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THE IMPLEMENTATION OF DIGITALIZATION ON EMPLOYEE PERFORMANCE MODERATED BY EMPLOYEE ENGAGEMENT AT THE GENERAL BUREAU OF THE REGIONAL SECRETARIAT OF NORTH SUMATRA PROVINCE

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Abstract

This study aims to explore the impact of digital transformation on employee performance, considering the level of employee engagement in the work environment of the General Bureau of the North Sumatra Provincial Secretariat (Setdaprovsu). The North Sumatra Provincial Government, specifically through the General Bureau of the Setdaprovsu, has begun implementing a digital technology-based work system to adapt to central government policies and developments in other regions that have already adopted digitalization. This implementation is expected to accelerate work processes, increase efficiency, and encourage increased employee productivity. However, some older employees experience difficulties adapting to the latest technological devices and systems. Low digital literacy among certain employees is a barrier to adapting to these changes. Therefore, it is important to explore the extent to which digitalization actually contributes to employee performance, and whether the level of employee work engagement can be a supporting factor in facing the challenges of digital adaptation. This study relies on quantitative methods by distributing an online questionnaire via the Google Form platform to 76 employees of the General Bureau of the Setdaprovsu as respondents. The data obtained is processed in numerical form using a Likert scale to assess the influence of independent, dependent, and intermediary variables. All data were analyzed using Smart-PLS (Partial Least Squares) statistical software. Based on the data processing results, it was found that digitalization positively contributes to employee performance. The higher the intensity of digital technology utilization in work activities, the better the resulting performance. Furthermore, employee engagement has been shown to play a moderating role, strengthening the relationship between digitalization and performance. This means that the positive effect of digitalization on performance will be greater if employees have a strong emotional attachment and commitment to their work.

Keywords: ***digitalization, employee performance, employee engagement, quantitative, moderation***

INTRODUCTION

Currently, government institutions are beginning to utilize technology to increase productivity and reduce expenses. The implementation of the Electronic-Based Government System (SPBE) allows for the automation of various administrative activities that previously required significant time and manual labor. This initiative aims to reduce operational costs and accelerate public services. The implementation of SPBE in North Sumatra Province, particularly within the Regional Secretariat, refers to Presidential Regulation Number 95 of 2018 concerning SPBE and North Sumatra Governor Regulation Number 12 of 2022, which governs the system's governance. In an effort to achieve organizational targets, regional agencies must not only pay attention to internal aspects but also be able to respond and adapt to the dynamics of the external environment adaptively and efficiently. The progress of an institution is largely determined by the performance of its employees. To maintain efficiency and sustainable performance quality, adopting digital technology is essential. Employee performance can be defined as an individual's work achievement based on predetermined indicators (Octaviani & Fuad, 2016). Digital transformation has drastically changed the lifestyle and work practices of modern society, which increasingly relies on technology. Therefore, it is crucial for every organization to adopt changes quickly and strategically to remain competitive and adaptable. Digital technology also strengthens the role of human resource management, for example in the recruitment process, which now utilizes various digital platforms such as Facebook, LinkedIn, Skype, and others (M. Adenuddin Alwy, 2022). On the other hand, employee performance is influenced not only by technological developments but also by internal psychological factors such as employees' emotional attachment to their institution. The concept of employee engagement is a crucial element in assessing the contribution of human resources to organizational progress. This term was first popularized by Gallup in 2004 and has been empirically applied in various sectors such as business, healthcare, and education. Employees who feel emotionally engaged tend to show greater concern for the progress of the organization where they work (Octaviani & Fuad, 2016).Currently, the General Bureau of the North Sumatra Provincial Secretariat has begun integrating digital-based work systems to align with the central government and several other provinces that have already undergone digital transformation. However, some senior employees still face difficulties in understanding the latest technology. Based on

these issues, this study was conducted to examine the influence of digitalization on employee performance, with employee engagement as a moderating variable in the General Bureau of the North Sumatra Provincial Secretariat.

