
RESPONDING TO THE IMPLEMENTATION CHALLENGES OF THE B-GATE DIGITAL ATTENDANCE SYSTEM AT BANK BTN SURAKARTA BRANCH OFFICE

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Abstract

This study evaluates the effectiveness and implementation challenges of the B-GATE digital attendance system at Bank BTN Surakarta. Using an explanatory sequential mixed-methods design, quantitative analysis examined its relationship with employee work discipline, followed by mix-methode analysis to identify implementation barriers. The findings show that B-GATE has a positive and significant relationship with employee discipline, particularly punctuality and compliance with working hours. However, its implementation is constrained by GPS instability, limited technical support, the absence of standardized operating procedures, employee resistance, and digital literacy gaps. Therefore, further development should focus on strengthening technical infrastructure, establishing clear internal guidelines, improving employee training, and adopting a user-centered approach. The study concludes that successful digital attendance implementation depends on both technological reliability and organizational readiness.

Keywords: *Digital Attendance, B-GATE, Work Discipline, Digital Transformation.*

A. INTRODUCTION

The rapid advancement of information and communication technology in the digital era has significantly transformed human resource management across various sectors, including banking. Digitalization now extends beyond customer-facing services to the internal dynamics of organizations, particularly in employee attendance management. One widely adopted innovation is the digital attendance system, which serves not only to record presence but also to enhance employee discipline, operational efficiency, and institutional accountability (Inayah & Mabruri, 2024). In performance management systems that demand transparency and real-time data, employee attendance is a critical indicator of institutional effectiveness.

Bank Tabungan Negara (BTN), a leading national banking institution, has developed a digital attendance system known as B-GATE. This system integrates GPS and facial recognition technology to monitor attendance in a manner directly connected to the head office and managed by the Human Capital Management Division (HCMD) in Jakarta (Antoni & Aryza, 2023). Designed to minimize fraudulent practices and improve monitoring efficiency, B-GATE leverages location-based and biometric technologies.

Nevertheless, like many digital systems, the implementation of B-GATE has not been without challenges. Previous studies have identified issues ranging from reliance on stable internet connectivity (Wayahdi, 2024) and limited hardware

availability in certain work units (Manik, 2023), to employee resistance toward new technologies (Cieslak & Valor, 2024). Consequently, a comprehensive evaluation of B-GATE is essential – not only to assess its functional effectiveness and user acceptance, but also to inform the development of more adaptive and sustainable strategies.

Digital attendance systems have become commonplace across multiple sectors. Employee presence forms the foundation of operational continuity within any organization (Iqbal & Khan, 2025). While manual systems often suffer from inaccuracy, inefficiency, and potential for recording errors (IceHrm, 2020), application-based digital systems have demonstrated their capacity to address these weaknesses. Previous research has shown that such systems enhance data accuracy, expedite information processing, and support more informed decision-making (Jannah, Nawangsih, & Edora, 2022).

This study aims to examine the effectiveness of the B-GATE digital attendance system in improving employee discipline at BTN. It adopts a two-phase approach. The first phase involves a quantitative analysis to evaluate the relationship between B-GATE usage and employee discipline, particularly regarding punctual and consistent attendance. This phase also analyzes the system's impact on efficiency and accountability within human resource governance. The central hypothesis posits that B-GATE significantly improves employee work discipline. The second phase uses a qualitative approach to explore implementation barriers from technical, managerial, and organizational culture perspectives. It also aims to formulate development strategies that are more responsive to user needs and the evolving work environment.

A review of relevant literature shows that the adoption of digital attendance systems has grown in tandem with technological advancements. Syahrir (2023) highlighted how such systems improve attendance accuracy in educational institutions, while Wijaya (2023) emphasized the role of mobile applications in reducing administrative time and increasing transparency in public agencies. In the banking sector, biometric and geolocation-based attendance systems are increasingly relevant in meeting demands for efficiency and accountability (Wibowo & Setiawan, 2024; Hidayat, 2025). However, most prior research remains sector-specific and does not provide a comprehensive view of digital attendance implementation within modern institutions like BTN. This study seeks to address that gap by offering an in-depth analysis of the B-GATE system, including its effectiveness, implementation challenges, and development strategies.

