PROMOTION MANAGEMENT INFORMATION SYSTEM BASED ON ASSESSMENT OF EMPLOYEES IN. BANTEN SUSTAINABLE ENERGY (CASE STUDY PT. SUSTAINABLE ENERGY BANTEN)

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ABSTRACT

PT. Lestari Banten Energi is a company engaged in the field of coal-fired power plants as the Genting Group subsidiary in Kuala Lumpur, Malaysia. Based on the results of interviews conducted to Sr. Executive - HR & Admin, employee decision-making process that will be promoted through the document manaagement manual system is still subjective. This is because there is no value given so as to make the tough manager do the calculation of the maximum. Quite often subjective judgments made against the employees. Lack of communication and a less harmonious relationship with the team or any other department be influential impact on the assessment process and the determination of the employees themselves. This study aims to assist the HR & Manager Admin and promotion of employees in decision making. Human resource management is used POAC (Planning, Organizing, Actuating, Controlling). Assessment of performance using KPI (Key Performance Indicator) based on the procedures and rules of the company's business will be taken as the final value and the results will be used in the SAW method (Simple Additive weighting)conducted by the Manager. The results will be used for promotion of employees. Based on the results of functional testing, UAT (User acceptence Test) and end user testing and implementation in an enterprise environment, it can be concluded that this system has helped the company in promotion of employees in decision making.

Keywords: Management Information Systems, Promotion Position, POAC Management, KPI (Key Performance Indicator), SAW (Simple Additive weighting)

1. PRELIMINARY

PT. Lestari Banten Energy is a subsidiary under the Genting Group and is engaged in the power industry. The company is entrusted to carry out the construction, operation and maintenance of a thermal power plant using coal fuel with a capacity of 660 MW (megawatts) in Banten, Indonesia. The plant consists of one unit of steam power plant (steam generators, turbine generators and generator electrical substation) located in Banten Province. PT. Lestari Banten Energy has signed a power purchase agreement or Power Purchase Agreement (PPA) with PT. PLN (Persero) on July 10, 2012 to supply power for 25 years. The plant is designed to provide clean with a nominal capacity of 625 MW (megawatts) for network systems PT. PLN (Persero) 500kV (kilovolt).

Employees who will be promoted in PT. Lestari Banten Energi using a system with two factors. A major factor in the determination of employee positions based on criteria can be viewed through the document management system manual. The second factor in the process of determining which employees will be promoted using the document KPI (Key Performance Indicator) as seen from the acquisition of the final value only.

In the interviews conducted to Sr. Executive - HR & Admin, in the decision-making process with the employees who will be promoted through the manual document management system is still subjective. That is because the lack of weight given value so as to make the difficult decisions Manager and the calculation of the maximum and objective.

The purpose of decision support systems that support the assessment of a manager and not to replace it. Second, to meningkankan effectiveness when making decisions of a manager rather than efficiency. Third, it helps a manager in making kputusan to problems of type semi teskruktur. [9]

2. LITERATURE REVIEW

2.1 Decision Making System

Decision support system is an interactive system in support of the decision in the decision making process through several alternative obtained from the processing of data, information and design models. [6]

2.2 ***Simple Additive Weighting (SAW)***

Simple Additive weighting method (SAW) is a method that has a weight penjmlahannya process. The weights of the different performance of each object has an equal opportunity for all the criteria that are owned.SAW method is a method often used in making decisions that have a lot of attributes. [10]SAW method takes a decision matrix normalization process (x) to a scale which can be compared with all the ratings of existing alternatives. SAW method is a method commonly known and often used in situations MADM (Multiple attribute

decision making). [1] Here is the formula of

$$r_{ij} = \begin{cases} \frac{x_{ij}}{Max_i\, x_{ij}} & \text{If j is an attribute of the advantages (benefits)} \\ \frac{Min_i\, x_{ij}}{x_{ij}} & \text{If j is an attribute of cost (cost)} \end{cases} \quad \textbf{(1)}$$

normalization in the SAW method:

Information :
r_{ij} = The value of the normalized performance rating
x_{ij} = Value attribute possessed in each existing criteria
$Max_{ij}\, x_{ij}$ = Greatest value of each criterion i
$Min_i\, x_{ij}$ = Smallest value of each criterion i
Benefit = greatest value is best
cost = Smallest is the best value

