Marginingsih, 2025; Nurzen, 2022). Global analyses by the OECD further emphasize that digital transformation in education can enhance governance, streamline administrative burdens, and expand opportunities for data-driven planning when implemented systematically and ethically (OECD, 2021; OECD, 2023). However, technology adoption must be complemented by changes in organizational culture and professional readiness to ensure meaningful integration within the school system.

Within the school environment, teachers serve as the primary agents of learning, making them central to any digital transformation initiative. Evidence suggests that digital tools can reduce teachers' administrative load and enable them to allocate more time toward improving instructional quality, provided they possess adequate digital competencies and receive continuous institutional support (Maimun, 2021; Sulistiani & Dewi, 2024). Without such support, digital systems risk becoming underutilized or misunderstood, limiting their potential to enhance teaching performance. The

integration of digital platforms for lesson planning, assessment, student monitoring, and reporting has shown positive outcomes in schools that prioritize teacher capacity-building initiatives. This demonstrates the critical need for aligning digital management policies with professional development strategies to ensure that teachers are empowered to use technology effectively

An important dimension of teacher performance that can be strengthened through digital systems is work discipline. Teacher discipline—including attendance, punctuality, task completion, and adherence to instructional standards—has a proven influence on students' learning continuity and overall school climate. Traditional methods of monitoring discipline often rely on manual logs that are prone to inaccuracy and bias. Digital discipline systems, such as biometric attendance, QR-based logging, and digital task tracking, offer objective and real-time data that can serve as a basis for supervision and performance evaluation (Biometric Attendance Study, 2022; Apriyanto, 2025). These tools not only enhance transparency but also foster accountability, ensuring that teachers are evaluated fairly and consistently. Research also highlights that data transparency encourages teachers to reflect on their performance, contributing to improved professional responsibility and discipline.

The use of data in educational decision-making, commonly referred to as Data-Based Decision Making (DBDM) or Data-Driven Decision Making (DDDM), has gained significant momentum as schools seek to optimize instructional quality and management efficiency. International and national literature highlights that when data is used to guide instructional improvements—rather than merely to enforce accountability—it promotes more responsive and individualized learning practices (Schildkamp, 2019; DBDM Teacher Support Report, 2022). Conversely, when data is misused for punitive purposes, teachers may develop defensive behaviors that hamper innovation. Thus, establishing a healthy data culture in schools, supported by training on data interpretation and utilization, is essential for ensuring that digitalization benefits both teaching quality and organizational development. This culture serves as a foundation for implementing discipline systems, performance monitoring, and continuous school improvement

Successful digital transformation in schools heavily depends on leadership capacity and change management. School leaders play a crucial role in articulating a vision for digital integration, managing resources, facilitating teacher training, and addressing resistance to change. Case studies in Indonesian schools show that effective planning, organization, implementation, and evaluation practices are significant predictors of digitalization success (Marginingsih, 2025; Education Technology Case Study—Indonesia, 2025). Without strong leadership, digital initiatives often fail to shift day-to-day professional practices and remain superficial. Transformational leadership styles, particularly those embracing digital thinking, have been associated with higher teacher engagement, greater innovation, and more sustainable digital adoption across school ecosystems.

In the specific context of SMP Negeri 03 Limboto Barat, the initiation of school digitalization and data-driven teacher discipline systems represents a strategic effort to enhance teacher performance systematically. The school has faced issues commonly found in manually managed institutions, including inconsistent performance records, delayed supervision processes, and difficulties in evaluating teacher discipline accurately. Implementing real-time digital attendance, digital academic task monitoring, and integrated performance dashboards is expected to support more objective supervision and targeted professional development interventions (Singgih, 2024; Teacher Performance Digital Assessment Study, 2025). These systems allow administrators to identify performance gaps early and provide timely coaching aligned with the school's improvement goals

Based on these considerations, this article aims to explore how digital school management and data-based discipline systems contribute to transforming teacher performance at SMP Negeri 03 Limboto Barat. The study specifically examines: (1) the implementation model of digital management and digital discipline systems at the school, (2) measurable changes in teacher performance and discipline following the implementation, and (3) supporting and inhibiting factors that influence the sustainability of digital transformation within the school environment. The findings of this study are expected to provide practical insights for other secondary schools seeking to strengthen teacher performance through evidence-based management and integrated digital systems.

