

Information Technology Infrastructure: Digital-Based Attendance Applications and Quality of Information Technology Services on Employee Performance Levels: Case Study APATOKI Application Soppeng of Indonesia

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Abstract. Digital transformation in information technology infrastructure has brought significant changes in various aspects, including human resource management. One of the innovations implemented is a digital-based attendance application that aims to increase the efficiency and effectiveness of employee performance. This study aims to analyze the influence of the use of the APATOKI digital attendance application and the quality of information technology services on the level of employee performance in Soppeng Regency, South Sulawesi Province. The research method used is a quantitative approach with data collection techniques through surveys to employees who use the APATOMKI application. Data analysis was carried out using descriptive and inferential statistical methods to test the relationship between independent variables, namely the use of digital attendance applications and the quality of information technology services, to the dependent variable, namely employee performance using SmartPLS 4.

The results of the study show that the use of digital attendance applications has a positive and significant influence on increasing employee discipline and productivity. In addition, the good quality of information technology services also contributes to increasing job satisfaction and operational effectiveness of employees. Simultaneously, the use of digital-based attendance applications and the quality of Information Technology services have a significant effect on Employee Performance with an R-Square Value of 0.699 which means 69% of the influence contributed and the remaining 31% is influenced by other aspects.

Thus, the implementation of digital attendance applications supported by reliable information technology infrastructure can be a key factor in optimizing employee performance. This study provides recommendations for government agencies and other organizations to continue to improve the quality of information technology services to support a more effective and efficient digital transformation.

Keywords: Information Technology Infrastructure, Digital Attendance Application, Quality of Service, Employee Performance, APATOKI

2 Background

In the era of digitalization, the use of information technology in the world of work is increasing. One of the growing information technology implementations is a digital-based attendance application that aims to improve accuracy and efficiency in recording employee attendance. In addition, the quality of service in information technology systems is also an important factor affecting employee performance.

The development of information technology has brought significant changes in various aspects of life, including in the world of work. One innovation that is increasingly being applied is the use of digital-based attendance applications as a solution in improving the efficiency of employee attendance management.

One of the regions that has implemented a digital-based attendance application is Soppeng Regency, South Sulawesi Province. The platform with the name APATOKI (Application for Performance and Discipline Benchmarking) is oriented towards the effectiveness and efficiency of ASN attendance in Soppeng Regency. Digital attendance systems such as APATOKI (Application for Performance and Discipline Benchmarking) are present as an answer to the challenge of recording attendance that is more accurate, efficient, and transparent.

Previously, conventional attendance systems that still relied on manual methods such as signatures or fingerprint machines often faced various obstacles, such as the risk of fraud, delays in reporting, and difficulties in data recapitulation. With a digital-based attendance application, the process of recording attendance becomes easier, more accurate, and can be monitored in real-time by management.

In addition to the application of technology in the attendance system, the service quality factor is also an important aspect that affects employee performance. Good service quality of a digital attendance system includes ease of use, system reliability, speed in processing data, and availability of support services for users. When a system has high service quality, employees can be more comfortable in using it, thus increasing their work productivity and effectiveness.

However, while digital attendance applications offer many benefits, their implementation does not always go smoothly. Some agencies may face challenges in terms of technology adoption by employees, technology infrastructure that is not yet optimal, as well as training needs for users in order to make the most of the system. Therefore, it is important to examine the extent to which the use of APATOKI and the quality of services provided can affect the level of employee performance.

This study aims to analyze the effect of using the APATOKI digital-based attendance application and service quality on employee performance. By understanding the relationship between attendance technology and employee performance, it is hoped that this research can provide insight for organizations in improving the effectiveness of human resource management and optimizing information technology in supporting work productivity.

3 Methods

3.1 Research Type

The approach used to achieve the objectives of this research is quantitative with a case study based on the post-positivism research paradigm. This type of research is Descriptive Quantitative using multiple linear regression to describe the relationship between variables without inferring a cause-and-effect relationship. The research was conducted in Soppeng Regency, South Sulawesi Province.

