

Integrating green recruitment and digital technology: Indirect influence on employee performance through digital competencies

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Abstract

Purpose: This study aims to analyze the direct and indirect relationships between Green Recruitment, Digital Technology, Digital Competence, and Employee Performance at PT Adhi Karya (Persero) Tbk. Specifically, it examines how Digital Competence mediates the influence of Green Recruitment and Digital Technology on employee performance in the construction sector.

Methodology: A quantitative research approach was employed using Structural Equation Modeling (SEM) with Partial Least Squares (PLS). Data were collected from 194 employees through purposive sampling, and the questionnaire used a five-point Likert scale. The analysis included validity, reliability, and hypothesis testing using SmartPLS 4.0..

Results: The findings reveal that both Green Recruitment ($\beta = 0.225$, $p < 0.01$) and Digital Technology ($\beta = 0.411$, $p < 0.001$) significantly enhance Digital Competence. In turn, Green Recruitment ($\beta = 0.203$), Digital Technology ($\beta = 0.253$), and Digital Competence ($\beta = 0.437$) significantly improve Employee Performance. Moreover, Digital Competence mediates the indirect influence of Green Recruitment ($\beta = 0.098$, $p < 0.01$) and Digital Technology ($\beta = 0.180$, $p < 0.001$) on performance.

Conclusions: Integrating sustainable recruitment practices and digital transformation strategies strengthens employee competencies and organizational productivity in construction companies.

Limitations: The study focuses on one SOE, limiting generalizability, and does not include moderating variables such as digital leadership or organizational culture.

Contribution: This study extends Green HRM and digital transformation theories by providing empirical evidence that Digital Competence serves as a critical bridge between sustainability-oriented HR policies and enhanced employee performance in the digital era.

Keywords: *Digital Competence, Digital Technology, Employee Performance, Green Recruitment, SEM-PLS*

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1. Introduction

The construction industry is currently facing great pressure in applying sustainability principles, especially in the human resource management process. As awareness of the importance of green practices increases, construction companies are encouraged to adopt Green Recruitment, which is recruitment that considers environmental and sustainability values in attracting and selecting candidates. A company's competitive advantage comes from its valuable, scarce, and hard-to-replicate resources. Green recruitment is seen as a strategy to get human resources who are not only technically competent but also sustainability-minded (Jabbour, de Sousa Jabbour, Govindan, Teixeira, & de Souza Freitas, 2013). On the one hand, the practice of Green Recruitment recruiting employees with environmental awareness and competence is seen as able to reduce operational impact on the environment while strengthening an environmentally friendly organizational culture. Saputra, Apriyan, and Subarjo (2025) found that green recruitment and green selection significantly improve employee performance in various industry sectors, including light construction and manufacturing.

One of the leading construction SOEs, PT ADHI KARYA (Persero) Tbk, has experienced a number of challenges in managing the performance of its employees. One of the factors that also affects is the lack of integration of Digital Technology and the low digital competence of employees. In its 2023 Annual Report, the company noted a 12.4% decrease in project productivity, accompanied by a high rate of digital administration errors and delays in project execution, which is allegedly caused by a lack of competence in the use of construction digital platforms such as BIM (Building Information Modeling). On the other hand, PT Adhi Karya has taken steps to transform human resources digitally by collaborating with SISI for the implementation of the Oksia application a Human Capital Management platform that includes recruitment, payroll, and performance management modules.

However, the application adoption process encountered obstacles: uneven user training raised resistance, so the use of digital features was not optimal. As a result, employees' digital competencies in the ability to operate digital systems and integrate technology in daily tasks are still relatively low. Technological advances demand increased productivity and efficiency. In line with the development of the Industrial Era 5.0 with an approach to humans who can collaborate with technology to create a better and just future (Ashdaq et al., 2024; (Ermawati, Widnyani, & Kartika, 2024) emphasized that employees' digital competencies have a significant positive effect on their performance, including through increasing task effectiveness and decision-making speed. Inadequate training can reduce Job And I think that's a Organizations need to prioritize training to improve job satisfaction (Ngoc et al., 2024).

In addition, in field practice, a subsidiary of PT Adhi Karya (PT Adhi Persada Gedung) had experienced a delay in salary payments in May 2025, which reduced employee motivation and productivity, an indicator of declining human resource performance, which was feared to have an impact on delayed project completion. This combination of HR issues emphasizes the need for integration between green recruitment and digital technology, with an emphasis on improving digital competencies as mediators to achieve improved employee performance. In addition, the recruitment strategy has not fully adopted green and digital-based principles, so the selection process still focuses on conventional aspects. This causes a mismatch between the competency needs in the digitalization era and the capabilities of new employees. To give an initial overview of the conditions in the field, the following is presented:

Table 1. Indicators and Field Findings

Variable	Key Indicator	Field Result
Green Recruitment (X1)	Use of online platforms, eco-friendly value of candidates	only 30% of vacancies are listed as sustainability criteria (HRD ADHI, 2023), and there are no specific environmental criteria in the job description; CSR policy focuses more on large projects.
Digital Technology (X2)	Use of e-recruitment, BIM, and collaborative software systems	48% of employees are not yet familiar with the project's digital software (BPSDM ADHI, 2023), and the implementation of the Oksia application by SISI,

		but adoption has been slow due to limited training and user resistance.
Digital Competency (Z)	Ability to use Digital Technology project	55% of projects are constrained by low digital adoption (Internal Audit 2023), low scores in internal surveys on the use of digital features; advanced training is not evenly distributed, only 73% of employee training targets have been achieved (ADHI Annual Report, 2023).
Employee Performance (Y)	Effectiveness, efficiency, and work productivity	The performance target was only achieved by 82% of the 100% annual target, this was due to salary and project delays; employee satisfaction index declined in Q1 2025

Source: Data Processed from Researchers (2025)