The novelty of this study lies in its integrative approach, combining quantitative and qualitative analyses to map the effectiveness, challenges, and opportunities of digital attendance system development within BTN. Its findings are expected not only to provide practical recommendations for internal improvement but also to serve as a reference for other institutions seeking to implement similar technologies for modern, efficient, and adaptive human resource management.

B. METHOD

This study employs a mixed methods approach, which combines both quantitative and qualitative methodologies (Sugiyono, 2016). This approach was selected to address the research questions from two complementary perspectives: first, the outcome perspective, which evaluates the effectiveness of the B-GATE digital

attendance system in improving employee discipline; and second, the process perspective, which explores implementation challenges and potential development strategies. As noted by Johnson, Onwuegbuzie, and Turner (2007), mixed methods allow researchers to gain a deeper and more comprehensive understanding of phenomena—particularly when the subject matter involves systems and organizational behavior.

In practice, the mixed methods approach emphasizes the collection, analysis, and integration of quantitative and qualitative data within a single study framework (Tashakkori, 2003). This research adopts an explanatory sequential design (see Figure 1) as developed by Creswell (2014), which begins with the collection of quantitative data followed by qualitative exploration. This strategy allows the researcher to further explain and enrich the quantitative findings through qualitative insights, resulting in a more holistic understanding of the research problem.

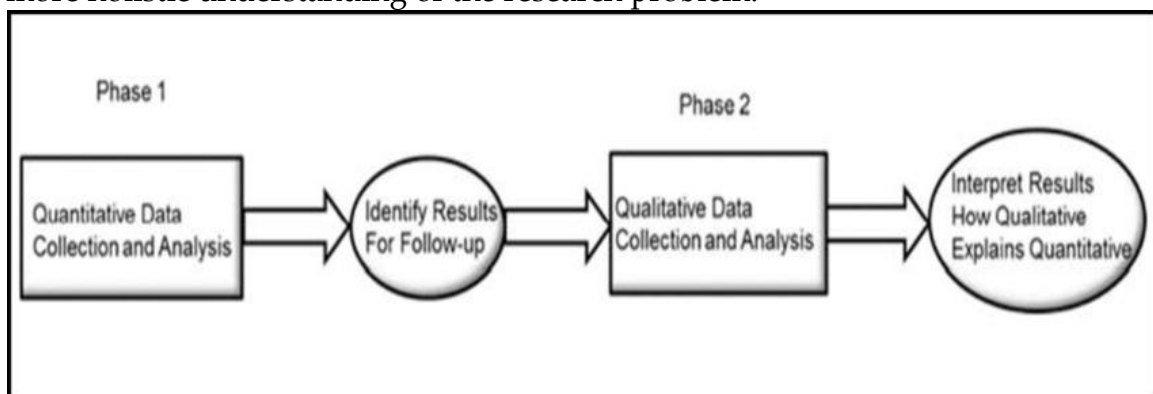


Figure 1. Explanatory Sequential Mixed Methods Design

Source: Creswell, 2014

This research was conducted in two distinct phases. The first phase was quantitative, focusing on measuring the effectiveness of the B-GATE digital attendance system in enhancing employee discipline at Bank BTN. In this phase, the researcher developed a questionnaire to assess employee perceptions across five key aspects of the system: ease of use, system reliability, accuracy of attendance recording, impact on work discipline, and user satisfaction. Each item was constructed using a five-point Likert scale (1–5) and was tested for validity and reliability prior to distribution. The collected data were then analyzed using descriptive and inferential statistical methods, including Pearson correlation and simple linear regression, with the assistance of SPSS or similar software. The results from this quantitative phase served as a foundation for formulating exploratory questions for the subsequent phase.

The second phase employed a qualitative approach aimed at further exploring the quantitative findings. This phase focused on identifying both technical and non-technical challenges in the use of the B-GATE system, as well as formulating development strategies that are adaptive to organizational needs. Data were collected through in-depth interviews and participant observations involving Bank BTN employees, particularly at the Surakarta branch office, which served as the case study location. The interviews were guided by a semi-structured protocol, featuring open-ended questions related to users' experiences, obstacles encountered, and expectations of the system. The resulting data were analyzed using thematic analysis, which

involved coding, categorization, and theme construction. This analysis aimed to enrich the interpretation of the quantitative data and serve as the basis for system development recommendations grounded in real user experience.

