Jurnal Mandiri IT ISSN 2301-8984 (Print)
Vol. 12 No. 3, January (2024), pp. 192-199

Application of the saw method for employee selection system in the PT Pinus Merah Abadi

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A R T I C L E I N F O

Article history:

Received Jan 9, 2024
Revised Jan 27, 2024
Accepted Jan 29, 2024

Keywords:

Employees;
Selection;
Simple Additive Weighting.

ABSTRACT

PT Pinus Merah Abadi is a company engaged in the sales and distribution business with a distribution network spread throughout Indonesia, both through traditional and modern channels. Currently PT Pinus Merah Abadi carries out the employee selection process on average 2 (two) times a year with a total of 50-60 job applicants. The assessment process when selecting employees uses multiple criteria, namely assessment during psychological tests, competency tests and interviews. The employee selection process still has several problems, including subjectivity in the assessment process and it takes a long time because it is done manually, resulting in the decision making process being slow. Based on these problems, research is needed as a system innovation in making decisions regarding the selection or selection of new employees at PT Pinus Merah Abadi applies a simple additive weighting method based on six criteria, namely: test, education, age, experience, readiness and expertise. As a result, this system can help make it easier for HRD to select employees based on the highest ranking results.

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1. INTRODUCTION

Every company needs employees as labor services who carry out every activity within the company organization (Rifani et al, 2022). Employees are individuals who provide their expertise to companies or organizations that require employee services in an effort to achieve human resource needs as planning and efforts to complete workforce needs (Rozi et al, 2019). Employees in a company can be divided into two types of groups, namely permanent employees and non-permanent employees (Agusli et al, 2020). Employees in a company are a very important asset, therefore employee selection must be more selective (Sofyan & Irvan, 2018) so that the employees selected are competent to occupy certain positions or positions (Pibiani, 2020).

Employee selection is a human resource management planning decision regarding the number of employees needed, when they are needed, and what criteria are needed in an organization (Pratama & Isma, 2020). The employee recruitment process is still not carried out professionally, but is carried out using approaches. This happens because there is no systematic standard method for assessing the suitability of prospective employees (Ismail & Syahrul, 2020). Often companies use subjective methods so that vacant positions in the company can be filled immediately, ignoring the impact in the future caused by errors in assessing the competency of

recruited employees (Pibriani, 2020), then the assessment process takes a long time because it is done manually, resulting in the decision making process being slow (Fadilah et al, 2021).

Accuracy in selecting and placing individuals has its own competitiveness for a company or organization in carrying out its activities. Apart from that, one of the factors related to recruitment is a positive image of the company (Audina et al, 2020), therefore a system innovation is needed that can facilitate and help companies in carrying out the selection process. Information systems are widely used to assist a company leader in making decisions (Gunawan, 2020) especially in the process of making decisions on hiring or recruiting employees. With advances in technology and developments in science, it can help make it easier to select and select prospective employees (Alamsyah, 2020).

PT Pinus Merah Abadi is a company engaged in the sales and distribution business with a distribution network spread throughout Indonesia, both through traditional and modern channels. PT Pinus Merah Abadi has a number of depots serving hundreds of thousands of customer outlets throughout Indonesia. Pinus Merah Abadi continues to transform into a rapidly growing distribution company, improving human resources, distribution systems, inventory management and corporate governance. Currently PT Pinus Merah Abadi carries out the employee selection process on average 2 (two) times a year with a total of 50-60 job applicants. The assessment process when selecting employees uses multi criteria, namely assessment during psychological tests, competency tests and interviews. The employee selection process still has several problems, including subjectivity in the assessment process. Based on these problems, research is needed as a system innovation in decision making for selecting new employees at PT Pinus Merah Abadi applies a simple additive weighting method based on six criteria, namely: test, education, age, experience, readiness and expertise.

2. RESEARCH METHOD

The software development method used is the prototyping method. Prototyping is a system development technique that uses a prototype to describe the system, so that the user or owner has an idea of the system that will be implemented (Indriyani, 2020). Prototyping has 4 stages, namely as follows (Syukron, 2020).

