Human Resource Digital Transformation through Technology Readiness

Eka Rahma Daniati, Elfitra Desy Surya, Kiki Farida Ferine

Abstract

This study aims to examine the influence of Digital Literacy and Adaptive Leadership Style on Human Resource Performance through Technology Readiness among outsourcing employees at ULP Cibadak, West Java. A total of 166 employees were selected using purposive sampling. The analysis was conducted using Partial Least Square (PLS) to test validity, reliability, and both direct and indirect effects between variables. The results indicate that Digital Literacy has a positive and significant effect on both Technology Readiness and Human Resource Performance, while Adaptive Leadership Style significantly affects Technology Readiness but not directly Human Resource Performance. Technology Readiness was found to mediate the relationship between Digital Literacy and Adaptive Leadership Style with Human Resource Performance. These findings highlight the importance of enhancing Digital Literacy and adaptive leadership to support technology readiness and improve HR performance in outsourcing environments.

Keywords: Digital Literacy, Adaptive Leadership Style, Technology Readiness, Human Resource Performance, Outsourcing Employees.

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Introduction

The rapid development of information and communication technology has transformed how both public and private organizations operate. The Procurement Service Unit (ULP) as the frontline of public procurement services is required to increase the efficiency, accuracy, and transparency of work processes. In many ULPs, some operational activities are carried out by outsourcing employees who play a crucial role in the execution of daily technical tasks. However, the success of digital transformation does not only depend on the availability of devices and systems but is highly determined by the capabilities of human resources (HR) and the leadership style managing that change. First, Digital Literacy becomes a key competency for outsourcing employees who must operate e-procurement applications, document management systems, and digital collaboration tools. Digital Literacy includes the ability to use hardware, software, understand information security, as well as the ability to adapt to system features and updates. The absence of adequate Digital Literacy can lead to operational errors, process delays, and decreased service quality.

Second, the leadership style within the management unit has a strong influence on the work motivation and behavior of employees, including outsourcing employees. An adaptive leadership style which is flexible, responsive to change, and encourages learning enables managers to adjust HR management strategies according to the demands of the digital environment. Adaptive leadership not only provides technical direction but also creates a culture that supports experimentation, knowledge sharing, and resilience in facing technical problems or new processes.

Third, technology readiness (technology readiness) acts as a bridge between individual capabilities and organizational performance outcomes. Technology readiness includes attitudes towards technology, the level of confidence in using systems, as well as the available infrastructure and training support. Although employees possess Digital Literacy, without organizational technology readiness (e.g., training support, system access, security policies) the potential for performance improvement is not fully realized. In other words, technology readiness can mediate or strengthen the relationship between Digital Literacy and leadership style on HR performance.

In the context of ULP Cibadak, West Java, outsourcing employees are an integral part of procurement operations. Constraints that often arise in the field such as difficulties using the e-procurement system, uncoordinated communication, and resistance to procedural changes indicate the need for an in-depth study regarding the factors influencing their performance. Research examining the simultaneous effects of Digital Literacy and adaptive leadership style, as well as the role of technology readiness as a mediating variable, will provide a comprehensive picture of how to improve the performance of outsourcing employees in the ULP environment.

Practical problems that arise include: to what extent is the Digital Literacy of outsourcing employees adequate for completing increasingly digitalized procurement tasks; how adaptive leadership at the ULP level facilitates or hinders the technology adaptation process; and whether the technology readiness at ULP Cibadak is sufficient to support the performance improvement of outsourcing HR. Additionally, there is a need to formulate evidence-based policy recommendations for example, training programs, changes in supervision patterns, and infrastructure improvement to improve operational performance. This research is important as it provides both practical and theoretical contributions. Practically, the research results can form the basis for designing Digital Literacy training interventions, developing adaptive leadership capabilities for ULP managers, and strategies for improving technology readiness specific to outsourcing employees. Theoretically, this research enriches the literature on the relationship between digital competence, leadership style, and HR performance by including technology readiness as an explanatory mechanism (mediation).