Methods.

1. **Research Design**

   To understand the complexities of digital transformation in educational settings, it is essential to adopt a research design capable of capturing real-life experiences, interactions, and organizational changes. Therefore, this study adopts a **descriptive qualitative research design** aimed at gaining an in-depth understanding of the phenomena experienced by stakeholders during the implementation of digital management systems and data-based discipline mechanisms. This approach is particularly appropriate because the nature of digitalization cannot be fully explained through numerical measures alone; rather, it requires exploring human perspectives, behaviors, and institutional dynamics. The design allows the researcher to examine how teachers and administrators perceive new technologies, respond to changes, and adapt their professional practices. It provides flexibility to explore emergent themes that arise naturally during the research process. Moreover, descriptive qualitative research is well-suited for documenting processes, identifying patterns, and understanding context-specific challenges. Given the multidimensional nature of digital transformation, this methodological choice provides a rich analytical lens to investigate how digital systems influence teacher performance and school management practices.

2. **Researh Location and Participants**

   Because digital transformation varies widely from one educational environment to another, selecting an appropriate research site is critical for ensuring contextual relevance. This study was conducted at **SMP Negeri 03 Limboto Barat**, a public junior high school that has begun implementing digital attendance systems, performance dashboards, and data-based supervisory practices. The school offers an ideal context for examining how technology reshapes management and teacher behavior. Participants in this study included the principal, vice principals, teachers, and the school operator. The principal was chosen because of his key role in initiating and directing the digitalization agenda at the school level. Vice principals, particularly those responsible for curriculum and student affairs, were included due to their operational responsibilities in the daily implementation of the system. Teachers were involved because they are the primary users of digital tools and directly experience the impact on their discipline and performance. The school operator participated as the technical handler of digital systems, ensuring accurate data processing and system maintenance. By involving a diverse group of informants, the study captures multiple viewpoints, allowing for a complete and nuanced understanding of the digital transformation process taking place within the school.

3. **Data Collection Techniques**

   To obtain robust and comprehensive insights into the school's digitalization process, this study employed multiple data collection techniques. These methods allow the researcher to capture not only what participants say but also what they do and what forms of evidence support their claims. The research utilized **in-depth interviews, direct observations, and documentation analysis**. In-depth interviews enabled participants to articulate their experiences, challenges, and perceptions regarding the digital transition, with the flexible semi-structured format allowing deeper exploration of emerging issues. Direct observations were conducted to witness firsthand how teachers and administrators interact with digital tools in their daily routines, including attendance logging, performance monitoring, and task submission. Observations help verify whether practices align with participant narratives. Documentation analysis was used to examine digital attendance records, teacher performance reports, internal policy documents, and application screenshots, providing factual evidence that strengthens and triangulates findings from interviews and observations. By combining these three techniques, the study ensures comprehensive, credible, and contextually grounded data.

4. **Participant Selection Technique**

   Selecting the right participants is essential for capturing accurate and meaningful insights. This study used **purposive sampling**, which involves intentionally selecting individuals who possess

relevant knowledge and direct experience with the phenomenon under investigation. In this context, purposive sampling ensures that participants are those who are most involved in or affected by the school's digitalization efforts. The principal was chosen due to his leadership role and strategic influence over digital policy decisions. Vice principals and the school operator were selected because of their operational responsibilities and technical involvement in managing the digital systems. Teachers were purposively selected based on variations in experience, digital literacy, and department representation, enabling the study to grasp diverse perspectives on the system's impact. This approach ensures that all collected data are rich, relevant, and directly aligned with the study's objectives. Furthermore, purposive sampling is commonly used in qualitative research, especially case studies, where depth of information is prioritized over breadth. Through this technique, the study gains access to informants who can provide detailed, accurate, and experience-based insights.