LITERATURE REVIEW

1. Performance

Performance refers to the work achievements of individuals and teams within an organization, carried out in accordance with their respective responsibilities and roles, to support the achievement of organizational goals legally, ethically, and without violating legal provisions (Muis et al., 2018). Performance components and benchmarks must be measurable, easy to understand, validated, fair, and realistic to achieve. Therefore, it is necessary to design comprehensive key performance indicators (KPI), accompanied by strategies and work programs that support the achievement of optimal work results. Performance assessment elements must follow the SMART principle, namely specific (clear), measurable, achievable, results-oriented, and have a specific time limit (Tsauri, 2014). In general, aspects assessed in performance evaluations include loyalty, work results, sense of responsibility, compliance, integrity, ability to work together, initiative, and work skills. Based on Government Regulation Number 30 of 2019 concerning Civil Servant Performance Assessment, performance evaluations are conducted based on the principles of objectivity, measurability, accountability, participation, and transparency.

2. Digitalization

Digital transformation, or digitization, impacts various sectors within an organization, with various divisions involved in developing change strategies, such as marketing, information technology, business development, strategic planning, and human resources. Digitalization is the process of changing from physical media to digital format, as explained by Asaniyah (2017). This process enables faster and easier data access through technological developments in the creation, distribution, storage, and analysis of information. According to Brennen and Kreiss (2016), digitalization can shape and influence the dynamics of modern life. Furthermore, according to Siregar (2019), digitalization is the process of converting from a physical or analog form to a virtual digital form. This transformation has a significant impact on various sectors. For example, in administration, the application of digital technology allows for electronic recording of employee data, streamlining work processes, and increasing efficiency in reporting and data archiving.

3. Employee Engagement

Employee engagement reflects the emotional state of individuals who feel enthusiastic and satisfied in carrying out their work (Robbins, 2009). Employee engagement is the positive energy and work spirit possessed by employees, which contributes to the achievement of organizational goals (Schiemann, 2011). This engagement is evident when an employee has a positive attitude and feels happy at work, reflected in enthusiasm, dedication, and high concentration in carrying out their responsibilities (Schaufeli & Bakker, 2004). Thus, employee engagement is a state when someone has positive feelings about their work and feels emotionally satisfied while carrying it out.

THEORETICAL FRAMEWORK AND HYPOTHESIS FORMULATION

Theoretical Framework of Thought

Based on the literature review above, a research framework has been created which can be seen in Figure 1, namely:

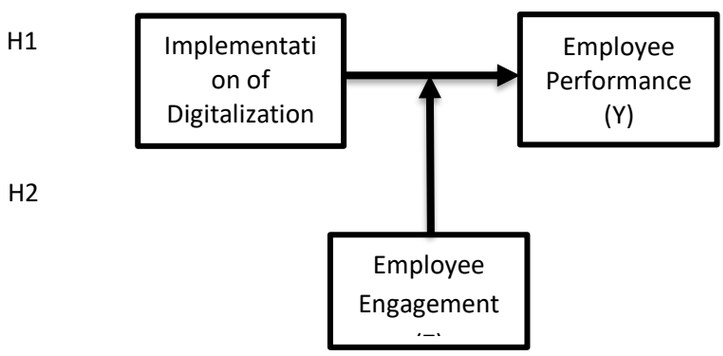


Figure 1
Framework

Hypothesis Formulation

The Relationship between Digitalization Implementation and Employee Performance

The use of digital technology has been shown to positively contribute to organizational operational efficiency (M. Putri et al., 2022). The shift toward digital, also known as digitalization, is a growing trend that impacts policy direction, organizational structure, and internal company processes, and is believed to have the potential to drive overall

performance improvements (Truant & Broccardo, 2021). A study by Pertiwi and Nurhikmah (2018) identified a significant relationship between digital-based work systems and employee performance at the BTPN Syariah Majalengka branch. Based on these findings, the following hypothesis was formulated:
H1: The implementation of digitalization has a positive effect on employee performance.