3.2 Data Collection Technique

The data used in this research is primary data. Primary sources are things that are stated by parties who are present at the time of the incident and can be used as witnesses or data providers directly to data collectors. Primary data collection in a study can be obtained directly from the source by doing various things, one of which is the survey method by distributing questionnaires (questionnaires). The questionnaire is one of the data collection techniques carried out by giving a set of written questions to respondents with predetermined criteria to answer. This research conducted a questionnaire interview with ASN in Soppeng Regency who used the APATOKI application. This collection technique is in the form of research questions that will be arranged in the questionnaire and will be interviewed directly to the respondent. The data generated is relevant data that can be used for research.

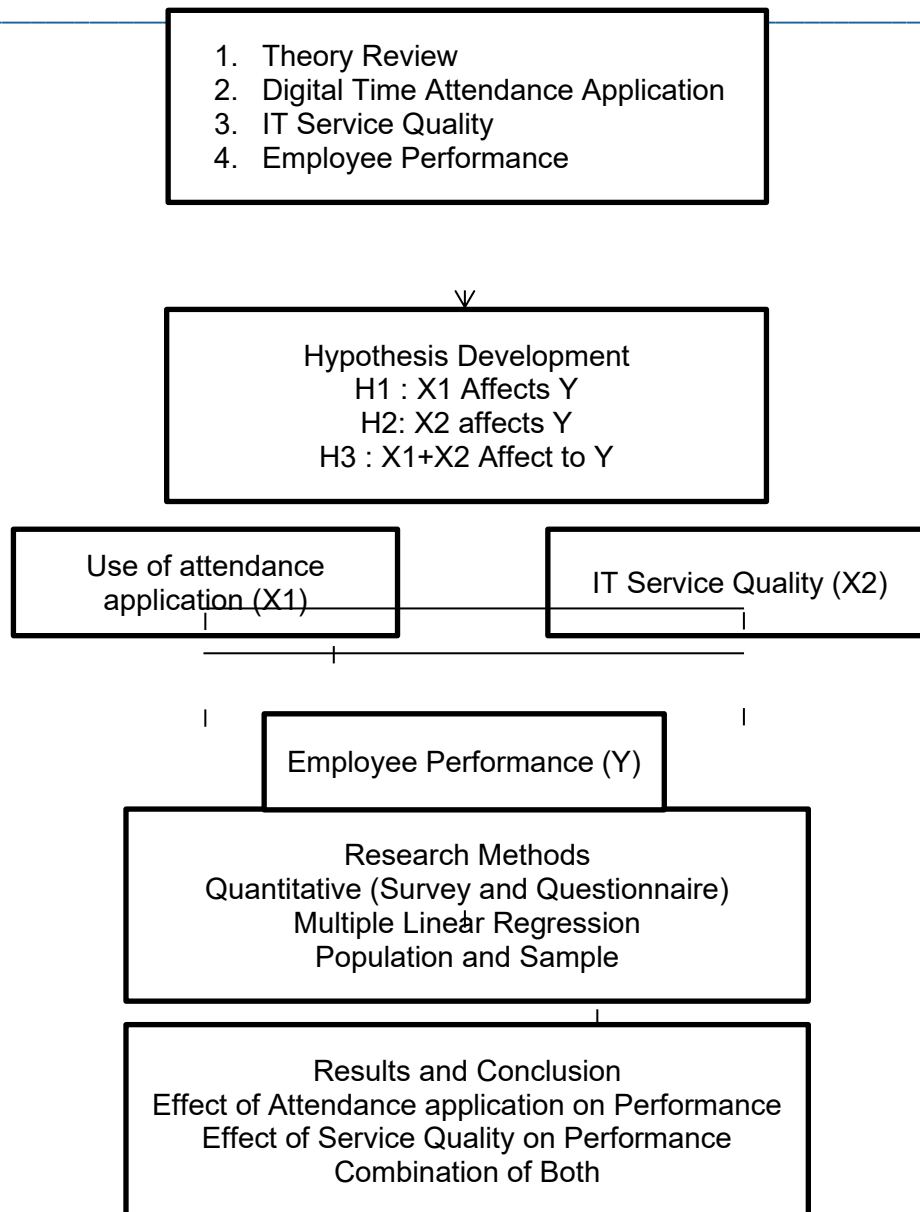


Figure 2. Research Framework

Can be seen in Figure 2, to measure how much significance the use of digital-based applications (X1) and the quality of information technology services (X2) have on employee performance (Y), it is described in several indicators of the variable and measured using a Likert scale. The Likert scale is a scale used to measure the perceptions, attitudes or opinions of a person or group regarding a social event or phenomenon (Pranatawijaya et al., 2019). The Likert scale used is a scale consisting of levels or points that have been modified to 5 points to measure low to high levels or vice versa. The modification of the Likert scale is intended to eliminate the weaknesses contained by the five-level scale.

Table 1. Variables and Indicators

Variables	Indicators
Use of Digital-based Attendance Application	1. Usability
	2. System realibility
	3. Features & Functionality

	4.	Data Security
	5.	Effectiveness & Efficiency
Information Technology Service Quality	1.	Reliability
	2.	Responsiveness
	3.	Security
	4.	Usability
	5.	Efficiency
	6.	Accessibility
	7.	User Satisfaction
Employee Performance	1.	Productivity
	2.	Work Quality
	3.	Work Discipline
	4.	Adaptability
	5.	Initiative & Creativity

Source: Researcher Analysis, 2024

Based on the table above, several actor variables will be measured on a Likert scale (five scale). the population in this study were 4512 people covering ASN in Soppeng Regency. Sample Withdrawal Using the Slovin Formula as follows:

