

## The Influence of Planning, Monitoring and Maintenance of Human Resources on Employee Performance Biogen BB Bogor

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DOI: [10.59631/sijosi.v1i2.209](https://doi.org/10.59631/sijosi.v1i2.209)

### Abstract

Human Resource (HR) Planning is part of the management process that determines the movement of an organization's human resources from its current position to its desired position in the future. HR planning is closely related to the supervisory function because it can be said that planning is a standard or monitoring tool for the work being done. The HR maintenance function is also essential because employees are the assets (wealth) of every organization, and they always play an active role in determining whether or not the organization's goals are achieved. The research was carried out at BB Biogen Bogor. The research analyzes the influence of planning, monitoring, and Maintenance of Human Resources on Employee Performance. This research uses a survey method with a descriptive and causal approach. The sample used was 98 respondents. The research results show that Planning, Supervision, and Maintenance of Human Resources together have a real and positive influence with a contribution of 78.7%, and the remainder (21.3%) is influenced by other factors that are not central to this research.

**Keywords** : Employee, human resources, human resources maintenance, monitoring.

### 1. Introduction

The Center for Research and Development of Agricultural Biotechnology and Genetic Resources (BB Biogen) is an echelon IIb technical implementation unit (UPT) under the Agricultural Research and Development Agency, Ministry of Agriculture as a result of the status increase and change of name of the Research Institute for Biotechnology and Agricultural Genetic Resources (Balitbiogen) with echelon IIIa status, through Decree (SK) of the Minister of Agriculture No. 631/Kpts/OT.140/12/2003 dated 30 December 2003.

Human Resource Planning is part of the management process flow in determining the movement of an organization's HR (Merentek, Sumual, Usuh, & Kampilong, 2023) from the current position to the desired position in the future. The main goal of human resource planners is to manage recruitment and staffing in such a way that the right resources are available at the right time without incurring excessive labor expenditures (Berk, Bertsimas, Weinstein, & Yan, 2019). Therefore, in the literature, it is stated that human resource planning procedures are designed to ensure that

organizational plans and goals are achieved effectively and efficiently (Lim, Wang, & Lee, 2017).

HR planning is closely related to the supervisory function because it can be said that planning is a standard or monitoring tool for the work being done (Bachtiar, 2021). Likewise, giving orders is closely related to the supervisory function because supervision is a follow-up to orders that have been issued (Djadjuli, 2018). What is ordered must be monitored so that what is ordered is carried out. The main aim of supervision is to ensure that what is planned becomes a reality (Sunarti, 2018).

In organizations, after the planning and monitoring functions, the HR maintenance function is also essential because employees are the assets (wealth) of every organization who always play an active role and determine whether or not the organization's goals are achieved (Heryanto, 2021; Maulyan, Sandini, & Yuliyana, 2023). Suppose human resource maintenance is not paid attention to. In that case, work morale, employee attitudes, and loyalty will decrease, absenteeism and turnover will increase, and discipline will decrease so that procurement and development that have been carried out well and at high costs will be less meaningful in supporting the achievement of organizational goals (Maulyan et al., 2023). Suwatno & Priansa (2020) stated that the objectives of HR maintenance include 1) To increase employee work productivity, 2) Increase discipline and reduce employee absenteeism, 3) Increase loyalty and reduce employee turnover, 4) improve the welfare of employees and their families, 5) Improving the physical, mental and attitude conditions of employees, 6) Reducing conflict and creating a harmonious atmosphere and 7) Making employee procurement more effective. In research conducted by Humphrey Onoriode & Peter Samuel (2022), HR maintenance, such as communication and safety, significantly affects employee performance. This research was conducted to analyze the influence of HR planning, monitoring, and maintenance on the performance of BB Biogen Bogor employees, both partially and jointly.

