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Analysis of HR Function Effectiveness on Employee Performance Through the HR Analytics Approach in a Type A Hospital in Bandung

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Abstract: The present study analyzes the effectiveness of Human Resource Development (HRD) in improving employee performance through the application of HR Analytics in a Type A hospital in Bandung. HRD is recognized as a strategic function in aligning human resource management with organizational goals and regulatory demands, while HR Analytics offers the potential to transform administrative data into actionable insights for decision-making. Using a quantitative survey method, data were collected through questionnaires and analyzed with standard statistical procedures to assess validity, reliability, correlation, and descriptive trends. The findings highlight the significant contribution of HRD to employee performance, yet also reveal that the hospital's use of HR Analytics within its human resource information system remains largely administrative rather than strategic. The study concludes that hospitals need to enhance their HRD strategies by embedding data-driven practices, thereby fostering sustainable productivity and improved quality of care.

Keyword: HRD, HR Analytics, Employee Performance, Hospital Management, Workforce Productivity

INTRODUCTION

Human Resource Development (HRD) plays a pivotal role in enhancing organizational productivity and efficiency of employees so they can contribute optimally to strategic goals. Within hospitals, HRD functions, ranging from training and career development to performance evaluation and reward systems are crucial for ensuring service quality in high-pressure environments (Werner & DeSimone, 2012; Sahadewa & Rahmawati, 2021). A supportive work culture and effective communication also play an essential role in strengthening collaboration and improving service excellence (Muthmainnah, 2017).

Amid the emergence of digital transformation, data-driven approaches such as *HR Analytics* have become essential in advancing HR functions. *HR Analytics* refers to the systematic use of data and technology to analyze employee behavior, performance, and needs, thus enabling evidence-based decisions in recruitment, retention, training, and performance

(Levenson, 2018). It operates across descriptive, predictive, and prescriptive levels, providing organizations with insights not only into what has occurred but also into what may happen and how to respond effectively (Margherita & Bua, 2021).

In the realm of healthcare, where large and complex datasets are common, this approach helps identify trends and anticipate workforce challenges. Empirical evidence shows that applying *HR Analytics* contributes to higher productivity, satisfaction, and retention (Santoso & Pratama, 2022), while integration of technology, organization, and human resources is key to effective hospital management (Khotimah, 2022).

Several studies demonstrate the importance of HRD in shaping employee outcomes. For instance, training is shown to enhance productivity and efficiency (Putri et al., 2022), while competency-based placement and transparent reward systems significantly improve performance (Khorida et al., 2023). Employee performance itself reflects not only the quantity and quality of work but also the influence of ability, motivation, and role perception (Mangkunegara, 2017; Robbins & Judge, 2017). In hospitals, additional factors such as leadership style and organizational climate further affect performance outcomes (Sedarmayanti, 2017).

This study aims to examine the impact of HRD effectiveness on employee performance mediated by *HR Analytics* within type A hospitals in Bandung. The main research question is: How does the effectiveness of HRD functions, supported by data-based approaches, contribute to improving employee performance in hospitals? The operational definition of HRD effectiveness refers to the extent to which HRD functions, including training, communication, and employee engagement, can achieve organizational goals, while employee performance is defined as the measurable outcomes of employee contributions in delivering health services.

METHOD

The research utilized a descriptive quantitative approach to describe and analyze information obtained through the measurement of predetermined variables. Data collection was conducted at Hospital X, type A Hospital in Bandung, Indonesia, using structured questionnaires with a Likert scale, distributed to nine employees of the Human Resource Division, from March 03, 2025 to May 03, 2025. The variables measured included the effectiveness of HRD functions as the independent variable, which was operationalized through indicators of recruitment, training programs, human resource management, and HR policies. Employee performance served as the dependent variable, operationalized through productivity, work quality, discipline, and collaboration. *HR Analytics* acted as the mediating variable, defined as the systematic use of data and technology in human resource management processes.

