Decision Support System for the Best Employee Performance Appraisal using the Web-Based Exponential Comparison Method (ECM) at Bank Mandiri Palembang

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A R T I C L E I N F O	ABSTRACT
	In this current condition, technology is developing very rapidly, so that all companies use computers for data processing to produce the accurate data. However, data processing using a computer only is not enough, so it must use a system that can help the performance of the data processor. One of the application required here is an application in giving rewards to employees at Bank Mandiri Palembang as the work productivity, employee behavior, and employee attitudes. This system is very helpful for Bank Mandiri Palembang in the process of giving rewards to bank employees, so that the reward process does not experience errors and takes quite a long time because the employee reward application uses the exponential comparison method. Thus, all data entered will be processed by this application with using the exponential method so that the reward data can process quickly and produces the accurate data. This calculation process is based on criteria that have been determined by Bank Mandiri Palembang for employees who receive rewards.

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1. INTRODUCTION

The advancement of information technology is very useful for everyone both for individual and group needs (Li, 2021). The increasing need for information technology needs to get attention and handling quickly and precisely, so that the expected results are in accordance with the needs (Abdelraheem et al., 2021; Deans et al., n.d.). Currently, the development of technology is developing rapidly that computers have become a basic need of every business field both in the government and private sectors(Asadzadeh et al., 2020; David, 2017; Tian et al., 2020).

The importance of employee performance in a government organization, such as Bank Mandiri Palembang is one of the elements in achieving the goal of maximum service to the community, by reflecting awareness and good ethics based on applicable regulations and

the influence of a leader in the organization. This study aims to determine the performance assessment of employees at Bank Mandiri Palembang. For this reason, the author tried to make a study on the decision support system for performance appraisal to the employees at Bank Mandiri Palembang(Fau, 2017).

Therefore, in order to make everything run smoothly. It needs to obtain information services quickly and accurately that is necessary to have a computerized performance appraisal data processing application. Moreover, application to support employee performance appraisal decisions at Bank Mandiri Palembang is using exponential comparison method. This exponential comparison method technique is used as an auxiliary for individual decision makers to use the design and build model that has been well-defined at the stage of the process that can help to overcome the problem of performance assessment to employees(Asadzadeh et al., 2020; Harni Kusniyati, 2016; Phan et al., 2020).

Based on the description above, an application is proposed to assist the task of Bank Mandiri to assess the employees performance based on predetermined criteria for subsequently selected employees which are entitled to the main bonus from Bank Mandiri Palembang is argued that there is Exponential Comparison Method (ECM), often also known as the weighted summation method. The basic concept of the Exponential Comparison (ECM) method is to find a weighted summation of the performance rating on each alternative for all attributes . Besides, the ECM Method is one of the right strategies or methods to achieve a goal in business because this method can determine the order of priority of decision alternatives with the plural criteria(Divayana et al., 2021; Turban, E., Aronson, J.E., Liang, T.P., Sharda, 2011). Based on the above ideas, the author intends to raise the research entitled "Decision Support System for the Best Employee Performance Appraisal using the Web-Based Exponential Comparison Method (ECM) at Bank Mandiri Palembang". This study aims to build a decision support system for the best employee performance appraisal at Bank Mandiri Palembang through the Exponential Comparison Method (ECM).

2. RESEARCH METHODS

The content of the research method is to formulate the problem under study in more detail (wherever possible written mathematically) and explain the proposed method (Sugiyono, 2017, 2018, 2019). When using an algorithm, it could be described in this section, along with *the state of the art.* The content of the Research Method generally only covers 20-30% of the entire paper.

3. RESULTS AND DISCUSSION

In the process of building the system, the author uses PHP code igniter coding in his work and uses Xampp as its server (Devianto & Munaldi, 2021). The database used in building the system was Mysql with PHP MyAdmin as the interface(Devianto & Munaldi, 2021; SIDIK, 2018)vvcode igniter . The application used to create code was Visual Code. The following are the results of the Employee Reward Application at Bank Mandiri Palembang KC Sudirman with a scenario that has been designed by the author.

This study resulted in an employee reward system application using the Exponential Comparison Method (ECM) which is a method to determine the most potential with relatively distant comparison values. Actors in the system consist of a section of the assessment team, employees, and leaders, where each actor has a different activity, such as the assessment team has an assessment activity during the process. The employee department that can view personal profiles and see performance values, while leaders will make reward decisions based on the results of the assessment.

