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The Transformation Of E-HRM In Developing The Quality Of Human Resources Based On Information Technology Toward Employee Performance Through Employee Satisfaction

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ABSTRACT

This research aims to evaluate the impact of e-compensation, e-learning, and e-performance appraisal on organisational performance, with team member satisfaction as a mediating variable. The study was conducted at PT. XYZ. Methodology used: A total of 77 respondents participated in this research. Data processing was carried out using the Structural Equation Modeling (SEM) method with a Partial Least Squares (PLS) variance-based approach. The results of the reliability and construct validity tests indicate that all variables have a high reliability level, with Cronbach's Alpha values as follows: Compensation Management (0.96), E-Learning (0.95), Employee Satisfaction (0.94), Employee Performance (0.96), and Performance Appraisal (0.91), all of which exceed the threshold of 0.90. The team member satisfaction variable consists of 13 indicators (Z.01 to Z.13) and was measured using a survey involving 77 respondents. To meet the criteria for convergent validity, each item must have a loading factor value of at least 0.60. An R-square value of 0.81 indicates that 81% of the variability in the dependent variable. Based on the analysis results, all indicators in this study meet the criteria for good validity and reliability. The indicators for the Employee Satisfaction variable show loading factor values above the threshold of 0.60.

1. Introduction

Human resources (HR) is one of the most critical factors in a company or organisation. Human resources play a crucial role in the company's development. Those who are classified or are HR personnel work within the organisation and function as drivers to achieve the established goals. Achieving an organisation's objectives requires the utilisation and cooperation of various resources. The most important aspect is to build an HR team capable of delivering optimal performance to achieve shared goals within an organization [9].

Team member performance can be defined as the individual work outcomes as they have finished the tasks given to them with predetermined goals. In order to help employees finish their tasks successfully and quickly, the workplace is essential [1]. Team member performance is crucial since it directly affects the company's production and the accomplishment of long-term objectives. [3].

Electronic Human Resource Management (e-HRM), which has revolutionized traditional HRM processes and allowed organizations to use technology to improve efficiency, effectiveness, and strategic decision-making, has emerged as a transformational strategy due to the rapid improvements in technology. The term "e-HRM" describes the incorporation of information technology (IT) into a number of HRM tasks and procedures, such as hiring and selection, training and development, performance management, and team member engagement. By utilizing technology, e-HRM seeks to increase HR data's timeliness, accuracy, and accessibility as well as speed HR procedures and improve managers' and employees' overall HRM experiences.

The connection between e-HRM and organizational effectiveness has drawn a lot of attention from scholars and professionals. While some study has shown compelling evidence that e-HRM can improve organizational performance, other studies have yielded contradictory or equivocal results. This discrepancy in findings emphasizes the need for more study to properly comprehend the relationship between e-HRM and organizational effectiveness. ([6];[3]; [10]; [7]; [2]; [4];). Researchers have validated the administrative function of e-HRM by demonstrating its capacity to automate HRM processes and enhance the effectiveness of HR department results. The "automated style" of information technology management serves as the foundation for this position. Beyond administrative duties, E-HRM solutions can reduce expenses and increase productivity in standard operational chores including payroll, electronic access control, attendance tracking, and team member record-keeping. This system facilitates data retrieval when necessary, such as electronic bookkeeping, by standardizing the documentation of HRM accomplishments. [10] claim that using electronic information systems to automate administrative tasks and supply information for organizational decision-making helps businesses stay competitive and improve performance. ([8]; [3]; [11]).

The topic of e-HRM implementation in practical training has been covered in the literature, but no specific outcomes have been documented. While some scholars reject this idea, others recommend that HR professionals improve their technological expertise. e-HRM is one of the biggest developments in HRM. Information technology has impacted every facet of human existence, and human resource management is one of those facets and a vital component. In essence, e-HRM is the use of technology by businesses to accomplish a variety of HR or personnel functions, such as hiring, training, performance reviews, and career advancement. ([2]; [8]; [10]). The influence of e-HRM implementation on team member satisfaction and organizational performance is the main subject of this study. Employees typically view E-HRM as a way to attain sufficient job satisfaction because it makes it easier, more accurate, and more organized for team members to carry out HR-related tasks. An organization's performance improves when internal management, particularly HR-related management, is carried out effectively and all of its operations are supported by technology. The purpose of this study, which was carried out at PT. XYZ, is to examine if e-compensation, e-training, and e-performance appraisal can affect organizational performance, mediated by team member satisfaction.

