

**THE INFLUENCE OF INFORMATION TECHNOLOGY, WORK ENVIRONMENT, AND WORK EFFICIENCY ON EMPLOYEE PERFORMANCE (A CASE STUDY OF EMPLOYEES AT PT PERMODALAN NASIONAL MADANI IN PATI CITY)**



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**Abstract**

This study aims to analyze the influence of Information Technology, Work Environment, and Work Efficiency on Employee Performance at PT Permodalan Nasional Madani in Pati City. The method used is quantitative, with primary data collected through a questionnaire distributed to 140 employees. The data were analyzed using statistical analysis with Partial Least Squares (PLS) Structural Equation Modeling (SEM) utilizing SmartPLS 3.0. The results of the study indicate that Information Technology does not have a significant effect on employee performance (t-statistic = 1.415; P value = 0.079), leading to the rejection of the first hypothesis (H1). Conversely, the Work Environment has a positive and significant impact on employee performance (t-statistic = 2.372; P value = 0.009), resulting in the acceptance of the second hypothesis (H2). Additionally, Work Efficiency also demonstrates a positive and significant effect on employee performance (t-statistic = 5.079; P value = 0.000), thereby accepting the third hypothesis (H3). This study concludes that to enhance employee performance, the company should focus on developing a positive work environment and improving work efficiency, as well as investing in supporting technologies.

**Keywords:** Employee Performance, Information Technology, Structural Equation Modeling, Work Efficiency, Work Environment

## INTRODUCTION

This study is a replication of the research conducted by entitled "The Influence of Information Technology and Work Environment on Employee Performance through Job Satisfaction as Mediation (A Study on Start-Up Companies in Yogyakarta)." This research employs a quantitative method, with sampling conducted using purposive sampling techniques. The results indicate that information technology has a positive and significant effect on employee performance, while the work environment positively influences employee performance but is not significant. This study utilizes independent variables (information technology, work environment), a dependent variable (employee performance), and a mediating variable (employee satisfaction).

In contrast, the research to be conducted will utilize independent variables (information technology, work environment, and work efficiency) and a dependent variable (employee performance). Human resources are crucial for a company as they determine the success and advancement of the company's performance. Human Resource Management (HRM) is an important strategic approach to managing the workforce in a company or organization. Effective and efficient HRM requires involvement in several stages, including planning, development, management, and supervision (Salsabila, 2023).

HRM strategies have become increasingly important for maintaining competitive advantage and business sustainability in the face of intensifying competition and market dynamics. The success of an organization in overcoming challenges is not solely determined by employees performing their job descriptions. Employees are expected to work optimally, going beyond their job descriptions by collaborating, helping each other, providing suggestions, actively participating, and contributing extra effort to the organization (Tesmanto & Rina, 2022). As the business world rapidly evolves, the importance of human resource management (HRM) for businesses increases. Human resources significantly affect how well a company achieves its objectives. The company's human resources are its most valuable assets, as their quality of work determines the company's success (Putri Primawanti & Ali, 2022). In addition to the importance of human resources, information technology also supports employees in working more efficiently.

Information technology has made human life easier, especially in conducting business activities. Recently, information technology has developed rapidly and has changed the way several industries operate. Companies can utilize information technology to enhance work efficiency by automating manual tasks, accelerating communication and decision-making, and improving information access. Information technology plays a vital role in various aspects of life, and it is undeniable that it can enhance workplace efficiency and productivity. According to Patentius, (2022), information technology performs six functions: capturing, processing, creating, storing, retrieving, and transmitting information.

Companies can thrive in a competitive business environment by effectively leveraging information technology, which enhances operations and management (Nurlaela & Trianasari, 2021). Equally important is the work environment, which significantly impacts employee performance; a comfortable and supportive setting boosts morale, reduces absenteeism, and minimizes errors and turnover (Nurhandayani, 2022). Key factors such as job security, management support, and organizational culture also play critical roles. A well-designed workspace can enhance communication and productivity (Wahyuni et al., 2023). Achyar et al., (2020) emphasizes that the work environment includes all facilities affecting performance, such as workplace conditions and interactions with colleagues (Gultom & Nurbaeti, 2023). Additionally, work efficiency focuses on maximizing outcomes while optimally utilizing resources, making it vital for organizational success. Efficient businesses adapt better to market changes and achieve goals with minimal time and financial resources. To enhance work efficiency, several supporting components are necessary, such as effective communication, structured work scheduling, and clear job descriptions for each employee (Halena & Yovita, 2020). By improving work efficiency through the optimization of these components, companies can not only reach their goals more quickly and efficiently but also enhance overall employee performance.