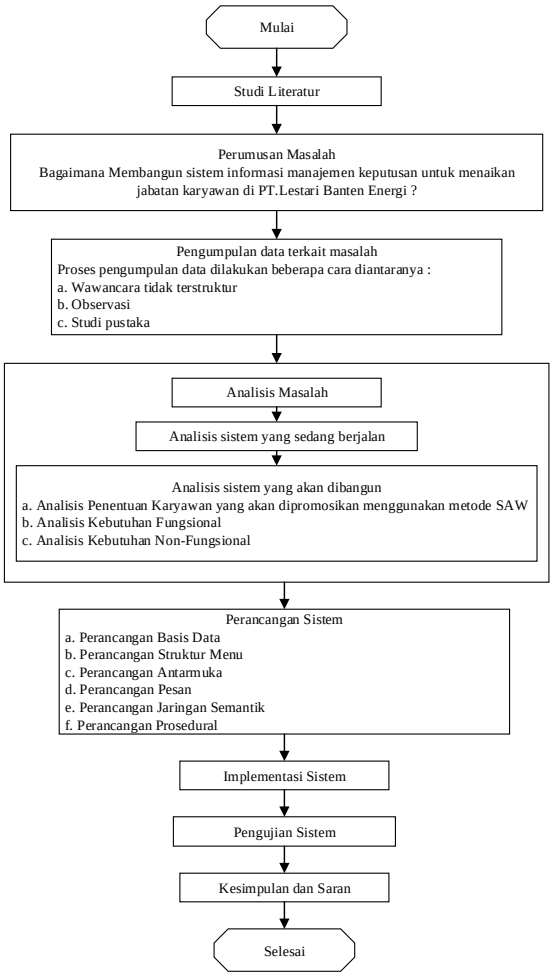
Where a performance rating that has been normalized on the attributes of the alternative Ai Cj; i = 1,2, ... m and j = 1,2, ... n. The reference value for each alternative (Vi) is given as:r_{ij}

$$V_i = \sum_{j=1}^{n} w_j r_{ij} \quad \textbf{(2)}$$

Information :
Vi = ranking for each alternative
Wj = weight value of each criterion
Rij = value normalized performance rating [9]

3. RESEARCH METHODOLOGY

The methodology used in this research use descriptive research methodology, which collects the data are then analyzed and memparkan observations in the field according to the fact that systematic, factual and accurate.



Picture 2.1 Research methodology

3.1 Data Collection Methods

In this stage of data collection related to the problem. Here are some of the techniques of data collection were used:

a. Not Structured Interview

Unstructured interview is an interview that is not systematic, and not arranged in which a researcher do not refer to the comprehensive list of questions to perform data collection.

b. Observation

Techniques to collect data done by conducting a systematic and thorough research.

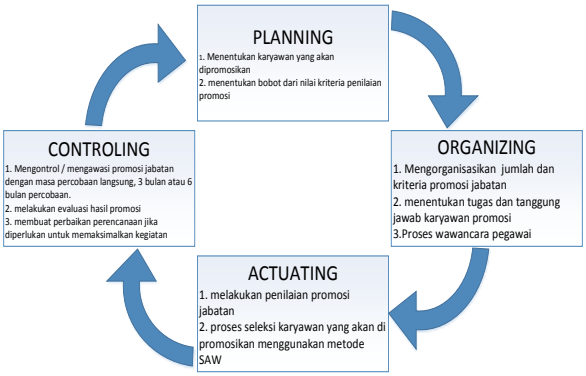
a. Literature review

Activities are studying various reference books as well as the results of previous similar studies and useful to get the theoretical basis of the problem to be studied.

4. RESULTS AND DISCUSSION

4.1 Campaign Management Information System Analysis Using the POAC

Analysis POAC (Planning, Organizing, Actuating, Controlling) is used to provide gamabaran on existing management processes within the information system at PT. Lestari Banten Energi. Stages POAC information system model (Planning, Organizing, Actuating, Controlling) will be described as follows:



Picture 4.1 Model POAC

4.2 Determination Analysis Employee Promotions

1. *Planning*

Planning is the planning stage in determining the employee to be promoted, some employees can be assumed that there are 5 people who recommended and planned by the Manager to get a promotion at the department*chemical Engineering* The employee data as follows:

Table 4.1 Data Employees planned Promotion

No.	Employee name	office	*Department*
1	Khairul Anam	*Officer*	*chemical Engineering*
2	Mad Sahrudi	*Officer*	*chemical Engineering*
3	Mahfud	*Officer*	*chemical Engineering*
4	Miftahurohman	*Officer*	*chemical Engineering*
5	Misnak	*Officer*	*chemical Engineering*