Based on the above description, this research focuses on: (1) examining the influence of Digital Literacy on the performance of outsourcing HR employees at ULP Cibadak; (2)

assessing the influence of adaptive leadership style on that performance; and (3) exploring the role of technology readiness as a mediator between Digital Literacy and adaptive leadership style on HR performance. The results are expected to formulate applicable operational policy recommendations to strengthen the capabilities of outsourcing HR and accelerate the effectiveness of digital transformation at ULP Cibadak, West Java.

Problem Formulation

1. Does Digital Literacy have a positive and significant effect on the HR Performance of outsourcing employees at ULP Cibadak West Java?
2. Does Adaptive leadership style have a positive and significant effect on the HR Performance of outsourcing employees at ULP Cibadak West Java?
3. Does Digital Literacy have a positive and significant effect on the Technology readiness of outsourcing employees at ULP Cibadak West Java?
4. Does Adaptive leadership style have a positive and significant effect on the Technology readiness of outsourcing employees at ULP Cibadak West Java?
5. Does Technology readiness have a positive and significant effect on the HR Performance of outsourcing employees at ULP Cibadak West Java?
6. Does Digital Literacy have a positive and significant effect on HR Performance through the Technology readiness of outsourcing employees at ULP Cibadak West Java?
7. Does Adaptive leadership style have a positive and significant effect on HR Performance through the Technology readiness of outsourcing employees at ULP Cibadak West Java?

Research Objectives

1. To test and analyze the influence of Digital Literacy on the HR Performance of outsourcing employees at ULP Cibadak West Java.
2. To test and analyze the influence of Adaptive leadership style on the HR Performance of outsourcing employees at ULP Cibadak West Java.
3. To test and analyze the influence of Digital Literacy on the Technology readiness of outsourcing employees at ULP Cibadak West Java.
4. To test and analyze the influence of Adaptive leadership style on the Technology readiness of outsourcing employees at ULP Cibadak West Java.
5. To test and analyze the influence of Technology readiness on the HR Performance of outsourcing employees at ULP Cibadak West Java.
6. To test and analyze the influence of Digital Literacy on HR Performance through the Technology readiness of outsourcing employees at ULP Cibadak West Java.
7. To test and analyze the influence of Adaptive leadership style on HR Performance through the Technology readiness of outsourcing employees at ULP Cibadak West Java.

HR Performance

According to Nasution (2022), HR Performance is the overall achievement of work results covering effectiveness, efficiency, responsibility, and adaptability in facing organizational demands. According to Ramadhan (2021), employee performance covers aspects of quantity, quality, timeliness, and work behavior, including communication, initiative, and compliance with organizational rules.

HR Performance Indicators

Based on Ramadhan (2021), HR performance can be measured through a combination of work result and work behavior aspects. The indicators that can be used are:

1. Work Quantity, Level of task or work completion according to set targets.
2. Work Quality: Level of accuracy, neatness, and conformity of work results with organizational standards.
3. Timeliness: Ability to complete work according to schedule or set deadlines.

4. Compliance with Procedures: Level of employee compliance in following organizational rules, SOPs, and regulations.
5. Work Behavior/Professionalism: Work attitude that supports the team and organization, including effective communication, initiative, and responsibility.

Factors Affecting HR Performance

According to Ramadhan (2021), factors influencing human resource (HR) performance include several important interrelated aspects, namely:

1. Ability
2. Motivation
3. Work Discipline
4. Leadership
5. Work Environment
6. Compensation

Digital Literacy

According to Gilster (2017), Digital Literacy is the ability to understand and use information in various formats through computers and the internet, including critical thinking skills towards digital information sources. According to Wan (2016), Digital Literacy is an individual's ability to understand, use, and evaluate information presented through digital media with the aim of increasing effectiveness in learning and working.