The Relationship Between Employee Engagement, Digitalization Implementation, and Employee Performance

Research conducted by Ratna (2018) shows that the effective use of information technology can improve employee work competency at PT. PLN (Persero) Malang Transmission Implementation Unit (UPT). Meanwhile, the results of a study by Sulistianingtiyas and Djastuti (2020) stated that the implementation of digital systems in the workplace encourages increased employee expectations of their own performance, thus impacting increased productivity. Furthermore, digitalization also influences employees' positive mindsets and behaviors in using technology, building self-confidence in carrying out tasks, fostering initiative, strengthening the willingness to continuously improve competency, and fostering creativity in problem-solving. This process also encourages active employee involvement in facing change, adapting to new challenges, and thinking strategically and sustainably, with high motivation and work dedication. Based on this study, the second hypothesis is formulated as follows:
H2: Employee engagement moderates the effect of digitalization implementation on employee performance.

METHOD

This research was conducted in the General Bureau within the Regional Secretariat of North Sumatra Province. The location is the North Sumatra Governor's Office, located at Jalan Pangeran Diponegoro Number 30, Madras Hulu Village, Medan Polonia District, Medan City, specifically on the third floor of the building. This study raised three main variables: a dependent variable representing Employee Performance, an independent variable referring to the Implementation of Digitalization, and a moderator variable describing Employee Engagement to the institution. To collect data from respondents, the researcher used a survey technique with a questionnaire instrument. The questionnaire used consisted of written questions and was designed to gather information about respondents' experiences and understanding of the topic being studied. This method refers to the opinion of Sugiyono (2019), who stated that a questionnaire is a data collection technique by providing a list of questions for respondents to answer. In its implementation, this questionnaire was distributed online using the Google Form platform, and each respondent's answer was given a score on a five-level Likert scale, ranging from 1 to 5. After the data collection process is complete, the incoming data is systematically managed and organized for analysis. Data analysis serves as a basis for drawing research conclusions. The analytical technique applied in this study is the Partial Least Squares (PLS) approach, a variance-based structural modeling method. PLS is used to develop theories, assess relationships between latent variables, and directly test moderating effects. As explained by Ghozali (2015), PLS is an alternative to the covariance-based Structural Equation Modeling (SEM). Unlike covariance SEM, which is generally used to test causality and established theories, PLS focuses more on predictive aspects and is suitable for exploratory research with small sample sizes and data that does not require normal distribution because it uses bootstrapping techniques.

To ensure the quality of the instrument used, validity and reliability testing were conducted. Validity testing aims to measure the extent to which each indicator in the questionnaire truly represents the construct being measured. This testing was conducted using the SmartPLS application through two types of validity, namely Convergent Validity and Discriminant Validity. Convergent validity is seen from the correlation between item scores (component scores) and construct scores (construct scores), which produces a loading factor value. If the loading factor value exceeds 0.7, then the indicator is considered valid, although in the instrument development stage, values between 0.5 and 0.6 are still acceptable (Imam Ghozali & Latan, 2015). On the other hand, discriminant validity is carried out by assessing cross-loadings between indicators and other constructs, and by comparing the square root of average variance extracted (AVE) value with the correlation between constructs in the model (I. Ghozali, 2011). According to Fornell & Larcker (1981), an AVE value that is considered to meet the requirements is greater than 0.5. Meanwhile, the reliability test aims to determine the extent to which the questions in the questionnaire are able to produce consistent answers. Reliability is measured using the Cronbach Alpha value and composite reliability, where a construct is considered reliable if it has a value above 0.7 (Imam Ghozali & Latan, 2015). Finally, to analyze the relationship between variables in the structural model, a test was conducted on the magnitude of the influence between latent constructs. Model evaluation was carried out by looking at the Estimate for Path Coefficients value and testing the significance of the relationship through the t-statistic and p-value values using the bootstrapping method (Imam Ghozali & Latan, 2015), which then became the basis for concluding whether the relationship between variables in this study was statistically significant.