$$n = N / (1 + Ne^2)$$

Description:

n: minimum sample size

N: many samples in the population

e: error tolerance limit (error)

so that the following sample is obtained:

$$n = 4512 / (1 + 4512(0.25)) = 39,99.....$$

The sample used in this study was 40 people with an accidental distribution (Purposive Sampling).

The scales used include:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

3.3 Place and Time of Research

The research was conducted in Soppeng Regency, South Sulawesi Province in February 2024.

3.4 Data Analysis and Inference Techniques

This research uses the Partial Least Square Structural Equation Modeling (PLS-SEM) approach. PLS-SEM is a second generation multivariate statistical procedure that can be applied in marketing research (Wong, 2019). PLS-SEM can also be used in formative measurement models and reflective measurement models. PLS-SEM uses a composite model approach in measuring estimation. So this PLS-SEM in multiple regression analysis is very good not only for measuring effect indicators in reflective measurement models, but also measuring composite indicators in formative measurements. Usually, PLS is used when there are problems in the data such as too small sample size, multicollinearity, or insufficient sample data when conducting. PLS uses the OLS algorithm to avoid non-recursive model identification problems that cannot be solved by CBSEM. In statistical tools, the distribution of data on different scales is a problem, and PLS can measure data on different scales at one time.

Model Measurement (Outer Model)

Outer model is a form of measurement that uses parameters on the connecting factors or vice versa. To measure instrument reliability and construct validity, namely by using this outer model. The validity test is carried out to measure the ability of the research instrument to measure something. Meanwhile, measuring the consistency of respondents in answering questions is used reliability test (Darma, 2021). This measurement model can also be done with reflective and formative methods. In this study, researchers used a reflective model.

1. Composite Reliability

Apart from conducting a validity test, when processing data in PLS, it is also necessary to conduct a reliability test. This reliability test has the aim of measuring the internal consistency of the measuring instrument (Darma, 2021). This is because the reliability test shows the consistency, accuracy, and accuracy of the meter used to take measurements.