Data analysis was carried out using the *Statistical Package for the Social Sciences (SPSS)* version 25. The procedures included descriptive statistical analysis to provide an overview of respondents' characteristics and variable distributions, followed by a normality test to ensure data suitability for parametric analysis. Pearson correlation analysis was applied to examine the relationships among variables. Furthermore, multiple linear regression analysis was employed to assess the effect of independent variables on the dependent variable, which included testing the coefficient of determination (R^2), F-test, and t-test to evaluate model fit and the significance of each predictor.

RESULT AND DISCUSSION

Result

1. Descriptive Statistical Analysis

The sample of this research is 9 respondents from the HR division at Hospital X. The characteristics of respondents in this study are described using frequency distribution data based on age, and tenure as presented in Table 1.

Table 1. Respondents Characteristic

Characteristic	Frequency	Percentage
Age		
35 – 44	6	66.7
25 – 34	3	33.3
Tenure		
> 6 years	7	77.8
1 – 3 years	2	22.2

Source: Research data

As shown in Table 1, the largest proportion of respondents fell within the 35–44 year age group (33%), while the majority had served in their positions for more than six years (77%) suggesting that the sample predominantly reflects mid-career employees with substantial work experience.

Table 2. Descriptive Statistics

	N	Min	Max	Mean	Std. Deviation
HRD Effectiveness	2	12	19	16.67	2.121
Employee Performance	9	17	23	20.22	1.716
HR Analytics	9	14	19	16.44	1.424

Source: Research data

Table 2 presents the mean values of the three variables reflect respondents' generally positive perceptions of HRD effectiveness, employee performance, and the implementation of HR Analytics. The moderate ranges and standard deviations further suggest the absence of significant deviations or extreme outliers, thereby indicating that the results are representative of the sample and strengthening the validity of the subsequent statistical findings.

2. Normality Test

A normality test was conducted to determine whether the research data exhibited a distribution close to normal, thereby ensuring the appropriateness of subsequent statistical techniques. In this study, the Shapiro–Wilk test was employed, as the sample size was fewer than 50 (n = 9).

Table 3. Normality Test (Shapiro-Wilk)

	Statistics	df	Sig.
HRD Effectiveness	.866	9	.113
Employee Performance	.927	9	.450
HR Analytics	.885	9	.179

Source: Research data

Table 3 results indicated significance values (Sig.) of 0.113 for HRD Effectiveness (X), 0.450 for Employee Performance (Y), and 0.179 for the HR Analytics approach (Z). As all significance values exceeded 0.05, it can be concluded that the three variables were normally distributed. With the normality assumption satisfied, the study proceeded using parametric statistical techniques, namely Pearson's correlation and regression analysis. Although the sample size was relatively small, the application of parametric methods remains appropriate (Ghasemi & Zahediasl, 2012), Thereby supporting the robustness of the chosen analytical framework.

3. Pearson's Correlation

Table 4. Pearson Correlation Test

		HRD Effectiveness	Employee Performance	HR Analytics
HRD Effectiveness	Pearson Correlation	1	.710*	.717*
	Sig. (2-tailed)		.032	.030
	N	9	9	9
Employee Performance	Pearson Correlation	.710*	1	.773*
	Sig. (2-tailed)	.032		.015
	N	9	9	9
HR Analytics	Pearson Correlation	.717*	.773*	1
	Sig. (2-tailed)	.030	.015	
	N	9	9	9

*. Correlations is significants at the 0.05 level (2-tailed)

Source: Research data

The correlation coefficient between HRD Effectiveness (X) and Employee Performance (Y) was r = 0.710 with a significance level of p = 0.032, which is below the 0.05 threshold. This indicates a statistically significant positive relationship between HRD Effectiveness and Employee Performance, with the strength of association categorized as moderate to strong. Similarly, HRD Effectiveness (X) and HR Analytics (Z) demonstrated a significant positive correlation of r = 0.717 (p = 0.030), reinforcing the consistency of the relationship. Moreover, Employee Performance (Y) and HR Analytics (Z) exhibited an even stronger positive correlation, with r = 0.773 and p = 0.015.