RESULTS AND DISCUSSION

The researchers processed the data obtained, in accordance with the main issues explained in the introduction. The results of this analysis were used to determine whether the formulated hypotheses could be accepted or rejected. Information regarding the respondent profile by gender is presented in Table 1 below.

Gender	Frequency	Percentage (%)
Man	52	68
Woman	24	32
Total	76	100

Table 1

Based on the data presented in Table 1, of the 76 respondents involved in this study, the majority were male, representing 52, or 68%. Meanwhile, there were 24 female respondents, representing approximately 32% of the total participants. This information indicates that the composition of employees in the General Bureau of the North Sumatra Provincial Secretariat is dominated by men compared to women. Further details on respondent characteristics by age group can be seen in Table 2 below.

Age	Frequency	Percentage (%)
Under 21 years	0	0
21 years – 25 years	0	0
26 years – 30 years	3	4
31 years – 35 years	4	5
36 years – 40 years	8	11
41 years – 45 years	7	9
Over 45 years old	54	71
Total	76	100

Table 2

Table 2 shows that the respondents were grouped into seven age ranges. There were no participants under 21 years old (0%) or in the 21 to 25 years old range (0%). A total of 3 respondents (4%) were in the 26–30 years old range, while 4 people (5%) were between 31–35 years old. The 36–40 years old group included 8 respondents (11%), and those aged 41–45 years numbered 7 people (9%). The majority of respondents, namely 54 people or around 71% of the total, were in the age group above 45 years old. Thus, it can be concluded that the majority of employees who responded to this study are classified as older. Furthermore, a description of respondents based on educational level can be seen in Table 3 below.

Education	Frequency	Percentage (%)
Junior High School	3	4
High School	32	42
Vocational High School	10	13
D-III	3	4
D-IV	5	7
S-1	21	28
S-2	2	3
Total	76	100

Table 3

Referring to the data presented in Table 3, of the 76 respondents, 3 (4%) had a junior high school education, 32 (42%) had completed high school, 10 (13%) were vocational high school graduates, 3 (4%) had a Diploma III degree, 5 (7%) had a Diploma IV degree, 21 (28%) had completed their undergraduate (S1) education, and 2 (3%) had a Masters (S2) education. Based on this distribution, the largest number of respondents came from the high school education group, which was 42%. Information regarding the respondents' background based on length of service can be found in Table 4 below:

Years of service	Frequency	Percentage (%)
Under 1 year	0	0
1-5 years	2	3
6-10 years	2	3
11-15 years	5	7
Over 15 years old	67	88
Total	76	100

Table 4

Referring to the information presented in Table 4, of the 76 respondents, no employees were found with less than one year of service. Two (3%) had between one and five years of work experience, and the same number, two (3%) had worked for six to ten years. Meanwhile, five (7%) respondents had between 11 and 15 years of service. The majority of respondents, 67 people, or approximately 88% of the total sample, were recorded as having served for more than 15 years. This indicates that the majority of employees within the General Bureau of the North Sumatra Provincial Secretariat are long-serving employees.

Descriptive Analysis

Descriptive analysis techniques were used to describe the data obtained during the study. The processed information included data on respondent characteristics and each of the variables studied. Data on respondents were presented in a frequency distribution table format based on specific classifications. Furthermore, the variables in the study were analyzed using a number of statistical measures, such as the mean, mode, standard deviation, and the lowest and highest values obtained. Furthermore, this process also involved regrouping the measurement scale, which originally consisted of 10 levels, into just five categories. The theoretical mean was calculated by adding the upper and lower theoretical limits and dividing the result by two. The lowest theoretical mean was 1, indicating that all questionnaire items were answered with a 1. The highest theoretical mean was 5, indicating that all items were answered with a 5. If the empirical mean was higher than the theoretical midpoint, the variable's condition was considered positive or good. The characteristics of the respondents in this study can be reviewed through the results of the descriptive analysis, which were presented in a frequency table. The following table summarizes the assessment based on the average for each question item in the questionnaire.