Requirements Collection

Gathering requirements for the system being developed needs to be done. Need analysis regarding ideas and ideas aims to find out what sales components are currently running. System requirements analysis defines system requirements such as system input, system output, system running processes and the database used.

Design Process

In this stage, there is a database schema and relationship design developed from a domain class diagram, where each class is identified separately. Part of system design is in the form of interface design concepts, processes and data to produce system specifications that suit needs. The design process uses HTML and PHP programming languages equipped with the MVC method in CodeIgniter

Build a prototype

The development of a system design prototype is realized in the desired prototype form.

Evaluation and improvement

Evaluation is carried out on prototypes that have been previously created based on test results and input from users. to carry out repairs as desired. Testing will be carried out using black box testing.

3. RESULTS AND DISCUSSIONS

Requirements Collection

At this stage, an analysis of system requirements is carried out regarding employee selection consisting of back end or administrator pages. This stage explains what features are needed in the employee selection system that will be designed later, later these features will be outlined in a diagram as a more detailed explanation.

Administrator Page:

A1. Administrators can log in
A2. Administrators can manage values
A3. Administrators can manage criteria
A4. Administrators can manage alternatives
A5. Administrators can manage rankings
A6. Administrators can view reports

Design Process

The design process begins with creating a diagram in the form of a use case as an illustration of the features provided employee selection system in PT Pinus Merah Abadi. The Usecase Diagram realizes the system requirements analysis plan, of course the design process is equipped with a system database design for safer data storage. More details can be seen in pictures 1 and 2 below

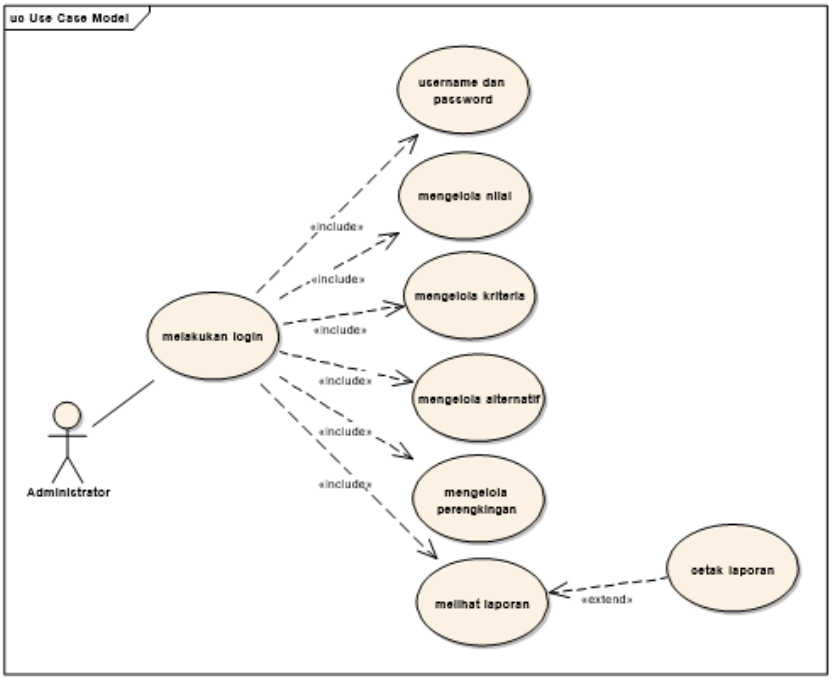

Figure 1. Administrator Usecase Diagram

The database design description is realized in the form of an entity relationship diagram.