In PLS, it allows researchers to use two methods for reliability testing: Cronbach's alpha method and composite reliability method. However, according to Chin, the composite reliability method is considered superior to Cronbach's alpha in measuring internal consistency. This is because composite reliability does not require the same boot procedure from all indicators (Yamin & Kurniawan, 2019). With this value, the true reliability value of a construct can be measured. The composite reliability value is expected to be at least 0.7 (Musyaff et al., 2021).

In the reliability test, it can be seen from the Cronbach's Alpha value and the Composite Reliability value. The construct is declared reliable if the composite reliability value is more than 0.7 and the Cronbach's alpha value is more than 0.6 (Ernawati & Noersanti, 2020).

2. Convergent Validity

Convergent validity test is a principle that measures derived from a construct should have a high correlation. According to Musyaff et al. (2021), the convergent validity value shows the validity of the indicators in the measurement. This value can be seen through the loading factor value on endogenous and exogenous variables. Where the recommended value is convergent validity > 0.7 but can be tolerated at 0.5.

What is used for convergent validity is outer loading > 0.5; communality > 0.5; and Average Variance Extracted (AVE) > 0.5. Indicator variables with a loading factor value < 0.4 must be removed and a loading factor value > 0.7 is a strong value. The AVE value can be said to be good if it meets the requirements of the rule of thumbs > 0.5 (Jannah & Ismail, 2023).

3. Discriminant validity

Discriminant validity has the principle that indicators of different constructs should not have a high correlation. The outer model value associated with the indicator variable of each construct variable must exceed the value of the other variables (Musyaff et al., 2021). This discriminant validity is tested using cross loading measurements with constructs. Another method used to test this discriminant validity is to compare the root AVE for each

construct with the correlation between one construct and another in a model. The rule of thumb used in discriminant validity is AVE root > latent variable correlation and cross loading value > 0.7 for one variable (Jannah & Ismail, 2023).

Inner Model

Testing the inner model or structural model is carried out to see the relationship between constructs, the significance value of the R-square of the research model. The structural model is evaluated using the Rsquare for the dependent construct t test as well as the significance of the structural path parameter coefficient.

This value is the coefficient of determination on an endogenous construct. The R Square value defines the variation of exogenous variables on endogenous variables. The criteria are R Square of 0.67 means strong, 0.33 means moderate, and 0.19 means weak (Musyaff et al., 2021).

4 Discussion

4.1 APATOKI digital-based attendance system (Performance and Discipline Benchmarking Application)

A digital-based attendance system is a method of recording attendance that uses technology to replace manual methods such as paper signatures. This system is usually based on applications, biometric devices, or cloud computing to record and store attendance data automatically and in real-time.

APATOKI (Application for Performance and Discipline Benchmarking) is a digital attendance system implemented by the Government of Soppeng Regency to monitor the attendance and performance of State Civil Apparatus (ASN) within the local government. This application functions as a basis for assessing attendance related to the payment of Additional Employee Income (TPP).

The use of APATOKI is mandatory for all ASNs in Soppeng Regency, where they are asked to download this application through official platforms, such as the Play Store. This step is in line with efforts to improve employee discipline and is a follow-up to the recommendations of the Supreme Audit Agency (BPK) of the Republic of Indonesia.

Overall, the implementation of digital-based attendance systems such as APATOKI in Soppeng Regency shows the commitment of local governments in utilizing technology to improve efficiency, accountability, and transparency in personnel management.

4.2 Characteristics of Respondents

Characteristics of Respondents based on Gender

Based on the results of the research conducted, the characteristics of respondents based on gender can be seen in the following table 2:

Table 2. Characteristics of respondents based on gender

Gender	Percentage
Male	62,5%
Female	37,5%

Source: Primary data that has been processed, 2025

Can be seen in table 2 From a total of 40 respondents, based on the table it is known that 62.5% consisted of male respondents, while the remaining 37.5% were respondents with female gender So it is concluded that the majority of respondents in this study are male.