In line with the above challenges, the integration of green recruitment and digital transformation in the recruitment process and human resource development is crucial. Green recruitment not only has an impact on a more sustainable corporate image, but can also attract candidates who have the appropriate environmental awareness and technological capabilities. However, the influence of both on employee performance does not occur directly, but is mediated by digital competencies as the main prerequisite for increasing work effectiveness in the era of construction digitalization. Based on the above problem statement, this study formulates the following questions: 1) Does Green Recruitment have a direct and significant effect on Digital Competence?; 2) Does Digital Technology have a direct and significant effect on Digital Competence? ; 3) Does Green Recruitment have a direct and significant effect on the organizational performance of employees?; 4) Does Digital Technology have a direct and significant effect on Employee Performance?; 5) Does Digital Competence have a direct and significant effect on Employee Performance?; 6) Is there a significant indirect influence between Green Recruitment on Employee Performance through Digital Competence?; 7) Is there a significant indirect influence between Digital Technology on Employee Performance through Digital Competencies?

2. Literature review

2.1. Green Recruitment

Renwick, Redman, and Maguire (2013) explained Green Recruitment as a selection and recruitment process for employees by considering the criteria of environmentally friendly behavior and attitudes from the early stages of recruitment. Jabbour et al. (2013) defines Green Recruitment as part of a Green HRM practice that emphasizes the recruitment, selection, and onboarding of environmentally conscious employees. Jamil, Zaman, Kayikci, and Khan (2023) declares Green Recruitment as the application of sustainability principles in the recruitment process, including the use of environmentally friendly recruitment materials and green skills criteria. Wang, Tang, Zhang, Phillips, and Aldawish (2024) describes Green Recruitment as an organizational strategy to attract candidates with environmental values and competencies. Das and Dash (2024) describes Green Recruitment as a systematic effort to integrate sustainability values into every stage of the recruitment process.

By Renwick et al. (2013), Green Recruitment indicators include: 1) Criteria for eco-friendly attitudes and behaviors: pro-environmental requirements in job descriptions and selection processes, ensuring candidates have green awareness. 2) Sustainable recruitment media: use of environmentally friendly job advertising channels (digital and print). 3) Green skills assessment: evaluation of technical and non-technical competencies related to sustainability during the selection process. 4) Environmental policy orientation: an onboarding session that exposes the company's policies on sustainability. 5) Green employer branding: an image of an organization that communicates environmental commitment in recruitment materials.

2.2. Digital Technology

Bharadwaj, Sawy, Pavlou, and Venkatraman (2013) defines Digital Technology as an IT infrastructure and platform that enables business processes to be connected in real-time. Vial (2021) defines Digital

Technology as a collection of digital tools and applications (e.g. IoT, cloud computing, data analytics) that facilitate the digital transformation of organizations. Bui and Le (2023) describes Digital Technology is the ability of organizations to leverage new technologies to create value. Reis, Amorim, Melão, and Matos (2018) refers to Digital Technology as the adoption and integration of digital technology in the management and operation process. Khizar, Kousar, and Adomako (2025) affirming Digital Technology as a key element in the digital ecosystem that drives innovation.

By Bharadwaj et al. (2013), digital Technology indicators include: 1) IT infrastructure: the availability of hardware and networks that support real-time digital operations. 2) Project management information system: implementation of applications such as BIM for planning and monitoring. 3) Digital collaboration platforms: the use of online communication and collaboration tools (e.g. HCM portals). 4) Utilization of data analytics: the ability to process project data for decision-making. 5) Automation and integration: the level of use of automated workflows and inter-system integration.

2.3. Digital Competency

Ferrari (2012) defines digital Competence as the collection of abilities, skills, and knowledge that individuals need to perform tasks in a digital environment. Ilomäki, Paavola, Lakkala, and Kantosalo (2016) states that Digital Competence includes information and technology literacy, digital communication, and cybersecurity. Blanc, Conchado, Benlloch-Dualde, Monteiro, and Grindei (2025) describes Digital Competence as the ability to solve problems creatively using digital tools. Mejías-Acosta, Regnault, Vargas-Cano, Cárdenas-Cobo, and Vidal-Silva (2024) explains Digital Competence encompasses four domains: information, communication, creative content, and security.

Ferrari and Punie (2013) affirming that Digital Competence includes digital collaboration and digital ethics. By Ferrari (2012) digital Competency indicators include: 1) Information and technology literacy: the ability to search, evaluate, and manage digital information. 2) Digital communication and collaboration: utilizing digital tools to interact and work together. 3) Digital problem-solving: creating creative content and solutions using technology. 4) Digital security and ethics: awareness of cybersecurity practices and ethical behavior. 5) Utilization of digital innovation: the use of new tools to improve work efficiency.

2.4. Employee Performance

(Díaz-Vilela et al., 2015) defines Employee Performance as the results of work achieved by employees in given tasks, measured by productivity, quality, and efficiency. Borman and Motowidlo (1997) stating that employee performance includes core tasks (task performance) and contextual contributions (contextual performance). Aguinis (2019) describes Employee Performance as formal and informal outcomes that include the achievement of organizational goals. Cardy and Leonard (2014) emphasizing employee performance as a combination of effectiveness and adaptability. Campbell, McCloy, Oppler, and Sager (1993) affirming that employee performance is measured through productivity, quality, initiative, and compliance with standards.

By Chalisa and Prawitasari (2024) Employee Performance indicators include: 1) Task productivity: quantity of output per unit of time. 2) Quality of workmanship: the level of conformity of the output with standards and specifications. 3) Time and cost efficiency: optimization of resource usage. 4) Initiative and innovation: contribution of ideas and problem solving. 5) Procedural compliance: adherence to the organization's rules, policies, and targets. This frame of mind model compiles direct and indirect relationships between variables as the basis for hypothesis testing.