## **2. Research Method**

This research aims to evaluate the influence of planning, supervision, and maintenance of human resources on employee performance at the Bogor Center for Research and Development of Agricultural Biotechnology and Genetic Resources (BB BIOGEN). The research method used is quantitative with multiple linear regression techniques. Data will be collected through distributing questionnaires to employees selected randomly from the population using the Simple Random Sampling method. After the data is collected, multiple linear regression analysis will determine how much human resource planning, supervision, and maintenance affect employee

performance. In addition, the analysis results will be interpreted to provide a better understanding of the factors that influence employee performance at BB BIOGEN Bogor.

**3. Results and Discussion**  
**3.1 Respondent Description**

**Table 1. The Description of Respondents**

<b>Characteristics</b>	<b>Categories</b>	<b>Total</b>	<b>Percentage (%)</b>
<b>Sex</b>	Male	62	63,30%
	Female	36	36,70%
<b>Marital status</b>	marriage	86	87,80%
	unmarried	12	12,20%
<b>Age</b>	21-25 years old	1	1,00%
	26-30 years old	3	3,10%
	31-35 years old	5	5,00%
	36-40 years old	3	3,10%
	46-50 years old	23	23,50%
	>50 years old	48	49,00%
<b>Last Education</b>	junior high school	3	3,10%
	Senior high school	33	33,37%
	Diploma	6	6,00%
	Baccalaureate	5	5,10%
	Bachelor	28	28,60%
	Master	12	12,00%
<b>Working range</b>	Doctor	11	11,20%
	0-5 years	6	6,10%
	6-10 years	6	6,10%
	11-15 years	9	9,20%
	16-20 years	15	15,30%
	21-25 years	17	17,30%
	26-30 years	17	17,30%
>30 years	28	28,60%	

The characteristics of the respondents sampled in this study were then grouped according to gender, marital status, age, highest level of education, and length of service. Respondent data based on gender was 62 men with a percentage of 63.30% and 36 women with a percentage of 36.70%. Respondent data based on the marital status of married employees numbered 86 people with a percentage of 87.8%, and unmarried employees numbered 12 with 12.2%.

Respondent data based on the age of employees aged 21-25 years is one person with a percentage of 1.00%, employees aged 26-30 years are 3 people with a

percentage of 3.10%, employees aged 31-35 years are 5 people with a percentage 5%, those aged 36-40 years amounted to 3 people with a percentage of 3.10%, aged 46-50 years there were 23 people with a percentage of 23.50%, those aged >50 years amounted to 48 people with a percentage of 49%.

Respondent data is based on the latest education. There are 3 employees with a junior high school level with a percentage of 3.10%, 33 high school employees with a percentage of 33.37%, 6 D3 employees with a percentage of 6%, 5 bachelor's degrees with a percentage of 5, 10%, 28 undergraduates with a percentage of 28.60%, 12 graduates with a percentage of 12%, and 11 graduates with a doctoral level education with a percentage of 11.20%.

Characteristics of respondent data based on length of service, employees with a service period of 0-5 years totaling 6 people with a percentage of 6.10%, a service period of 6-10% totaling 6 people with a percentage of 6.10%, a work period of 11-15 years totaling 9 people with a percentage of 9.2%, 16-20 years of service totaling 15 people with a percentage of 15.3%, 21-25 years of service totaling 17 people with a percentage of 17.30%, 26-30 years of service totaling 17 people with a percentage of 17.30% and a work period of >30 years totaling 28 people with a percentage of 28.60%.

### 3.2 Validity and Reliability

The technique used to test this validity is "product moment correlation" from Pearson, with a confidence level of 95% ( $\alpha = 0.05$ ) carried out by correlating the score of each item with the total score. Validity test results were obtained using the SPSS program application by comparing the Corrected Item-Total Correlation value  $r$  calculated  $> r$  table. According to Sugiyono (2018), if  $r$  count  $> r$  table at a significant level of 5% ( $\alpha = 0.05$ ), and  $n = 98$ ,  $r$  table = 0.197, then it can be said that an instrument is valid, and when  $r$  is calculated  $< r$  table, then the item is invalid. Valid research variable items can be used as instruments in research, or the questions asked can be used to measure the variables studied.