Digital Literacy Indicators

According to Gilster (2017), Digital Literacy is not merely the technical ability to use computers or the internet, but also includes the ability to think critically about digital information. From this concept, Digital Literacy indicators can be formulated as follows:

1. Ability to Access Digital Information
2. Ability to Evaluate Information
3. Ability to Use Digital Technology
4. Ability to Communicate Information
5. Critical and Ethical Thinking Ability

Adaptive Leadership Style

According to Putra & Sari (2021), Adaptive leadership style emphasizes flexibility, collaboration, empowerment of team members, and the ability to facilitate innovation or the use of new technology in the work environment. According to Rahmawati & Hidayat (2020), Adaptive leadership is the leader's ability to adjust managerial behavior and approaches to the situation, subordinates' needs, and organizational dynamics to achieve goals effectively.

Adaptive Leadership Style Indicators

According to Putra & Sari (2021), adaptive leadership style emphasizes flexibility, collaboration, team empowerment, and the ability to face change. From this concept, the indicators that can be used are:

1. Leader Flexibility
2. Staff Collaboration and Participation
3. Subordinate Empowerment
4. Encouragement for Innovation and Experimentation
5. Ability to Manage Change

Technology Readiness

According to Rohman & Nur (2019), Technology readiness is defined as the ability of an organization or individual to adopt, utilize, and adapt to new technology to support

productivity and work effectiveness. According to Chong et al. (2017), Technology readiness is the level of readiness and ability of individuals to use new technology devices effectively, including a positive attitude towards innovation and confidence in operating the technology.

Technology Readiness Indicators

Based on Chong et al. (2017), technology readiness (Technology Readiness) includes attitudes and abilities of individuals to use new technology effectively. From this concept, the indicators that can be used are:

1. Optimism towards Technology
2. Innovativeness
3. Comfort in Using Technology
4. Preparedness to Face Obstacles (Discomfort/Low Resistance)
5. Security and Confidence

Conceptual Framework

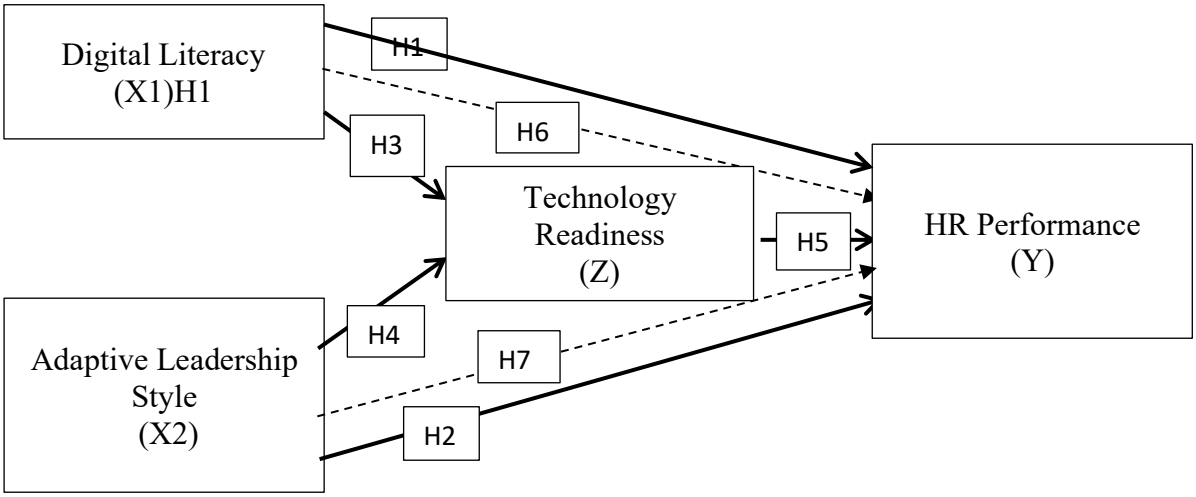

Figure 1. Conceptual Framework

Research Hypotheses

H1 Digital literacy has a positive and significant effect on HR Performance among Outsourcing employees of ULP Cibadak, Sukabumi Regency, West Java.

