

Application of a Web-Based Decision Support System (DSS) in Determining Technical Writer Employees Who Meet Requirements for Extended Working Period

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Abstract— Currently, technical writers help IT development team members review and improve the products they work on, as technical writers are often skilled at creating and maintaining technical documentation. But not far from that, companies that have reliable developers also need someone who can reliably document all the systems used when software engineer developers develop a product that is being worked on. To determine whether the employee deserves to have his working period extended, it sometimes makes it difficult for companies because to assess employees as technical writer positions the assessment standards used are still manual. Causing frequent failures to choose under the position of technical writer is appropriate for employees who have been selected and employees deserve to extend their tenure contract. To conduct research on the design of a Decision Support System (DSS) using the Analytical Hierarchy Process (AHP) method for assessing the performance of technical writer employees to help determine employees in the field of technical writers who have followed the probation period for several months whether it is appropriate to be retained.

Keywords— Criteria, Technical Writer, Decision Support System (DSS), Analytical Hierarchy Process (AHP), Employee.

I. INTRODUCTION

Technical writers are defined as writers or compilers of technical communications used in technical fields and occupations, such as computer hardware and software, engineering, chemistry, aeronautics, robotics, finance, medical, consumer electronics, biotechnology and forestry. Although "Technical Writer" is a new concept, it is a recognized occupation in Western Europe.

Therefore, the author took the initiative to conduct research on the design of a Decision Support System (DSS) using the Analytical Hierarchy Process (AHP) method for evaluating the performance of technical writer employees to help determine employees in the technical writer field who have done a probation period for several months whether it is appropriate to maintain their tenure

II. REVIEW OF LITERATURES

2.1 Decision Support System (DSS)

Decision Support System DSS or decision support system is an information system to help middle-level managers for semi-structured decision-making processes to be more effective by using analytical models and available data. In general, DSS

is a system that can provide capabilities both problem solving and communication capabilities for semi-structured problems. In the Decision Support System also adopts several elements to compile it, one of which is using the relationship with the user as a criterion, Haettenschwiler in his book suggests that the Decision Support

System is distinguished by to passive, active and cooperative or cooperation. (2018, Zeni Muhamad, Kusri).

- A passive DSS is a system that assists the decision-making process, but cannot advise a firm decision or solution.
- Active DSS can provide such suggestions or solutions firmly and clearly.
- Cooperative DSS allows for an iterative process between human and system towards achieving a consolidated solution. Decision makers can modify, supplement or refine the decision suggestions provided by the system for validation.

2.2 Analytical Hierarchy Process (AHP)

Analytical Hierarchy Process AHP is a decision support model developed by Thomas L. Saaty.

This decision support model will create a hierarchy out of a difficult multi-factor or multi-criteria situation. According to Apip, Andi, Dwi, and Gusti Tia (2018), hierarchy is the depiction of a complicated problem in a multi-level structure with the aim as the first level, then levels for components, criteria, and sub-criteria, and finally levels for options.

2.3 Supporting Software

2.3.1 Visual Studio Code



Visual Studio Code
Fig. 1. Visual Studio Code

Visual Studio Code is a source code editor developed by Microsoft for Windows, Linux and macOS. It includes support for debugging, embedded git control and GitHub, highlighting syntax, intelligent code completion, snippets, and code refactoring. It is highly customizable, allowing users to change themes, keyboard shortcuts, preferences, and install extensions

that add additional functionality (2019, Agustini a, Wahyu Joni).

2.3.2 PHP (Preprocessor Hypertext)



Fig. 2. PHP

PHP (Hypertext Preprocessor) is a scripting language that integrates with HTML and runs on the server side. This means that all syntax given will be fully executed on the server while only the results are sent to the browser in the form of HTML. To distinguish between HTML and PHP commands, the <?> or <?php...Gambar 2.PHP

2.3.3 Mysql



Fig. 3. Mysql

In this research, MySQL is the main choice in web development and web- based applications, because MySQL can process millions of data. request and thousands of transactions at once.

