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Digital absence innovation in the enforcement of employee work discipline at the Makassar City education office

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ABSTRACT

This study aims to analyze and explain digital attendance innovation in enforcing employee work discipline, along with the supporting and inhibiting factors that influence its implementation. This research uses a qualitative method with a descriptive approach to gain an in-depth understanding of how digital attendance functions within an organizational setting. Data were collected through observations, interviews, and documentation, allowing the researcher to capture the real conditions and employee experiences. The data analysis process followed the stages of data collection, condensation, display, and conclusion drawing to ensure systematic and comprehensive interpretation. The findings show that the digital attendance innovation at the Makassar City Education Office is effective when evaluated using an innovation model approach. In terms of relative advantage, the system saves employees' time in recording attendance and reduces the inefficiencies found in manual systems. Regarding suitability, the system aligns well with organizational needs in promoting discipline, although employee discipline is also influenced by other factors, such as work culture and supervision. From the perspective of complexity, several technical challenges were identified, particularly during power outages, which prevented the attendance machine from operating properly. In terms of trialability, employees can operate the system easily because of its practical design and simple procedures. Finally, in terms of observability, digital attendance enables supervisors and operators to monitor attendance data transparently and detect potential fraud, such as employees attempting to entrust attendance to others. Overall, digital attendance serves as an important tool for strengthening employee work discipline.

Keywords: innovation; digital absence; work discipline; department of education; Makassar City

1. INTRODUCTION

Technological advancements have reshaped nearly every aspect of human life, transforming how people think, work, and interact within organizations. Activities that were once performed using manual or traditional tools are now increasingly supported by digital technologies designed to enhance their effectiveness, productivity, and efficiency. This transformation is not merely technical; it represents a shift in mindset, where speed, accuracy, and transparency are central values in organizational practices. In an era marked by rapid change and open competition, individuals and institutions that fail to adapt to technological developments risk being left behind the competition. Consequently, the evolution of information technology places significant demands on institutions and agencies to continuously improve their systems and work. This expectation applies not only to profit-oriented organizations but also to non-profit institutions, such as government agencies (Nefianto, 2025).

Today, government institutions are required to demonstrate professional governance characterized by accountability, transparency, and efficiency. One of the essential elements in achieving these standards is the discipline of civil servants, particularly time discipline, as reflected in employee attendance. Work discipline in government agencies is not only a matter of personal responsibility but also a reflection of institutional credibility in the delivery of public services. Therefore, government agencies require mechanisms that can encourage and control employee discipline in a measurable and systematic manner. In this context, digital attendance systems have emerged as a strategic solution to address long-standing issues related to attendance management and work discipline (Aprianti, 2023).

Digital attendance is a crucial asset for organizations of all sizes because it supports the management of human resources in a structured and reliable manner. It helps drive, direct, maintain, and develop organizational performance by providing accurate and real-time data on employee presence at work. With digital attendance, organizations can monitor employee punctuality, reduce opportunities for manipulation, and ensure that attendance records are recorded objectively. These advantages make digital attendance not only a tool for recording presence but also an instrument for organizational control and performance monitoring, in line with contemporary technological developments (Susilo, 2023).

The Makassar City Education Office is one of the government institutions that has adopted digital attendance as part of its effort to improve employee discipline. This innovation was implemented to replace the previous manual attendance system, which had several weaknesses, including the potential for fraud and inefficiency in recording attendance data. The digital attendance system used by the Makassar City Education Office produces highly accurate data, allowing management to monitor employee attendance in a transparent and systematic manner. This initiative aligns with Article 6 of the South Sulawesi Governor Regulation Number 25 of 2020 concerning Regional Attendance Implementation, which emphasizes that regional innovation can take the form of innovation in governance, public services, or other innovations relevant to the regional authority. The adoption of digital attendance clearly represents an innovation in governance that utilizes technology to strengthen bureaucratic management (Ilmiah et al., 2025).

Civil servant discipline has long been associated with attendance problems, particularly absenteeism and manipulation. It is widely known that some civil servants have practiced entrusting their attendance to colleagues, allowing them to be recorded as present even when they are not physically at work. This practice has become a habitual problem in many government offices and reflects the weaknesses of manual attendance systems that rely heavily on trust rather than verification. Such conditions highlight the urgency of implementing a more reliable system capable of minimizing fraudulent behavior and improving overall discipline (Juni et al., 2025).