H2 Adaptive leadership style has a positive and significant effect on HR Performance among Outsourcing employees of ULP Cibadak, Sukabumi Regency, West Java.

H3 Digital literacy has a positive and significant effect on Technology readiness among Outsourcing employees of ULP Cibadak, Sukabumi Regency, West Java.

H4 Adaptive leadership style has a positive and significant effect on Technology readiness among Outsourcing employees of ULP Cibadak, Sukabumi Regency, West Java.

H5 Technology readiness has a positive and significant effect on HR Performance among Outsourcing employees of ULP Cibadak, Sukabumi Regency, West Java.

H6 Digital literacy has a positive and significant effect on HR Performance through Technology readiness among Outsourcing employees of ULP Cibadak, Sukabumi Regency, West Java.

H7 Adaptive leadership style has a positive and significant effect on HR Performance through Technology readiness among Outsourcing employees of ULP Cibadak, Sukabumi Regency, West Java.

Research Type

According to Sugiyono (2019), quantitative research is a research method based on positivist philosophy, used to study a specific population or sample, data collection uses research instruments, and data analysis is statistical with the aim of testing predetermined hypotheses.

Research Location and Time

According to Arikunto (2019), determining research time is necessary so that research activities can be well-planned and data collection can be carried out systematically and efficiently. This research was conducted at the Procurement Service Unit (ULP) Cibadak located at: Jl. Raya Karang Tengah No.427, Karangtengah, Cibadak District, Sukabumi Regency, West Java 43351. The research time is scheduled from November to December 2025.

Research Population and Sample

The population in this study are all outsourcing employees working at ULP Cibadak, Sukabumi Regency, totaling 166 people. According to Sugiyono (2019), a population is a generalization area consisting of objects or subjects that have certain qualities and characteristics determined by the researcher to be studied and then conclusions are drawn. The sampling technique used in this study is saturated sampling technique. According to Sugiyono (2020), saturated sampling is a sampling determination technique if all population members are used as the sample. Thus, the number of samples in this study is 166 respondents, which are all outsourcing employees at ULP Cibadak, Sukabumi Regency.

Data Collection Technique

The data collection technique in this study was carried out using a questionnaire. According to Sekaran and Bougie (2017), a questionnaire is a set of written questions used to obtain information from respondents regarding facts or their opinions.

Data Analysis Technique

According to Ghozali & Latan (2019), PLS-SEM is suitable for use in research that is predictive and exploratory in nature, with a sample size that is not too large and a research model that involves intervening variables. Analysis using SmartPLS 3.3.3 is performed through two main stages, namely testing the measurement model (outer model) and testing the structural model (inner model), explained as follows.

Measurement Model Testing (Outer Model)

The measurement model is used to assess the relationship between indicators and latent variables. Its main purpose is to ensure that the indicators used are truly valid and reliable in measuring the researched construct. According to Hair et al. (2021), several tests are performed at the outer model stage, namely:

1. Convergent Validity
2. Discriminant Validity
3. Composite Reliability

Structural Model Testing (Inner Model)

The structural model is used to test the relationships between latent variables that have been established in the hypotheses. According to Hair et al. (2021), testing the structural model is carried out with the following steps:

1. Evaluation of R-Square (R^2) Value
2. Predictive Relevance Test (Q^2)
3. Goodness of Fit Test (GoF)
4. Path Significance Test (Path Coefficient)

Results and Discussion

Outer Model Analysis

Convergent Validity

Convergent validity of the measurement model with reflective indicators can be seen from the correlation between the item/indicator score and its construct score. Indicators that have an individual correlation value greater than 0.7 are considered valid, but in the development stage of research, indicator values of 0.5 and 0.6 are still acceptable. Based on the results for outer loading, it shows that there are indicators with loading below 0.60 and not significant. The structural model in this study is shown in the following Figure:

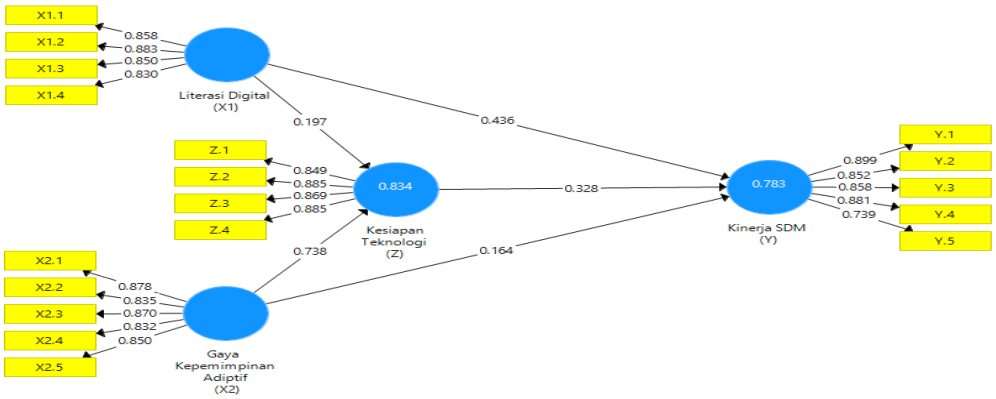

Figure 2. Outer Model

Source: Smart PLS 3.3.3

The Smart PLS output for loading factors provides results in the following table: Outer Loadings

In this research, there are equations and the equation consists of two substructures. For substructure 1:

Z = b1X1 + b2X2 + e1

Z = 0,197X1 + 0,738 X2+ e1

For substructure 2:

Y = b3X1 + 4X2 + b5Z + e2

Y = 0,436X1 + 0,164X2 + 0,328Z + e2

Table 1. Outer Loadings

	Adaptive Leadership Style_ (X2)	Technology Readiness _(Z)	HR Performance _(Y)	Digital Literacy _(X1)
X1.1				0,858
X1.2				0,883
X1.3				0,850
X1.4				0,830
X2.1	0,878			
X2.2	0,835			
X2.3	0,870			
X2.4	0,832			
X2.5	0,850			
Y.1			0,899	
Y.2			0,852	
Y.3			0,858	
Y.4			0,881	
Y.5			0,739	
Z.1		0,849		

Z.2		**0,885**		
Z.3		**0,869**		
Z.4		**0,885**		

Source : Smart PLS 3.3.3

The results of the outer loadings test in Table 1 show that all indicators for the variables Digital Literacy (X1), Adaptive Leadership Style (X2), Technology Readiness (Z), and HR Performance (Y) have outer loading values above 0.70. This indicates that each indicator has met the convergent validity criteria and is able to reflect its construct well. Thus, all indicators are declared valid and suitable for use in the research model.

2. Discriminat Validity

The next test is discriminant validity test. This test aims to determine whether a reflective indicator is a good measurement for its construct based on the principle that indicators correlate highly with their own construct. The table shows the cross-loading results of the discriminant validity test as follows:

Table 2. Discriminant Validity

	Adaptive Leadership Style_ (X2)	**Technology Readiness _(Z)**	**HR Performance _(Y)**	**Digital Literacy _(X1)**
X1.1	0,729	0,683	0,717	0,858
X1.2	0,712	0,715	0,755	0,883
X1.3	0,731	0,704	0,731	0,850
X1.4	0,776	0,747	0,705	0,830
X2.1	0,878	0,764	0,754	0,794
X2.2	0,835	0,735	0,717	0,794
X2.3	0,870	0,809	0,740	0,743
X2.4	0,832	0,801	0,685	0,676
X2.5	0,850	0,760	0,673	0,665
Y.1	0,775	0,779	0,899	0,838
Y.2	0,706	0,729	0,852	0,721
Y.3	0,691	0,715	0,858	0,700
Y.4	0,732	0,718	0,881	0,725
Y.5	0,636	0,604	0,739	0,597
Z.1	0,774	0,849	0,705	0,713
Z.2	0,798	0,885	0,751	0,729
Z.3	0,798	0,869	0,698	0,682
Z.4	0,797	0,885	0,773	0,778