**Table 2. The Results of Validity and Reliability Test**

Variables	Total Item	Validity	Reliability (Cronbach's Alpha)	Conclusion
Planning	7	$r$ count $> r$ table (Valid)	0.926	Reliable and acceptable
Monitoring	10	$r$ count $> r$ table (Valid)	0.938	Reliable and acceptable
HR Maintenance	19	$r$ count $> r$ table (Valid)	0.946	Reliable and acceptable
Performance	10	$r$ count $> r$ table (Valid)	0.924	Reliable and acceptable

Based on the Table 2 above, The results of the validity test show that all items from the research variables, including Planning, monitoring, and Maintenance of Human Resources (HR), are valid for performance. In detail, the validity test on the Planning variable with 7 items shows that all items have a calculated r value more significant than the r table. The same thing was found in the monitoring variable, with 10 items, and the HR Maintenance variable, with 19 items. Each item in this variable is proven to be valid for performance. Furthermore, the Performance variable with 10 items also shows high validity, where the calculated r-value is greater than the r-table, making it valid for HR Planning, monitoring, and Maintenance.

Apart from the validity test, a reliability test was also carried out to measure the internal consistency of the statements in the questionnaire. The reliability test results show high Cronbach's Alpha values for all variables. In the Planning variable, Cronbach's Alpha value of 0.926 indicates that the statements in the questionnaire are reliable and acceptable. Likewise, the monitoring variable obtained a Cronbach's Alpha value of 0.938, and the HR Maintenance variable obtained a value of 0.946. These two values show a high level of reliability.

Finally, the reliability of the performance variable was also tested, and a Cronbach's Alpha value of 0.924 was obtained. This value confirms that the statements in the questionnaire for the Performance variable are reliable and acceptable. Thus, all items in this research questionnaire can be considered valid and reliable, providing confidence that the instruments used can be measured accurately and consistently.

### 3.3 Descriptive Analysis of Variables

**Table 3. Descriptive Analysis of Variables**

Categories	Question Number	Indicators	Highest/Lowest Score	Score
Planning	1	Increased employee potential and satisfaction	Highest	452
	7	Adjustment to external organizational changes	Highest	452
Monitoring	4	HR Mapping	Lowest	424
	9	Objective information	Highest	451
	11	Timely evaluation of repairs	Highest	451
	15	Flexible system	Highest	451
	12	Centralized system	Lowest	425

HR Maintenance	20	Work discipline	Highest	457
Performance	18	Loyalty	Lowest	421
	47	Cooperation	Highest	454
	42	Follow instructions	Lowest	421

Descriptive Statistics for Planning Frequency Distribution SPSS, descriptive analysis results state the highest score in questionnaire statement number 1, indicator "Increasing employee potential and satisfaction," and indicator number 7, "Adjustment to external changes in the organization," with a score of 452. The lowest score is in question number 4, indicator "HR mapping," with a score of 424.

Descriptive Statistics for the Distribution of Monitoring Frequencies. The highest score is in questionnaire statement number 9, indicator "Objective information," number 11, indicator "Timely evaluation of improvements," and number 15, indicator "Flexible system," with a score of 451. The lowest score is in question number 12, indicator "Centralized system," with a score of 425—descriptive Statistics for the distribution of HR Maintenance Frequency. The highest score for questionnaire question number 20 is the "Work discipline" indicator, with a score of 457.

The lowest score is on question number 18, the "Loyalty" indicator, with a score of 421. The highest score is for Descriptive Statistics for Performance Frequency distribution on questionnaire statement number 47, the "Cooperation" indicator, with a score of 454. The lowest score is on question number 42, the indicator "Follow instructions," with a score value of 421.

### 3.4 Interpretation of Inferential Statistics Data

#### 3.4.1 Results of Correlation Analysis between Planning and Performance

**Table 4. Correlation between planning and performance Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.887 <sup>a</sup>	.787	.785	1.98844

a. Predictors: (Constant), Planning

b. Performance

The calculation results above,  $R = 0.887$ , are located in the interval (0.80 - 1.000), based on Table 4; this shows that the relationship between Planning and Performance is Very Strong and positive.