Based on observations and interviews conducted at the Makassar City Education Office, the implementation of digital attendance since 2021 has been a key strategy to address these issues. The shift from manual to digital attendance was expected to close loopholes that previously allowed attendance manipulation. However, despite the introduction of this new system, some employees still commit disciplinary violations, such as arriving late, leaving work earlier than scheduled, or failing to use their working hours productively. There are instances where employees leave the office before break time,

spend excessive time chatting, use mobile phones during work hours, or request permission to leave the office for matters unrelated to their duties at work.

These observations indicate that while digital attendance can effectively control physical presence, it does not guarantee optimal work behavior throughout the working hours. Discipline is a multidimensional concept influenced not only by attendance systems but also by organizational culture, supervision, and commitment. Nevertheless, the implementation of digital attendance remains a significant step toward improving discipline, as it establishes a clear, objective, and transparent mechanism for monitoring employee presence.

In conclusion, technological developments have pushed government institutions to modernize their administrative systems, including attendance management systems. The digital attendance innovation at the Makassar City Education Office represents an effort to adapt to these changes while addressing persistent issues related to discipline. Although challenges remain in ensuring that employees fully utilize their working hours productively, digital attendance provides a strong foundation for improving accountability and transparency. By integrating technological innovation with effective supervision and a supportive work culture, government agencies can enhance employee discipline and, ultimately, improve the quality of public service delivery.

2. RESEARCH METHOD

This study employs a qualitative approach with a descriptive design, aiming to describe and gain an in-depth understanding of the implementation of digital attendance innovation in enforcing employee work discipline at the Makassar City Education Office. This approach was selected because work discipline issues are not solely related to administrative aspects, but also involve employee behavior, work habits, and responses to the use of digital technology within government organizations (Maluku & Wakim, 2023).

The unit of analysis in this study is the implementation of the digital attendance system and employee work discipline behavior. The research was conducted at the Makassar City Education Office, a local government institution that has implemented a digital attendance system in managing employee attendance. The research population includes all employees within the office; however, research informants were selected using purposive sampling, consisting of employees and officials who are considered knowledgeable and directly involved in the implementation of the digital attendance system.

Data collection was carried out through observation, interviews, and documentation. Observation was used to directly examine the practices of digital attendance usage and employee attendance behavior. Semi-structured interviews were conducted with leaders, attendance system operators, and employees who use the system to obtain in-depth information. Documentation served as supporting data, including internal policies, attendance reports, and relevant archival records. The number of informants was determined based on data saturation, where data collection ceased once information became repetitive and no new significant findings emerged (Yunia, 2020).

The collected data were analyzed using the Miles and Huberman data analysis model, which consists of data reduction, data display, and conclusion drawing and verification. To minimize bias and ensure data validity, this study employed source and method triangulation, as well as confirmation of findings with key informants. Through this approach, the study is expected to provide an objective and comprehensive description of digital attendance innovation in enforcing employee work discipline (Khairunisa, 2024)

3. RESULT AND DISCUSSION

The results of this study indicate that digital attendance innovation at the Makassar City Education Office plays a significant role in strengthening employee work discipline, particularly in terms of punctuality, attendance transparency, and the effectiveness of supervision. The shift from a manual system to a digital one is not merely a change in the attendance recording tool, but a transformation in how the

organization manages employee work behavior. These findings can be explained through Rogers' Diffusion of Innovation Theory, especially the five main dimensions: relative advantage, compatibility, complexity, trialability, and observability. These dimensions provide a comprehensive framework for understanding why digital attendance is accepted by employees and how this innovation contributes to improved work discipline.

From the perspective of relative advantage, digital attendance is perceived to offer far greater benefits compared to the manual system. In the previous system, opportunities for attendance manipulation—such as proxy signing or inaccurate recording—were still widely possible. With digital attendance, these loopholes can be minimized because the system operates automatically, often based on biometric identification or integrated systems that are difficult to manipulate. In addition, the attendance recording process becomes faster, more efficient, and no longer creates long queues at the beginning of working hours. The attendance data generated is also more accurate and can be accessed in real time by management. These advantages encourage employee acceptance of the new system while simultaneously shaping more orderly work habits.