Hypotheses Development

H_1**:** E-Compensation positively influences team member satisfaction
H_2**:** E-learning positively impacts team member satisfaction
H_3**:** E-Performance Appraisal positively influences team member satisfaction

2. Method

Population

The population in this study includes all operational and managerial employees working in the engineering maintenance division of PT XYZ, with a total of 77 respondents. The research sample consists of employees who have had more than five (5) years of service and possess homogeneous characteristics.

Data Collection Technique

Primary data were obtained directly from the research location through the distribution of closed questionnaires, which were designed with written questions and addressed to management leaders. The completion of the questionnaire was conducted in person, with the researcher or surveyor present, who, in this case, consisted of only one person. Each answer provided has been organised in a

response format based on an ordinal rating scale with five levels, also known as the Likert scale. This scale is used to measure attitudes, opinions, and perceptions of individuals or groups towards the variables being researched.

Validity Test

In this study, the validity test was conducted by calculating the correlation between each item of the questionnaire and the total score of each variable using the Pearson Product-Moment correlation technique:

$$r_{xy} = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{\left\{n\sum x^2 - (\sum X)^2\right\}\left\{n\sum Y^2 - (\sum Y)^2\right\}}}$$

That is:
n = number of respondents
X = item score
Y = total score

Steps in testing the validity in (Arief Prastito, 2005). Data processing in this study was conducted using the Structural Equation Modeling (SEM) method, based on Partial Least Squares (PLS) variance. The data analysis technique is a stage for processing and systematically analyzing data.

SEM itself is a multivariate analysis method that combines factor analysis and regression, aiming to test the relationships between variables in a model, both the relationship between indicators and constructs, as well as between constructs. Meanwhile, Partial Least Squares (PLS) is a multivariate statistical approach that compares several independent variables with a single dependent variable.

3. Results and Discussion

Results

The team member satisfaction variable is measured using 13 indicators, labeled Z.01 to Z.13, with responses collected from 77 participants. To satisfy the requirements for convergent validity, each indicator must have a loading value greater than 0.6. As shown in the table, all indicators exceed this threshold, indicating that each one makes a significant contribution to the construct. The results for convergent validity are presented in the outer loading table generated by Smart PLS.

Table 1. Convergent Validity Employee Satisfaction

Variable	team member Satisfaction	Validity Requirements Convergent
Z.01	0,84	>0.6
Z.02	0,88	>0.6
Z.03	0,84	>0.6
Z.04	0,78	>0.6
Z.05	0,65	>0.6
Z.06	0,67	>0.6
Z.07	0,87	>0.6
Z.08	0,84	>0.6
Z.09	0,83	>0.6
Z.10	0,65	>0.6
Z.11	0,69	>0.6
Z.12	0,81	>0.6
Z.13	0,81	>0.6

The table presents the results of the convergent validity test for the indicators measuring the

Employee Satisfaction variable, identified as Z.01 to Z.13. This test assesses the degree to which each indicator accurately reflects the Employee Satisfaction construct, using factor loading values as the standard. Indicators are considered valid if their loading values are greater than 0.6. Based on the data, all indicators exceed this value, indicating that they meet the criteria for convergent validity and are suitable for inclusion in the research model.

Table 2. Convergent Validity Employee Satisfaction

Variable	team member Satisfaction	Validity Requirements Convergent
E-compensation	0.81	0.80
EmployeeSatisfaction	0.83	0.83
EmployeePerformance	0.84	0.83

According to Table 2, the independent constructs in the model can account for 81% of the variability in the Compensation Management construct, as indicated by the R-square value of 0.81. The percentage of variation in the dependent variable that can be accounted for by the independent variables in a model is shown by the R-squared value. The model's capacity to explain a variable's behavior increases with the R-square value. The Compensation Management variable has an R-squared value of 0.81 and an adjusted R-squared value of 0.80 based on the data in the table. This indicates that other variables in the model account for 81% of the variations in Compensation Management. Model stability is indicated by the almost similar adjusted value.

Meanwhile, the Employee Satisfaction variable shows identical R-squared and adjusted R-squared values of 0.83, indicating that 83% of the variation in team member satisfaction can be explained by the factors in the model, with a perfect model fit rate, as there is no difference between the initial value and the adjusted value. For the Employee Performance variable, the R-squared value was recorded at 0.84 and adjusted at 0.83, indicating that most of the variation in team member performance, which accounts for 84%, can be explained by the independent variables used in the model.