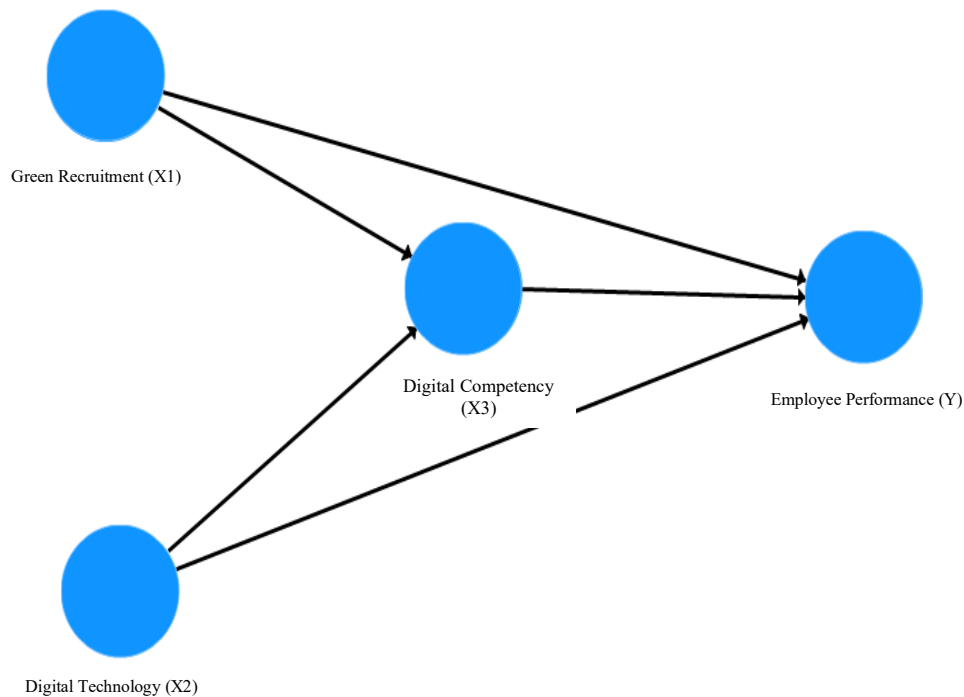


Figure 1. Research Frameworks

This framework of thought underlies the hypothesis formulation that will be tested using the Structural Equation Modelling (SEM-PLS) approach to identify direct and indirect relationships between variables.

2.5. Hypothesis Development

The following is the development of hypotheses based on previous literature and the conceptual framework that has been compiled:

2.5.1. Green Recruitment for Digital Competence

Green recruitment that integrates sustainability criteria in the recruitment process tends to produce employees who are more adaptive and open to innovation, including mastery of digital technology. Research (Renwick, Jabbour, Muller-Camen, Redman, & Wilkinson, 2016) Renwick supports this by showing that employees recruited through a green approach are more motivated to develop digital competencies. At ADHI, recruitment programs such as the Fresh Graduate Development Program (FGDP) and the Post Graduate Development Program (PGDP) have begun to include sustainability elements in the selection, which is expected to improve the digital competence of new employees. In line with previous research Renwick et al. (2016) showed that green recruitment significantly improves employee competencies, including digital competencies, because employees recruited with this approach tend to be more adaptive to change, including digital transformation.

H1: There is a positive and significant influence between Green Recruitment on Digital Competence

2.5.2. Digital Technology for Digital Competence

The implementation of digital technologies such as BIM and ERP systems at ADHI requires skilled employees in operating these technologies. Research by Veldhoven, Etikala, Goossens, and Vanthienen (2021) found that the implementation of digital technology significantly improves employees' digital competencies, especially when supported by adequate training. This is in line with the findings at PT ADHI KARYA, where training such as the Project Management Development Program (PMDP) and BIM certification have helped employees master new technologies (ADHI Annual Report, 2023). ADHI has initiated BIM training and certification to ensure that employees can use technology effectively, but data show that only 73% of training targets were achieved by 2023,

indicating that there is room for improvement.

H2: There is a positive and significant influence between Digital Technology on Digital Competence

2.5.3. Green Recruitment on Employee Performance

Employees hired with a green approach tend to have a value alignment with the company, which has a positive impact on performance. Research Jabbour et al. (2013) found that Green Recruitment directly improve performance through enhancement Commitment and employee commitment. At ADHI, AKHLAK values that include sustainability aspects are part of the performance assessment, so that employees recruited with a green approach are expected to have better performance. Research by Naqvi, Shafi, Qazalbash, Islam, and Raza (2025) Reward & recognition mechanism in GHRM (including Green Recruitment) contribute to the increase in Environmental Performance and general employee performance in the manufacturing and service sectors.

H3: There is a positive and significant influence between Green Recruitment on Employee Performance

2.5.4. Digital Technology on Employee Performance

Digital technology directly improves the efficiency and accuracy of work, which has an impact on employee performance. ADHI reports that the implementation of BIM has reduced project costs by up to 15% (Annual Report, 2023), demonstrating the positive impact of technology on performance. However, without adequate digital competencies, the benefits of technology cannot be maximized. According to COA (2025) the use of digital technology in construction project management increases efficiency, collaboration, and productivity in the field, which has a significant positive impact on employee performance.

H4: There is a positive and significant influence between Digital Technology on Employee Performance organization

2.5.5. Digital Competence on Employee Performance

Employees with high digital competence are able to make optimal use of technology, thereby increasing productivity and innovation. Research Bharadwaj et al. (2013) it shows that digital competence is a strong predictor of employee performance in the digital era. At ADHI, employees with BIM certification have 25% higher productivity, proving the importance of digital competence. Previous research by Ingsih, Astuti, and Riyanto (2024) showed that employees with high digital competence tend to perform better because they can make optimal use of technology.