The first thing to do to be able in accessing the system is that the assessment team

must first do *login* by entering a username and password.

4. DISCUSSION

The Login page on the best employee performance appraisal application at Bank Mandiri Palembang KC Sudirman can be seen in the following Figure 1:
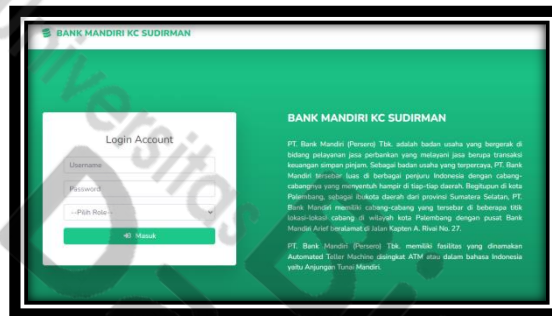

Figure 1 Login Page

Furthermore, the author will explain the process of managing the incoming and outgoing mail along with their supporting features. Here is the explanation:

a. User login as Admin. The author will explain what features that the user gets if he logs in as an admin. The list of its features as follows:

1. Data Management Criteria i.e. users can add criteria codes, add criteria names and weight values

2. Data Management sub-criteria, i.e. users can carry out the process of adding names and values of sub-criteria based on the criteria that have been made

3. Alternative data management, that users can manage employee data.

4. Assessment data management, when users can input values based on specified criteria.

5. Calculation data management, that the user can see the results calculation in accordance with the calculation of the ECM method

6. Final result data management, that the user can see the total value of the final result and the user can print the final result in the form of a pdf file

7. User data management, when the user can see and add the user roles

8. Profile data management, when the user can see the details of the profile data and can also change the user code

b. User log in as Employee. The author will explain what features the user gets if they log in as an employee. The list of its features as follows:

1. Value Data Management i.e. users can see the values that have been provided by the assessment team

2. Final Result Data Management, when the user can see the total final result value and the user can print the final result in the form of a pdf file

3. Profile data management, that the user can see the details of the profile data and can also change the user code

c. User logg in as Leader, The author will explain what features the user gets if he logs in as a Leader. The list of its features as follows:

1. Data Management of the final result, when the user can see the total value of the final result and the user can print the final result in the form of a pdf file

2. Profile data management, i.e. the user can see the details of the profile data and can also change the user code

Users who log in as a mail assessment team will be shown a dashboard menu or main page as shown in Figure 2
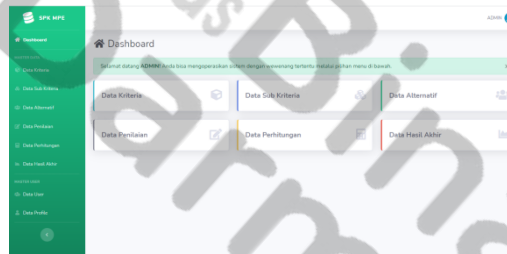
Figure 2 Admin Main Page

On the Main Page on the left part, there is information displayed in several features ranging from criteria data, sub-criteria data, alternative data, assessment data, calculation data, final result data, user data, and profile data.

The following is an explanation of each menu that can be selected by the user:

a.   Data management criteria

On this menu, the user will be displayed a table of data that has been entered into the system. The view in viewing criteria data can be seen in Figure 3.

Figure 3. *Data Kriteria* Management page

On the data management page, the criteria are used to display the overall list of criteria. What can be done with this page is to add, repair, and remove. After that, on the top button, which is on the right side, there is a menu of add *data kriteria*. It can be seen in Figure 4.