### 3.4.2 Results of Regression Analysis between Planning and Performance

**Table 5. Results of Regression Analysis between Planning and Performance**

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	7.652	2.239		3.417	.001
Planning	1.317	.070	.887	18.844	.000

a. Dependent Variable: Performance

The regression equation formed is:

$$Y = 7.652 + 1.317 X_1$$

The interpretation of the equation is as follows:

a. The intercept or constant is 7.652

This means that if the independent variable  $X_1$  (Planning) is equal to zero, then the size of the variable  $Y$  (Performance) is 7.652

b. Direction number or regression coefficient

The variable  $X_1$  (Planning) of 1.317 means that the effect of Planning on Performance is positive, or any increase in the score value of variable  $X_1$  (Planning) by 1, the coefficient of determination of 0.787 or 78.7% means that the magnitude of the influence of Planning on Performance is 78.7%. In comparison, the rest (21.3%) is influenced by other factors not included in this study.

Increasing the  $Y$  (Performance) variable score value by 1.317

### 3.4.3 Results of Regression Analysis between Monitoring and Performance

**Table 6. Results of Regression Analysis between Planning and Performance**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.876 <sup>a</sup>	.768	.766	2.07568

a. Predictors: (Constant), Monitoring

b. Dependent Variable: Performance

The results of the above calculations,  $R = 0.876$ , lie in the interval (0.80 - 1.000) based on Table 9; this shows that the relationship between monitoring and Performance is Very Strong and positive. This means that if supervision goes up, then performance goes up.

Based on the calculation of the regression coefficient in Table 6, it can be seen that the regression equation formed is:

$$Y = 6.951 + 0.939 X_2$$

The interpretation of the equation is as follows:

1. Intercept or constant of 6.951

This means that if the independent variable  $X_2$  (Monitoring) equals zero, the magnitude of variable  $Y$  (Performance) is 6.951.

2. Direction number or regression coefficient

Variable  $X_2$  (Monitoring) of 0.939, this means that the effect of Supervision ( $X_2$ ) on Performance ( $Y$ ) is positive, or every increase in the score value of variable  $X_2$  (Supervision) by 1 will increase the score value of variable  $Y$  (Performance) by 0.939.

### Coefficient of Determination

The coefficient of determination of 0.768 or 76.8% means that the magnitude of the influence of Supervision on Performance is 76.8%. In comparison, the rest (23.2%) is influenced by other factors not included in this study.

## 3.4.4 Analysis of the Relationship between HR Maintenance and Performance

### 3.4.4.1 Correlation Analysis

Table 7. Correlation Analysis Results between HR Maintenance and Performance Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.836 <sup>a</sup>	0.698	0.695	2.36805

a. Predictors: (Constant), HR Maintenance

b. Dependent Variable: Performance

The results of the above calculations,  $R = 0.836$ , lie in the interval (0.80 - 1.000); this indicates that the relationship between Discipline and Performance is Very Strong and positive. This means that if HR maintenance increases, then performance also increases.

### 3.4.4.1 Regression Analysis

Table 8. Results of Regression Analysis between HR Maintenance and Performance Coefficients<sup>a</sup>

Model	Unstandardized Coefficients	Standardized Coefficients		t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.064	3.137		0.977	0.331

HR Maintenance	0.537	0.036	0.836	14.902	0
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The regression coefficient can be seen that the regression equation formed is:

$$Y = 3.064 + 0.537 X_3$$

The interpretation of the equation is as follows:

1. Intercept or constant of 3.064  
This means that if the independent variable X<sub>3</sub> (HR Maintenance) equals zero, the magnitude of variable Y (Performance) is 3.064.
2. The direction number or regression coefficient of variable X<sub>3</sub> (HR Maintenance) of 0.537 means that the effect of HR Maintenance (X<sub>3</sub>) on Performance (Y) is positive or every increase in the score value of variable X<sub>3</sub> (HR Maintenance) by 1, it will increase the score value of variable Y (Performance) by 0.537.
3. Coefficient of Determination  
In Table 4, it can be seen that the coefficient of determination of 0.698 or 69.8% means that the magnitude of the effect of HR Maintenance on Performance is 69.8%. In comparison, the rest (30.2%) is influenced by other factors not included in this study.