In terms of compatibility, digital attendance is considered to be aligned with organizational needs and local government policies that promote bureaucratic digitalization. This transformation does not stand alone but is part of a broader agenda of governance reform based on technology. Employees do not perceive this system as something foreign or contradictory to existing work patterns, but rather as a reinforcement of the supervision system that was already in place. This is consistent with previous studies suggesting that technological innovations are more readily accepted when they do not conflict with existing values, experiences, and established work systems. However, this study also finds that improvements in work discipline are not entirely determined by the presence of attendance technology. Organizational work culture, consistent managerial supervision, and individual employee commitment remain important factors influencing disciplined behavior.

From the perspective of complexity, this study identifies several technical obstacles that affect the effectiveness of digital attendance. Internet network disruptions, power outages, and limited technological understanding among some employees pose challenges in system implementation. This situation shows that technological innovation in the public sector is highly dependent on the readiness of supporting infrastructure. When infrastructure is unstable, the benefits of technology cannot be optimally realized. In addition, differences in digital literacy levels among employees also affect the speed of adaptation to the new system. These findings reinforce the view that technical complexity often becomes a barrier to the implementation of digital innovation in public organizations, especially in institutions with limited facilities and diverse human resource capacities.

Meanwhile, in terms of trialability, digital attendance at the Makassar City Education Office is relatively easy for employees to learn and use. The simple system that does not require complicated procedures allows employees to adapt quickly. The habituation process occurs naturally because employees interact with the system on a daily basis. This ease accelerates the organizational learning process and reduces resistance to change. Employees do not require much time to understand how the system works, allowing the innovation to be implemented effectively without causing significant disruption to daily work routines.

In the dimension of observability, the results of using digital attendance can be directly observed by supervisors and system operators. Attendance data can be monitored in real time, enabling potential fraud to be detected immediately. This transparency creates a strong supervisory effect, even without direct physical monitoring. Employees are aware that every instance of lateness or absence will be automatically recorded in the system. This condition encourages the emergence of collective awareness to be more disciplined in complying with working hours. These findings are consistent with previous research emphasizing that the ease of observing the benefits of innovation accelerates technology acceptance and encourages changes in employee work behavior.

Nevertheless, this study also finds that digital attendance has limitations in influencing overall work discipline. The system is highly effective in controlling employees' physical presence, but it does not directly guarantee the quality of performance during working hours. Employees may arrive on time but

not necessarily use their working time productively. This indicates that work discipline has broader dimensions beyond mere attendance. Therefore, digital attendance should be viewed as an initial control tool that must be supported by a more comprehensive performance supervision system.

This study also emphasizes that the influence of digital attendance on work discipline becomes stronger when supported by consistent managerial supervision and the implementation of clear sanctions. When attendance data is used as the basis for performance evaluation, employees are more motivated to maintain their discipline. Conversely, if the data is not followed up with policies or evaluations, the effectiveness of the system tends to decline. In other words, technology will function optimally only when integrated with firm and consistent human resource management practices (Hatta et al., 2024).

In addition to technological and managerial factors, this study identifies the presence of social pressure among employees. The transparency of attendance data creates a situation where employees are aware of each other's level of discipline. Unconsciously, this condition forms a culture of mutual monitoring that contributes to improved discipline. Employees feel uncomfortable if they are frequently late or absent because such data can be seen by colleagues and supervisors. This social pressure becomes an indirect factor that strengthens the influence of digital attendance on changes in work behavior (Damayanti, 2024).

As an alternative explanation, the improvement in work discipline found in this study cannot be entirely attributed solely to the implementation of digital attendance. External factors such as internal organizational policies, increased employee awareness of data-based evaluations, and social dynamics in the workplace also influence behavioral changes. Therefore, the findings of this study should be understood as the result of interactions between technology, policy, and organizational behavior, rather than as a linear outcome of digital attendance implementation alone.

Overall, this discussion confirms that digital attendance innovation is an important instrument in enforcing employee work discipline at the Makassar City Education Office. However, its effectiveness is highly dependent on organizational context, infrastructure readiness, managerial support, and a supportive work culture. Digital attendance is not a single solution, but rather part of a broader and integrated discipline management system. When supported by consistent policies, effective supervision, and employee commitment, this innovation can make a tangible contribution to creating a more orderly, transparent, and professional work environment.