The research population comprised all operational employees of Bank BTN who use the B-GATE system. The quantitative sample was selected purposively based on criteria such as frequency of B-GATE usage, duration of system use, and job position. This purposive sampling ensured that respondents had direct experience with the system under study, thereby yielding data that were relevant and representative of the research objectives. For the qualitative phase, informants were selected based on their direct involvement with the B-GATE system at the focal case study site – namely, BFS staff members of Bank BTN's Surakarta branch office.

C. RESULT AND DISCUSSION

1. B-GATE Attendance System at Bank BTN

Online attendance refers to an application-based system that enables attendance recording to be conducted remotely via smartphones (Mahdalena & Sujono, 2021). One example of such implementation is the B-GATE (BTN GEO Attendance) application, a GPS-based attendance system that utilizes facial recognition instead of fingerprint scanning. This application is automatically connected to the central office, allowing real-time attendance logging (Antoni, 2023). The management of the B-GATE system falls under the responsibility of the central Human Capital Management Division (HCMD) located in Jakarta. B-GATE is a GPS- and biometric-based online attendance application developed by Bank BTN. Its core features include real-time attendance recording, location verification, and integration with the broader management system (Widyaningsih, 2020).

In the context of this study, five components are used as indicators to evaluate the performance of the B-GATE online attendance system:

- a. Hardware
This refers to the physical elements of the system that can be directly observed. These components serve as the operational tools for the attendance system, including smartphones, facial recognition scanners, and servers.
- b. Software
This supports the operation of the management information system and is divided into two categories: system software and application software. Both play critical roles in enabling the attendance process to function efficiently and automatically.
- c. Database
The database comprises systematically stored information within a computer system. With the help of specific programs, data within the database can be accessed, reviewed, and processed for reporting or analytical purposes.
- d. Procedures
These are a set of steps, guidelines, or instructions that must be followed to operate the system or application correctly. This component is essential to ensure that users can utilize the system in accordance with established standards.

e. Human Resources (Brainware)

Human operators of the system are a crucial component of any information system. This includes computer operators, system analysts, programmers, and data entry personnel. Their roles are vital to the successful implementation and smooth functioning of the system.

2. Effectiveness of the B-GATE Digital Attendance System

This study employed a quantitative approach to measure the effectiveness of the B-GATE digital attendance system in improving employee discipline at Bank BTN. Data were collected through questionnaires distributed to 75 respondents from five main and auxiliary branch offices of BTN in Surakarta, all of whom had used the B-GATE system for more than six months. The research instrument used a 5-point Likert scale to assess two variables: First, X (Independent Variable): The perceived usefulness of the B-GATE attendance system, measured through aspects such as ease of use, reliability, accuracy, and processing speed. Second, Y (Dependent Variable): Employee work discipline, assessed through indicators such as punctuality, lateness, and adherence to official working hours.

The data summary showed that the average employee perception of the B-GATE system was relatively high. The descriptive statistical details are presented below:

Table 2. Descriptive Statistics

Variable	N	Mean	Std. Deviation
B-Gate (X)	75	4.18	0.47
Work discipline (Y)	75	4.05	0.53

The average employee perception score of the B-GATE system was 4.18, indicating that most respondents found the system easy to use and believed it enhanced operational efficiency. Meanwhile, the average score for work discipline was 4.05, suggesting that employees perceived the system as contributing to improved punctuality and compliance with working hours. A simple linear regression analysis was conducted to determine the extent to which the B-GATE system influences employee discipline. The results of the analysis are presented in the following table:

Table 3. Regression Coefficients

Model	Unstandardized Coefficients	Std. Error	t	Sig
Constant	1.801	0.330	5.460	0.000
B Gate (X)	0.541	0.082	6.598	0.000

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.610	0.372	0.364	0.420

An R Square value of 0.372 indicates that 37.2% of the variance in employee work discipline can be explained by the use of the B-GATE system. With a significance level of $p = 0.000$ (which is lower than $\alpha = 0.05$), it can be concluded that there is a statistically significant relationship between the use of the B-GATE system and improvements in employee discipline.

The regression coefficient of 0.541 suggests that for every one-unit increase in positive perception of the B-GATE system, there is a corresponding 0.541-unit increase in the employee discipline score (see Figure 2). This implies that the more effective and user-friendly the system is perceived to be, the higher the likelihood that employees will arrive on time and comply with work regulations.

