



Digital Workforce Monitoring and Supervisory Control: Implications for Employee Performance Outcomes

Chintia Martceli Putri¹, Indah Hartati², Fillia Anindita³

^{1,2,3} Metro City Regional Secretariat

Email: chintiamartceliputri@gmail.com

Abstract

This study investigates the influence of e-attendance and work supervision on employee performance. Data were collected through questionnaires, interviews, and documentation, and analyzed using multiple linear regression with SPSS 24.0. The results indicate that both e-attendance and work supervision have a significant partial and simultaneous effect on employee performance. E-attendance contributes to improved discipline and efficiency in attendance tracking, while work supervision ensures task alignment with organizational standards, enhancing accountability and motivation. The combined implementation of e-attendance and effective supervision strengthens performance quality and quantity, supporting better public service delivery. These findings provide theoretical insights into public administration practices and practical guidance for local governments to optimize human resource management strategies.

Keywords: E-Attendance, Work Supervision, Employee Performance, Public Administration.

Introduction

Employee performance is a critical factor in determining the success of government organizations in achieving their objectives and delivering optimal public services (Karampotsis *et al.*, 2024). Work discipline and effective supervision are essential elements for enhancing employee productivity (Madiistriyatno & Sofianto, 2021). Within the context of local government, attendance systems play a strategic role in monitoring the discipline of civil servants (Schlæger & Wang, 2017). However, manual attendance methods are often ineffective and susceptible to manipulation. With advances in technology, the implementation of electronic attendance systems (e-attendance) has emerged as an innovative solution that offers greater accuracy and efficiency in tracking employee attendance while supporting data-driven decision-making (Low, 2023).

The Metro City Government has adopted an e-attendance system in the Protocol and Leadership Communication Division of the Regional Secretariat to improve employee discipline and performance. Nevertheless, attendance records reveal that some employees continue to arrive late or leave early, which negatively affects the quality of public services. Supervisory data also indicate variations in employee performance before and after the implementation of e-attendance. These findings suggest that the effectiveness of the e-attendance system still requires robust work supervision to ensure consistent improvements in employee performance (Jensen *et al.*, 2019).

In addition to e-attendance, work supervision has a significant impact on performance outcomes (Abdurrasodik *et al.*, 2020). Effective supervision ensures that tasks are carried out according to established standards and strengthens employees' sense of responsibility (Razak *et al.*, 2018). Within the Protocol and Leadership Communication Division, supervisory oversight plays a vital role in maintaining discipline, fostering motivation, and ensuring the quality of employee output. Without adequate supervision, the e-attendance system alone is insufficient to guarantee sustainable performance improvements (Modise & Modise, 2023).

Based on these observations, this study aims to analyze the influence of e-attendance and work supervision on employee performance in the Protocol and Leadership Communication Division of the Regional Secretariat of Metro City. The findings are expected to contribute theoretically to the development of public administration knowledge and provide practical insights for local governments in formulating effective policies to enhance employee performance and improve the quality of public services.

Literature Review

a. E-Attendance

E-attendance is an electronic employee attendance recording system designed to monitor and automatically compile attendance data. According to (Ferdika & Nasution, 2020), such systems are essential for government agencies and organizations to ensure employee discipline. By utilizing digital technology, e-attendance replaces manual methods that are prone to data manipulation, resulting in more accurate and transparent attendance records (Koman *et al.*, 2024).

Beyond functioning as a disciplinary control tool, e-attendance also supports administrative efficiency (Baldacchino *et al.*, 2018). Barusman & Habiburrahman (2022), state that digitizing attendance records enhances productivity and fosters innovation in human resource management. Automated recording allows managers to save time, reduce administrative errors, and facilitate the evaluation of employee performance. Furthermore, Atieh *et al.*, (2016) emphasize that the implementation of e-attendance simplifies the monitoring of working hours, overtime, and employee tardiness. Accurate attendance data can serve as a basis for performance assessments, incentive distribution, and corrective actions. Thus, e-attendance is not merely an administrative instrument but also a strategic approach to strengthening organizational governance (Mohamed *et al.*, (2022).

b. Work Supervision

Work supervision is a systematic process to ensure that task execution aligns with organizational plans and standards (Deussom *et al.*, 2022). Arsana *et al.*, (2019) explains that supervision aims to ensure tasks are performed efficiently and effectively according to established objectives. This process allows leaders to identify deviations and take necessary corrective actions (Devi, 2016).