Employee performance in a competitive and dynamic work environment is crucial for a company's success. With various abilities and high motivation, employees continue to contribute to achieving the company's objectives. To optimally achieve the company's goals, a clear human resource management system must be applied to measure how well employee

performance indicates how effectively the available human resources contribute to the company's progress (Fitriatin & Yustini, 2023).

According to Ayunasrah et al., (2022), performance is based on motivation and ability, which means that employee performance is determined by the quality of work achieved by each employee after completing assigned tasks according to their responsibilities, and it is assessed based on quality and quantity achieved within a specific time frame. A manager conducts performance evaluations to assess all employees. This research will differ from previous studies by using new variables for comparison, such as information technology, work environment, and work efficiency in relation to employee performance, which will impact the employees.

## **REVIEW OF LITERATURE**

### **Information Technology**

Information technology, a combination of computer technology and interaction through hardware and software, is designed to process, manipulate, retrieve, organize, store, and manage data. This system generates accurate, timely, and relevant information that companies use to reduce personal needs, uncertainty, administration, and streamline business activities (Niken Afiana & Rosiana Ulfa, 2023). It encompasses a wide range of technologies, including database systems, software applications, content management systems, network infrastructure, information security, and communication tools like the internet and telecommunications. Information and communication technology (ICT) plays a vital role in processing data to produce high-quality information for personal and business use, serving as a strategic resource for decision-making (Lestari et al., 2023). Access to accurate and timely information has become essential in modern life, forming a critical foundation for intelligent and informed decisions.

### **Work Environment**

The work environment refers to the setting in which employees carry out their daily tasks. A supportive work environment provides peace of mind for employees and enables them to work at their best. The work environment can influence employees' emotions. If employees enjoy the work environment, they will engage in activities that make the

workplace more comfortable, utilize working hours effectively, and improve their performance. The work environment encompasses not only the physical setting where employees work but also the interpersonal relationships among colleagues and between subordinates and superiors (Goldsmith, 2012).

### **Work Efficiency**

Work efficiency is the best comparison between the work performed and the results achieved from that work. Without disregarding other factors influencing the work, the best comparison indicates that performance is primarily determined by how activities are executed. Therefore, work efficiency is generally an embodiment of a working method that allows for achieving an optimal balance between effort and results, which is an efficient way of working (Tessalonika et al., 2021). Consequently, work efficiency is not just about achieving results but also about how the work is carried out. Employing efficient working methods allows for the best comparison between the effort expended and the outcomes produced, which is key to achieving a productive work environment.

### **Employee Performance**

Performance is a function of motivation and ability. To complete a task or job, one must possess a certain level of motivation and skill. Without a clear understanding of what needs to be done and how to do it, a person's motivation and ability will not be fully effective (Astuti, 2016). An employee's performance is a direct reflection of how well they can apply their motivation and skills to a specific task, and a deep understanding of that task is essential for achieving optimal performance.

#### Research Hypotheses:

H1: Information technology has a positive and significant effect on employee performance.

H2: The work environment has a positive and significant effect on employee performance.

H3: Work efficiency has a positive and significant effect on employee performance.

### **RESEARCH METHOD**

This quantitative study analyzes the effects of information technology, work environment, and work efficiency on employee performance at Permodalan Nasional

Madani. A quantitative approach enables the measurement of research variables numerically, facilitating statistical analysis and informed decision-making.

Operational definitions are based on respondents' scores using a five-point Likert scale (Strongly Disagree to Strongly Agree). The main independent variables are information technology, work environment, and work efficiency, while employee performance is the dependent variable. Each variable is measured using valid and reliable instruments.

Information technology is defined as the use of accurate and timely information, assessed through indicators like ease of work and productivity. The work environment includes all factors that influence performance, measured by teamwork, workspace, and organizational culture. Work efficiency refers to optimal resource utilization, evaluated through work procedures and quality. Employee performance is the ability to complete tasks, influenced by organizational support and measured through timeliness and quality.

Primary data will be collected directly from employees at PT Permodalan Nasional Madani in Pati City through questionnaires. The study employs purposive sampling to ensure representative samples from various divisions and positions.