H5: There is a positive and significant influence between Digital Competencies on Employee Performance organization

2.5.6. Green Recruitment has an indirect effect on Employee Performance through Digital Competencies

Green recruitment not only has a direct impact on performance but also indirectly through the improvement of digital competencies. Research Tampubolon (2022) found that employees with sustainability values tended to be more motivated to develop digital competencies, which ultimately improved performance. At ADHI, the integration of green recruitment with digital training is expected to strengthen this mediation channel. Research in line with Alshuaibi, Alhebri, Khan, and Sheikh (2024) green Digital Learning Orientation (part of the Green Recruitment) functions as a mediator in improving employee performance through strengthening their digital competencies.

H6: Green Recruitment has an indirect effect on the organizational performance of employees through Digital Competencies

2.5.7. Digital Technology indirectly affects Employee Performance through Digital Competencies

Digital technology requires digital competencies to achieve maximum impact on performance. Research Veldhoven et al. (2021) shows that technology without the support of digital competencies has only minimal impact. At ADHI, BIM training and certification are key to ensuring that technology can be optimally utilized to improve performance. Competency development strategies through digital technology in the government environment have been proven to mediate and improve employee

performancee, demonstrating the effectiveness of the mediation mechanism.

H7: Digital Technology has an indirect effect on *the organizational performance of employees through Digital Competencies*

3. Methodology

The population in this study is all employees of PT Adhi Karya (Persero) Tbk. Based on data from the company's annual report, the number of employees in 2024 will be 2,502 people. The sampling technique used is purposive sampling, which is a sample selection technique based on certain considerations according to the research criteria (Scott, 2020). According to Hair, Babin, Anderson, and Black (2019), the minimum sample size for Structural Equation Modeling (SEM) analysis is 5–10 respondents per indicator. Because there are 20 indicators (5 indicators × 4 variables), the sample size is minimal: $> 20 \times 10 = 200$ respondents. However, from the process of distributing the questionnaire online through Google Form, the data that was successfully collected and declared suitable for analysis was as many as 194 respondents.

3.1. Research Design

This study uses a quantitative approach with a positivistic paradigm to test the relationship between variables statistically. The research paradigm adopted is positivistic, which focuses on objectively measurable observations and measurements (Keser & Köksal, 2017). This research is based on the development of a pathway model (*Path Analysis*) with the help of Smart PLS 3.0 software to analyze the mediating role of Organizational Performance in the influence of independent variables on Organizational Sustainability.

3.2. Research Instruments

The instrument used was a closed questionnaire with a Likert scale of 5 points (1 = strongly disagree to 5 = strongly agree). The questionnaire was compiled based on indicators adapted from previous literature related to *Green Recruitment*, Digital Technology, Digital Competence, and Employee Performance.

Table 2. Operational Variable

Variable	Indicator	Questionnaire Statement	Scale	Source
Green Recruitment	GR1. Criteria for eco-friendliness	I was recruited with eco-values and attitudes in mind.	Likert (1–5)	(Renwick et al., 2013)
	GR2. Continuous recruitment media	The recruitment process uses eco-friendly digital media		
	GR3. Green skills assessment	My eco-friendly abilities were evaluated during job selection.		
	GR4. Environmental policy orientation	I received training on environmental policy during my job orientation		
	GR5. Employer green branding	The company has an image that supports environmental sustainability.		
Digital Technology	TD1. IT Infrastructure	The company provides the digital infrastructure that supports my work.	Likert (1–5)	(Bharadwaj et al., 2013)
	TD2. Project management system	I use digital apps in project management.		
	TD3. Digital Collaboration	I use digital platforms for work collaboration.		
	TD4. Analytics Data	I use digital data to support work decisions.		
	TD5. System automation	My work is helped by an automated digital system.		

Digital Competency	KD1. Information & technology literacy	I am able to search and manage digital information effectively.	Likert (1–5)	(Ferrari, 2012)
	KD2. Digital Collaboration	I can work with colleagues through digital platforms.		
	KD Digital Problem	I am able to solve problems using digital technology..		
	KD4. Digital ethics and security	I understand the importance of maintaining the ethics and security of digital data.		
	KD5. Digital Innovation	I use new technology to improve work efficiency.		
Employee Performance	KK1. Productivity	I complete work according to the target time and volume of work.	Likert (1–5)	(Vuong & Nguyen, 2022)
	KK2. Work Quality	My work is in accordance with the company's quality standards.		
	KK3. Efficiency	I use my time and resources efficiently.		
	KK4. Initiatives and innovation	I actively provide new ideas to improve the work process.		
	KK5. Compliance	I comply with the company's policies and work procedures.		

Source: Researcher (2025)

3.3. Data Collection Procedure

The data collection procedure in this study was carried out using the survey method, namely distributing questionnaires to respondents who had been determined based on the purposive sampling technique. The questionnaire was compiled based on theoretical indicators from each variable, namely *Green Recruitment*, Digital Technology, Digital Competence, and Employee Performance. The questionnaire was given online to speed up and facilitate distribution to employees of PT Adhi Karya (Persero) Tbk who met the sample criteria. Before being disseminated, a content validity test was carried out involving supervisors and human resource practitioners to ensure that all items were relevant and easy to understand by respondents. The results of the questionnaire distribution showed that from the total distribution carried out, there were 194 questionnaires that were successfully collected in complete and worthy of analysis. The data is then selected to ensure that there are no duplications, inconsistencies, or missing values, so that the final data is eligible for quantitative analysis using the SEM-PLS approach.

3.4. Data Analysis Techniques

Data analysis was carried out with Partial Least Squares Structural Equation Modeling (PLS-SEM) using Smart PLS software version 4.0. The selection of SEM-PLS is suitable for studies with relatively small sample sizes and model complexity involving mediating variables. The data analysis technique in this study uses a quantitative approach with Structural Equation Modeling (SEM) tools based on Smart PLS software version 4.0. The selection of SEM-PLS is suitable for studies with relatively small sample sizes and model complexity involving mediating variables (Hair Jr et al., 2021). Before the SEM analysis is carried out, the validity and reliability of the instrument are first tested using *Outer Loading*, *Composite reliability* and *average variance extracted (AVE)* to ensure the accuracy and consistency of the data. Once the data is declared valid and reliable, SEM analysis is used to test the direct and indirect relationships between variables. This model was chosen because it is able to test complex causal relationships, including the influence of Digital Competency mediation on relationships between *Green Recruitment* and Digital Technology on Employee Performance. The interpretation of the results was carried out based on the value of the path coefficient (*Path Coefficient*), the value of R^2 , as well as the value of significance (*p-value* and *t-statistic*) of each relationship between variables.