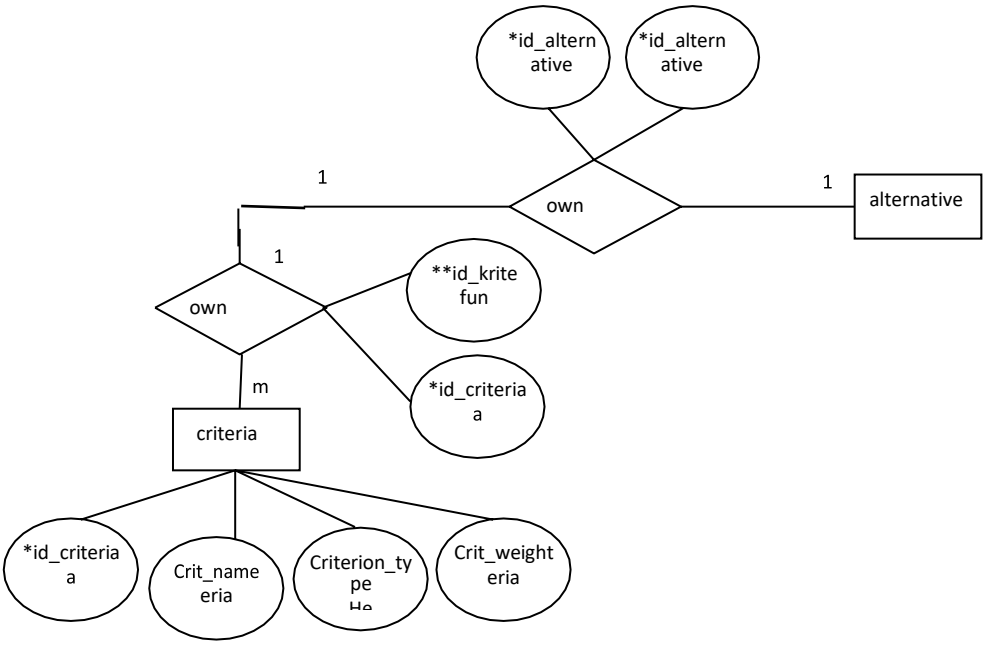

Figure 2. Entity Relationship Diagram

Building Prototypes

Making a prototype design for employee selection system in PT Pinus Merah Abadi is carried out using the PHP programming language using the CodeIgniter framework.

Figure 3 is a login page interface design for administrators and users to access the website.The user or administrator must enter a username and password to be able to access the dashboard page and others