These findings collectively suggest that HR Analytics functions as a reinforcing factor for employee performance by providing data-driven insights that enhance the precision of human resource management strategies (Marler & Boudreau, 2017).

4. Multiple Linear Regression Analysis

Given that the correlations among HRD Effectiveness, Employee Performance, and HR Analytics were statistically significant and positive, a multiple regression analysis was subsequently conducted to further examine the predictive influence of HRD Effectiveness on Employee Performance, both directly and through the mediating role of HR Analytics.

Table 5. Coefficient of Determination (R^2)

Model	R	R^2	Adjusted R^2	Std. Error of the estimate
1	.804[a]	.647	.530	1.177

a. Predictors: (Constant), HR Analytics, HRD Effectiveness

b. Dependent Variable: Employee Performance

Source: Research data

Table 5 shows a strong correlation between the independent variables, HR Effectiveness (X) and HR Analytics (Z), and the dependent variable, Employee Performance (Y), with an R value of 0.804 and R square (R^2) = 0.647. The adjusted R^2 = 0.530 indicates a reliable model fit while controlling for potential overestimation. This finding implies that both HR function effectiveness and the application of HR analytics are significantly and positively associated with employee performance.

To further assess the overall significance of the regression model, an F-test was conducted, providing statistical validation that the combination of HR Function Effectiveness and HR Analytics significantly predicts employee performance

Table 6. ANOVA / F-test

Model		Sum of Squares	df	Mean Square	F
1	Regression	15.245	2	7.623	5.503
	Residual	8.310	6	1.385	
	Total	25.556	8		

a. Dependent Variable: Employee Perfomance
b. Predictors: (Constant), HR Analytics, HRD Effectiveness
Source: Research data

as presented in Table 6, show an F-value of 5.503 with a significance level of 0.044 (< 0.05), indicating that the regression model is simultaneously significant. This suggests that the combination of HR Function Effectiveness and HR Analytics significantly predicts Employee Performance. Practically, this finding implies that organizations can enhance employee performance by simultaneously improving HR function effectiveness and leveraging HR analytics in decision-making and management processes.

Following F-test overall significance, individual contributions of each predictor were further examined using t-tests to determine which variables have a statistically significant effect on employee performance.

Table 7. Coefficients[a]

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t
1	(Constant)	5.138	4.828		1.064
	HRD Effectiveness	.259	.281	.320	.919
	HR Analytics	.655	.419	.544	1.562

a. Dependent Variable: Employee Performance
Source: Research data

The t-test results show that HRD Effectiveness (X) (t = 0.919, Sig. = 0.394) and HR Analytics (Z) (Sig. = 0.169) do not individually have a statistically significant effect on Employee Performance (Y). Despite the overall model being significant in the F-test, the small sample size (N = 9) limits the statistical power, preventing individual causal effects from reaching significance. Practically, this suggests that organizations should implement HR function effectiveness and HR analytics together, as their combined application is more likely to improve employee performance.

Discussion

Descriptive analysis indicates that the variables HR Function Effectiveness, HR Analytics, and Employee Performance have relatively close minimum and maximum values, along with moderate standard deviations, suggest a fairly homogeneous data distribution among respondents (Ghozali, 2018). Pearson correlation test results reveal a positive relationship between both independent variables and the dependent variable, although the strength of the relationships varies. This finding aligns with Dessler (2020), who states that effective HR function management and the utilization of analytics in human resource decision-making tend to be correlated with better organizational performance.