Next is to determine weights for each criterion position, as follows:

Table 4.2 Weighting Criteria Benefit and Cost

No.	Benefit Criteria	Weights in (%)	Weights In Decimal
1	*Skill of knowledge*	25%	0:25
2	*Education*	35%	0:35
3	*experience*	40%	0.4
4	*training competency*	25%	0:25
5	*behavior competency*	35%	0:35
No.	**cost Criteria**	**Weights in (%)**	**Weights In Decimal**
1	*Key Performance Indicator*	25%	0:25

2. *Organizing*

Organizing is the stage for determining the number of criteria, assignment of responsibilities of employees are promoted and recommends process performed by the employees of Assistant Manager and Manager to employees who are elected in the promotion. From interviews will be submitted to the HR & Admin to ditindaklanjutkan to the next process.

3. *actuating*

Ratings promotion, in this case assumed to have opened a promotion that has performed calculations using the method of assessment of employees in the document IEC. The end result of KPI performance appraisal form, will be used as a secondary factor in the determination of employee promotions. Determination of the main factors taken from a document management system such as Skill Manual of Knowledge, Education, Training, Competency, Behavior competency and secondary factor using the Key Performance Indicators.

In the early stages of HR & Admin opening promotions, and further each employee who wants to enroll for such vacancies CV upload Job Promotion Proposal as follows:

Picture 4.2 CV Submission of Self-Promotion

It can be assumed that there are 5 people who register for the promotion jbatan the Chemical Engineering department employees' data had been presented ditahap planning. The next stage every employee will insert sheet CV (curriculum vitae) Job Promotion Proposal for ditindaklanjutnya by the Manager and an assessment of performance using SAW method.

Table 4.3 Weighting Criteria Benefit and Cost

No.	Benefit Criteria	Weights in (%)	Weights In Decimal
1	*Skill of knowledge*	25%	0:25
2	*Education*	35%	0:35
3	*experience*	40%	0.4
4	*training competency*	25%	0:25
5	*behavior competency*	35%	0:35
No.	**cost Criteria**	**Weights in (%)**	**Weights In Decimal**
1	*Key Performance Indicator*	25%	0:25

Table 4.4 Criteria Skill Of Knowledge

Criteria	Value	Assessment criteria
Skill Of Knowledge	95-100	Very good
	85 - <95	Well
	75 - <85	moderate
	65 - <75	Bad
	<65	Very bad

Table 4.5 criteria Education

Criteria	Value	Assessment criteria
Education	95-100	Very good
	85 - <95	Well
	75 - <85	moderate
	65 - <75	Bad
	<65	Very bad

Table 4.6 Criteria Experience

Criteria	Value	Assessment criteria
experience	95-100	Very good
	85 - <95	Well
	75 - <85	moderate
	65 - <75	Bad
	<65	Very bad

Table 4.7 Competency Training criteria

Criteria	Value	Assessment criteria
Competency training	95-100	Very good
	85 - <95	Well
	75 - <85	moderate
	65 - <75	Bad
	<65	Very bad

Table 4.8 Competency Behavior criteria

Criteria	Value	Assessment criteria
behavior Competency	95-100	Very good
	85 - <95	Well
	75 - <85	moderate
	65 - <75	Bad
	<65	Very bad

Table 4.9 Key Performance Indicator criteria

Criteria	Value	Assessment criteria
Key Performance Indicator	95-100	Very good
	85 - <95	Well
	75 - <85	moderate
	65 - <75	Bad
	<65	Very bad

For a table of criteria and alternatives table, a table that there was or is the case today, for instance tables and alternative criteria used promotional data in 2017.