5. Data Analysis Technique

The complexity of qualitative data requires a systematic and rigorous analysis approach. This study used the **Miles & Huberman interactive model**, which consists of three interconnected stages: data reduction, data display, and conclusion drawing/verification. Data reduction involves condensing raw information collected from interviews, observations, and documentation into smaller, manageable units by coding, categorizing, and summarizing key themes. This helps the researcher focus on essential patterns related to digitalization and teacher discipline. In the data display stage, organized information is presented through narrative descriptions, tables, charts, or matrices, allowing relationships between concepts to emerge clearly. This visual or structured representation supports deeper interpretation and helps connect themes such as technology use, discipline changes, and leadership support. The third stage, conclusion drawing and verification, involves synthesizing findings to develop meaningful and accurate interpretations. Verification is ongoing throughout the analysis to ensure that conclusions align with empirical evidence. The Miles & Huberman model is effective because it is iterative, structured, and adaptable to complex qualitative datasets, making it ideal for examining digital transformation in educational settings.

6. Data Validity Measures

Ensuring the validity and credibility of qualitative data is crucial for producing trustworthy research findings. This study applied **triangulation techniques**, including source triangulation, method triangulation, and time triangulation. Source triangulation involved comparing information obtained from different participants—principals, teachers, vice principals, and the school operator—to validate consistency and reduce bias. Method triangulation included cross-checking data gathered from interviews, observations, and documentation, ensuring the data are supported across methods rather than relying on a single technique. Time triangulation involved collecting data at different times to assess stability and avoid capturing temporary or irregular behaviors. Additionally, member-checking was conducted by returning interview summaries to participants to confirm accuracy, preventing misinterpretation. The researcher also maintained detailed field notes, ensured transparency in data interpretation, and adhered to reflexive practices to minimize researcher bias. Together, these measures enhance the study's credibility, dependability, and confirmability, ensuring that findings genuinely reflect the realities at the research site.

B. Result and Discussion

Before presenting the detailed findings, it is important to highlight that the results of this study represent the outcome of a systematic implementation of digital school management and a data-driven discipline system at SMP Negeri 03 Limboto Barat. The analysis is based on data collected through observations, digital records, interviews, and document analysis conducted over several weeks. The findings illustrate not only numerical improvements in teacher performance indicators but also behavioral changes that emerged as a direct consequence of increased accountability and transparency introduced by the digital system. This section begins by presenting quantitative results in the form of tables and graphs to illustrate the shifts in teacher performance before and after the

digital intervention. Following that, the discussion interprets these findings in relation to existing theories and previous studies on digital transformation in education. Together, these results provide a comprehensive understanding of how digitalization can influence work discipline, performance consistency, and professional compliance within the school environment.

1. Results

The implementation of digital school management and a data-based discipline system at SMP Negeri 03 Limboto Barat resulted in significant improvements across several teacher performance indicators. Data were collected before the implementation (pre-digitalization) and after the full operation of the digital system (post-digitalization). The indicators assessed include attendance, punctuality, task completion, and lesson plan submission. These indicators represent key dimensions of teacher discipline and professional responsibility within the school environment