Data analysis involves an Outer Model assessment for validity and reliability, followed by an Inner Model analysis to estimate relationships between latent variables. The Goodness of Fit (GoF) test will evaluate the model's predictive power, while R-Square ( $R^2$ ) values will indicate the influence of endogenous variables. Hypothesis testing will utilize Structural Equation Modeling (SEM) with Partial Least Squares (PLS) via SmartPLS 3.0. Hypotheses will be accepted if the T-statistic is greater than 1.96 and the p-value is less than 0.05, signifying significant effects among the variables.

## **RESULTS AND DISCUSSION**

The independent variables in this study consist of Information Technology, Work Environment, and Work Efficiency. For the Information Technology variable (X1), there are five assessment indicators: facilitating work (X1,1), increasing productivity (X1,2), usefulness (X1,3), enhancing job performance (X1,4), and improving efficiency (X1,5). Next, the Work Environment variable (X2) also has five assessment indicators, which include teamwork (X2,1), workspace (X2,2), relationships with coworkers (X2,3), organizational

culture (X2,4), and work equipment (X2,5). The final independent variable, Work Efficiency (X3), consists of five indicators: work procedures (X3,1), the rationality of tasks (X3,2), work skills (X3,3), work discipline (X3,4), and work quality (X3,5). The dependent variable, Employee Performance (Y), is measured through three indicators: punctuality (Y,1), quality (Y,2), and quantity (Y,3).

**Table 1.**  
**Respondent Identity Based on Gender**

Category	Frequency	Percentage
Male	17	12,1%
Female	123	87,9%
Total	140	100%

Source: Primary data processed in 2024

The data above indicates that the respondents who filled out the questionnaire in this study were predominantly female employees, totaling 123 individuals or 87.9%. In contrast, there were 17 male employees, accounting for 12.1%.

**Table 2.**  
**Respondent Identity Based on Age**

Category	Frequency	Percentage
18-25 years old	103	73,6%
26-33 years old	25	17,9%
34-41 years old	7	5%
42-45 years old	4	2,9%
Over 45 years old	1	0,6%
Total	140	100%

Source: Primary data processed in 2024

The data above shows that 103 respondents, or 73.6%, are employees aged 18-25 years. There are 25 employees aged 26-33 years, accounting for 17.9%. Seven employees, or 5%, are aged 34-41 years, while four employees, or 2.9%, fall within the 42-45 year age range. Finally, there is only one employee aged over 45 years, representing 0.6% of the respondents who completed this questionnaire. This means that the highest percentage of respondents is comprised of employees aged 18-25, followed by those aged 26-33. Respondents aged 34-41 are the third largest group, while employees aged 42-45 and those over 45 years have the lowest percentages in this study.

**Table 3.**  
**Respondent Identification Based on Length of Service**

Category	Frequency	Percentage
Less than 1 year	24	17.1%
1-3 years	65	46.4%
4-5 years	20	14.3%
More than 5 years	31	22.1%
Total	140	100%

Source: Primary data processed in 2024

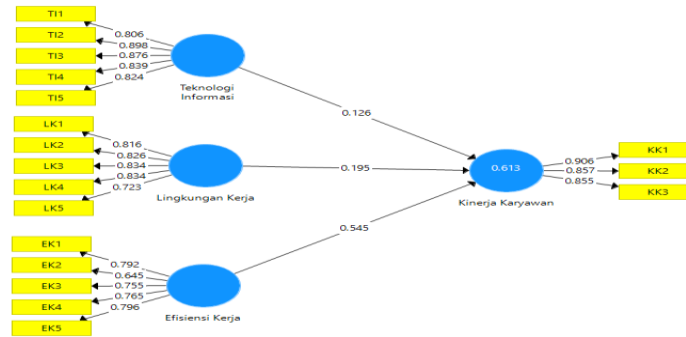
The data above indicates that the most common length of service among respondents is 1-3 years, with 65 respondents or 46.4%. This is followed by those with more than 5 years of service, totaling 31 respondents or 22.1%. In third place are respondents with less than 1 year of service, numbering 24 or 17.1%. The least number of respondents, totaling 20 or 14.3%, fall within the 4-5 years service category.

**Table 4.**  
**Outer Model Analysis Before Dropout**

	TI	LK	EK	KK	Description
TI1	0,806				valid
TI2	0,896				valid
TI3	0,876				valid
TI4	0,839				valid
TI5	0,824				valid
LK1		0,816			valid
LK2		0,826			valid
LK3		0,834			valid
LK4		0,834			valid
LK5		0,723			valid
EK1			0,792		valid
EK2			0,645		Invalid
EK3			0,755		valid
EK4			0,765		valid
EK5			0,793		valid
KK1				0,906	valid
KK2				0,857	valid
KK3				0,855	valid

Source: Primary data processed in 2024

From Table 4, the green-highlighted values represent the loading values between constructs, where the cross-loading values between constructs are higher than the values of other constructs. Therefore, it can be concluded that the latent variables demonstrate good discriminant validity.