2.4 Technical Writer

Jobs in this position are quite widely needed by several companies that have difficulty in creating documentation for the systems or applications they develop. In addition to creating user guides, technical writers are needed to build the overall documentation of the application or system, so that its existence can add value to the application to be higher. (2022, Yusuf Muharam, Neneng Reka).

Technical writers are defined as writers or compilers of technical communications used in technical fields and occupations, such as computer hardware and software, engineering, chemistry, aeronautics, robotics, finance, medical, consumer electronics, biotechnology, and forestry.

While "Technical Writer" may be a more recent concept, it is a recognized field in Western Europe, with an established tradition. (2021, Silvia maria Chireac).

Technical writing is always done with considering the target audience or end user. The way the information is organized, curated, and selected should be appropriate with background technical background or non-technical background of the audience reading the technical documentation.

Technical writing is a general term for several types of writing:

- Writing UI & UX (for software interfaces).
- Label writing
- Guide: User Guide, Feature Documentation, API etc.
- Visuals: diagrams, infographics, videos

2.5 Qualifications Worker Who May Perform Probationary Period

Ministerial Regulation Number: KEP.100/MEN/IV/2004 precisely in Article 1 paragraph (1) explains that PKWT "Specified Time Work Agreement hereinafter referred to as PKWT is a work agreement between workers/laborers and employers to establish a working relationship within a certain time or for a certain job".

Based on this explanation, Article

59 paragraph (4) of the Manpower Law explains "The Specified Time Work Agreement can be extended and renewed which can be held for a maximum of 2 (two) years and may only be extended 1 (one) time for a maximum period of 1 (one) year." Meanwhile, the permanent employee status is a work agreement with the status to establish a working relationship that is a permanent employee.

This agreement has a lasting nature, why is this so because in determining employees who will terminate employment, there will be an initial employment agreement that has been agreed upon and obliges the legal subjects who make the agreement to fulfill these responsibilities.

Article 60 paragraph (1) stipulates that the probationary period applies to both types of work agreements, namely PKWTT can require a probationary period of at most 3 (three) months while PKWT does not require a probationary period.

III. RESEARCH METHODOLOGY

System Design, is a design process to design a system or improve an existing system so that the system becomes better and can-do work effectively and efficiently, the design process can be in the form of Input design, output design, file design that has been made.



Fig. 4. Work Flow

3.1 Design System

Software used by the author in making this system.

- Operating System : Microsoft Windows
- Programming language : PHP
- Web Service :Apache
- Database Service : MYSQL
- Database Manager : PhpMyAdmin
- Text Editor :Visual Studio Code

3.1.1 Contex Diagram (CD)

Context Diagram consists of a circle of transformation processes, data sources, and data destinations that receive or send data directly from the transformation process.