The calculation results above, R = 0.887, are located in the interval (0.80 - 1.000), based on Table 4; this shows that the relationship between Planning and Performance is Very Strong and positive.

### 3.4.5 Analysis of the Relationship between Planning, Monitoring, HR Maintenance and Performance

#### 3.4.5.1 Correlation Analysis

Correlation analysis is used to determine the direction and strength of the relationship between Planning, Monitoring, HR Maintenance, and Performance, using SPSS 17.0. The results obtained are:

**Table 9. Correlation results of planning, monitoring and maintaining HR on performance**

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.896 <sup>a</sup>	0.803	0.796		1.93467

a. Predictors: (Constant), HR Maintenance, Monitoring, Planning

b. Dependent Variable: Performance

The calculation results above, R = 0.896, are located in the interval (0.80 - 1.000); this shows that the relationship between Planning, Supervision, and Maintenance of HR together on Performance is Very Strong and positive. This means that an increase in HR Planning, Supervision, and Maintenance will jointly cause an increase in Performance.

### 3.4.5.2 Regression Analysis

Regression analysis is intended to predict the value of Planning (X1), Monitoring (X2), and HR Maintenance (X3) on Performance (Y) using SPSS 17.0 calculations as follows:

$$Y = a + b X1 + b X2 + b X3$$

X1, X2, X3 = Independent variables

Y = Dependent variable

a = Intercept or Constant

b = Direction number or Regression Coefficient

From this information, using SPSS 17.0 calculations, the following results are obtained:

**Table 10. Results of Multiple Regression Analysis between Planning, Monitoring and Maintenance of Human Resources and Performance**

Model	Coefficients <sup>a</sup>			t	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
(Constant)	4.911	2.584		1.901	0.06
1 Planning	0.735	0.225	0.495	3.274	0.001
Monitoring	0.324	0.16	0.302	2.029	0.045
HR Maintenance	0.076	0.072	0.118	1.055	0.294

a. Dependent Variable: Performance

Based on the calculation of the regression coefficients, it can be seen that the regression equation formed is:

$$Y = 4.911 + 0.735 X1 + 0.324 X2 + 0.076 X3$$

The interpretation of the equation is as follows:

1. The intercept or constant is 4.911

This means that if the independent variables X1 (Planning), X2 (Monitoring),

2. Direction number or regression coefficient

a. Variable

b. Variable

c. Variable X3 (HR Maintenance) is 0.076. This means that the influence of 0.076.

3. Coefficient of Determination

Table 10 shows that the coefficient of determination is 0.803 or 80.3%, and the adjusted coefficient of determination is 0.796 or 79.6%. According to Santosa & Ashari (2005), "Because the regression equation uses many independent

variables, the coefficient used to explain this equation is the adjusted coefficient of determination."

The results of the adjusted coefficient of determination of 0.796 or 79.6% mean that the magnitude of the influence of Planning, Monitoring, and Maintenance of HR together on Performance is 79.6%. In comparison, the remainder (20.4%) is influenced by other factors not included in this study.

### 3.4.6 Hypothesis testing

#### 3.4.6.1 T-Test

Real level ( $\alpha$ ),  $\alpha$  value = 5% or (0.05)

and the t table value has degrees of freedom (db) =  $98 - 3 = 95$  at t table = 1.665

Test criteria:

Ho is accepted (Ha is rejected) if t count < t table

Ho is rejected (Ha is accepted) if t count >

1). T-test (Partial Analysis) between Planning and Performance

a). Hypothesis formulation

Ho = There is no influence of planning on performance

Ha = There is an influence of Planning on Performance

b). Statistical test value

Based on calculations with SPSS 17.0,  $t = 18.844$

c). Conclusion

Because  $t = 18.844 > t$  table = 1.665, Ho is rejected (Ha is accepted), meaning there is a significant influence between planning and performance.