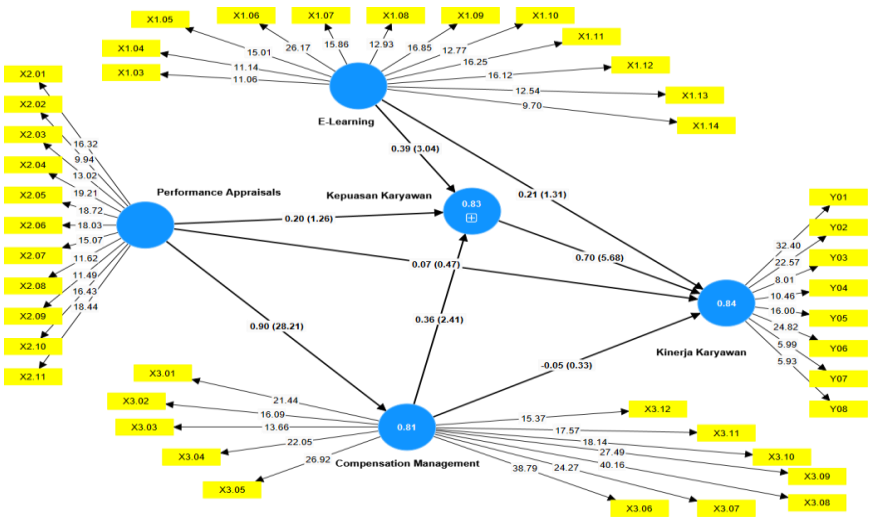

Figure 2. Path Diagram

Figure 2 presents information regarding the loading values, indicating the contribution of each indicator to the constructed measurement. If the loading value is higher than 0.6, the indicator is considered to represent its construct significantly, and it can be concluded to be valid in the context of measurement. For example, a value of 0.90 with a t-statistic of 28.21 indicates a powerful and significant influence between the indicator and its construct, as the high t-value statistically shows a powerful relationship. Conversely, when an indicator has a low loading value, such as -0.05 and a t-value of only 0.33, it can be said that the relationship is very weak and statistically insignificant, thus questioning the indicator's contribution to the construct. Besides the relationship between the indicator and the construct, this figure also displays numbers within the blue circles, such as 0.81, 0.83, and 0.84, which refer to the reliability values of the construct, expressed in both Average Variance Extracted (AVE) and Composite Reliability. These values indicate the level of internal consistency of each construct, where values above 0.7 or 0.8 suggest that the construct has sufficient and stable measurement quality.

Table 3. Reliability and Validity Constructs

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Compensation Management	0.96	0.96	0.68
E-Learning	0.95	0.96	0.65
Kepuasan Karyawan	0.94	0.95	0.61
Kinerja Karyawan	0.96	0.97	0.78
Performance Appraisals	0.91	0.93	0.56

Discussion

Based on the results of the reliability and construct validity tests shown in Table 3, all variables used in this research model exhibit a very high level of internal consistency. This is indicated by a Cronbach's Alpha value exceeding the commonly used minimum threshold of 0.70. More specifically, the Compensation Management variable scored 0.96, indicating that all indicators forming this construct have perfect consistency in measuring the aspects of compensation management. Similarly, the E-Learning variable recorded a reliability value of 0.95, demonstrating that all items within this construct are strongly interrelated and capable of reflecting the use of learning technology for human resource development.

The Employee Satisfaction variable also demonstrates high reliability, with a Cronbach's Alpha value of 0.94, indicating that all indicators in this construct consistently reflect employees' perceptions of their job satisfaction. Furthermore, Employee Performance received a score of 0.96, confirming that all indicators used to measure performance consistently reflect various aspects of job performance, ranging from efficiency to achievement of results. Meanwhile, the Performance Appraisals variable recorded a score of 0.91. The high Cronbach's Alpha value across all constructs confirms that the measurement instruments in this study have excellent reliability and can be trusted. In other words, these measurement tools have met the necessary standards to ensure that the data produced consistently and accurately reflects the actual situation. Therefore, this model is assessed to be not only strong conceptually but also statistically reliable.

Based on the analysis results displayed in Table 1, all indicators used to measure the Employee Satisfaction variable show loading factor values above the minimum threshold of 0.60. This indicates that each indicator has a sufficiently substantial contribution to forming the construct and meets the criteria for convergent validity. In other words, these indicators consistently measure aspects that genuinely represent Employee Satisfaction. Among all the indicators, indicator Z.02 recorded the highest loading factor value of 0.88, indicating that this indicator is highly representative of the Satisfaction construct. Employees. Conversely, the indicators with the lowest values are Z.05 and Z.10, which each achieved a score of 0.65.