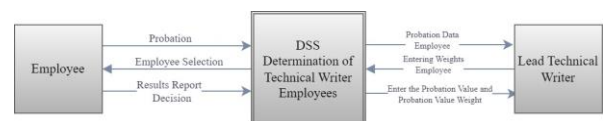


Fig. 5. Contex Diagram

3.1.2 Data flow diagram (DFD) level I Level I in the following figure:

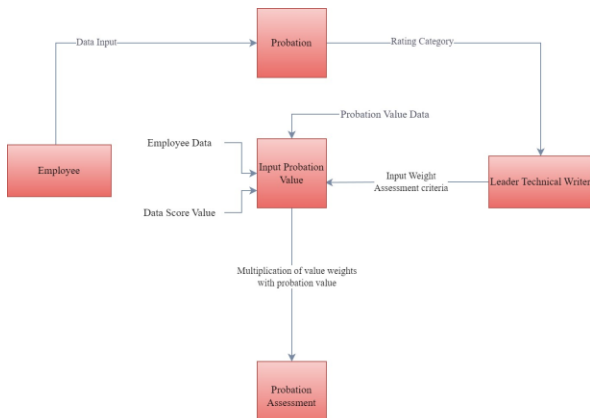


Fig. 6. DFD level I

3.1.3 Data flow diagram (DFD) level II Level II probation assessment process in the following figure:

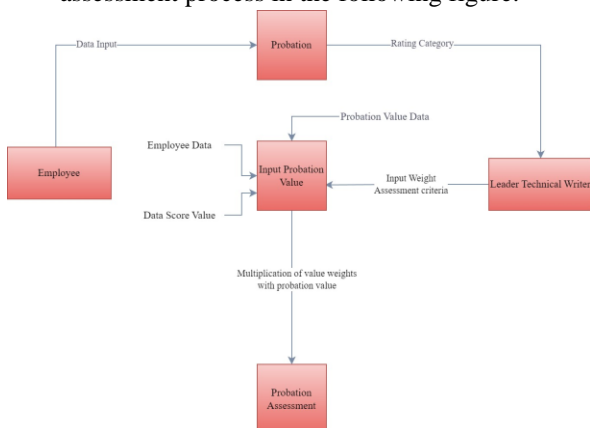


Fig. 7. DFD Level II

3.1.4 Entity relationship diagram (ERD)

The DSS for determining technical writer employees is shown in the following figure.

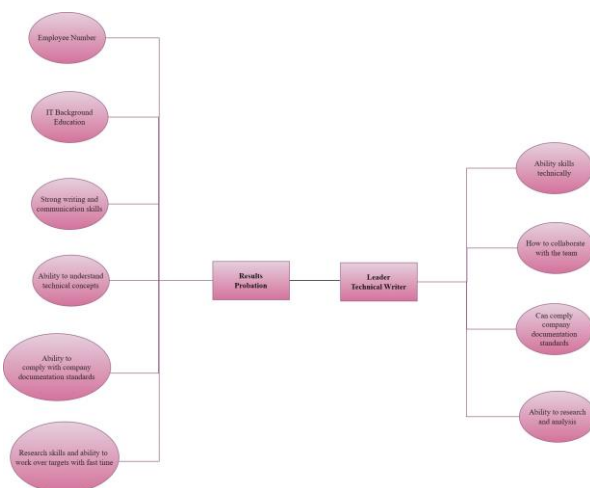


Fig. 8. Employee Determination ERD

3.2 Flowchart

Flowchart on DSS determining employee technical writer positions in the figure:

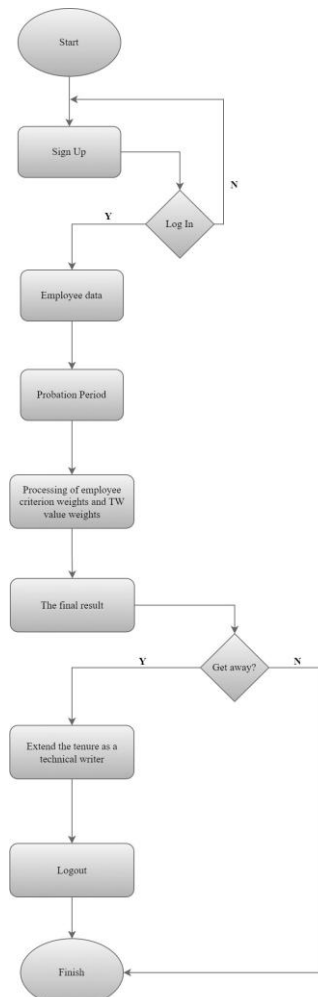


Fig. 9. Flowchart

3.3 Database Design

This database helps tables that will be used to store various information, In the system requires a table:

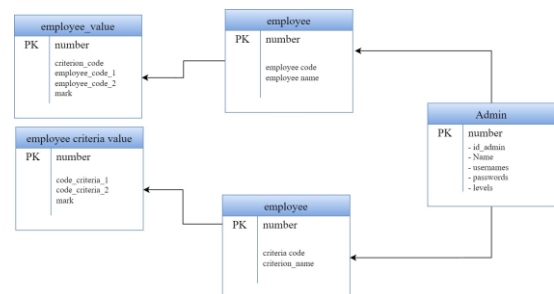


Fig. 10. Database ERD

3.4 Interface Design

This interface design is intended to help in the process of coding (making program scripts), to produce a good display, easy to use the user, etc.