Characteristics of Respondents by Age

Based on the results of the research conducted, the characteristics of respondents based on age can be seen in the following table 3:

Table 3 Characteristics of respondents based on age

Age	Percentage
21-30 Tahun	25%
31-40 Tahun	37,5%
41-50 Tahun	25%
>50 Tahun	12,5%

Source: Primary data that has been processed, 2025

Can be seen in table 3 Of the total 40 respondents, based on the table it is known that 25% consisted of respondents aged 21-30 years, 37.5% aged 31-40 years, 25% aged 41-50 years and the remaining 12.5% were respondents aged > 50 years. So it can be concluded that the majority of respondents in this study are 31-40 years old.

Characteristics of Respondents based on Agency

Based on the results of the research conducted, the characteristics of respondents based on the agency can be seen in the following table 4:

Table 4 Characteristics of respondents based on agency

Instance	Percentage
Dinas Peternakan	12,5%
Dinas Pertanian	12,5%
Guru Sekolah	25%
Kesbampol	12,5%
Dinas Pendidikan	12,5%
Lainnya	12,5%

Source: Primary data that has been processed, 2024

It can be seen in table 5 From a total of 40 respondents, based on the table it is known that 12.5% consist of respondents who work as Livestock Service Employees, 12.5% Agriculture Service, 25% School Teachers, 12.5% Kesbampol Employees, 12.5% Education Service Employees and the remaining 12.5% Includes BKD, Environment, etc. Employees. So it can be concluded that the majority of respondents in this study work as School Teachers.

4.3 Evaluation of the Measurement Model (Outer Model)

In the reliability test, it can be seen from the Cronbach's Alpha value and the Composite Reliability value. The construct is declared reliable if the composite reliability value is more than 0.7 and the Cronbach's alpha value is more than 0.6 (Ernawati & Noersanti, 2020). Data on the composite reliability and Cronbach's alpha values for each variable in the study can be shown in table 5 below:

Table 5 Composite Reliability and Cronbach's Alpha

Variables	Cronchbach's Alpha	Composite Reliability
Use of Digital-based Attendance (X1)	0.792	0.868
IT Service Quality (X2)	0.829	0.856

Employee Performance (Y)	0.789	0.823
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Source: SmartPLS 4 Processing, 2025

Based on table 5 above, the value of composite reliability shows greater than 0.7 and Cronbach's alpha greater than 0.6. As well as the value of composite reliability > Cronbach's alpha so that both are declared qualified.

To determine whether or not the data passes the convergent validity test, it can be assessed based on the results shown by outer loading. According to Musyaff et al. (2021), the convergent validity value shows the validity of the indicators in the measurement. This value can be seen through the loading factor value on endogenous and exogenous variables. Where the recommended value is convergent validity > 0.7 but can be tolerated at 0.5.