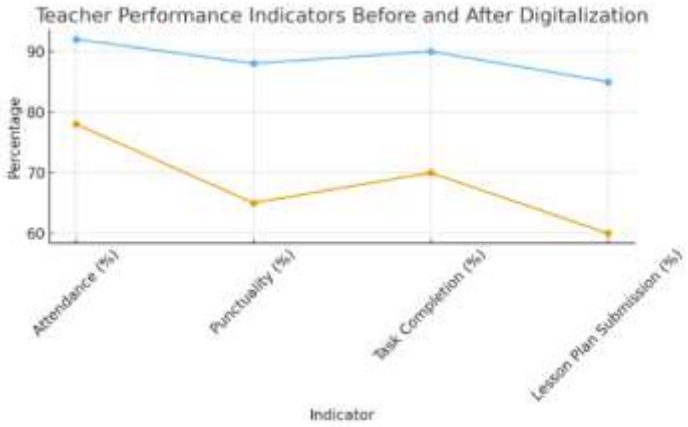

Figure 1. Teacher Performance Indicators Before and After Digitalization

The graph clearly illustrates the performance shift, with each indicator showing a noticeable increase after the implementation of the digital system. Attendance and punctuality exhibit the steepest improvements, which aligns with the assumption that digital attendance tracking reduces lateness and absentee tendencies. The upward trend also highlights the role of automation and real-time notification features in supporting teacher consistency

Table 1. Teacher Performance Before and After Digitalization

No	Indicator	Pre-Test	Post-Test
1	Attendance	78	92
2	Punctuality	65	88
3	Task Completion	70	90
4	Lesson Plan Submission	60	85

The results demonstrate a clear upward trend across all measured indicators. Teacher attendance increased from 78% to 92%, indicating that the digital attendance system improved compliance and reduced absenteeism. Punctuality improved even more sharply, rising from 65% to 88%, suggesting that real-time monitoring and automatic time logging encouraged teachers to adhere to school schedules more consistently. Task completion also rose from 70% to 90%, reflecting more efficient monitoring of academic responsibilities. Meanwhile, lesson plan submission increased from 60% to 85%, showing that teachers became more diligent in fulfilling curriculum documentation requirements when the process was digitized and monitored through a structured dashboard system.

Discussion

The results indicate that digitalization of school management, particularly the implementation of a data-driven discipline system, has brought measurable positive effects on teacher performance at SMP Negeri 03 Limboto Barat. The substantial increase in attendance and punctuality demonstrates that digital systems foster accountability by providing transparent, real-time data accessible to both teachers and school leaders. This finding aligns with earlier research stating that digital attendance systems reduce manual manipulation and increase teacher compliance (e.g., biometric attendance studies). Moreover, improvements in task completion and lesson plan submission reflect the efficiency benefits of digital dashboards. When teachers are provided with clear deadlines, automated reminders, and easily accessible task-tracking systems, they are more likely to complete administrative tasks on time. This aligns with literature pointing out that digital task management tools improve workload organization and reduce cognitive burden for teachers (Maimun, 2021; Sulistiani & Dewi, 2024).

Additionally, the data shows how digital systems support professional supervision. With accurate, quantifiable data available, school administrators can provide targeted coaching and interventions. Instead of relying on subjective impressions, supervisors can identify performance gaps more precisely and address them with appropriate solutions. This is consistent with the principles of Data-Based Decision Making (DBDM), which emphasize using data to guide improvements rather than merely enforce compliance. However, the findings also underline the importance of leadership and digital literacy. The success observed at the school is partly attributed to strong administrative support, adequate training for teachers, and the presence of an operator who manages the digital platform. Without these supporting elements, digital systems often fail to influence actual teacher behavior.Overall, the results affirm that digital school management, when implemented systematically and accompanied by adequate support, leads to significant improvements in teacher discipline and performance. These findings contribute evidence that digitalization is not merely a technological upgrade but a transformative change with wide-reaching implications for instructional quality and school governance?

C. Conclusion

The results of this study show that the digitalization of school management and the use of data-driven discipline systems at SMP Negeri 03 Limboto Barat significantly improved teacher attendance, punctuality, task completion, and lesson plan submission. These improvements indicate that digital systems enhance accountability, streamline administrative processes, and support more objective supervision. The shift from manual procedures to automated monitoring not only strengthened teacher discipline but also fostered a more transparent and efficient organizational culture within the school. Beyond its educational implications, this study provides valuable insights for the fields of economics and business. The findings demonstrate how data-based management can optimize human resource performance, reduce inefficiencies, and support evidence-driven decision-making—principles that are essential in modern organizational and economic systems. The school's transformation illustrates that digital tools can improve productivity and institutional governance, offering a practical model for organizations seeking to adopt digital strategies to enhance performance and operational effectiveness.

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