Average	Information
1.00 – 1.80	Strongly Disagree
1.81 – 2.60	Don't agree
2.61 – 3.40	Neutral
3.41 – 4.20	Agree
4.21 – 5.00	Strongly agree

Source: Sugiyono (2016:216)

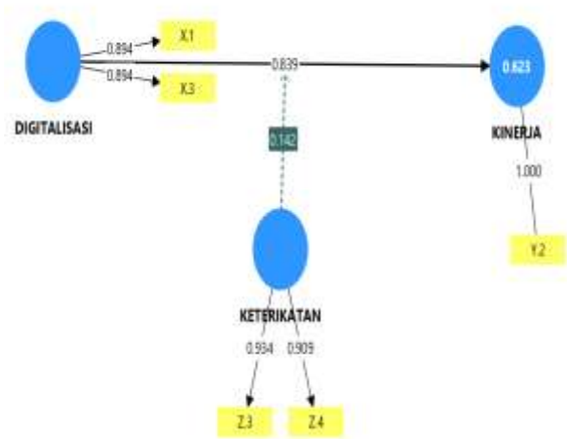
The following displays the Loadings values for each indicator:

Table 1

	Digitalization (X)	Attachment (Z)	Performance (Y)	(Z)*(X)
X.1	0.894			
X.3	0.894			
Y.2			1,000	
Z.3		0.934		
Z.4		0.909		
Z*X				1,000

Source: Processed from Smart PLS Software (2025)

Figure 1 Validity Testing Based on Factor Loading



Source: Processed from Smart PLS Software (2025)

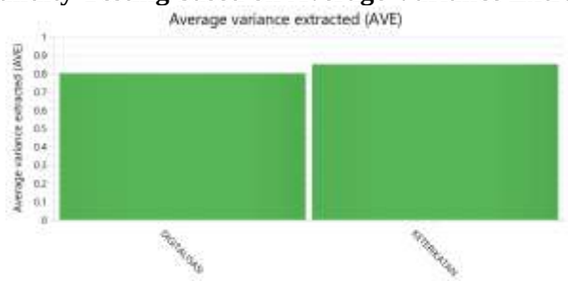
Based on the validity test results using the factor loading values displayed in Table 1 and Figure 1, it can be seen that all indicators have values above 0.7. This means that all items have met the validity criteria based on the level of factor loading. Furthermore, researchers also conducted validity testing using the Average Variance Extracted (AVE) approach as a further step in assessing construct validity.

Table 2 Validity Testing based on Average Variance Extracted (AVE)

	AverageVariance Extracted (AVE)
Attachment	0.849
Digitalization	0.800

Source: Processed from Smart PLS Software (2025)

Figure 2 Validity Testing based on Average Variance Extracted (AVE)



Source: Processed from Smart PLS Software (2025)

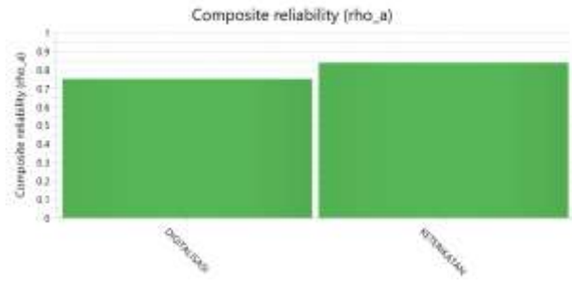
According to Mahfud and Ratmono (2013:67), the recommended minimum limit for an AVE value is above 0.5. Based on the findings of this study, all constructs demonstrated AVE values exceeding this figure, indicating they met validity standards according to the AVE criteria. The researchers then continued the analysis process by conducting a reliability test by measuring the composite reliability (CR) value.