Source: Smart PLS 3.3.3

Based on Table 2, the cross-loading value of each indicator shows that the indicator has the highest loading on the construct it measures compared to other constructs. This indicates that each construct, namely Digital Literacy (X1), Adaptive Leadership Style (X2), Technology Readiness (Z), and HR Performance (Y) has met the discriminant validity criteria. Thus, each construct is declared empirically different and is able to measure the intended concept accurately.

Composite reliability

A construct is declared reliable if the Cronbach's alpha value is above 0.7. The following table shows the loading values for the research variable constructs generated from running the Smart PLS program in the following table:

Table 3. Construct Reliability and Validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Adaptive Leadership Style_ (X2)	0,906	0,930	0,728
Technology Readiness _(Z)	0,895	0,927	0,761
HR Performance _(Y)	0,901	0,927	0,719
Digital Literacy _(X1)	0,878	0,916	0,732

Source: Smart PLS 3.3.3

The test results in Table 3 show that all constructs have Cronbach's Alpha and Composite Reliability values above 0.70 and AVE values above 0.50. This indicates that the constructs Adaptive Leadership Style (X2), Technology Readiness (Z), HR Performance (Y), and Digital Literacy (X1) have met the construct reliability and validity criteria, so the research instrument is declared reliable and valid for use in further analysis.

Inner Model Analysis

Evaluation of the structural model (inner model) is conducted to ensure the built structural model is robust and accurate. The analysis stages performed in evaluating the structural model are seen from several indicators, namely:

1. Coefficient of Determination (R2)

Based on data processing that has been done using the SmartPLS 3.0 program, the R Square values obtained are as follows:

Table 4. R Square Results

	R Square	Adjusted R Square
Technology Readiness _(Z)	0,834	0,832
HR Performance _(Y)	0,783	0,779

Source: Smart PLS 3.3.3

The R Square value shows that the Technology Readiness (Z) variable can be explained by the independent variables by 83.4%, while the remaining 16.6% is influenced by other factors outside the model. Meanwhile, HR Performance (Y) can be explained by variables in the model by 78.3%, with 21.7% influenced by other variables outside the research. The Adjusted R Square value close to R Square indicates that the model has strong and stable explanatory power.

Hypothesis Testing

After assessing the inner model, the next step is to evaluate the relationships between latent constructs as hypothesized in this research. Hypothesis testing in this study is conducted by looking at T-Statistics and P-Values. A hypothesis is declared accepted if the T-Statistics value > 1.96 and P-Values < 0.05. The following are the Path Coefficients results for direct effects:

Table 5. Path Coefficients (Direct Effects)

	Original Sample (O)	T Statistics (| O/STDEV |)	P Values	Results
Adaptive Leadership Style_ (X2) -> Technology Readiness _(Z)	0,738	12,007	**0,000**	**Accepted**
Adaptive Leadership Style_ (X2) -> HR Performance _(Y)	0,164	1,564	**0,059**	**Rejected**
Technology Readiness _(Z) -> HR Performance _(Y)	0,328	3,344	**0,000**	**Accepted**
Digital Literacy _(X1) -> Technology Readiness _(Z)	0,197	3,075	**0,001**	**Accepted**
Digital Literacy _(X1) -> HR Performance _(Y)	0,436	5,600	**0,000**	**Accepted**