Akeem (2017), outlines that supervision involves setting standards, measuring performance, comparing results to standards, and determining corrective measures. In the context of public administration, work supervision also ensures the quality of services provided to the community. Effective supervision strengthens accountability and public trust in government institutions (Nweke, 2021).

According to Pisriwati *et al.*, (2024), effective supervision fosters employee responsibility, improves work discipline, and drives the achievement of organizational targets. Consistent and appropriate supervision enables continuous performance monitoring and improvement, ensuring the organization meets its goals optimally (Dini, 2024).

c. Employee Performance

Basically, Employee performance refers to the work outcomes achieved by individuals in accordance with their assigned duties and responsibilities (Zhou *et al.*, 2024). Loan (2020), defines performance as the level of achievement in completing

specific tasks, while Hariandja (2008) emphasizes that performance reflects the actual behavior employees exhibit in fulfilling their roles. High employee performance serves as a benchmark for organizational success, particularly in the public sector (Zakaria *et al.*, 2020).

Nalim *et al.*, (2020), identifies several indicators of employee performance, including work quality, work quantity, reliability, and cooperative attitudes. These indicators are crucial for evaluations aimed at identifying areas for improvement. In the context of public service, employee performance is closely linked to community satisfaction with the services received (Diamantidis & Chatzoglou, 2019).

Barusman *et al.*, (2024), argue that work discipline, motivation, and the work environment significantly influence employee performance. Therefore, organizations must ensure that human resource management systems, including work supervision and e-attendance implementation, function effectively. Enhancing employee performance directly contributes to improved public service effectiveness and the achievement of organizational objectives (Gautama So *et al.*, 2018).

Research Framework

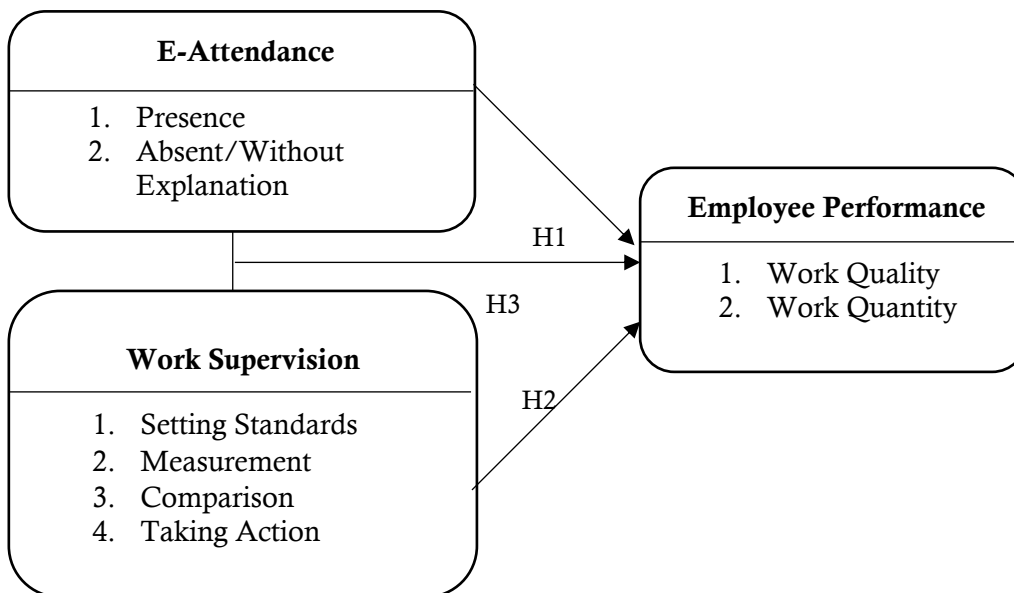


Figure 1. Framework

Methodology

This study employed a quantitative approach with a verificative design to analyze the influence of e-attendance and work supervision on employee

performance in the Protocol and Leadership Communication Division of the Metro City Regional Secretariat. The entire research population, consisting of 27 employees, was used as the sample (census sampling) due to its limited size, which allowed the inclusion of all respondents. The quantitative approach was chosen as it enables objective hypothesis testing through statistical analysis, thereby providing valid and reliable empirical evidence (Daniel, 2016).