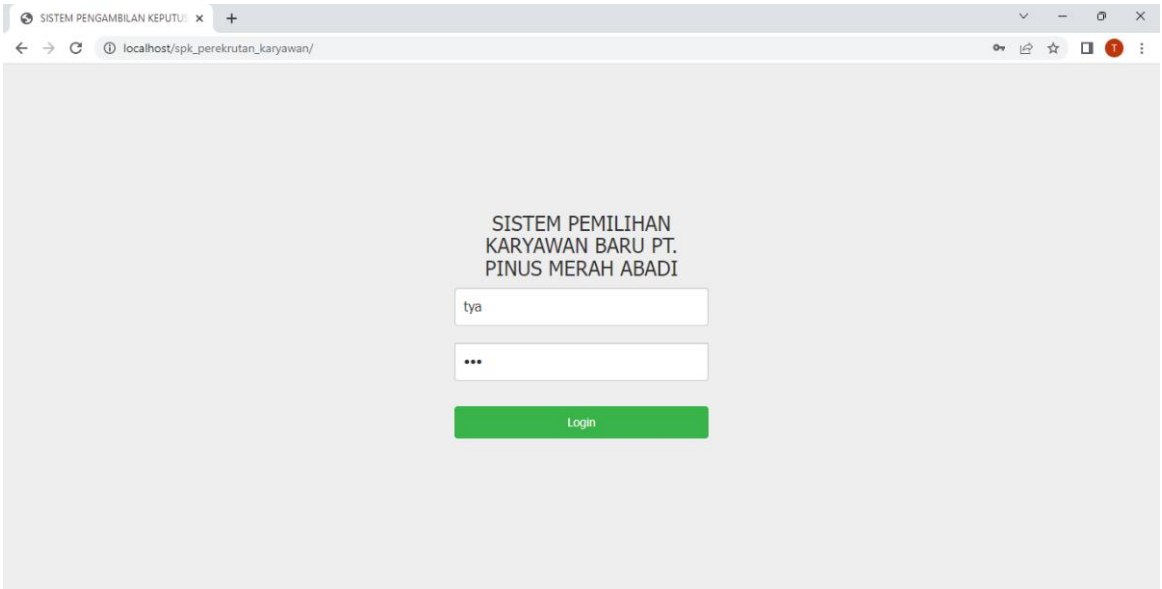

Figure 3. Administrator and User Login Prototype Design

Figure 4 is a display for the value of each attribute which will later be included in the ranking calculation

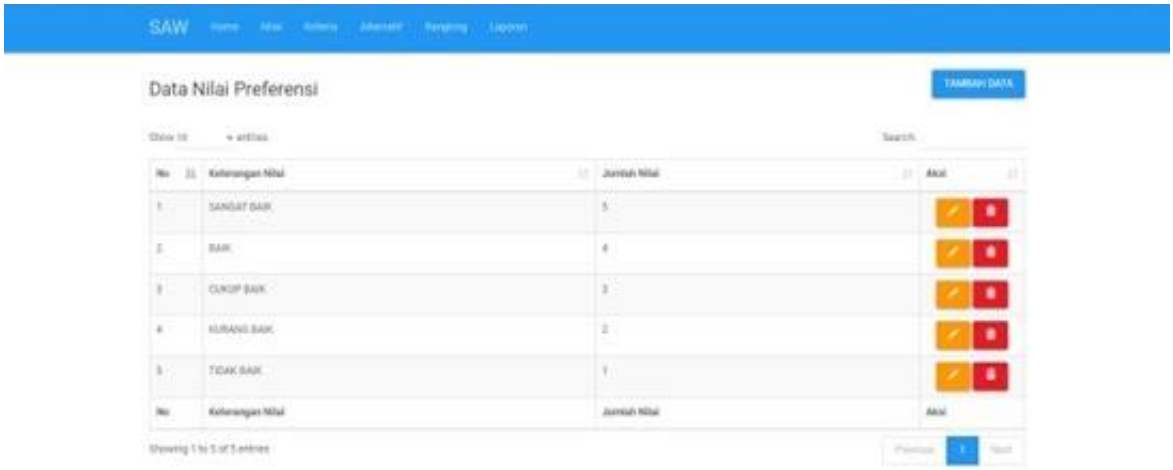

Figure 4. Value Data Prototype Design

Figure 5 is alternative data or employee data selected for assessment using the website

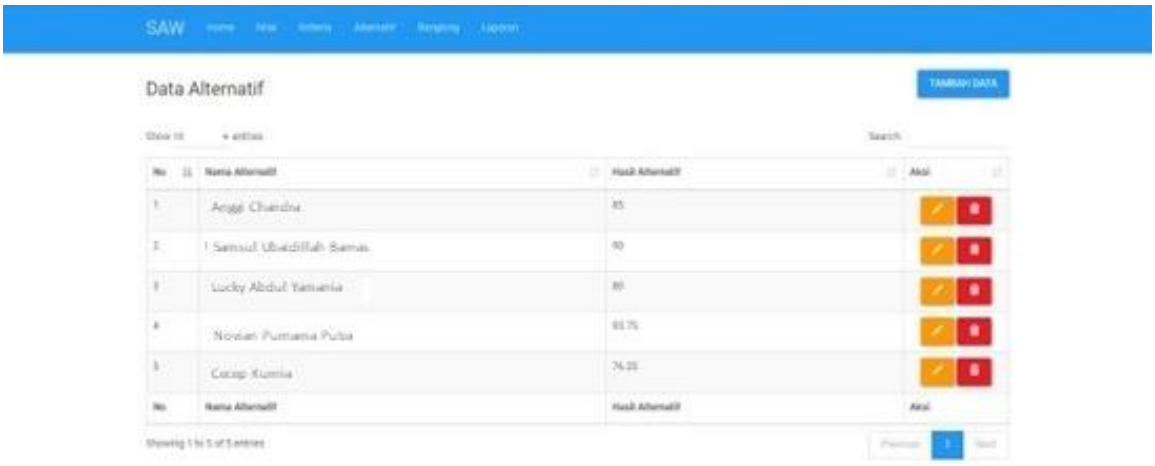

Figure 5. Alternative Data Prototype Design

Figure 6 is a display for adding ranking data for outstanding employees

Figure 6. Prototype Design for Adding Ranking Data

Figure 7 results from the ranking of outstanding employees with the number of alternatives input being 5 employees