**Figure 1.**  
**Outer Model Before Dropout**

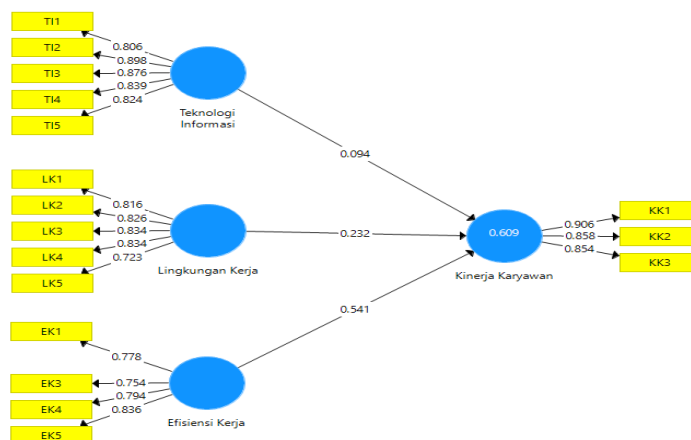
Based on the validity test requirements, indicators that meet the criteria and are considered valid are those with loading factor values greater than 0.7. The table above shows a loading factor value less than 0.7 for the variable of Work Efficiency (EK2). In contrast, the variables of Information Technology, Work Environment, and Employee Performance all have values greater than 0.7, indicating they meet the necessary criteria. The variables that have met the criteria will be grouped, and the following table shows the indicator values that have met the requirements or have loading factor values greater than 0.7:

**Table 5.**  
**Outer Model Analysis After Dropout**

	TI	LK	EK	KK	Description
TI1	0,806				valid
TI2	0,898				valid
TI3	0,876				valid
TI4	0,839				valid
TI5	0,824				valid
LK1		0,816			valid
LK2		0,826			valid
LK3		0,834			valid
LK4		0,834			valid
LK5		0,723			valid
EK1			0.792		valid

EK3	0.755	valid
EK4	0,765	valid
EK5	0,793	valid
KK1	0,906	valid
KK2	0,857	valid
KK3	0,855	valid

Source: Primary data processed in 2024



**Figure 2.**  
**Outer Model After Dropout**

**Table 6.**  
**Cross Loading Analysis**

	<b>Information Technology (TI)</b>	<b>Work Environment (LK)</b>	<b>Work Efficiency (EK)</b>	<b>Employee Performance (KK)</b>
TI1	0,596	0,559	0,792	0,568
T12	0,305	0,484	0,645	0,463
TI3	0,524	0,514	0,755	0,591
TI4	0,552	0,459	0,765	0,587
TI5	0,616	0,434	0,796	0,630
LK1	0,550	0,623	0,703	0,906
LK2	0,516	0,426	0,643	0,857
LK3	0,567	0,571	0,639	0,855
LK4	0,470	0,816	0,508	0,485
LK5	0,530	0,826	0,596	0,587
EK1	0,482	0,834	0,472	0,511

EK2	0,454	0,834	0,469	0,481
EK3	0,484	0,723	0,568	0,430
EK4	0,806	0,458	0,584	0,484
EK5	0,898	0,549	0,627	0,522
KK1	0,876	0,510	0,596	0,547
KK2	0,839	0,517	0,573	0,538
KK3	0,824	0,511	0,591	0,552

Source: Primary data processed in 2024

Based on Table 6, the green-highlighted values represent the loading values between constructs, where the cross-loading values between constructs are higher than those of other constructs. It can be concluded that the latent variables demonstrate good discriminant validity. Furthermore, to test the Average Variance Extracted (AVE), the values must exceed 0.5, indicating that 50% or more of the provided indicators meet this criterion. The results of the validity test using AVE are as follows:

**Table 7.**  
**Average Variance Extracted (AVE) Values**

	<b>Cronbach's Alpha</b>	<b>Rho_A</b>	<b>Composite Reliability</b>	<b>AVE</b>
Information Technology	0,903	0,904	0,928	0,721
Work environment	0,866	0,874	0,903	0,652
Work Efficiency	0,808	0,815	0,867	0,567
Employee Performance	0,844	0,849	0,906	0,762

Source: Primary data processed in 2024

Table 7 indicates that the AVE values for the Information Technology variable (0.721), Work Environment variable (0.652), Work Efficiency variable (0.567), and Employee Performance variable (0.762) are all greater than 0.5, meaning that all variables are considered valid.