4. Results and discussions

4.1. Results

4.1.1. Descriptive Statistics of Research

Descriptive statistics were used to provide an overview of the sample used in this study. Here is a table showing the demographic characteristics of respondents. The following is a table of employee demographics based on data from 194 respondents which is adjusted proportionally to the composition of PT Adhi Karya (Persero) Tbk's employee data in 2024:

Table 3. Demographic Response (n = 194)

Category	Sub Category	Total (people)	Presentation (%)
Gender	Male	159	81,96%
	Female	35	18,04%
Age Range	< 30 years	33	17,01%
	31–45 years	104	53,61%
	46–55 years	52	26,80%
	> 55 years	5	2,58%
Education Level	S3	0	0,0%
	S2	28	14,43%
	S1	133	68,56%
	D3/D4	16	8,25%
	High School/Vocational School	17	8,76%
Employment Status	Remain	134	69,07%
	Not Fixed	60	30,93%
Organization Level	Staff & Senior Staff	58	29,90%
	Project Manager (PM)	16	8,25%
	Project Level 2	52	26,80%
	Project Level 3	48	24,74%
	Other (Manager/Admin,etc)	20	10,31%

Based on Table 3, the majority of respondents in this study were male employees as many as 159 people or around 81.96%, which reflects the dominance of men in the construction sector. In terms of age, the most respondents were in the age range of 31–45 years as many as 104 people (53.61%), followed by the age group of 46–55 years old at 26.8%. Most of the respondents have a Bachelor's degree (S1), which is 133 people (68.56%), according to the needs of technical competence in construction projects.

In terms of employment status, the majority of respondents were permanent employees, namely 134 people (69.07%), reflecting the long-term employment structure at PT Adhi Karya (Persero) Tbk. Based on the organizational level, respondents were dominated by the Staff & Senior Staff group as many as 58 people (29.90%), followed by Level 2 and Level 3 project workers, which shows that the majority of respondents are directly involved in the field and technical operations of construction projects.

4.2. Data Analysis

4.2.1. Measurement Model

The measurement model or *outer model* is used to connect the indicator variables with the latent construct being measured. In this study, variables such as *Green Recruitment*, Digital Technology, Digital Competence, and Employee Performance were modeled as reflective constructs. The evaluation of the measurement model is carried out through the following analyses:

4.2.2. Cross Loading

In a reflective model, *outer loading* shows how strongly each indicator represents a latent construct. This analysis ensures that all measurement items have a loading value that exceeds 0.4, as shown in Table 3. The entire loading value is significant at the level of $\alpha = 0.05$. In addition, each indicator has a higher loading value against its original construct compared to other constructs, which means

that there is no cross-correlation that casts doubt on the validity of the indicator.

Table 4. Cross Loading

Variable Indicator	Green Recruitment (X1)	Digital Technology (X2)	Digital Competence (Z)	Employee Performance (Y)
GR.1	0,877	0,330	0,443	0,317
GR.2	0,848	0,279	0,385	0,282
GR.3	0,888	0,241	0,447	0,213
GR.4	0,875	0,185	0,542	0,186
GR.5	0,913	0,231	0,555	0,234
TD.1	0,231	0,951	0,405	0,945
TD.2	0,295	0,707	0,555	0,630
TD.3	0,260	0,975	0,452	0,962
TD.4	0,262	0,934	0,459	0,871
TD.5	0,257	0,942	0,414	0,948
KD.1	0,488	0,461	0,937	0,491
KD.2	0,471	0,419	0,880	0,400
KD.3	0,512	0,444	0,884	0,470
KD.4	0,526	0,459	0,926	0,474
KD.5	0,441	0,448	0,860	0,437
KK.1	0,271	0,967	0,502	0,983
KK.2	0,312	0,927	0,501	0,970
KK.3	0,237	0,957	0,486	0,981
KK.4	0,269	0,962	0,483	0,980
KK.5	0,258	0,872	0,484	0,924

The findings from Table 4 Cross Loading show that each indicator has the highest loading value on its original construct compared to other constructs. For example, the GR.1 to GR.5 indicators have the highest loading on the Green Recruitment (X1) construct, and not on other constructs such as Digital Technology, Digital Competence, and Employee Performance. This indicates that there is no high cross-loading correlation between the indicator and other constructs that could cast doubt on the validity of the construct. Thus, it can be concluded that the indicators in this model have good indicator validity, and each indicator accurately reflects its latent construct.

4.2.3. Discriminatory Validity

Discriminant validity indicates the extent to which different constructs do not overlap each other. In this case, the validity of the discriminant is confirmed if the square root of the value *Average Variance Extracted (AVE)* for each construct is greater than the correlation between the other constructs. Criterion (Fornell & Larcker, 1981) used as a test base. The results in Table 4 and Table 7 show that all indicators have the highest loading on the intended construct compared to other constructs, which means that the discriminant validity is met.