The following is a description of the results of the data analysis conducted at the Makassar City Education Office:

3.1. Relative Advantages

The advantages of using digital attendance include speed and efficiency. Digital attendance can be accessed more quickly and reduces the risk of fraud in recording attendance, as it is difficult to falsify. Manual attendance processes often require a lot of paper for forms, worksheets, and so on, helping to reduce paper usage, which aligns with sustainability and environmental sustainability efforts. Using digital attendance can be more practical and easier in recapitulating employee attendance, thus benefiting from effective work discipline enforcement.

3.2. Compatibility

The findings of this study indicate that digital attendance is relatively aligned with organizational needs and local government policies related to bureaucratic digitalization. This is consistent with previous studies suggesting that technological innovations are more readily adopted when they do not conflict with existing values, experiences, and established work systems. However, this study also finds that improvements in work discipline are not solely determined by attendance technology, but are also influenced by work culture, managerial supervision, and individual employee commitment. These findings reinforce prior research that positions technology as a supporting tool rather than a single determining factor in shaping work discipline.

3.3. Complexity

The study identifies technical constraints such as network disruptions, power outages, and limited technological understanding among some employees. These findings are consistent with several high-quality prior studies indicating that technical complexity can hinder the effectiveness of digital innovation in the public sector, particularly in institutions with infrastructure limitations and varying levels of digital literacy among employees. Therefore, the effectiveness of digital attendance systems is conditional and highly dependent on the readiness of supporting infrastructure.

3.4. Triability

Digital attendance at the Makassar City Education Office is relatively easy to use, and its outcomes can be directly observed by supervisors and system operators. This condition accelerates organizational learning processes and increases trust in the system. These findings align with previous studies emphasizing that ease of trial and visibility of innovation benefits facilitate technology adoption and encourage changes in employee work behavior.

3.5. Observability

Digital attendance at the Makassar City Education Office is relatively easy to use, and its outcomes can be directly observed by supervisors and system operators. This condition accelerates organizational learning processes and increases trust in the system. These findings align with previous studies emphasizing that ease of trial and visibility of innovation benefits facilitate technology adoption and encourage changes in employee work behavior.

4. CONCLUSION

This study concludes that the digital attendance (digital absence) innovation at the Makassar City Education Office has strengthened employee work discipline primarily by improving punctuality, increasing transparency, and reducing opportunities for attendance manipulation. Viewed through Rogers' Diffusion of Innovation dimensions, the system provides clear relative advantages (faster recording, more accurate data, and lower fraud risk), shows strong compatibility with bureaucratic digitalization needs, and is supported by high trialability and observability because employees can operate it easily and supervisors can monitor attendance in real time.

At the same time, the innovation's effectiveness is conditional. Complexity-related constraints—especially power outages, network disruptions, and uneven digital literacy—can weaken system performance. More importantly, controlling physical presence does not automatically ensure productive work behavior throughout office hours; discipline is also shaped by work culture, supervision consistency, and follow-through on sanctions and performance evaluation. Therefore, digital attendance should be treated as a foundational control tool that must be integrated with managerial supervision, clear HR enforcement mechanisms, and reliable supporting infrastructure to produce sustainable discipline improvements.

Ethical Approval

South Sulawesi Governor Regulation Number 25 of 2020 concerning the Implementation of Regional Attendance, namely Article 6 states that regional innovation is based on 3 (three) forms, namely, (a) Innovation in regional government governance, (b) Innovation in public services; and/or (c) Other innovations in accordance with government affairs that are the authority of the region.

Informed Consent Statement

All participants were informed of the purpose of the study, and informed consent was obtained prior to data collection. Participation was voluntary, and all responses were kept confidential and used solely for

academic research purposes.

Authors' Contributions

AR conceptualized the study, conducted data analysis, and drafted the manuscript. AF contributed to research design and methodological guidance. RAK, ARN, DH, RA, AM, and MR assisted in data collection, documentation, and manuscript revision. All authors have read and approved the final manuscript.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data Availability Statement

The data presented in this study are available on request from the corresponding author due to privacy reasons.

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Notes on Contributors

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A. Rahmatia is currently affiliated with the public administration department and a lecturer at the Permata Ilmu Maros Institute of Technology and Health. His expertise and contributions in public administration are invaluable to this research. His dedication to advancing public administration and commitment to improving public administration outcomes are reflected in his work.

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