- The admin level is used when the admin wants to see all employee detail data. Here is a picture of the design:

- Login page, Admins must enter their username and password first before logging in.

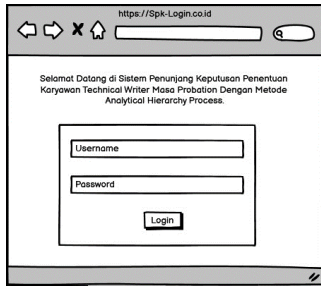


Fig. 11. Login Page

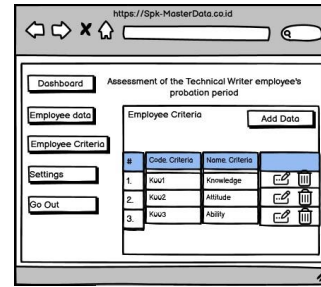


Fig. 15. Employee Criteria Page

2. Employee data page, in the employee data view displays employee name data. Admins can also add, edit, delete employee data.

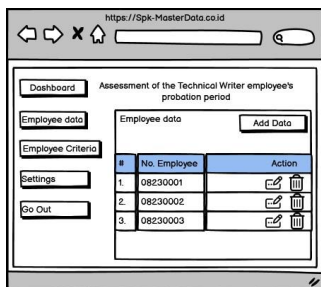


Fig. 12. Employee Data Page

- a. Add Employee Criteria Data.

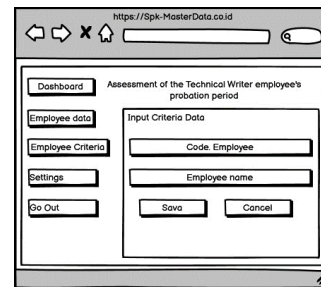


Fig. 16. Add Criteria Data

- b. Edit Employee Criteria.

- a. Add Employee Data

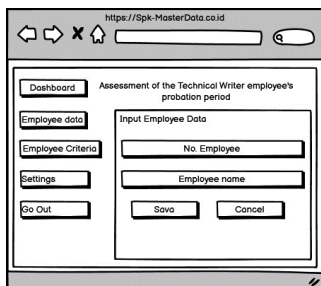


Fig. 13. Add Employee Data

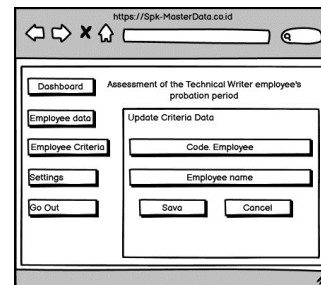


Fig. 17. Edit Criteria Data

- b. Edit Employee Data

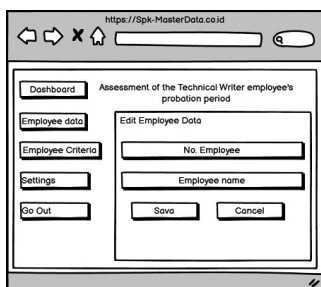


Fig. 14. Edit Data

4. Setting page, Change password is used if the admin wants to change the old password

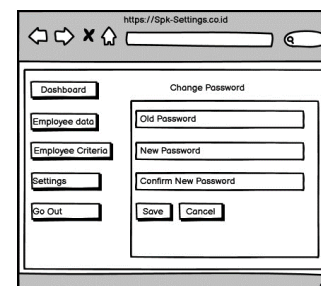


Fig. 18. Setting

3. Employee Criteria page, users can enter data according to employee criteria. And can edit, edit and delete.

- User Level

This user level is used when you want to determine the comparison value of employee criteria.