Table 5. Discriminant Validity for Research Constructs

	Green Recruitment (X1)	Employee Performance (Y)	Digital Competence (Z)	Digital Technology (X2)
Green Recruitment (X1)	0,881			
Employee Performance (Y)	0,278	0,968		
Digital Competence (Z)	0,544	0,507	0,898	
Digital Technology (X2)	0,285	0,969	0,497	0,907

Table 5 Discriminant Validity uses the approach of Fornell and Larcker (1981) to assess whether the constructs in the model are really different from each other. The discriminant validity is said to be fulfilled if the value of the square root of AVE (shown in the diagonal of the table) is higher than the correlation value between constructs (values outside the diagonal). For example, the square root value of AVE for *the Green Recruitment* construct is 0.881, greater than its correlation with Employee Performance (0.278), Digital Competence (0.544), and Digital Technology (0.285). Similarly, for other constructs such as Digital Technology which has a diagonal value of 0.907, greater than other correlations. Thus, it can be concluded that the validity of the discriminator has been met.

Table 6. Analysis of Confirmatory Factors and Composite Reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
<i>Green Recruitment (X1)</i>	0,928	0,933	0,945	0,775
<i>Digital Technology (X2)</i>	0,943	0,953	0,958	0,823
<i>Digital Competence (Z)</i>	0,940	0,942	0,954	0,806
<i>Employee Performance (Y)</i>	0,983	0,984	0,987	0,937

4.2.4. Internal Consistency / Reliability of Scale

Internal reliability measures the consistency between items in a single construct. One of the commonly used sizes is *Cronbach's Alpha* (Cronbach, 1951). Alpha values describe the positive correlation between indicators in a group. Based on Table 6, the *Cronbach's Alpha* for all constructs to be above 0.90, i.e. *Green Recruitment* 0.928, Digital Technology 0.943, Digital Competence 0.940, Employee Performance 0.983. These values indicate that all constructs have a very high level of internal consistency, since according to Hair et al. (2019), values above 0.70 are good enough, while values above 0.90 indicate excellent reliability.

4.2.5. Composite Reliability

Composite reliability is an alternative to *Cronbach's Alpha* which is considered more accurate in the context of reflective structural models. This measure describes the internal consistency of the construct based on the individual contributions of each indicator (Fornell & Larcker, 1981). Based on Table 6, the *Composite Reliability* For each construct is: *Green Recruitment* (0.945), Digital Technology (0.958), Digital Competence (0.954), and Employee Performance (0.987). All of the composite reliability values exceeded the threshold value of 0.70, indicating that all constructs are highly reliable and trustworthy for use in future analysis.

4.2.6. Convergent Validity

Convergent validity was evaluated using *the Average Variance Extracted* (AVE) value, which measures the proportion of indicator variance described by the latent construct compared to the measurement error. The ideal AVE value is above 0.50. The results in Table 6 show that all constructs have adequate AVE values: *Green Recruitment* of 0.775, Digital Technology of 0.823, Digital Competence of 0.806, and Employee Performance of 0.937. These values confirm that the indicators in each construct have the ability to explain their latent constructs very well, so that the convergent validity has been met.

4.2.7. Structural Model

The structural model serves to describe the relationships between latent variables, both independent and dependent, in order to test the hypothetical causal influence. In this study, the linear relationship between various constructs such as *Green Recruitment* (X1), Digital Technology (X2), Employee Performance (Y) and Digital Competence (Z) became the basis for model development.

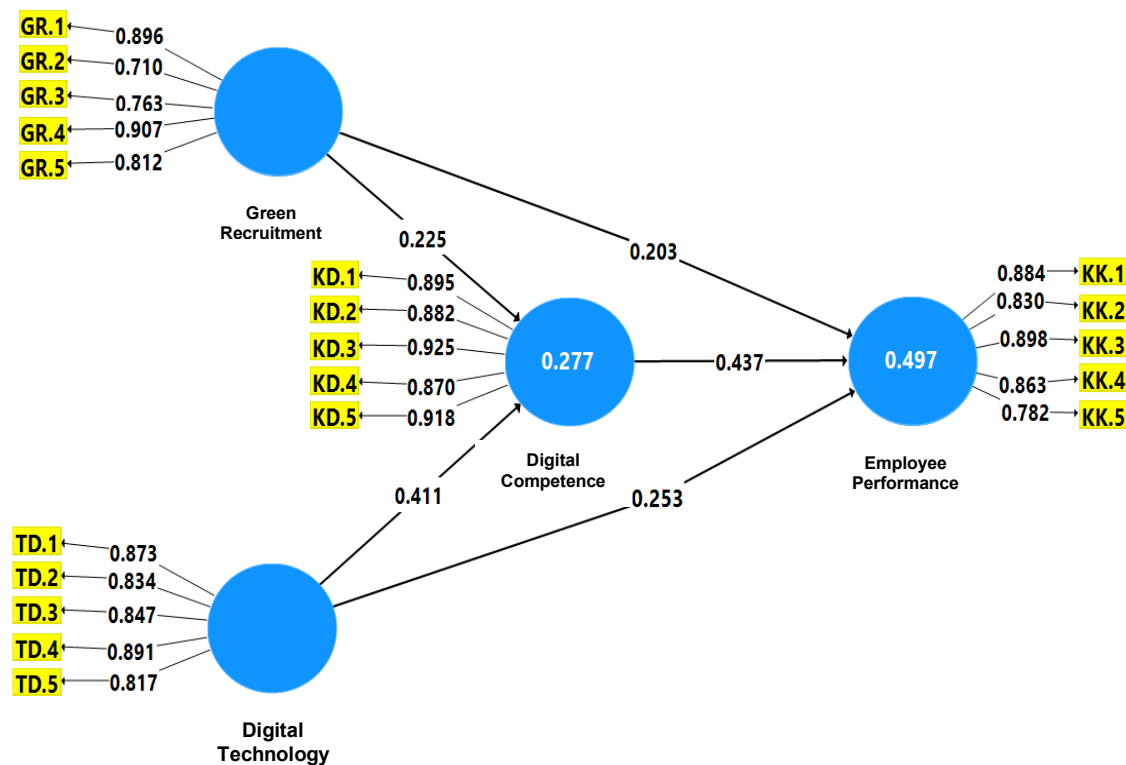


Figure 2. Path Coefficients Value

The figure above presents a structural model from the PLS-SEM analysis that illustrates the relationship between the exogenous variables of *Green Recruitment* (X1), *Digital Technology* (X2), and *Employee Performance* (Y), through the mediation of *Digital Competency* (Z). The *R-squared value* for *Digital Competence* is 0.277, meaning that 27.7% of the variability of *Digital Competence* can be explained by *Green Recruitment* (X1) and *Digital Technology* (X2). The rest, which is 72.3%, is influenced by other variables outside the model. Meanwhile, the *R-squared* for *Employee Performance* reaches 0.497, which means that 49.7% of the variability of *Employee Performance* can be explained by *Green Recruitment* (X1), *Digital Technology* (X2), and *Digital Competence* (Z). The remaining 50.3% is explained by factors outside the model.