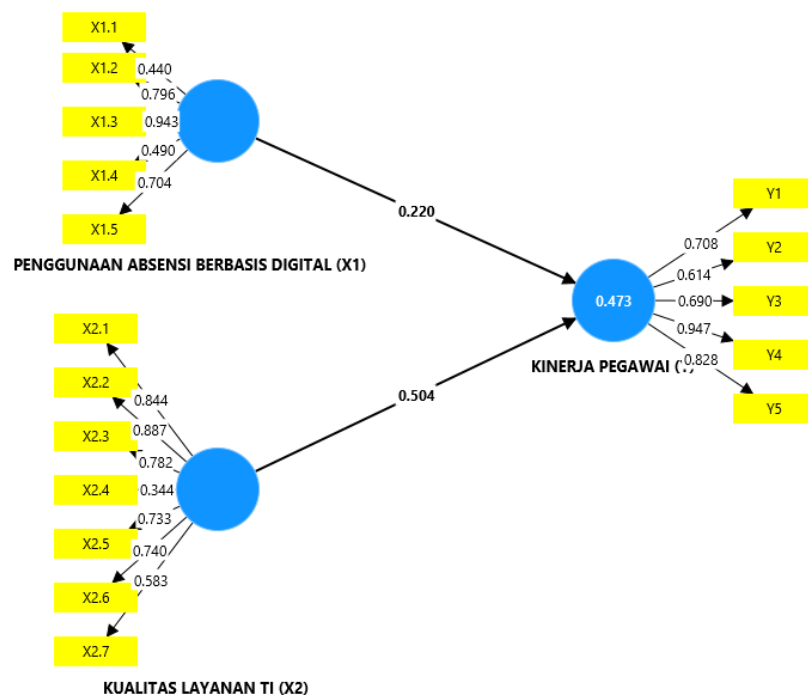


Figure 2. SmartPLS diagram, 2025

Table 6 Composite Reliability dan Cronbach's Alpha

	X1.	X2.	Y
X1.1	0.771		
X1.2	0.865		
X1.3	0.900		
X1.4	0.731		
X1.5	0.807		
X2.1		0.859	
X2.2		0.921	
X2.3		0.855	
X2.4		0.844	

X2.5		0.665	
X2.6		0.765	
X2.7		0.657	
Y.1			0.798
Y.3			0.874
Y.4			0.799
Y.5			0.770

Source: SmartPLS 4 Processing, 2025

Based on the results of the outer loading data processing above, it can be concluded that the indicators in the study each have a value of 0.5, which can then be concluded again that these indicators have passed the convergent validity test.

Table 7 Average Variance Extracted (AVE) Value

Variabel	Average Extracted (AVE)	Variance
Use of Digital-based Attendance (X1)	0.512	
IT Service Quality (X2)	0.529	
Employee Performance (Y)	0.729	

Source: SmartPLS 4 Processing, 2025

In the table above, it can be checked that the AVE (Average Variance Extraced) value of all variables is > 0.5, which means that it is in accordance with the recommended criteria. Therefore, it can be continued for the discriminant validity test as the next test.

After conducting the convergent validity test, the discriminant validity test can be seen based on the resulting cross loading value. Where the cross loading value can be observed with the conclusion that each variable indicator has a greater value when compared to the value of other variable indicators.

Table 8 Tabel Cross Loading

	X1.	X2.	Y
X1.1	0.771	0.342	0.543
X1.2	0.865	0.321	0.321
X1.3	0.900	0.342	0.543
X1.4	0.731	0.342	0.321
X1.5	0.807	0.321	0.432
X2.1	0.234	0.859	0.543
X2.2	0.342	0.921	0.234
X2.3	0.321	0.855	0.543
X2.4	0.432	0.844	0.321
X2.5	0.543	0.665	0.432

X2.6	0.342	0.921	0.234
X2.7	0.321	0.855	0.543
Y.1	0.543	0.543	0.798
Y.3	0.234	0.234	0.874
Y.4	0.342	0.342	0.799
Y.5	0.321	0.321	0.770
Y.6	0.432	0.432	0.813

Source: SmartPLS 4 Processing, 2025

Based on the table above which shows the cross loading data, it can be noted where the loading factor value on the latent variable is higher than the loading value when associated with each other variable. Furthermore, it is concluded that each latent variable has met the requirements to pass the discriminant validity test.

4.4 Structural Model Evaluation (Inner Model)

In evaluating the structural model (Inner Model) can be done by looking at the R Square value and the Path Coefficient value. R-Square is used to assess how much exogenous variables can explain endogenous variables in a data.

Table 9 R Square Value

	R-square	R-square adjusted
Y	0.699	0.691

Source: SmartPLS 4 Processing, 2025

The R Square value successfully shown by the table above is 0.699. This value concludes that the variables of Digital-Based Attendance Usage (X1) and IT Service Quality (X2) contribute 69% influence to Employee Performance then the remaining 31% is influenced by other variables.

Exogenous variables can be said to have an effect on endogenous variables if the T Statistic ($|O/STDEV|$) value > T Table and has a P Values value < 0.05 so that the research can be accepted (Yamin & Kurniawan, 2019).

