

# Path Analysis for Implementation Analysis Of Human Resources Information System On Human Resources Planning

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**Abstract.** At present, the quality of HR decisions is highly dependent on the quality of information held and obtained. HR information should be made available to HR managers and other line managers in the company or agency so that it will facilitate decision making. In the current era of technological development, information systems are developing rapidly in support of management activities. In other words, HR information systems can get the information needed or the choices of many people who are more related to new HR planning activities. The purpose of this study is to measure the contribution of the implementation of human resource information systems to the effectiveness of human resource planning. In this paper, the analysis uses the path analysis model. The results of the analysis of the implementation of the HR information system can explain the benefits of the HR information system in the organization's HR planning decision making.

## 1. Introduction

At present wherever and whenever managers and HR departments really need detailed and quality information about HR in the company. The quality of HR decisions is highly dependent on the quality of information held and obtained. The development of information technology and such advanced information facilities should be utilized in supporting the achievement of organizational goals.

Likewise, the Human Resources Development and Human Resources Agency (BKPSDM) of the Kubu Raya Regency, West Kalimantan Province has implemented a human resource information system in support of improving staffing management services in the Kubu Raya Regency Government. Currently the BKPSDM Kubu Raya has two HR information systems, namely the Personnel Management Information System (SIMPEG) and the Personnel Service Application System (SAPK). Personnel Management Information System is a series of employee information and data compiled systematically, thoroughly and integrated with technology-based functions to run business processes and produce useful information in the implementation of Personnel Management. Personnel Service Application System is a staffing service system that is integrated and connected online with all agencies to provide staffing services (Perka BKN No. 14 of 2011).

The Characteristics of the Kubu Raya Government where the geographical area is spread widely between one sub-district to another and the number of state civil servants (ASN) of 5,442 people is a challenge for BKPSDM to improve services in supporting the improvement of ASN and Institution performance. For this reason, the existence of a reliable human resource information system is needed



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in achieving the objectives of effective human resource planning in the KubPSDM BKPSDM environment.

Based on this background, this study takes the title Path Analysis for the Analysis of the Implementation of Human Resource Information Systems Against Human Resource Planning. The purpose of the research is to measure the contribution of the implementation of human resource information systems to the effectiveness of human resource planning at the Human Resources Development and Human Resources Agency Kubu Raya Regency.

To simplify the explanation of this research, the authors present the discussion into four parts, 1. Introduction which explains the background, problems, research objectives and systematic writing. 2. Theories and Methods, explaining the theories used in this study and the research methodology. 3. Results and Discussion, explain in detail the results obtained from the study and 4. Conclusions, explain the final conclusions from the results of the study.

## 2. Theories and Methodologies

### 2.1. Theories

Human Resources information system is a systematic procedure for collecting, storing, maintaining, attracting and validating data needed by a company / agency to improve human resource decisions. The term human resource planning is activities related to (1) environmental observations and assessments, (2) setting goals to be achieved with HR activities in line with the measurements that will be used to assess the achievement of those objectives; and (3) develop specific plans for HR policies and practices that are in line with the schedule for implementing those plans to update information.

A human resource information system must be designed to provide information that can support healthy decision making with information criteria; (1) On time, i.e. manager or HR department must have access; (2) Accurate, i.e. manager or human resources department must be able to depend on the accuracy of the information provided; (3) Concise, i.e. a manager or human resources department must be able to absorb a lot of information in each area; (4) Relevant, i.e. managers or human resources departments must obtain information not only information needed in certain situations; (5) Complete, a manager or human resources department must be able to obtain complete information. There are three main functional components in each human resource information system, including (1) Input function (human resource input system), which is to enter employee information into the HR information system; (2) Data maintenance function (human resource database system), after the data is entered into the information system, the data maintenance function will update and add new data to the existing database; (3) Output function (human resource output system); namely the resulting output that is valuable for users of HR information systems.

### 2.2. Methodologies

This research is a type of explanatory research (explanatory research) that is research that aims to explain the position of the variables studied and the relationship between one variable with another variable. This research was conducted in a census of all 22 civil servants in the BKPSDM Kubu Raya. Data collection methods in this study were conducted by survey methods that used techniques: (1) interviews, (2) questionnaires and (3) literature studies. This study examines four variables: three independent variables (X) and one dependent variable (Y). Endogenous variables (free) in this study are the human resource input system (input function) or X1, the human resource data base system (data maintenance function) or X2 and the human resource output system (output function) or X3. While the exogenous (dependent) variable is human resource planning (Y).