**Table 8.**  
**Composite Reliability Analysis Results**

	<b>Cronbach's Alpha</b>	<b>Rho_A</b>	<b>Composite Reliability</b>	<b>AVE</b>
Information Technology	0,903	0,904	0,928	0,721
Work environment	0,866	0,874	0,903	0,652

Work Efficiency	0,808	0,815	0.867	0,567
Employee performance	0,844	0,849	0,906	0,762

Source: Primary data processed in 2024

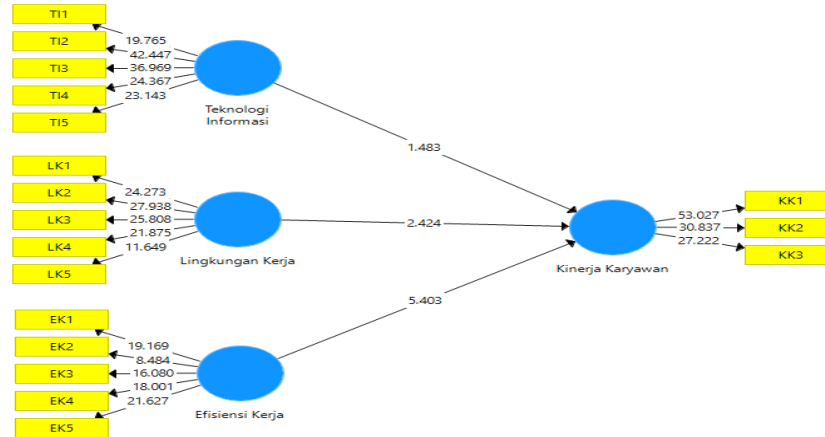
Based on Table 8, it can be seen that the Cronbach's Alpha and Composite Reliability values for the variables of Information Technology (X1), Work Environment (X2), Work Efficiency (X3), and Employee Performance (X4) are all greater than 0.7, indicating that all variables in this study meet the criteria for reliability.

**Table 9.**  
**Multicollinearity Analysis Results**

	VIF	Information
TI1	3,025	Multicollinearity Free
TI2	4,252	Multicollinearity Free
TI3	2,814	Multicollinearity Free
TI4	2,632	Multicollinearity Free
TI5	2,115	Multicollinearity Free
LK1	2,226	Multicollinearity Free
LK2	2,034	Multicollinearity Free
LK3	2,346	Multicollinearity Free
LK4	2,360	Multicollinearity Free
LK5	1,645	Multicollinearity Free
EK1	1,834	Multicollinearity Free
EK2	1,451	Multicollinearity Free
EK3	1,547	Multicollinearity Free
EK4	1,722	Multicollinearity Free
EK5	1,926	Multicollinearity Free
KK1	2,383	Multicollinearity Free
KK2	2,012	Multicollinearity Free
KK3	1,870	Multicollinearity Free

Source: Primary data processed in 2024

Based on Table 9, all variable indicators in this study do not exhibit multicollinearity, as the indicators for Information Technology (TI), Work Environment (LK), Work Efficiency (EK), and Employee Performance (KK) have VIF values less than 5.



**Figure 3.**  
**Inner Model**

The inner model illustrates the strength of estimation among latent variables. In this study, the inner model consists of path coefficient tests, goodness of fit, and hypothesis testing. The assessment of the inner model (structural model) using PLS is as follows:

**Table 10.**  
**SRMR and NFI Values**

<b>SRMR</b>	<b>0,072</b>
<b>NFI</b>	<b>0,787</b>

Source: Primary data processed in 2024

Based on the data above, it can be concluded that both indicators of Goodness of Fit (GoF), namely SRMR and NFI, indicate a good fit.

**Table 11.**  
**R-Square Values**

	<b>R-Square</b>	<b>R-Square Adjusted</b>
Employee Performance	0,613	0,604

Source: Primary data processed in 2024

The R-Square test results in Table 11 show that the variability of employee performance is 61.3%. The R-Square value of 0.613 indicates that the independent variables examined information technology, work environment, and work efficiency—have a significant impact on employee performance. This means that approximately 38.7% of the variability is still unexplained and is due to factors outside the scope of this study.