1. In the employee criteria assessment view, it displays the comparison value of employee criteria that follow the probation period.

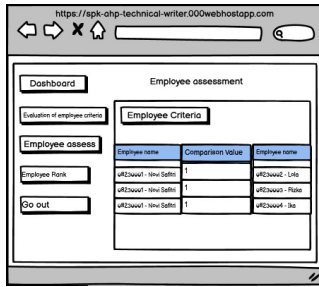


Fig. 19. Criteria Assessment Page

- Employee assessment page, this page is used to view the comparison value of employee criteria. Users enter values for employee criteria.

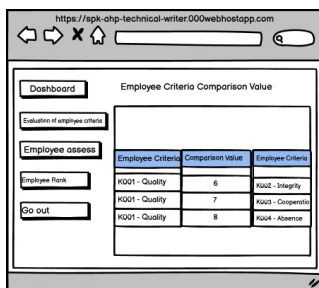


Fig. 20. Employee Assessment Page

- Employee Ranking Page, used to view the selection results of employees who have followed the probation period.

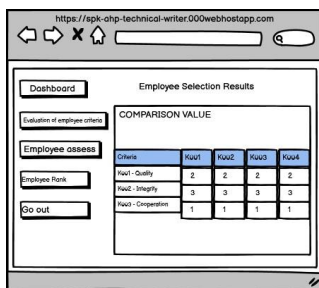


Fig. 21. Ranking Page

- Logout page, logout is used when the user wants to exit the website display.

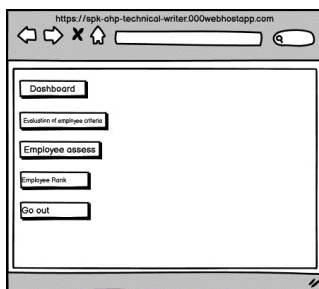


Fig. 22. Logout

IV. Implementation And Results

Technical Writer Employee Determination Structure and Design. This web-based there are several different accesses with the aim of distinguishing employee data lists, and employee criteria that have been determined from the Company.

4.1. Admin Level

1. Login Form

Enter the username and password that has been determined if you have logged in the admin can access the desired menu in the following image:

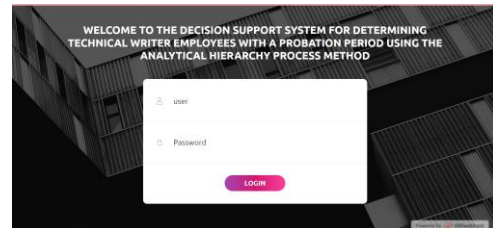


Fig. 23. Login Page

2. Dashboard Menu

This main menu is the centre of the program application.

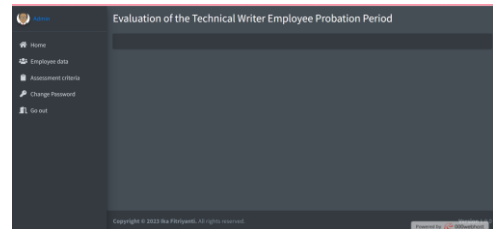


Fig. 24. Home Page / Dashboard

3. Employee Data

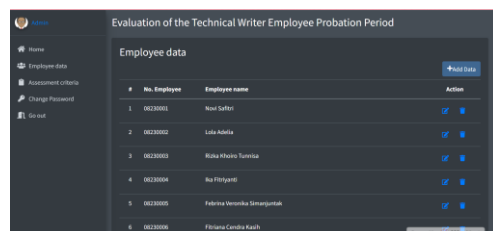


Fig. 25. Employee Data

The employee data page is used to store employee data that follows the probation period.