Measurement of the variable questionnaire items using a Likert scale with the criteria strongly agree given a value of 5, agree given a value of 4, do not know given a value of 3, less agree given a value of 2 and strongly disagree given a value of 1, data analysis techniques using path analysis. used to test the amount of the contribution (contribution) shown by the path coefficient on each path diagram of the causal relationship between variables X1, X2, X3 to Y. Correlation and regression analysis is the basis for calculating path coefficients using SPSS software. The research data obtained are further processed

to produce calculations (outputs) including ANOVA, coefficients, model summaries, and correlations which will be analyzed to determine the effect and relationship between variables in the structural equation model of the research path diagram. The use of path analysis in problem solving is done through stages - namely formulating a hypothesis, determining the path diagram of the problem under study, constructing the structural equation, testing the hypothesis and analyzing.

### 3. Result and Discussion

A sample of 22 with various characteristics based on the level of education and years of service of ASN can be seen in Table 1.

**Table 1.** Number of Respondents by Characteristics of Years of Service and Employee Education Level

No.	Years of Respondents ( Years )	Education Level of Respondents			
		Senior High School	3- year Diploma	S1	S2
1	1 – 5	-	-	3	-
2	6 – 10	-	3	9	1
3	11 – 15	-	-	1	-
4	16 -20	-	-	1	
5	21 – 25	-	-	2	1
6	More Than 25	1	-	-	-
Number of Respondents (People)		1	3	16	2

Source : BKPSDM, 2019

Testing the validity and reliability of the questionnaire data was carried out in order to obtain instrument items that were considered valid and reliable as in tables 2 to table 6. The validity test was done by comparing the  $r$  value of the research criteria set at 0.30 to the correlation coefficient at the 0.05 significance level where if  $r_{\text{arithmetic}} > r_{\text{criteria}}$  then the item variable is declared valid.

**Table 2.** Recapitulation of Validity of the HR Input System Instruments

No.	Variable Dimension X1	Item	r	Information
1	Internal HR Research Data Source	X1.1	0.602	Valid
		X1.3	0.320	Valid
		X1.5	0.327	Valid
		X1.6	0.502	Valid
		X1.7	0.492	Valid
		X1.8	0.421	Valid
2	External Data Sources ( <i>Human Resources Intelligent Data</i> )	X1.2	0.520	Valid
		X1.4	0.645	Valid
		X1.9	0.315	Valid

Table 2 is a description of validity items HR Input Systems.

**Table 3.** Recapitulation of Validity of HR Base Data System Instruments

No.	Variable Dimension X2	Item	r	Information
1	Fill in the Database	X2.3	0.486	Valid
		X2.4	0.726	Valid
		X2.5	0.724	Valid
2	Data Base Storage Locations	X2.1	0.802	Valid
		X2.2	0.802	Valid

Table 3 is a description of validity items HR Base Data Systems.

**Table 4.** Recapitulation of Validity of HR Output System Instruments

No.	Variable Dimension X3	Item	r	Information
1	Basic Form of HR Output System	X3.1	0.381	Valid
2	Data Base Storage Locations	X3.8	0.660	Valid
3	Output Group Produced by SISDM	X3.2	0.322	Valid
		X3.3	0.415	Valid
		X3.4	0.628	Valid
		X3.5	0.662	Valid
		X3.6	0.697	Valid
		X3.7	0.628	Valid

Table 4 is a description of validity items HR Output Systems.

**Table 5.** Recapitulation of Validity of HR Planning Instruments

No.	Variable Dimension Y	Item	r	Information
1	Work Force Planning	Y.1	0.638	Valid
		Y.2	0.447	Valid
2	Labor Procurement	Y.3	0.768	Valid
		Y.4	0.624	Valid
3	Placement, Mutation and Promotion	Y.5	0.824	Valid
		Y.6	0.727	Valid
4.	Career Planning and Development	Y.7	0.408	Valid
		Y.8	0.528	Valid
		Y.9	0.574	Valid
5	HR Evaluation	Y.10	0.566	Valid

Table 5 is a description of validity items HR PLanning.

Reliability testing is performed on valid item variables by comparing the value of the Cronbach efisien coefficient with the criteria if Cronbach  $\alpha > 0.6$  then the variable is declared reliable. The recapitulation of the reliability test results can be seen in Table 6.