2). T-test (Partial Analysis) between Monitoring and Performance

a). Hypothesis formulation

Ho = There is no influence of HR maintenance on performance

Ha= there is an influence of HR maintenance on performance

b). Statistical test value

Based on calculations with SPSS 17.0,  $t = 17.832$

c). Conclusion

Because  $t = 17.832 > t$  table = 1.665, Ho is rejected (Ha is accepted), meaning there is a significant influence between supervision and performance.

3). T-test (partial analysis) between HR maintenance and performance. Based on calculations with SPSS 17.0,  $t = 14.902$

Conclusion

Because  $t = 14.902 > t \text{ table} = 1.665$ ,  $H_0$  is rejected ( $H_a$  is accepted), meaning there is a significant influence between HR Maintenance and Performance.

**3.4.6.2 F-Test (Simultaneous Analysis)**

Real level ( $\alpha$ ),  $\alpha$  value = 5% or (0.05), and F table value with

$V1 = dk \text{ numerator} = k = 3$

$V2 = dk \text{ denominator} = n - k - 1 = 98 - 3 - 1 = 94$  in F table = 2.70

Test criteria:

$H_0$  is accepted ( $H_a$  is rejected) if  $F \text{ count} < F \text{ table}$

$H_0$  is rejected ( $H_a$  is accepted) if  $F \text{ count} > F \text{ table}$

F-Test (Simultaneous Analysis) between Planning, Monitoring, HR Maintenance and Performance

**Table 11. F-Test Results**

ANOVA <sup>b</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1431.714	3	477.238	127.5	.000 <sup>a</sup>
	Residual	351.837	94	3.743		
	Total	1783.551	97			

a. Predictors: (Constant), HR Maintenance, Monitoring, Planning

b. Dependent Variable: Performance

1. Hypothesis formulation

$H_0$  = There is no influence of HR Planning, Supervision, and Maintenance on Performance

$H_a$  = There is an influence of HR Planning, Supervision, and Maintenance on Performance

2. Statistical test value

Based on calculations with SPSS 17.0, it can be seen in Table 11 that calculated  $F = 127.503$

3. Conclusion

Because  $F \text{ count} = 127.503 > F \text{ table} = 2.70$ ,  $H_0$  is rejected ( $H_a$  is accepted), meaning there is a significant influence between Planning, Supervision and Maintenance of HR together on Performance.

**4. Conclusion**

Based on data processing and hypothesis analysis of the influence of Planning, Monitoring, and Maintenance of Human Resources on the Performance of BB Biogen Employees, Ministry of Agriculture, Bogor, it can be concluded that Planning has an influence of 78.7% on Performance, with the remaining 21.3% being influenced by

other factors such as organizational culture and leadership. The influence of Monitoring on Performance reached 76.8%, while the remaining 23.2% was influenced by factors such as competency and Monitoring technology. HR maintenance has a 69.8% influence on Performance, with 30.2% influenced by other factors such as the compensation system and work climate. Overall, HR planning, monitoring, and maintenance influence 79.6% of performance, and 20.4% are influenced by other factors not included in this research.

To increase the influence of Planning, it is recommended that BB Biogen, the Ministry of Agriculture, and Bogor focus on mapping human resources based on competency, for example, through job promotions based on employee position analysis. To increase the influence of Monitoring, comprehensive and tiered Monitoring must be implemented, with a quarterly evaluation of the implementation of Monitoring to see the output. The influence of HR maintenance can be increased by giving attention and appreciation to outstanding employees, such as announcing the best employees every month.

Performance improvement can be achieved by improving the lowest indicator, "Following instructions," giving task orders per SOPs and employee competencies. This action will ensure that the tasks given are in accordance with the employee's abilities, thereby increasing work effectiveness and efficiency. By implementing these suggestions, it is hoped that the performance of BB Biogen Employee Performancegor Ministry of Agriculture can continue to improve significantly.

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