Although they are at the lower limit, both indicators still meet the validity criteria, making them relevant for use in the measurement model. Overall, the structure of this variable measurement model has demonstrated good convergent validity and can be used to describe employees' perceptions of the digital work environment, system usability, transparency, and enhanced accessibility through the implementation of the E-HRM system—the factor loading values obtained range from 0.65 to 0.88. The Z.02 indicator recorded the highest value at 0.88, indicating a decisive contribution to representing the Employee Satisfaction variable. Meanwhile, the lowest values were obtained by indicators Z.05 and Z.10, each at 0.65, but still within the valid category. The high validity across all indicators indicates that the instrument used to measure team member satisfaction can consistently and reliably depict the intended construct. This means that all item questions have sufficient strength to reflect the variable.

Meanwhile, the results from Table 2 show how the Compensation Management construct reflects the organisational strategy in managing compensation in a more structured and strategic manner, both in the form of financial compensation such as base salary, bonuses, and allowances, as well as non-financial compensation such as awards, recognition, performance-based incentives, and career development. The digital transformation carried out in HR management practices through E-HRM also brings changes in how compensation is designed, delivered, and evaluated, making it more transparent and efficient. In a compensation system designed and implemented with the support of E-HRM technology, higher team member engagement and productivity can be encouraged. Furthermore, the results from Table 3 indicate that the adjusted R-squared value for the Employee Satisfaction variable is 0.83, suggesting that the variables in the model can explain 83% of the variation in team member satisfaction. Overall, the consistency between the R-square and Adjusted R-square values indicates that the measurement model is relatively stable, not experiencing overfitting, and has high predictive ability. Similarly, the Employee Performance variable shows an R-squared value of 0.84, and its adjusted value decreases only slightly to 0.83, affirming that this model can explain most of the variation in team member performance.

Furthermore, Table 3 displays the results of the reliability test, as indicated by the Composite Reliability (CR) values, which show that all constructs have values above 0.90. For example, Compensation Management and E-Learning each have a CR of 0.96, Employee Satisfaction has a CR of 0.95, Employee Performance has a CR of 0.97, and Performance Appraisals has a CR of 0.93. This indicates that all items used in these constructs have perfect internal consistency. In addition, the Average Variance Extracted (AVE) values also demonstrate good convergent validity, as all constructs have an AVE above 0.50. The most decisive influence was found in the relationship between Employee Satisfaction and Employee Performance, with a coefficient of 0.70 and a z value of 5.68, which is highly significant. This shows that Employee Satisfaction plays a crucial mediating role in bridging the influence between digital transformation and performance improvement. The structural model suggests that, in an effort to improve team member performance, organisations cannot rely solely on implementing technology or training programs. This finding provides a crucial foundation for companies to design human resource management strategies based on E-HRM that are balanced, focusing on people, data, and technology.

Indicators X1.01 to X1.14 in Figure 2 represent the implementation of information technology in various functions of human resource management, such as recruitment processes, training, and team member administration management. Meanwhile, indicators X2.01 to X2.11 are used to measure the development of technology-based HR quality, which includes enhancing team member competencies and skills through the utilization of digital systems. Both variables influence team member satisfaction, which serves as a mediating variable in this model. team member satisfaction, constructed through indicators Y01 to Y08, plays a central role in conveying the impact of E-HRM transformation and HR development on team member performance. team member performance itself is measured using indicators X3.01 to X3.12, reflecting performance dimensions such as effectiveness, productivity, and quality of output. Based on model estimates, the direct impact of E-HRM transformation on team member performance tends to be low. Still, its indirect effect through team member satisfaction shows a significant mediating contribution. Conversely, technology-based human resource development has a substantial direct impact on performance improvement while also contributing to increased job satisfaction. Overall, this model

reaffirms that the application of technology does not solely determine the success of digital transformation in human resource management, but also by its ability to create satisfaction and team member engagement, which ultimately drives overall performance improvement.

4. Conclusion

Based on the analysis results, all indicators used in this study meet the criteria for good validity and reliability. The indicators for the Employee Satisfaction variable show loading factor values above the threshold of 0.60, with indicator Z.02 being the most representative. Meanwhile, the Compensation Management construct also shows high validity, with indicators reflecting fairness, transparency, and the effectiveness of the digital-based compensation system. The results of the structural model testing reveal that Employee Satisfaction acts as an essential mediator in bridging the influence of digital transformation on Employee Performance, where the relationship between satisfaction and performance shows the strongest and most significant impact.

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Declarations

Author contribution.
SM: Initiated the research idea, designed the methodology, conducted data collection and analysis, and wrote the initial draft of the article. NMM: Provided conceptual review, validated the results, and performed the final editing. WWH, ZTR: Contributed to writing and revising the article.
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Additional information. No additional information is available for this paper.

Data and Software Availability Statements

Software and Data Accessibility Statements include links to publicly accessible datasets and software that were generated and analyzed during the study and experiments, as well as information regarding where data and software supporting the findings presented in a published paper can be obtained.

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