Table 3 Reliability Testing based on Composite Reliability (CR)

	Composite Reliability(CR)
Attachment	0.837
Digitalization	0.750

Source: Processed from Smart PLS Software (2025)

Figure 3 Reliability Testing based on Composite Reliability (CR)



Source: Processed from Smart PLS Software (2025)

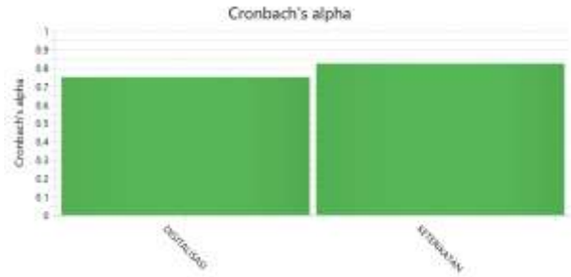
Mahfud and Ratmono (2013:67) stated that to ensure a construct is reliable, the composite reliability (CR) value should ideally exceed 0.7. Based on the analysis conducted in this study, all constructs showed CR values higher than this threshold. This indicates that all indicators within each variable have adequate internal consistency and meet reliability requirements. After this stage, the reliability testing process continues by measuring Cronbach's Alpha (CA), which is an additional indicator to assess the extent to which items within the construct demonstrate consistency in respondents' responses.

Table 4 Reliability Testing based on Cronbach's Alpha (CA)

	Composite Reliability(CR)
Attachment	0.750
Digitalization	0.824

Source: Processed from Smart PLS Software (2025)

Figure 4 Reliability Testing based on Cronbach's Alpha (CA)



Source: Processed from Smart PLS Software (2025)

According to Mahfud and Ratmono (2013:67), a Cronbach's Alpha (CA) value that can be said to meet the reliability standard is above 0.7. Based on the results of data processing, it was found that all constructs in this study had CA scores that exceeded this threshold. This finding indicates that the measuring instrument or instrument used has demonstrated a good level of internal consistency between items within a single variable. After reliability testing was conducted, the next stage was testing discriminant validity, which was conducted using the Fornell-Larcker method. The results of the discriminant validity analysis are presented in the following section.

Table 5 Discriminant Validity Testing

	Digitalization	Attachment	Performance
Digitalization	0.894		
Attachment	0.914	0.922	
Performance	0.783	0.709	1,000

Source: Processed from Smart PLS Software (2025)

Discriminant validity was tested by comparing the square root of the AVE of each construct with the correlation between constructs. The results showed that all square roots of the AVE were higher than the correlation between constructs, thus concluding that discriminant validity had been achieved.

Significance Test of Effect (Boostrapping) (Hypothesis Test)

The results of the significance test of the influence are in the following table:

	Originalsample (O)	Samplemean (M)	Standard deviation(STDEV)	T Statistics (|O/STDEV|)	P values
Digitalization (X) -> Performance (Y)	0.839	0.827	0.290	2,894	0.004
(X)*(Z) -> (Y)	0.142	0.125	0.118	1,206	0.228

Source: Processed from Smart PLS Software (2025)

Based on the results in the table above, the following results were obtained:

1. Digitalization (X) has a positive impact on performance (Y), with a path coefficient of 0.839 and a P value of 0.004 (H1 is accepted).
2. Employee engagement (Z) acts as a moderator in the influence of digitalization on employee performance (Y), although some results occur accidentally with a P value of 0.228 (H2 is accepted).

CONCLUSION

The implementation of digital technology has been proven to positively contribute to improving employee performance. The more intensive the use of digital systems in daily work activities, the more optimal the output produced by employees. Digital technology supports operational efficiency, accelerates access to important information, and improves work procedures, both at the individual and organizational level as a whole. The findings in this study also indicate that employee engagement plays a significant role in strengthening the positive effects of digitalization on performance. In other words, the higher the level of emotional, cognitive, and behavioral engagement of employees towards their tasks, the greater the benefits they can gain from the use of digital technology. Employees who demonstrate a sense of responsibility, enthusiasm, and involvement in their work tend to adapt more quickly to digital systems and are able to utilize them optimally to support increased work productivity.

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