Data were collected using a questionnaire as the primary instrument, supplemented by interviews for data validation and documentation review as secondary sources. The questionnaire was developed based on indicators of the study variables, including e-attendance (presence and absence), work supervision (standard setting, measurement, comparison, and corrective actions), and employee performance (quality and quantity of work). Responses were measured using a five-point Likert scale, ranging from “strongly agree” to “strongly disagree,” to assess the respondents’ level of agreement with the provided statements.

Prior to data analysis, validity and reliability tests were conducted to ensure the accuracy and consistency of the measurement instruments. The data were analyzed using simple and multiple linear regression with the assistance of SPSS version 24.0 to test the proposed hypotheses. A 95% confidence level ($\alpha = 0.05$) was applied to evaluate the partial and simultaneous effects of e-attendance and work supervision on employee performance. The research site was selected based on data accessibility and the relevance of observed phenomena, with the study scheduled over a three-month period covering data collection, analysis, and report preparation.

Result And Discussion

Validity Test

The research instrument was tested for validity using construct validity to ensure the accuracy and appropriateness of the questions, while its reliability was assessed through an internal consistency test employing Spearman’s rank correlation. The instrument testing was conducted at a significance level of $\alpha = 0.05$. With a sample size of $N = 27$, the corresponding critical t-value used for evaluation was 0.381.

Table 1. E-Attendance Validity Test

Statement Item	r-table	r-count	Description
X1.1	0,381	0.562	Valid
X1.2	0,381	0.613	Valid
X1.3	0,381	0.843	Valid
X1.4	0,381	0.741	Valid
X1.5	0,381	0.784	Valid

Source: Data Processed, 2024

Table 1 indicates that all question items used in the E-Attendance variable instrument were found to be valid. Therefore, the E-Attendance instrument is considered acceptable for use. Among the five items employed to measure the E-Attendance variable, the validity test results confirmed that all items were both valid and statistically significant. Consequently, the E-Attendance instrument is deemed appropriate for further measurement of the E-Attendance variable within the Protocol and Leadership Communication Division of the Metro City Regional Secretariat.

Table 2. Work Supervision Validity Test

Statement Item	r-table	r-count	Description
X2.1	0,381	0.727	Valid
X2.2	0,381	0.559	Valid
X2.3	0,381	0.771	Valid
X2.4	0,381	0.583	Valid
X2.5	0,381	0.422	Valid
X2.6	0,381	0.675	Valid

Source: Data Processed, 2024

Table 2 shows that all question items used in the Work Supervision variable instrument were found to be valid. Therefore, the Work Supervision instrument is considered acceptable for use. Among the six items employed to measure the Work Supervision variable, the validity test results confirmed that all items were both valid and statistically significant. Consequently, the Work Supervision instrument is deemed appropriate for further measurement of the Work Supervision variable within the Protocol and Leadership Communication Division of the Metro City Regional Secretariat.

Table 3. Employee Performance Validity Test

Statement Item	r-table	r-count	Description
1	0,381	0.574	Valid
2	0,381	0.786	Valid
3	0,381	0.730	Valid
4	0,381	0.803	Valid
5	0,381	0.886	Valid
6	0,381	0.831	Valid
7	0,381	0.707	Valid
8	0,381	0.721	Valid

Source: Data Processed, 2024

Table 3 indicates that all question items used in the Employee Performance variable instrument were found to be valid. Therefore, the Employee Performance instrument is considered acceptable for use. Of the eight items employed to measure the Employee Performance variable, the validity test results confirmed that all items were both valid and statistically significant. Consequently, the Employee Performance instrument is deemed appropriate for further measurement of the Employee Performance variable within the Protocol and Leadership Communication Division of the Metro City Regional Secretariat.