Table 4.10 Criteria and Alternatives

Nama Karyawan	Skill Of knowledge	Education	Experience	Training Competency	Behavior Competency	Key Performance Indicator
Khairul Anam	60	80	65	70	80	70
Mad Sakrudi	75	85	65	75	73	85
Mahfud	70	60	70	60	70	85
Miftahurohman	60	65	85	70	65	90
Misnak	75	65	60	60	85	70

1. Make a decision matrix

A decision matrix used as an alternative where Xij merpakan performance rating ith alternative to attribute j, the matrix is derived from the table abovethus obtained matrix as follows :

$$X = \begin{bmatrix} 60 & 80 & 65 & 70 & 80 & 70 \\ 75 & 85 & 65 & 75 & 73 & 85 \\ 70 & 60 & 70 & 60 & 70 & 85 \\ 60 & 65 & 85 & 70 & 65 & 90 \\ 75 & 65 & 60 & 60 & 65 & 70 \end{bmatrix}$$

2. Conducting the process of normalizing the decision matrix

R ddapat normalized matrix of equations. The normalization calculation using a formula if the attribute krena advantage of the available data is an attribute of an advantage. Sehingga obtained normalizedas follows :

Alternative 1 (Khairul Anam):

$$R^{11} = = 0.8 \frac{60}{Max\ (60,75,70,60,75)}$$

$$R^{12} = = 0.94 \frac{80}{Max\ (80,85,60,65,65)}$$

$$R^{13} = = 0.76 \frac{65}{Max\ (65,65,70,85,60)}$$

$$R^{14} = = 0.93 \frac{70}{Max\ (70,75,60,70,60)}$$
$$R^{15} = = 1 \frac{80}{Max\ (80,73,70,65,65)}$$
$$R^{16} = = 0.77 \frac{70}{Max\ (70,85,85,90,70)}$$

Alternative 2 (Mad Sharudi):

$$R^{21} = = 1 \frac{75}{Max\ (60,75,70,60,75)}$$
$$R^{22} = = 1 \frac{85}{Max\ (80,85,60,65,65)}$$
$$R^{23} = = 0.76 \frac{65}{Max\ (65,65,70,85,60)}$$
$$R^{24} = = 1 \frac{75}{Max\ (70,75,60,70,60)}$$
$$R^{25} = = 0.91 \frac{73}{Max\ (80,73,70,65,65)}$$
$$R^{26} = = 1 \frac{85}{Max\ (70,85,85,90,70)}$$

Alternative 3 (Mahfud):

$$R^{31} = = 0.93 \frac{70}{Max\ (60,75,70,60,75)}$$
$$R^{32} = = 0.71 \frac{60}{Max\ (80,85,60,65,65)}$$
$$R^{33} = = 0.82 \frac{70}{Max\ (65,65,70,85,60)}$$
$$R^{34} = = 0.8 \frac{60}{Max\ (70,75,60,70,60)}$$
$$R^{35} = = 0.88 \frac{70}{Max\ (80,73,70,65,65)}$$
$$R^{36} = = 1 \frac{85}{Max\ (70,85,85,90,70)}$$

Alternative 4 (Miftahurohman):

$$R^{41} = = 0.8 \frac{60}{Max\ (60,75,70,60,75)}$$
$$R^{42} = = 0.76 \frac{65}{Max\ (80,85,60,65,65)}$$
$$R^{43} = = 1 \frac{85}{Max\ (65,65,70,85,60)}$$
$$R^{44} = = 0.93 \frac{70}{Max\ (70,75,60,70,60)}$$
$$R^{45} = = 0.81 \frac{65}{Max\ (80,73,70,65,65)}$$
$$R^{46} = = 1 \frac{90}{Max\ (70,85,85,90,70)}$$

Alternative 5 (Misnak):

$$R^{51} = = 1 \frac{75}{Max\ (60,75,70,60,75)}$$
$$R^{52} = = 0.76 \frac{65}{Max\ (80,85,60,65,65)}$$
$$R^{53} = = 0.71 \frac{60}{Max\ (65,65,70,85,60)}$$
$$R^{54} = = 0.8 \frac{60}{Max\ (70,75,60,70,60)}$$
$$R^{55} = = 0.8 \frac{65}{Max\ (80,73,70,65,65)}$$
$$R^{56} = = 0.77 \frac{70}{Max\ (70,85,85,90,70)}$$

Table 4.11 Normalized

Nama Karyawan	*Skill Of knowledge*	*Education*	*Experience*	*Training Competency*	*Behavior Competency*	*Key Performance Indicator*
Khairul Anam	0.8	0.94	0.76	0.93	1	0.77
Mad Sahrudi	1	1	0.76	1	0.91	1
Mahfud	0.93	0.71	0.82	0.8	0.88	1
Miftahurohman	0.8	0.76	1	0.93	0.81	1
Misnak	1	0.76	0.71	0.8	0.8	0.77

3. Finding alternatives

Menggnakan equation (2) to find the best alternative equation and requires a results table normalization and weighting criteria table.