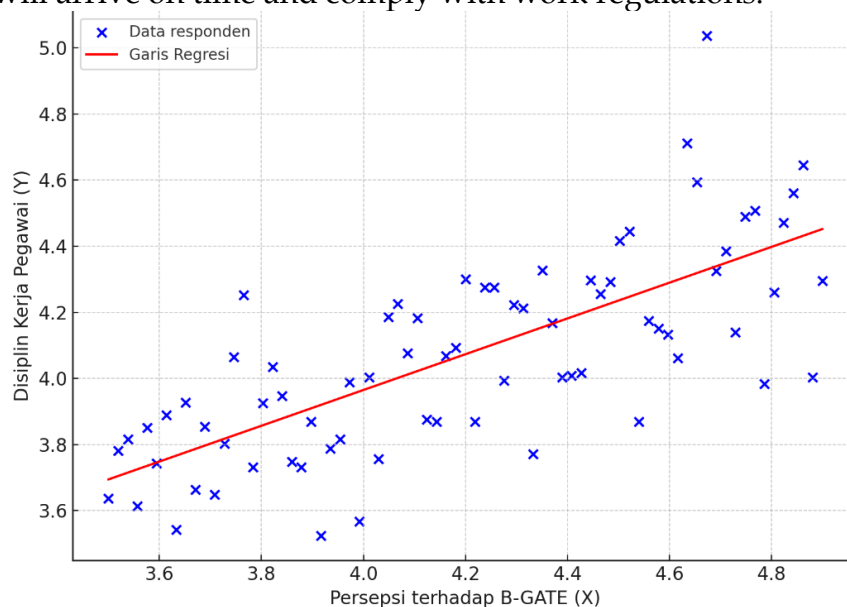


Figure 2. Relationship Between B-GATE Usage and Employee Work Discipline

These findings serve as the foundation for the second phase of the study, indicating a positive correlation between the use of digital attendance systems and human resource management, particularly in relation to employee discipline. Systems like B-GATE function not merely as attendance recorders, but also as managerial instruments that contribute to the development of orderly and measurable work behavior.

3. Challenges in Implementing the B-GATE Attendance System

The findings from the second phase of this study, obtained through in-depth interviews and observations at five Bank BTN branch offices, reveal that although the B-GATE system has been widely implemented, various challenges persist in its execution. Data analysis was conducted using a thematic analysis approach, which identified four key themes: (1) Technological Instability, (2) Lack of Guidelines and Technical Support, (3) Psychological Resistance and Digital Culture, and (4) Digital Literacy Gaps.

a. Technological Instability

The first theme that emerged from the field data concerns technological instability. Many employees reported difficulties when the GPS system failed to accurately detect their location—especially in high-rise buildings or areas with weak signals. Although B-GATE is designed to operate in real time, its effectiveness is highly dependent on internet signal quality and user devices. One respondent stated: “Sometimes I’m already at the office, but the system can’t detect my location. I have to step outside and find a signal before I can check in—even when time is tight.”

b. Lack of Guidelines and Technical Support

The second challenge relates to weak institutional support in the form of standardized operating procedures (SOPs) and adequate technical assistance. Interviews revealed that not all units have uniform technical guidelines to respond to system errors or malfunctions. Some respondents noted that when issues arise, there is no clear protocol for immediate action at the unit level. As a result, employees must wait for confirmation from headquarters or supervisors, which leads to delays. The lack of technical support is exacerbated by the absence of a local helpdesk capable of resolving technical problems swiftly and efficiently.

c. Psychological Resistance and Digital Culture

The third theme reflects psychological resistance among some employees toward the adoption of new technologies, particularly those perceived as surveillance tools such as B-GATE. Several employees felt that they were being “over-monitored” because the application records their location and time with high precision. This tension reveals a conflict between the organization’s need for discipline and individuals’ needs for privacy and psychological comfort. Such perceptions indicate that digital culture has not been fully internalized. Digital systems are still often viewed as control mechanisms rather than productivity tools.

d. Digital Literacy Gaps

The final theme concerns digital literacy gaps, particularly among senior staff or those unaccustomed to using mobile applications in a work context. Some employees expressed difficulties with the B-GATE workflow—from logging in and syncing data to reporting errors. The lack of technical training and absence of practical user guides (such as videos or digital simulations) has led to a reliance on coworkers, slowing down the adaptation process and reducing user confidence.