Figure 4. *Add Data Criteria page*

On the *Tambah data kriteria* (add criteria data) page, the admin can add some criteria by inputting the criteria code, the weight of the criteria, and the name of the criteria. After that, in Figure 2 on the left, there is *Data Sub Kriteria* (sub-criteria data) management which can be seen in Figure 5

b. Sub Criteria data management

The sub-criteria data management page can be seen in Figure 5 below:
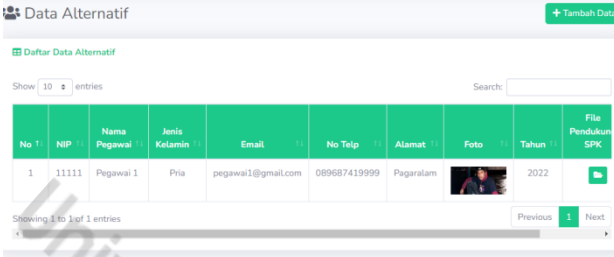
Figure 5. Sub Criteria Data Page

In the table in Figure 5 there is an add sub-criteria data button. The user also can manage the page and add sub-criteria and values from the sub-criteria. A further explanation of adding sub-criteria data can be seen in Figure 6.

Figure 6. Add Sub Criteria Data page

c. Alternative Data Management

Users can also manage alternative data, alternative data itself is employee data, and admin can also add employee data in the filter menu of Figure 2. The display can be seen in Figure 7
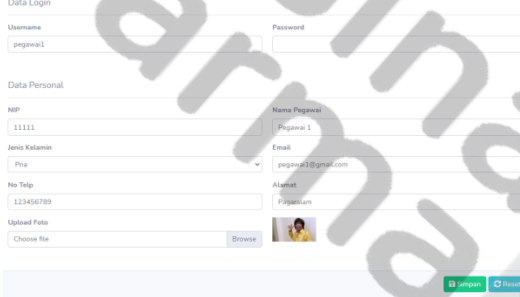
Figure 7. Alternate Data Pages

On the alternative data page, there is some employee information ranging from employee identification numbers, employee names, genders, employee emails, phone numbers, photo addresses, and actions that can manage by admin.

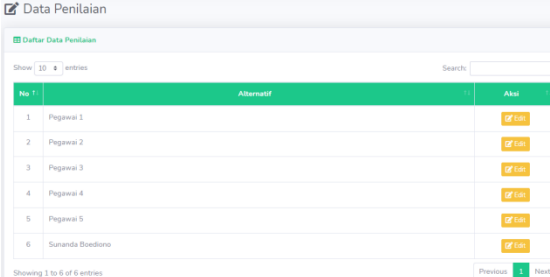The employee data edit page on the alternative data menu is shown in Figure 8 below:


Figure 8. Edit Employee Data page

d.   Assessment Data Management

The assessment data page on the Bank Mandiri KC Sudirman application Palembang is presented in Figure 9 below:

Figure 9. Assessment Data page

On the assessment data page, the assessment team can provide an assessment result according to the criteria in the application. Then, the assessment team can manage or edit the value. The employee assessment edit page in this application can be seen in Figure 10 below:

Figure 10. Edit Assessment Data page

After that, on the edit page of the assessment data, the user can give a value or change the value that has been specified in each of the criteria. After that, there is a calculation data menu where the user can see the calculation process of each criterion that has been given. It can be seen in Figure 11, Figure 12, and Figure 13.

Figure 11. Value Matrix Calculation Page

On the matrix value calculation page, there are some values that have been submitted by the assessment team based on the criteria that have been determined. Table of criteria weights can be seen in Figure 12.

In this menu, the user will be presented a table containing a table of weight criteria that can be seen in Figure 12 and there is also a calculation of the ECM value that can be seen in Figure 13.

Figure 12. Page Weight Criteria

Users can also see the calculation of ECM values and summation based on the weight values that have been given. The display of ECM calculation values can be seen in Figure 13.

Figure 13. MPE value calculation page

e. Final Result Data Management

Users can also see the acquisition of the final result value which automatically the total value that has been calculated based on the ECM method. There is also a ranking table about who the employee that gets the most score and he/she will get the first rank and vice versa. A view to see the final result values seen in Figure 14.

Figure 14. Final Result Value Page

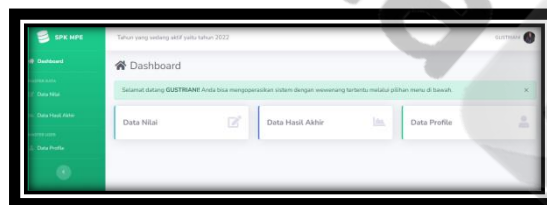Users who log in as Employees will be displayed a dashboard menu or main page as shown in Figure 15

Figure 15. Employee Home

On the main page for employee account, which is on the right, there is information displayed in 3 boxes. The first box displays value data, and the second box displays the final result data, and the third box displays profile data. On the left side, there are several menus that can be selected by the user, namely the value data menu, final result data, and profile data

The following is an explanation of each menu that can be selected by the user:

a. Value Data Management

In this menu, the user will be shown a table containing a list of value data according to the criteria provided by the appraiser which can be seen in Figure 16.