**Table 12.**  
**Hypothesis Test Results**

	<b>Original Sample</b>	<b>Sample Mean (M)</b>	<b>Standard Deviation (STDEV)</b>	<b>T Statistic ( O/STDEV)</b>	<b>P Value</b>	<b>Description</b>
Information Technology -> Employee Performance	0,126	0,111	0,089	1,415	0,079	Not Supported
Work Environment -> Employee Performance	0,195	0,196	0,082	2,372	0,009	Supported
Work Efficiency -> Employee Performance	0,545	0,560	0,107	5,079	0,000	Supported

Source: Primary data processed in 2024

The impact of Information Technology (X1) on Employee Performance (Y) shows an original sample result of 0.126, a t-statistic of 1.415, and a p-value of 0.079, indicating a non-significant effect since the t-statistic is less than 1.96 and the p-value is greater than 0.05. Therefore, Hypothesis H1, which states that Information Technology has a non-significant effect on Employee Performance, is rejected. Conversely, the Work Environment (X2) has an original sample result of 0.195, a t-statistic of 2.372, and a p-value of 0.009, indicating a positive and significant effect on Employee Performance, thus Hypothesis H2 is accepted. Work Efficiency (X3) shows an original sample result of 0.545, a t-statistic of 5.079, and a p-value of 0.000, which also indicates a positive and significant effect on Employee Performance, leading to the acceptance of Hypothesis H3.

**The Influence of Information Technology on Employee Performance**

Based on the research findings, it has been proven that information technology has a non-significant impact on employee performance. The study indicates that the use of information technology tends to improve employee performance. This is consistent with numerous previous studies showing that IT can enhance efficiency, productivity, and work quality. The analysis results align with the research conducted by Malik, (2023), which stated that the information technology variable has a positive but non-significant effect on performance. Although there is a positive relationship, it is not strong enough to be deemed statistically significant. This means that it cannot be conclusively stated that an increase in the use of information technology will always lead to an improvement in employee performance in all situations.

### **The Influence of the Work Environment on Employee Performance**

The analysis results demonstrate that the work environment has a positive and significant impact on employee performance. This implies that a supportive work environment will further enhance employee performance, thus supporting the second hypothesis (H2) in this study. This research is in line with the study conducted by Afiana & Onwunyi, (2021), which stated that the influence of the work environment on employee performance or productivity is closely related to the achievement of company goals. Whether employees work productively depends on motivation, job satisfaction, stress levels, physical working conditions, social pressures, and changes occurring in the workplace.

Another study by Muhammad Basri & Rosfiah Aarsal, (2022) showed that the work environment positively and significantly influences employee performance. This indicates that the work environment plays a crucial role in enhancing employee performance, and the workplace conditions significantly affect their productivity. Companies must create a friendly work environment that encourages employees to work comfortably and perform their tasks effectively (Nurkhasi, 2023). Factors such as workspace layout, relationships among employees, and organizational culture play a vital role in creating a work environment that supports optimal performance.

### **The Influence of Work Efficiency on Employee Performance**

The analysis results indicate that work efficiency has a positive and significant impact on employee performance. This suggests that by improving work efficiency, companies can

achieve higher productivity, reduce operational costs, and ultimately increase profits. Therefore, the third hypothesis (H3) in this study can be accepted. This research aligns with the study conducted by Christa et al. (2021), which found that work efficiency significantly influences employee performance simultaneously. By understanding the positive relationship between work efficiency and employee performance, companies can focus on developing appropriate training programs, implementing supportive technologies, and creating a work culture that values and encourages efficiency.

## CONCLUSION

The study examining the impact of Information Technology, Work Environment, and Work Efficiency on Employee Performance at PT Permodalan Nasional Madani in Pati, which involved 140 respondents, yielded several key conclusions. It was found that Information Technology does not have a significant effect on employee performance, leading to the rejection of hypothesis H1, supported by a t-value of 1.415 (less than the critical value of 1.960) and a p-value of 0.079 (greater than 0.05). In contrast, the Work Environment positively and significantly influences employee performance, with hypothesis H2 being accepted based on a t-value of 2.372 (greater than 1.960) and a p-value of 0.009 (less than 0.05). Additionally, Work Efficiency was shown to have a positive and significant impact on employee performance, with hypothesis H3 accepted, as indicated by a t-value of 5.079 (greater than 1.960) and a p-value of 0.000 (less than 0.05). Consequently, it is recommended that future research focus on specific types of Information Technology, broaden the variables related to the Work Environment to include physical and social dimensions, and provide a clearer definition of Work Efficiency. Companies should consider these factors comprehensively and invest in technologies that enhance both efficiency and productivity.

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