These four themes highlight the complex nature of the challenges in implementing the B-GATE system—challenges that cannot be addressed solely through technological upgrades. System instability must be met with improved infrastructure and reliable hardware. The absence of clear technical guidelines and on-site support indicates the need for consistent SOPs and the presence of technical personnel within work units. Meanwhile, cultural resistance and literacy gaps require more empathetic organizational communication strategies and ongoing training programs. Ultimately, the success of B-GATE implementation cannot be measured solely by its technical functionality but must also account for how effectively the organization understands and manages the human factors involved.

This study not only measured the effectiveness of the B-GATE digital attendance system in enhancing employee discipline, but also offered a critical reflection on how technology is adopted, received, and interpreted within the complex organizational structure of Bank BTN. Quantitative analysis revealed a statistically significant positive correlation between employee perceptions of the B-GATE system and improvements in work discipline. Meanwhile, qualitative findings provided deeper insight into how the technology is implemented in the realities of day-to-day operations.

Overall, the B-GATE system has succeeded in establishing a foundation for data-driven, real-time discipline monitoring. However, this technical achievement does not automatically guarantee comprehensive implementation success. Field

findings highlight a gap between the strengths of the technology and the readiness of the organizational ecosystem to support digital transformation.

First, the presence of advanced technology does not ensure success if not supported by fundamental infrastructure such as network quality and adequate devices. This underlines that in any digital innovation, technical aspects cannot stand alone without robust supporting systems.

Second, human factors remain central to the successful adoption of technology. Resistance, anxiety over surveillance, and disparities in digital competence all illustrate that change management in public organizations continues to pose challenges. The success of digital systems depends on how users understand, accept, and feel a sense of ownership over the system. Third, organizational policy dimensions also significantly influence implementation effectiveness. Inconsistent SOPs, lack of training, and insufficient technical support all point to institutional weaknesses in guiding the very technologies they adopt. This confirms that digitalization is not merely a change in tools, but a transformation in mindsets, work processes, and leadership approaches.

Theoretically, this study reinforces the understanding that the success of technological systems in public organizations is influenced not only by technical variables but also by socio-organizational factors. Theoretical models such as the Technology Acceptance Model (TAM) and Socio-Technical Systems Theory are highly relevant in explaining how the interaction between people, systems, and organizational structures determines the success or failure of technology adoption. This research contributes to the application of these frameworks in the context of public sector human resource management in Indonesia, particularly within state-owned banks. It provides theoretical insights into the development of data-driven performance management models that integrate technological systems with organizational behavior.

Thematic analysis in this study shows that the success of digital technology implementation is also highly context-dependent, shaped by local environments, organizational culture, and users' level of digital literacy. This supports a contextual approach to innovation management in the public sector, where one-size-fits-all solutions are unlikely to succeed. The findings of this study offer several important implications for Bank BTN and other institutions seeking to adopt digital attendance systems or similar technologies in human resource management:

- a. Strengthening Technological Infrastructure
- b. Developing Clear Technical Guidelines and SOPs
- c. Enhancing Employee Training and Digital Literacy
- d. Managing Organizational Change
- e. Integrating Attendance Data with Performance Management
- f. Conducting Regular Evaluations and System Improvements

Digitalization is never merely about switching from manual to automated systems. It is a process of structural, cultural, and human transformation. B-GATE is only an entry point toward more modern personnel governance. Yet, without institutional commitment, adaptive leadership, and active user engagement, this innovation risks becoming more of a burden than a solution.

D. CONCLUSION

The B-GATE digital attendance system has a positive and significant contribution to improving employee work discipline at Bank BTN Surakarta, particularly in supporting punctuality and compliance with working hours. However, its implementation still faces several challenges, including GPS instability, limited technical support, the absence of standardized operating procedures, employee resistance, and digital literacy gaps. Therefore, further development of B-GATE should focus on strengthening technical infrastructure, establishing clear internal guidelines, improving employee training, and adopting a more user-centered approach. Overall, the findings show that the success of digital attendance implementation depends not only on technological performance but also on organizational readiness and effective change management.

Digital transformation through systems like B-GATE should not be viewed merely as an administrative replacement, but as part of a broader paradigm shift in organizational management. The system serves as a symbol of a transition toward a more transparent, efficient, and data-driven work culture. In this process, visionary and participatory leadership is essential to ensure that change is not merely procedural, but embedded in the institutional work culture.

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