4. Assessment Criteria

The assessment criteria page is used to store assessment criteria. Here is the picture



Fig. 26. Assessment Criteria Page

5. Settings

The settings page is used to change the password.

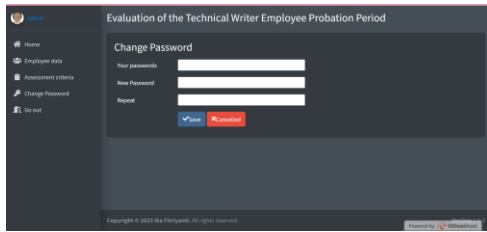


Fig. 27. Settings

6. Exit

Exit is used if the user wants to exit the web page.



Fig. 28. Exit

4.2 Leader Level

1. Main Menu / Dashboard

This main menu is the centre of the program application

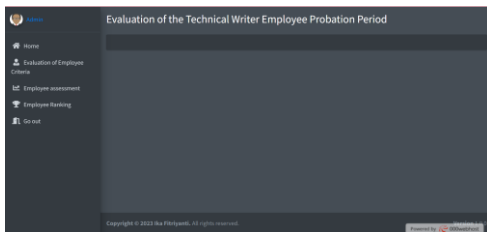


Fig. 29. Home Page/ Dashboard

2. Employee Criteria Assessment



Fig. 30. Employee Criteria Assessment

And on the employee criteria assessment menu there is also a value reference where there is a normal weighting and an inverse weighting value.

3. Employee Assessment



Fig. 31. Assessment Criteria Page

The employee assessment page is used by technical writer users to give grades to employees who have done the probation period.

4. Employee Ranking

To see the ranking of the criteria comparison values.

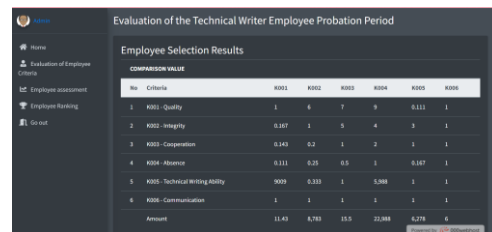


Fig. 32. Employee Ranking

5. Exit

Exit menu is used if the user wants to exit the web page, by clicking the exit menu.

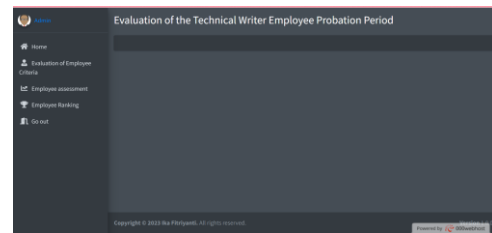


Fig. 33. Exit

4.3 Workflow of decision support system with AHP method

For access consists of two levels, namely the admin level and the leader, the admin level is used to view employee data and for the leader level is used when the leader or leader of the technical writer gives an assessment according to the criteria.

Every employee who follows the probation period with a 3-month working period where the employee follows the probation period well.

1. Input on the employee data that has been obtained.
2. Input criteria data on employees which will later be used in assessment and comparison.
3. For selection with AHP method
If the final score > 7 then the employee will be extended his working period, to continue the next contract. But if the score < 7 then the employee who has followed the probation period will be declared a failure. And the working period will be terminated.

IV. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

After doing this research, the conclusions obtained from the author are a decision support systems application program has been created to determine technical writer employees who meet the requirements for extension of service period. Decision Support Systems applications are equipped with general technical writer contains information about the technical writer field. To data security, user names and passwords for admin and leader levels are differentiated. So that the admin cannot know the value data that will be inputted by the leader, only the leader knows the value that has been given.

5.2 Advice

Decision Support Systems implementation of a decision support system in determining technical writer employees on the dashboard page cannot be equipped with a graph of the data that has been entered. So that you cannot automatically see the lowest data and the highest data

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