Figure 16. List of Value Data page

Users can only see the list of values, they cannot manage the data, because the only ones who can manage the value list are the assessment team

b. Final Result Data Management

The final result management page for employees can be seen in Figure 4.17 below.

Figure 17. Final Result of Calculation page

Users can also see the acquisition of the final result value which automatically the total value has been calculated based on the ECM method. There is also a ranking table where the employee who gets the most score will get the first rank and vice versa.

c. Profile Data Management

In the table in Figure 4.18 change employee data, the data that can be changed is full name, employee ID number, Username, Password, Email, employee address, and photo. The display can be seen in Figure 18.
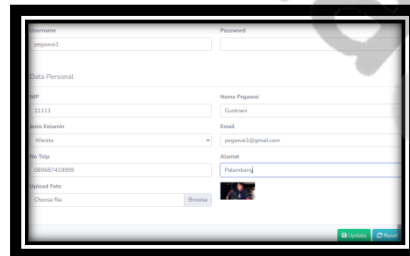

Figure 18. Change Employee Data page

Users who log in as Leaders will be shown a dashboard menu or main page as shown in Figure 19.
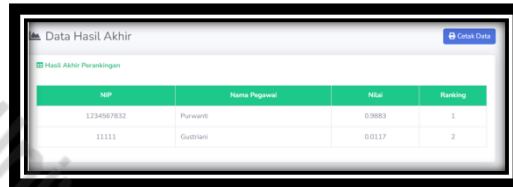
Figure 19. Lead Main page

On the main page for Leader which is on the right, there is information displayed in 3 boxes. The first box displays the dashboard, the second box displays the final result data, and the third box displays the profile data. On the left side, there are several menus that can be selected by the user, namely the dashboard menu, final result data, and profile data

The following is an explanation of each menu that can be selected by the user:

a.Final Result Data Management

In this menu, the user will be shown a table containing a list of value data according to the criteria provided by the appraiser which can be seen in Figure 20

Figure 20. Final Results Data page

Users can also see the acquisition of the final result value which automatically the total value that has been calculated based on the ECM method. There is also a ranking table where the employee who gets the most score will get the first rank and vice versa.

b.Final Result Data Diagram Management

In this menu, the user will be presented a diagram of a list of value data according to the criteria provided by the appraiser which can be seen in Figure 21.
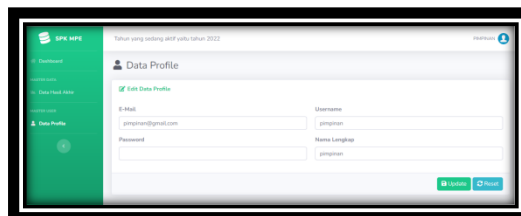

Figure 21. Final Result Data Diagram page

Users can also see the acquisition of the final result value which automatically the total value has been calculated based on the EECM method. There is also a diagram where employees can see a diagram that is green has 1st and 2nd rank position, yellow is in 3rd position, and red is in 4th and 5th position.

c.Profile Data Management

Table in Figure 18 is used to change the lead data. Data that can be changed is full name, employee ID number, Username, Password, Email, address and photo of the leader. The display can be seen in Figure 22

Figure 22. Profile Edit page

c.Period Data Management in Every Year

The table in Figure 23 shows the final result value and ECM calculation based on the period of each year.

Figure 23. Year Data page.

5. CONCLUSION

Producing the best employee performance appraisal application at Bank Mandiri KC Sudirman Palembang using the exponential comparison method (ECM), PHP programming language and MySQL database so that the resulting system can help the decision making process quickly and precisely. Assessment criteria in order to help decision making using 3 main criteria, namely assessment of work productivity, employee behavior, and employee attitudes. Able to increase the validity of data because the process of adding, deleting, and repairing are well recorded so that it is beneficial for decision making at Bank Mandiri KC Sudirman Palembang.

6. BIBLIOGRAPHY

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