Table 10 Path Coefficient Value

	Original Sample (O)	T Statistic (O/STDEV)	P Value
Use of Digital Time Attendance -> Employee Performance	0.254	2.025	0.301
IT Service Quality -> Employee Performance	0.249	2.123	0.000

Source: SmartPLS 4 Processing, 2025

In the table in the path coefficient value, it is shown where the relationship between the variable Use of Digital-based Attendance (X1) with Employee Performance (Y) has an original sample (O) value of 0.254 with T Statistic ($|O/STDEV|$) 2.025 > T Table (1.291), and a P-Values value of 0.301. This concludes that the Use of Digital-Based Attendance Variables has a partial positive effect on Employee Performance so that H1 is accepted.

IT Service Quality In the table in the path coefficient value, it is shown where the relationship between the IT Service Quality variable (X2) and Employee Performance (Y) has an original sample (O) value of 0.249 with T Statistic ($|O/STDEV|$) $2.123 > T$ Table (1.291), and a P-Values value of 0.000. This concludes that the IT Service Quality Variables have a partial positive effect on Employee Performance so that H2 is accepted.

Based on the results of the original sample (O) value obtained from table 10, it can be concluded that the equation becomes:

$$Y = 0,254X1 + 0,249X2$$

Description:

Y = Employee Performance

X1 = Use of Digital-Based Attendance

X2 = Quality of Information Technology Services

The above equation can be explained as follows:

1. The original sample value (O) of the Use of Digital-based Attendance (X1) is 0.254, meaning that if the other X variables are constant and then the variable Use of Digital-Based Attendance (X1) increases by 1 unit, Employee Performance (Y) will increase by 0.254.
2. The original sample (O) value of Information Technology Service Quality (X2) is 0.249, meaning that if the other X variables are constant and the Service Quality variable (X2) increases by 1 unit, Employee Performance (Y) will increase by 0.249.

The R Square value shown is 0.699. This value concludes that the variables of Digital-Based Attendance Usage (X1) and IT Service Quality (X2) contribute 69% influence to Employee Performance then the remaining 31% is influenced by other variables.

The study by Ivedtaresty and Suyanto (2024) shows that the implementation of digital-based attendance systems significantly enhances employee discipline, which subsequently improves their performance. Digital attendance systems increase the accuracy of attendance records and reduce data manipulation, thereby promoting transparency in workforce management. This indirectly encourages employees to be more punctual and responsible for their working hours, leading to improved overall productivity within the organization.

Sharma et al. (2016) emphasized that the quality of information technology services strongly influences employee satisfaction and organizational commitment. When IT systems function reliably—with minimal disruptions and user-friendly interfaces—employees feel supported in completing their tasks efficiently. High-quality IT services foster a more effective work environment, which contributes to both individual and collective performance improvements across departments.

Taufik et al. (2019), in their research at a university library, found that well-integrated information technology improves service speed and operational efficiency. This finding supports the idea that IT service quality is not only essential in business environments but also in educational and public institutions. It reinforces the relevance of technology-based systems in enhancing human resource performance across different sectors by simplifying workflows and enhancing task management.

Ighomereho et al. (2022) argue that e-service quality plays a significant role in shaping employee responsiveness and work accuracy, especially in organizations that rely on digital platforms for communication and customer service. Digital systems allow for real-time data access and task management, which enhances efficiency. The availability of automation and system integration reduces the burden of manual work, allowing employees to concentrate on more strategic and value-added activities.

Based on the literature reviewed, it can be concluded that both digital attendance systems and IT service quality play crucial roles in influencing employee performance. While the current study indicates that the effect of digital attendance is not statistically significant, previous research highlights its practical benefits. This

inconsistency may result from differences in organizational context, the quality of system implementation, or employee perceptions. Therefore, continuous improvement in system usability and employee training is necessary to maximize the benefits of digital tools in workplace performance.

5 Conclusion

Based on the results of the research conducted, it can be concluded that partially, the use of digital-based attendance affects the level of employee performance and the quality of information technology services affects the level of employee performance. Simultaneously, the use of digital-based attendance and the quality of information technology services affect the level of employee performance by contributing an influence of 69%.

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