Reliability Test

Reliability testing reflects the level of accuracy and precision of a measurement instrument. An instrument is considered reliable when its measurement results are both accurate and consistent. Reliability testing emphasizes the stability and consistency of measurement outcomes. A questionnaire is regarded as reliable if respondents' answers to the same statements remain consistent or stable over time. Furthermore, a construct or variable is deemed reliable when it produces a Cronbach's Alpha value of ≥ 0.60 .

Table 4. Reliability Test Results

Variable	Cronbach Alpha	Description
E-Attendance	0,760	Reliable
Work Supervision	0,852	Reliable
Employee Performance	0,886	Reliable

Source: Data Processed, 2024

The reliability test results indicate that all question items from the three variables examined are considered reliable, as they achieved Cronbach's Alpha values of ≥ 0.60 .

Hypothesis Testing Results

This study was conducted with 27 respondents and formulated the following research hypotheses.

Table 5. Hypothesis Testing Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	13.132	4.594		2.859	.009
E-Attendance	.517	.197	.431	4.040	.020
Employee Performance	.373	.165	.371	2.917	.005

Source: Data Processed, 2024

Hipotesis penelitian yang diajukan adalah sebagai berikut. Pertama, H_0 menyatakan bahwa E-Absensi tidak berpengaruh terhadap kinerja pegawai pada Bagian Protokol dan Komunikasi Pimpinan Sekretariat Daerah Kota Metro, sedangkan H_1 menyatakan bahwa E-Absensi berpengaruh terhadap kinerja pegawai pada bagian tersebut. Kedua, H_0 menyatakan bahwa Pengawasan Kerja tidak berpengaruh terhadap kinerja pegawai pada Bagian Protokol dan Komunikasi Pimpinan Sekretariat Daerah Kota Metro, sedangkan H_1 menyatakan bahwa Pengawasan Kerja berpengaruh terhadap kinerja pegawai pada bagian tersebut. Ketiga, H_0 menyatakan bahwa E-Absensi dan Pengawasan Kerja secara bersama-sama tidak berpengaruh terhadap kinerja pegawai pada Bagian Protokol dan Komunikasi Pimpinan Sekretariat Daerah Kota Metro, sedangkan H_1 menyatakan bahwa keduanya secara bersama-sama berpengaruh terhadap kinerja pegawai pada bagian tersebut.

Hasil pengujian hipotesis menggunakan program SPSS versi 24 menghasilkan persamaan regresi sebagai berikut:

$$Y = 13,132 + 0,517X_1 + 0,373X_2 + \varepsilon.$$

Persamaan ini menunjukkan bahwa sebelum dilakukan pengukuran, baik E-Absensi maupun Pengawasan Kerja, variabel E-Absensi telah memiliki pengaruh terhadap kinerja pegawai dengan nilai konstanta sebesar 0,517. Demikian pula, Pengawasan Kerja sebelum dilakukan pengukuran telah memiliki nilai konstanta sebesar 0,373.

Conclusion and Implication

Conclusion

Based on the research findings and discussion, it can be concluded that e-attendance has a significant influence on employee performance in the Protocol and Leadership Communication Division of the Metro City Regional Secretariat. Furthermore, work supervision was also found to have a significant effect on employee performance within the same division. In addition, e-attendance and work supervision collectively exert a combined influence on employee performance in the Protocol and Leadership Communication Division of the Metro City Regional Secretariat.

Implication

This study demonstrates that e-attendance and work supervision have a significant impact on employee performance within the Protocol and Leadership Communication Division of the Metro City Regional Secretariat. Optimizing the e-attendance program and strengthening work supervision are essential to promote better performance outcomes. The findings also highlight the importance of employee awareness in adhering to established regulations as a fundamental responsibility of civil servants. Furthermore, the results provide valuable insights for employees and leadership to engage in self-improvement, enhance work motivation, and serve as a basis for reinforcing e-attendance and work supervision policies to improve overall organizational performance.

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