Before conducting multiple regression analysis, classical assumption tests were performed. The Shapiro-Wilk normality test yielded significance values > 0.05 for all variables, indicating that the data are normally distributed (Razali & Wah, 2011). Multicollinearity tests showed a Tolerance value of 0.486 (> 0.10) and a VIF of 2.060 (< 10), suggesting no multicollinearity issues (Hair et al., 2019), and confirming that the model is suitable for use. The multiple regression analysis results indicate that, simultaneously, HRD Effectiveness and HR Analytics significantly influence Employee Performance ($F = 5.503$; Sig. = 0.044). The R^2 value of 0.647 suggests that 64.7% of the variance in employee performance can be explained by these two independent variables, while the remaining 35.3% is influenced by other factors not included in the model.

Partially, both independent variables, HRD Effectiveness and HR Analytics, show a positive influence on employee performance. However, their significance levels do not meet the 5% threshold, with Sig. values of 0.394 and 0.169, respectively. This may be attributed to the limited sample size (n = 9), which reduces statistical power and prevents existing effects from being detected as significant (Cohen, 2013; Hair et al., 2019).

Nevertheless, the positive coefficients of both predictors indicate a direction consistent with theoretical expectations, where improvements in HRD effectiveness and the utilization of HR Analytics tend to be associated with increased employee performance. These findings align with recent literature emphasizing that the integration of HRD strategies and analytic technologies can provide significant added value for organizations (Marler & Boudreau, 2017; Minbaeva, 2018).

CONCLUSION

Based on the data processing and interpretation in this study, HR Function Effectiveness on employee performance through the HR Analytics approach demonstrates a consistently positive relationship, indicating that the more effective HRD is in carrying out its role, the higher the resulting employee performance. This is also supported by descriptive analysis showing homogeneous responses among participants. However, the mean scores not reaching the maximum level suggest that HRD strategies still need strengthening.

The study indicates that the lowest-rated aspect among respondents is employee involvement in self-development activities supported by HRD. To address this gap, HRD strategies should focus on developing programs that are more relevant to daily work needs and integrated with performance assessment outcomes.

Human resource development programs should be designed based on training needs analysis utilizing data from the HRIS, ensuring that the training content is truly aligned with the competencies required in the field. Additionally, HRD must ensure follow-up after training, such as post-training performance evaluations or implementing coaching and mentoring systems by direct supervisors, so that employee competency improvements are measurable. Recognition or rewards should also be provided for employees who demonstrate significant progress.

The implementation of monitoring tools such as Key Performance Indicators (KPIs) and periodic data-based evaluations can also help ensure that each employee completes tasks within the designated deadlines. Similarly, effective communication and coordination mechanisms between supervisors and subordinates are crucial. This can be achieved by training unit leaders to provide clear, consistent, and easily understandable instructions, minimizing the risk of misinterpretation during task execution.

Meanwhile, the application of HR Analytics, positioned as a mediating variable in this study, indicates that the use of data and information through the HRIS, *including HR Analytics,* has been intensively applied in administrative aspects such as attendance recording, retention monitoring, and employee training documentation. This data utilization has so far helped HRD ensure attendance discipline, monitor employee turnover rates, and evaluate participation in training programs.

Beyond administrative purposes, data is used to inform policies that enhance employee productivity, anticipate work fatigue or absenteeism, and identify units with high turnover for targeted retention strategies, such as improving internal communication, welfare programs, career development initiatives, and work-life balance measures, including additional leave or flexible working hours.

For example, attendance data can guide stricter discipline policies, review attendance patterns, and adjust shift systems to balance workloads. Retention data enables HRD to design more relevant engagement and welfare programs. Hospitals are encouraged to invest in adequate IT infrastructure and improve analytical literacy among HRD staff to ensure HR Analytics generates actionable insights for employee performance improvement.

Furthermore, considering the limitation of this study due to the relatively small sample size, future research is recommended to use a larger sample to enhance statistical power and the external validity of the findings. Subsequent studies may also consider other relevant variables, such as work motivation, job satisfaction, and organizational culture, which could act as mediating or moderating variables in the relationship between HR Function Effectiveness, HR Analytics, and employee performance. In this way, more comprehensive research results can provide a stronger empirical basis for human resource management policies and practices in the future.

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