Figure 7. Ranking Data Prototype Design

Evaluation and Improvement

The final stage of designing employee selection system of PT Pinus Merah Abadi is in the form of testing using black box testing, this testing is carried out to see the suitability of the features that have been built.

Table 1. Administrator Page Test Table

No	Testing Scenarios	*Test Cases*	Expected results	Test result	Conclusion
1	*Username*and the password is not entered or is incorrect then click the login button	*Username:*(blank or false) Password: (blank or false)	The system will deny user access and display "LOGIN FAILED!, *username*or your password is not correct"	According to expectations	*Valid*
2	Typing *username* and password with the correct data then click the	*Username:*admin (True) Password: admin (True)	The system receives login access and displays the dashboard page	According to expectations	*Valid*

	button login.				
3	Manage value data	Click the value menu, manage value data (add or delete)	The system displays value data, the system updates value data	According to expectations	*Valid*
4	Manage criteria data	Click the criteria menu, manage criteria data (add, edit or delete)	The system displays criteria data, the system updates criteria data	According to expectations	*Valid*
5	Manage alternative data	Click the alternative menu, manage alternative data	The system displays alternative data, system	As expected	*Valid*

4. CONCLUSION

Website-based employee selection decision-making system using the simple additive weighting method at PT. Pinus Merah Abadi is more effective, because it makes it easier for HRD to select quality employees. Employee selection is based on four criteria, namely: test, age, education, experience, readiness and expertise to provide more precise and accurate information on prospective employees. The ranking feature in the website-based employee selection system provides more detailed information regarding the alternatives for new employees to be selected. In my future research and development endeavors, I aim to enhance the website-based employee selection decision-making system at PT. Pinus Merah Abadi by incorporating advanced data analytics and machine learning techniques. The objective is to further optimize the evaluation process and provide more nuanced insights into prospective employees' suitability. By integrating predictive modeling, the system can analyze historical data to identify patterns of success among existing employees and refine the weighting of criteria accordingly. Additionally, the inclusion of natural language processing (NLP) algorithms can facilitate a more comprehensive analysis of candidates' educational backgrounds and work experiences, extracting valuable information that may not be readily apparent through traditional methods. This enhanced system will not only streamline HRD's decision-making process but also contribute to the organization's ability to identify and select high-quality candidates that align with the company's long-term goals and values.

REFERENCES

Agusli, Rahmat, M. Iqbal Dzulhaq & Fery Candra Irawan. (2020). Academic Journal of Computer Science Research Vol. 2, no. July 2, 2020. E-ISSN: 2721-3161.

Alamsyah, Nur. (2020). Web-Based Employee Selection Information System Using the SAW Algorithm. Journal of Nuansa Informatics Vol. 14, no. 2 July 2020. ISSN: 1858-3911.

Audina, Yuni, Yeffriansjah Salim & Feiliana Tan. (2020). Employee Selection Information System at PT. Hendrawan Audi Mandiri Using the SAW Method. Journal of Information Technology Vol. 15, no. March 1, 2020. ISSN: 1907-2430.

Fadilah, Nabilah Yadzhan, Safitri Juanita & Pamela Larasati. Employee Selection Decision Support System with Multi Criteria Using AHP and SAW Methods. Journal of Information Systems and Technology Vol. 9, no. 2 April 2021. ISSN: 2460-3562.