Table 4.12 Normalized and Weighting Criteria

Bobot (W_j)	*0.25*	*0.35*	*0.4*	*0.25*	*0.35*	*0.25*
Nama Karyawan	*Skill Of knowledge*	*Education*	*Experience*	*Training Competency*	*Behavior Competency*	*Key Performance Indicator*
Khairul Anam	0.8	0.94	0.76	0.93	1	0.77
Mad Sahrudi	1	1	0.76	1	0.91	1
Mahfud	0.93	0.71	0.82	0.8	0.88	1
Miftahurohman	0.8	0.76	1	0.93	0.81	1
Misnak	1	0.76	0.71	0.8	0.8	0.77

1. Alternative khairul anam:

v_1 = (0.25 x 0.8) + (0.35 x 0.94) + (0.4 x 0.76) + (0.25 x 0.93) + (0.35 × 1) + (0.25 x 0.77) = 1,608

2. Alternative mad sahrudi

v_1 = (0.25 × 1) + (0.35 × 1) + (0.4 x 0.76) + (0.25 × 1) + (0.35 x 0.91) + (0.25 × 1) = 1.7225

3. alternative mahfud

v_1 = (0.25 x 0.93) + (0.35 x 0.71) + (0.4 x 0.82) + (0.25 x 0.8) + (0.35 x 0.88) + (0.25 × 1) = 1.567

4. alternative miftahurohman

v_1 = (0.25 x 0.8) + (0.35 x 0.76) + (0.4 × 1) + (0.25 x 0.93) + (0.35 x 0.81) + (0.25 × 1) = 1,632

5. alternative misnak

v_1 = (0.25 × 1) + (0.35 x 0.76) + (0.4 x 0.71) + (0.25 x 0.8) + (0.35 x 0.8) + (0.25 x 0.77) = 1.4725

Table 4.13 Outcome Measures

Alternative	Weights
Khairul Anam	1,608
Mad Sahrudi	1.7225
Mahfud	1.567
Miftahurohman	1,632
Misnak	1.4725

The conclusion of CMS calculations using Simple Additive weighting method (SAW), from the calculation of finding the best alternatives submitted by 5 employees for promotion and get the highest

score is Mad Sahrudi, so the Manager will take action for the promotion of Mad Sahrudi.

4. *controlling*

controlling Here is the action supervision to employees selected for promotion by following the standards set by the company, the employees elect During trial period will be monitored and evaluated hasilnnya.

4.3 Analysis Database

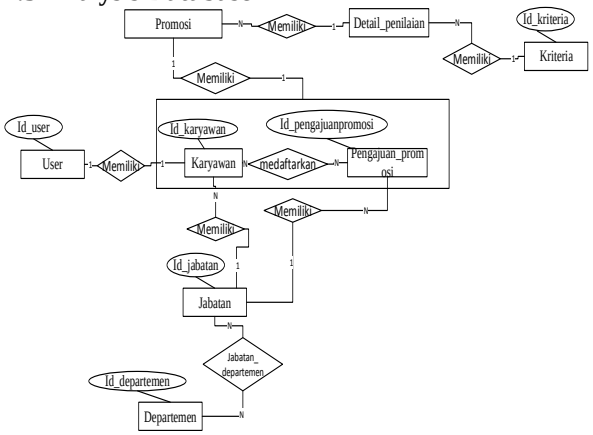


Figure 4.3 Entity Relationship Diagram

4.4 AnalysisNon-Functional Requirement

4.4.1 Hardware Requirements Analysis

Table 4:14 Needs Analysis Hardware Runs

No.	Device	Specification
1	processor	Speed of 2.26 GHz
2	memory	1 GB
3	VGA Card	512 MB
4	Hard Drive	500 GB
5	monitor	Monitor 14 ", 1024 x 768 pixel resolution

4.4.2 Hardware Requirements Analysis Proposed

Table 4:15 Hardware Requirements Analysis Proposed

No.	Device	Specification
1	processor	Speed of 2.26 GHz
2	memory	1 GB
3	VGA Card	512 MB
4	Hard Drive	500 GB
5	monitor	Monitor 14 ", 1024 x 768 pixel resolution
6	Network	Indihome 10Mbps

4.4.3 Software Requirements Analysis Running

Table 4:16 Running Analysis Software

No.	Device	Specification
1	Operating system	Microsoft Windows 7
2	browser	Mozilla Firefox, Chrome
3	database Server	WAMP server
4	Application	Adobe Reader