**Table 6.** Recapitulation of Research Variability Test Results

No	Variable	Cronbach $\alpha$ Value	Information
1	HR Input System (X1)	0.691	Reliable
2	HR Database System ( X2)	0.717	Reliable
3	HR Output System (X3)	0.717	Reliable
4	HR Planning (Y)	0.817	Reliable

This study analyzes problems related to the contribution of human resource input system variables, human resource database system, human resource output system and human resource planning at the Kubu Raya Human Resources and Development Agency. Problem solving using path analysis is carried out through stages - namely determining the path diagram of the problem under study, composing the structural equation, testing the hypothesis and analyzing. The path diagram model based on the paradigm of the relationship

between variables can be described as follows Figure 1. The path diagram below  $X_1$ ,  $X_2$ ,  $X_3$  is an exogenous variable and  $Y$  is an endogenous variable.

The structural equation is:

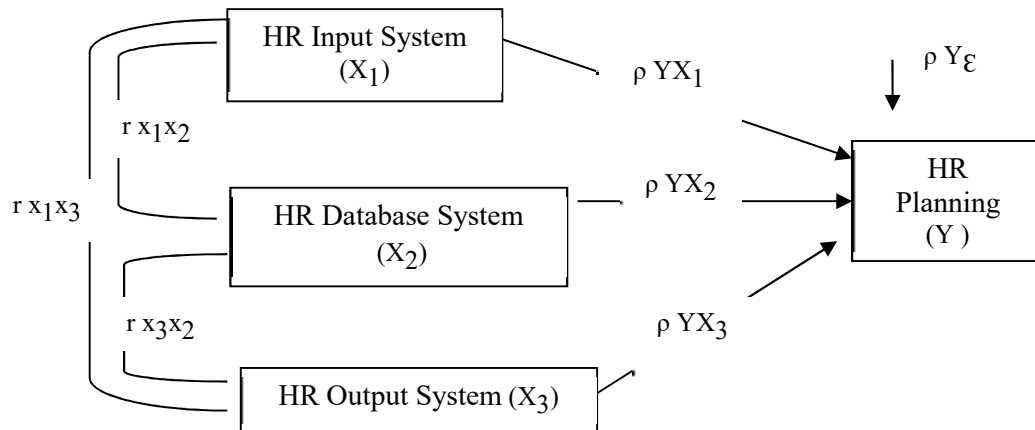
$$\text{Structure: } Y = \rho_{YX1} X_1 + \rho_{YX2} X_2 + \rho_{YX3} X_3 + \rho_{Y\epsilon}$$

Where :

$X_1$  = HR Input System                       $Y$  = HR Planning

$X_2$  = HR Database System                 $\epsilon$  = Error

$X_3$  = HR Output System



**Figure 1.** Model Structure Diagram 1

The hypothesis in this study:

$H_a$ : Human resource input system, Human resource database system and human resource output system contribute simultaneously and significantly to human resource planning.

Based on the results of data processing in structural equation, it can be seen that the outputs of tables 7 to 10, the path coefficients obtained are tested as follows:

1) Anova  $X_1$ ,  $X_2$ ,  $X_3$  on Human Resource Planning ( $Y$ )

**Table 7.** A N O V A Model 1

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	103.340	3	34.447	5.363	.008 <sup>a</sup>
	Residual	115.614	18	6.423		
	Total	218.955	21			

a. Predictors: (Constant), HR Input System, HR Database System, HR Output System

b. Dependent Variable: HR Planning

2) Coefficients  $X_1$ ,  $X_2$ ,  $X_3$  on Human Resource Planning ( $Y$ )

**Table 8.** Coefficients Model 1

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.402	11.111		.666	.514
	HR Input System	-.607	.381	-.436	-1.596	.128
	HR Database System	.735	.371	.427	1.982	.063
	HR Output System	1.328	.369	.876	3.594	.002

a. Dependent Variable: HR Planning

3) Summary  $X_1$ ,  $X_2$ ,  $X_3$  on Human Resource Planning ( $Y$ )

**Tabel 9.** Model Summary Model 1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.687 <sup>a</sup>	.472	.384	2.534

a. Predictors: (Constant), HR Input System, HR Database System, HR Output System

The whole test (simultaneous) is shown in table 7. Anova Model 1. The statistical hypothesis is formulated as follows:

H1:  $\rho_{YX1} = \rho_{YX2} = \rho_{YX3} \neq 0$

H0:  $\rho_{YX1} = \rho_{YX2} = \rho_{YX3} = 0$

The hypothesis is as follows:

Ha: Human resource input system, Human resource database system and human resource output system contribute simultaneously and significantly to human resource planning.