4.3. Hypothesis Testing Results

The next step in the analysis is to test the significance of *path coefficients* to find out whether the relationships between constructs in the model are statistically significant. This test aims to assess the possible cause-effect relationship between latent variables (Streukens & Leroi-Werelds, 2016). Table 7 presents the complete results of the model testing. Each path is tested based on three statistical parameters, namely: path coefficient (β), standard error, and significance value (p-value). If the p-value < 0.05, then the relationship is considered significant.

Table 7. Hypothesis Testing Results

		Path Coefficients				
Assumptions	Relation	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
H1	Green Recruitment (X1) -> Digital Competence (Z)	0,225	0,233	0,072	3,112	0,002
H2	Digital Technology (X2) -> Digital Competence (Z)	0,411	0,412	0,069	5,998	0,000
H3	Green Recruitment (X1) -> Employee Performance (Y)	0,203	0,199	0,050	4,029	0,000

H4	Digital Technology (X2) -> Employee Performance (Y)	0,253	0,262	0,081	3,137	0,002
H5	Digital Competence (Z) -> Employee Competence (Y)	0,437	0,434	0,082	5,348	0,000
Specific Indirect Effects						
Assumptions	Relation	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
H6	Green Recruitment (X1) -> Digital Competence (Z) -> Employee Performance (Y)	0,098	0,101	0,037	2,678	0,008
H7	Digital Technology (X2) -> Digital Competence (Z) -> Employee Performance (Y)	0,180	0,179	0,046	3,885	0,000

H1: Green Recruitment has a positive effect on Digital Competence

The findings were found to prove that *Green Recruitment* has a positive and significant effect on Digital Competence, with a path coefficient value of 0.225, a t-statistical value of 3.112, and a significance value (p-value) of 0.002. This means that the implementation of an environmentally friendly recruitment strategy actually contributes to shaping and improving the digital capabilities of employees at PT Adhi Karya (Persero) Tbk.

H2: Digital Technology has a Positive Effect on Digital Competence

The findings were found to prove that Digital Technology has a positive and significant effect on Digital Competence, with a coefficient value of 0.411, t-statistic of 5.998, and p-value of 0.000. These findings show that the better the adoption and use of digital technology in the work environment, the higher the level of digital competence possessed by employees.

H3: Green Recruitment has a Positive Effect on Employee Performance

The findings were found to prove that *Green Recruitment* has a positive and significant effect on Employee Performance, with a coefficient of 0.203, t-statistic of 4.029, and p-value of 0.000. This means that recruitment practices that emphasize sustainability and environmental awareness aspects have been proven to be able to improve employee performance from various dimensions, such as productivity, efficiency, and work quality.

H4: Digital Technology has a Positive Effect on Employee Performance

The findings were found to be proven that Digital Technology has a positive and significant effect on Employee Performance, with a coefficient value of 0.253, t-statistic of 3.137, and p-value of 0.002. This indicates that the application of digital technology in the work process not only simplifies operational processes, but also has a real impact on improving employee performance.

H5: Digital Competence has a Positive Effect on Employee Performance

The findings were found to prove that Digital Competence has a positive and significant influence on Employee Performance, with a coefficient of 0.437, t-statistic of 5.348, and p-value of 0.000. These results reinforce the view that mastery of digital skills, such as information literacy, online collaboration, and cybersecurity, are important factors in driving optimal performance in the digital era.

H6: Green Recruitment has a significant indirect influence on Employee Performance through the mediating role of Digital Competencies

The findings were found to prove that *Green Recruitment* has an indirect influence on Employee Performance through Digital Competence, with a mediating effect value of 0.098, t-statistic of 2.678, and p-value of 0.008. This indicates that part of the impact of Green Recruitment on performance improvement is channeled through improving employees' digital competencies.

H7: Digital Technology has a significant indirect influence on Employee Performance through the mediating role of Digital Competencies

The findings were found to prove that Digital Technology also has a significant indirect influence on Employee Performance through Digital Competence, with a mediating effect value of 0.180, t-statistic of 3.885, and p-value of 0.000. This confirms that the use of digital technology not only has a direct impact on performance, but also strengthens these effects through improving employees' digital skills.

4.4. Discussion

4.4.1. Green Recruitment for Digital Competence

The results of the study showed that *Green Recruitment* had a positive and significant effect on Digital Competence with a path coefficient value of 0.225, t-statistic of 3.112, and p-value of 0.002. This shows that a hiring strategy that considers environmental aspects is capable of shaping employees' digital capabilities. *Green Recruitment* not only emphasizes the technical and non-technical competency aspects of prospective employees related to sustainability issues, but also encourages an onboarding and training process that integrates technology. This is in accordance with the theory of (Renwick et al., 2013) which emphasizes that Green HRM is included in practices that are able to develop sustainable competency capacity.

These findings are reinforced by research from Jabbour et al. (2013) which states that the green recruitment process encourages organizations to recruit candidates who have technological proficiency to implement eco-friendly programs. Likewise, a study from Moczydłowska, Sadkowska, and Leszczewska (2024) found that green hiring is closely related to employee technology awareness, especially in project-based sectors such as construction. A similar study by Faisal (2023) also confirmed that companies with green recruitment strategies have a higher level of digital readiness compared to conventional companies.