Table 4:17 Needs Analysis Software suggested

No.	Device	Specification
1	Operating system	Microsoft Windows 7 Professional
2	browser	Mozilla Firefox, Chrome
3	database Server	WAMP server
4	Application	Adobe Reader

4.5 AnalysisFunctional Requirements

4.5.1 Context Diagram

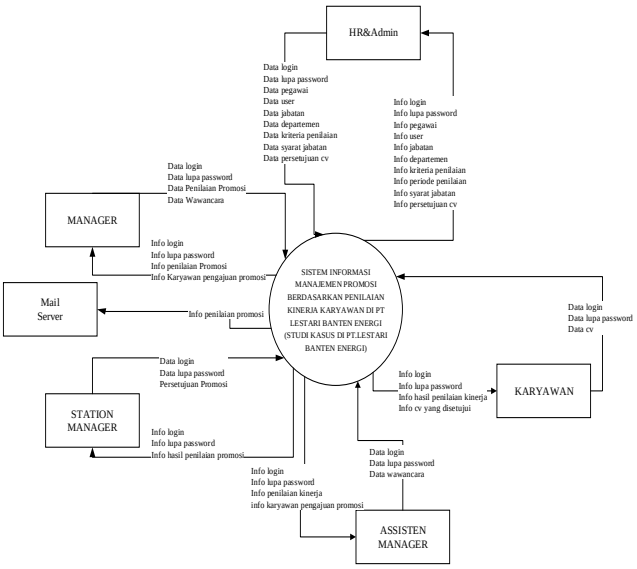


Figure 4.4 Diagram Context

4.5.2 Data Flow Diagram Level 1

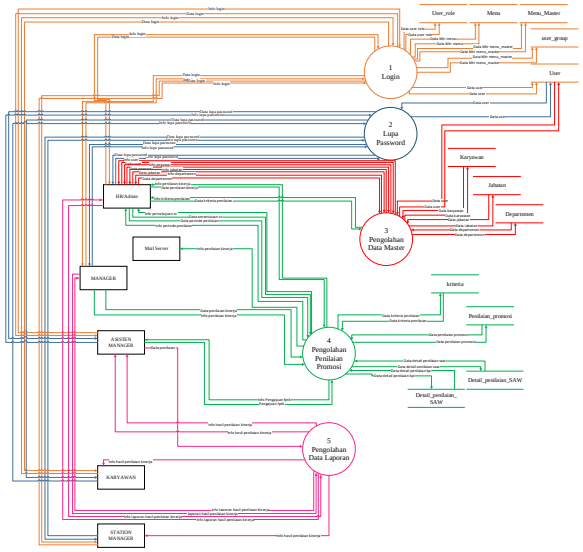


Figure 4.5 DFD Level 1

4.6 Implementation and Testing

4.6.1 Conclusion Functional Testing

The results of system testing has been done on the whole, it can be concluded that the sale management information system based on the assessment of employees at PT. Lestari Banten Energi has been through the stages of repair on each process so as to produce the expected output.

4.6.2 Scenario Testing User Acceptance Test (UAT)

The purpose of the testing User Acceptance Test (UAT) is to confirm that the entire system is under testing can meet the business needs to provide assurance that the test system has worked properly and can be used before it was officially to end users. Testing of end users do HR & Admin, employee, Manager, Assistant Manager and Station Manager.

Conclusion 4.6.3 User Acceptance Test (UAT)

Based on test results Accepteance User Test (UAT) has been done on the management information system of promotion based on those appraisals in PT. Lestari Banten Energy, it can be concluded that the system was able to proceed to the stage of the final user acceptance testing (interview).

5. COVER

5.1 Conclusion

Based on test results obtained from studies conducted in the preparation of this thesis as well as referring to the purpose of the study that has been made, it was concluded that:

1. This system helps the HR & Admin and Manager in the decision making dipromosika employees.

2. This system can be helpful in recommending employees to be promoted.

5.2 Suggestions

Based on the results that have been achieved in building sale management information system based on the assessment of employees at PT. Lestari Banten Energy still has shortcomings, therefore it is advisable to add things - things that can complement the future, including:

1. Campaign management information systems are built to be developed in the display also features that can be made more attractive.
2. For this application the future development direction of HRIS (Human Resources Information System), which also was to discuss the direction of financial and payroll.

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