H0: Human resource input system, Human resource database system and human resource output system do not contribute simultaneously and significantly to human resource planning.

From the ANOVA table, the probability value (sig) = 0.008 was obtained. Because the value of sig = 0.008 < 0.05, the decision is that H0 is rejected and Ha is accepted so that individual testing can proceed. This means that human resource input systems, human resource database systems and human resource output systems contribute simultaneously and significantly to human resource planning.

The hypothesis is as follows:

Ha: Human resource input system, Human resource database system and human resource output system contribute simultaneously and significantly to human resource planning.

H0: Human resource input system, Human resource database system and human resource output system do not contribute simultaneously and significantly to human resource planning.

From the ANOVA table, the probability value (sig) = 0.008 was obtained. Because the value of sig = 0.008 < 0.05, the decision is that H0 is rejected and Ha is accepted so that individual testing can proceed. This means that human resource input systems, human resource database systems and human resource output systems contribute simultaneously and significantly to human resource planning.

Individual test variables obtained the following results:

1) Human resource input systems contribute significantly to human resource planning.

Individual tests are shown in table 8. Coefficients Model 1. The statistical hypotheses of the research are formulated as follows:

H1:  $\rho_{YX1} > 0$

H0:  $\rho_{YX1} = 0$

The hypothesis is as follows:

H1: Human resource input systems contribute significantly to human resource planning

H0: Human resource input systems do not contribute significantly to human resource planning

From the Coefficients table seen in the Sig column (significant) sig = 0.128 which value is greater than the probability value 0.05 or 0.128 > 0.05, then H0 is accepted and H1 is rejected, meaning the path analysis coefficient is not significant. So the human resource input system does not contribute significantly to human resource planning

2) The human resource database system contributes significantly to human resource planning

Individual tests are shown in table 8. Coefficients Model 1. The statistical hypotheses of the research are formulated as follows:

H2:  $\rho_{YX2} > 0$

H0:  $\rho_{YX2} = 0$

The hypothesis is as follows:

H1: The human resource database system contributes significantly to human resource planning

H0: Human resource database system does not contribute significantly to human resource planning

From the Coefficients table seen in the Sig column (significant) sig = 0.063 which value is greater than the probability value 0.05 or 0.063 > 0.05, then H0 is accepted and H2 is rejected, meaning the path

analysis coefficient is not significant. So the human resource database system does not contribute significantly to human resource planning

3) Human resource output systems contribute significantly to human resource planning

Individual tests are shown in table 8. Coefficients Model 1. The statistical hypotheses of the research are formulated as follows:

H3:  $\rho_{YX3} > 0$

H0:  $\rho_{YX3} = 0$

The hypothesis is as follows:

H1: Human resource output systems contribute significantly to human resource planning

H0: Human resource output systems do not contribute significantly to human resource planning

From the Coefficients table seen in the Sig column (significant) sig = 0.002 which value is smaller than the probability value 0.05 or  $0.002 < 0.05$ , then H3 is accepted and H0 is rejected, meaning the path analysis coefficient is significant. So the human resource output system contributes significantly to human resource planning.

The results of the analysis prove that there is no significant path coefficient, namely the HR Input System variable (X1) and the HR Base Data System variable (X2), then Model 1 is improved through the Trimming Model, that is removing the X1 and X2 variables which are considered to be the path coefficient results are not significant. from his analysis. Then repeated or tested again by not including the two exogenous variables.

The calculation results are shown in tables 10 through table 12 as follows:

1) Anova X3 on Human Resource Planning (Y)

**Tabel 10. ANOVA Model 2**

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	76.530	1	76.530	10.747	.004 <sup>a</sup>
	Residual	142.424	20	7.121		
	Total	218.955	21			

a. Predictors: (Constant), HR Output System

b. Dependent Variable: HR Planning

2) Summary X3 on Human Resource Planning (Y)

**Tabel 11. Summary Model 2**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.591 <sup>a</sup>	.350	.317	2.669

a. Predictors: (Constant), HR Output System

3) Coefficients X3 on Human Resource Planning (Y)

**Tabel 12. Coefficients Model 2**

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
		B	Std. Error	Beta			
1	(Constant)	14.123	9.422			1.499	.150
	HR Output System	.896	.273	.591		3.278	.004

a. Dependent Variable: HR Planning

The summary of Structural Equation test results is as follows:

**Tabel 13.** Summary ANOVA Model 1 and Model 2

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	103.340	3	34.447	5.363	.008 <sup>a</sup>
	Residual	115.614	18	6.423		
	Total	218.955	21			
2	Regression	76.530	1	76.530	10.747	.004 <sup>a</sup>
	Residual	142.424	20	7.121		
	Total	218.955	21			

a. Predictors : ( Constant ), HR Input System, HR Database System, HR Output System

b. Dependent Variable : HR Planning

**Tabel 14.** Summary Coefficients Model 1 and Model 2

	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.402	11.111		.666	.514
	HR Input System (X1)	-.607	.381	-.436	-1.596	.128
	HR Database System (X2)	.735	.371	.427	1.982	.063
	HR Output System (X3)	1.328	.369	.876	3.594	.002
2	(Constant)	14.123	9.422		1.499	.150
	HR Output System (X3)	.896	.273	.591	3.278	.004

a. Dependent Variable : HR Planning (Y)

**Tabel 15.** Summary of Summary Model 1 and Model 2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.687	.472	.384	2.534
2	.591	.350	.317	2.669

a. Predictors : ( Constant ), HR Input System (X1), HR Database System (X2), HR Output System (X3)

b. Dependent Variable : HR Planning (Y)

Based on the results of the analysis, the path coefficient value X3 to Y is  $\rho_{YX3} = 0.591$  with a coefficient of reflection or contribution ( $R^2_{YX3} = 0.350$ ) and a large residual coefficient  $\rho_{Y\epsilon} = \sqrt{1 - R^2_{YX3}} = \sqrt{1 - 0.350} = 0.806$ .

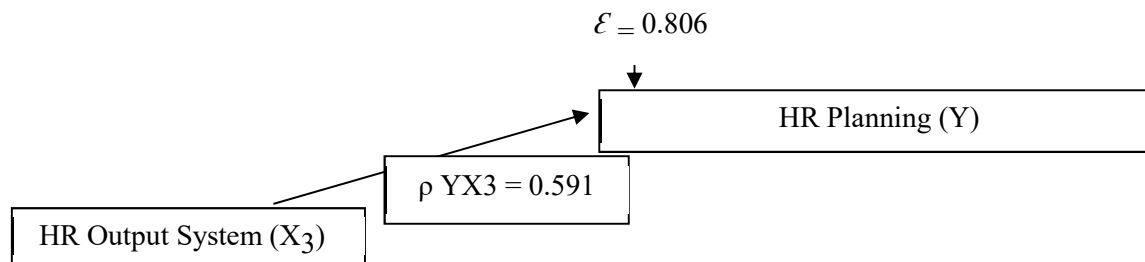
The sub-structure equation 1 becomes the following:

$$Y = \rho_{YX3} + \rho_{Y\epsilon} \text{ and } R^2_{YX3} \text{ or}$$

$$Y = 0.591 X3 + 0.806 \epsilon \text{ and } R^2_{YX3} = 0.350$$

Thus the path equation obtained from the structural equation changes, namely to become Figure 2 as follows:





**Figure 2.** The Empirical Relationship of Structure of X3 Variable to Y

#### 4. Conclusions

Based on an analysis of the results and discussion of the study of the selected sample, the following conclusions can be drawn:

- The hypothesis states human resource input systems, human resource database systems and human resource output systems contribute simultaneously and significantly to human resource planning. That not all variables can be accepted, because based on testing the path coefficient of the structure only the path coefficient X3 to Y is statistically significant. While the path coefficient X1 to Y and X2 to Y is not significant. Thus the findings of this analysis provide information that the system of human resource output simultaneously and significantly to Human Resource Planning. The amount of contribution is  $0.5912 \times 100\% = 34.93\%$  and the remaining  $0.8062 \times 100\% = 64.97\%$  is a contribution from other variables outside the human resource output system.
- That the human resource input system, especially non-financial human resource data such as leader succession data, position analysis and evaluation data and data regarding employee complaints has not been included in the human resource information system so that in the future it is necessary to consider it in the personnel management system.
- Human resource database system in Kubu Raya BKPSDM Environment is available although the ease of access to update and add data for each employee's personal is still difficult, especially for employees in other agencies because the information system has not been integrated between agencies within the Kubu Raya Regency Government so considered to make the system online between agencies and the BKPSDM.
- Human Resources output system still has not produced concise, relevant and complete information so that some activities related to human resource planning cannot be carried out optimally. For this reason, BKPSDM can continue to develop applications that help smooth the human resource information system and prepare adequate personnel to carry out the management of the information system.

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