4.4.2. Digital Technology for Digital Competence

The relationship between Digital Technology and Digital Competence is proven to be significant, with a coefficient value of 0.411, t-statistic of 5.998, and p-value of 0.000. This means that the higher the application of digital technology in the work environment, the higher the digital competence of employees. Access to project information systems, the use of data analytics, and automation of work processes are natural means of learning and digital literacy. According to Bharadwaj et al. (2013), the adoption of digital technology facilitates organizational learning and adaptation of digital skills in the context of work. These results are also in line with research from Soto-Acosta, Popa, and Martinez-Conesa (2018) which states that digital transformation is a catalyst for strengthening digital competency. Meanwhile, a study by Azaz et al. (2024) found that an integrated digital environment encourages employees to constantly update their competencies as technology evolves.

4.4.3. Green Recruitment on Employee Performance

Green Recruitment directly affects Employee Performance with a coefficient value of 0.203, t-statistic of 4.029, and p-value of 0.000. This shows that green recruitment practices have an impact on improving employee productivity, efficiency, and quality of work. This practice encourages a responsible work culture, in line with sustainability values, which ultimately increases job satisfaction and motivation. Renwick et al. (2013) explained that the implementation of GHRM has an impact on organizational performance through strengthening sustainability values in the HR management process. Khan et al. (2022) found that good green recruitment increases employees' commitment and pro-environmental behavior, which in turn strengthens their contribution to work targets. Meanwhile, according to Saeed et al. (2019), organizations that implement green HRM show higher HR performance in terms of innovation and operational efficiency.

4.4.4. Digital Technology on Employee Performance

The direct influence of Digital Technology on Employee Performance is significant with a coefficient value of 0.253, t-statistic of 3.137, and p-value of 0.002. These results indicate that the use of technology in the work process speeds up and simplifies task completion, increases accuracy, and

opens up a wider space for collaboration. Technologies such as BIM, digital collaboration platforms, and system integration accelerate decision-making and operational effectiveness.

According to Bharadwaj et al. (2013), the adoption of digital technology improves work coordination and decision-making, thus having a direct impact on productivity and work quality. This is in line with a study from Vial (2021) which shows that digital transformation strengthens individual performance through increased efficiency. Meanwhile, research from Ladu, Koch, Ashari, Blind, and Castka (2024) also found that digital maturity in construction companies is positively correlated with HR performance in technology-based projects. Despite having digital technology, the lack of adoption of digital technology can slow down employee performance.

4.4.5. Digital Competence on Employee Performance

Digital Competence has the strongest influence on Employee Performance with a coefficient value of 0.437, t-statistic of 5.348, and p-value of 0.000. This means that the higher the digital mastery that employees have, the higher their performance. This is due to the ability to find information, solve problems digitally, and collaborate effectively on technology platforms. Ferrari (2012) stated that digital competence is the foundation of employee success in the era of digital transformation. These results are reinforced by research from Laar, Deursen, Dijk, and Haan (2020) which shows that employees with high digital skills are more adaptive and productive in completing tasks. A study from Sartika, Astuti, Chasanah, and Riyanto (2023) also concluded that digital skills are the main predictors in improving the quality of work results and time efficiency in organizations.

4.4.6. Green Recruitment has a significant indirect influence on Employee Performance through the mediating role of Digital Competence

The results of the analysis showed that Green Recruitment had a significant indirect influence on Employee Performance through Digital Competence, with an indirect effect value of 0.098, t-statistic of 2.678, and p-value of 0.008. This shows that Green Recruitment encourages the strengthening of digital competencies, which ultimately improves work performance. Research from Jabbour et al. (2013); Jamil et al. (2023) supports these results, stating that green recruitment approaches strengthen digital competencies that indirectly improve performance.

4.4.7. Digital Technology has a significant indirect influence on Employee Performance through the mediating role of Digital Competence

Digital Technology also showed a significant indirect influence on Employee Performance through Digital Competence, with an effect value of 0.180, t-statistic of 3.885, and p-value of 0.000. This shows that in addition to having a direct effect, technology also forms digital competencies that act as a reinforcement of employee work performance. These findings are in accordance with the integrative model of Bharadwaj et al. (2013) which states that digital capability functions as a catalyst for organizational outcomes. Research by Hamid (2022) and Soto-Acosta et al. (2018) also confirms that the success of technology adoption is greatly influenced by employees' digital readiness to operate and optimize it.

5. Conclusions

5.1. Conclusion

The results of this study show that Green Recruitment and Digital Technology have a positive and significant influence both directly on Digital Competence and on Employee Performance. Digital Competence has also been proven to have a significant effect on Employee Performance, as well as mediating the indirect influence between Green Recruitment and Digital Technology on Employee Performance. This emphasizes the importance of integrating green recruitment policies and digital transformation in improving the competence and performance of the workforce in the construction industry, especially at PT Adhi Karya (Persero) Tbk.

5.2. Limitations

The practical implication of this study is that HR management in the construction sector needs to strengthen the Green Recruitment strategy by including environmental sustainability criteria in the

selection and onboarding process of employees. In addition, strengthening Digital Technology infrastructure and culture can significantly improve employees' digital capabilities, which in turn is able to drive overall organizational performance. Companies also need to make Digital Competence a priority for structured and sustainable training and development.

5.3. Recommendations

This study suggests that PT Adhi Karya (Persero) Tbk and similar companies in the construction sector are more active in integrating sustainability aspects in HR policies, as well as accelerating internal digital transformation. Follow-up research is recommended to include other variables such as organizational culture or digital leadership to see a broader impact on performance. In addition, qualitative in-depth studies can also be conducted to explore in more detail the dynamics of green recruitment implementation and technology adoption in the field.

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