Gunawan, Catur E. (2020). Application of the TOPSIS Method for Appointing Contract Employees to Permanent Employees of PT. Hanuraba Sawit Kencana. Journal of Informatics and Computers Vol. 3, no. 1 April 2020. ISSN: 2614-8897.

Indriyani, Novita. Analysis and Implementation of a Web-Based Medicine Sales Information System at the Bekasi People's Pharmacy. Journal of Computer and Informatics Paradigms Vol. 21, no. 2.

Ismail & Syahrul Hariansyah. (2020). Application of the TOPSIS Method in the Non-PN Government Employee Recruitment System at the Soppeng Regency Defense Office. Scientific Journal of Information Systems and Informatics Engineering Vol. 3, no. 1 April 2020. ISSN: 2620-5327.

Pibriani, Desi. (2020). Use of the Simple Additive Weighting Method in Making Employee Selection Decisions at PT. A B C. Techno Journal Vol. 19, no. February 1, 2020.

Pratama, Aditya Rizky & Ismarmiaty. (2020). PT Employee Recruitment Decision Support System. Cakra Mobilindo uses the SAW method. Matric Journal: Management, Information Engineering and Computer Engineering Vol. 20, no. 1 November 2020. ISSN: 2476-9843.

Rifani, Yurizal Rizqon, Yufis Azhar & Wildan Suharso. (2022). PT Employee Selection Decision Support System. Sims Jaya KALTIM Using the SAW Method. Repositor Journal Vol. 4, no. 3 August 2022. ISSN: 2714-7975.

Rozi, Muhamad Fahrur, Edy Santoso & Muhammad tanzil Furqon. (2019). Decision Support System for Hiring New Employees Using the AHP and TOPSIS Methods. Journal of Information Technology and Computer Science Development Vol. 3, no. 9 September 2019. E-ISSN: 2548-964X

Sofyan, Prabandari & Irvan Irawan. (2018). Decision Support System for Accepting New Employees at PT. Soraya Interindo. Global Sysphotech Journal Vol. 8, no. 1. ISSN: 2088-1762.

Syukron, Ahmad (2020). Design of a Website-Based Village Population Administration Information System in Winong Village. Journal of Bianglala Informatics, Vol. 7, no. 1. ISSN: 2338-9761.

Siringoringo, F. (2023). Sistem Pendukung Keputusan Pemilihan Penerima Bantuan Sosial Menggunakan Metode Electre & Roc. *Management of Information System Journal*, *1*(3), 85–95.

Sugiarto, B. (2021). *Di Desa Dayeuh Manggung Kabupaten Garut*. *02*(01), 29–33.

Syahril, M., & Suharjo, I. (2021). Sistem Pendukung Keputusan Pemilihan Laptop Untuk Kebutuhan Kuliah Metode Simple Additive Weighting (SAW). *Jurnal Information System & Artificial Intelligence*.

Taufikurrahman, I., & Gunawansyah, G. (2022). Sistem Pendukung Keputusan Seleksi Ketua Operasional Dkm Ulil Albab Universitas Sangga Buana Dengan Menggunakan Metode Simple Additive Weighting (Saw) Dan Weighted Product (Wp). *Infotronik : Jurnal Teknologi Informasi Dan Elektronika*, *7*(2), 70. https://doi.org/10.32897/infotronik.2022.7.2.1707

Triawan, M. (2021). Penerapan Metode Forward Chaining dalam Sistem Pakar Diagnosa Komputer. *AMIK Lembah Dempo*, *3*(98), 38.

Wahyuningrum, T., & Januarita, D. (2014). *Perancangan WEB e-Commerce dengan Metode Rapid Application Development (RAD) untuk Produk Unggulan Desa*. *2014*(November), 81–88.

Zidifaldi, D. (2020). Sistem Pendukung Keputusan Dalam Memilih Laptop Gaming Dan Content Creator Sesuai Kebutuhan Dengan Menggunakan Metode Weighted Product. *Jurnal Digital Teknologi Informasi*, *3*(2), 47. https://doi.org/10.32502/digital.v3i2.2636