Source: Smart PLS 3.3.3

1. Effect of Adaptive Leadership Style (X2) on Technology Readiness (Z): The test results show that Adaptive Leadership Style has a positive and significant effect on Technology Readiness with a coefficient value of 0.738, T-statistic 12.007, and p-value 0.000. Thus, the hypothesis is accepted.
2. Effect of Adaptive Leadership Style (X2) on HR Performance (Y): Analysis results show a coefficient of 0.164 with T-statistic 1.564 and p-value 0.059. This value does not meet the significance criteria, so Adaptive Leadership Style does not have a significant effect on HR Performance. Therefore, the hypothesis is rejected.
3. Effect of Technology Readiness (Z) on HR Performance (Y): Technology Readiness is proven to have a positive and significant effect on HR Performance with a coefficient value of 0.328, T-statistic 3.344, and p-value 0.000. Thus, the hypothesis is accepted.
4. Effect of Digital Literacy (X1) on Technology Readiness (Z): The test results show that Digital Literacy has a positive and significant effect on Technology Readiness with a coefficient of 0.197, T-statistic 3.075, and p-value 0.001. Therefore, the hypothesis is accepted.
5. Effect of Digital Literacy (X1) on HR Performance (Y): Digital Literacy has a positive and significant effect on HR Performance with a coefficient value of 0.436, T-statistic 5.600, and p-value 0.000. Thus, the hypothesis is accepted.

Table 6. Path Coefficients (Indirect Effects)

	Original Sample (O)	T Statistics (| O/STDEV |)	P Values	Results
Adaptive Leadership Style_ (X2) -> Technology Readiness _(Z) -> HR Performance _(Y)	0,242	3,275	**0,001**	**Accepted**
Digital Literacy _(X1) -> Technology Readiness _(Z) -> HR Performance _(Y)	0,065	2,219	**0,013**	**Accepted**

Source: Smart PLS 3.3.3

6. Effect of Adaptive Leadership Style (X2) on HR Performance (Y) through Technology Readiness (Z): The test results show that Adaptive Leadership Style has a positive and significant indirect effect on HR Performance through Technology Readiness, with a coefficient value of 0.242, T-statistic 3.275, and p-value 0.001. Thus, Technology Readiness is proven to mediate the effect of Adaptive Leadership Style on HR Performance, so the hypothesis is accepted.

7. Effect of Digital Literacy (X1) on HR Performance (Y) through Technology Readiness (Z): Analysis results show that Digital Literacy has a positive and significant indirect effect on HR Performance through Technology Readiness, with a coefficient of 0.065, T-statistic 2.219, and p-value 0.013. This indicates that Technology Readiness acts as a mediating variable, so the hypothesis is accepted.

Conclusion

1. Adaptive Leadership Style has a positive and significant effect on Technology Readiness, so the hypothesis is accepted.
2. Adaptive Leadership Style does not have a significant effect on HR Performance, so the hypothesis is rejected.
3. Technology Readiness has a positive and significant effect on HR Performance, so the hypothesis is accepted.
4. Digital Literacy has a positive and significant effect on Technology Readiness, so the hypothesis is accepted.
5. Digital Literacy has a positive and significant effect on HR Performance, so the hypothesis is accepted.
6. Adaptive Leadership Style has a positive and significant indirect effect on HR Performance through Technology Readiness, so the hypothesis is accepted.
7. Digital Literacy has a positive and significant indirect effect on HR Performance through Technology Readiness, so the hypothesis is accepted.

Suggestions

1. Organizational management needs to develop adaptive leadership capabilities at the managerial level to encourage technology readiness in the work environment, so that HR performance increases optimally.
2. The company should improve the digital literacy of all employees, for example through training, workshops, and technology-based learning programs, so that technology readiness and HR performance can be more optimal.
3. Implementation of technology development programs must be accompanied by adaptive leadership strategies so that employees can better accept digital changes.
4. Organizations can utilize these findings to design technology mediation interventions, namely programs that connect adaptive leadership and digital literacy with improved HR performance indirectly through technology readiness.

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