JURNAL IPTEKS TERAPAN
Research of Applied Science and Education V15.i2 (221-228)

ISSN : 1979-9292

E-ISSN : 2460-5611

EMPLOYEE PERFORMANCE ANALYSIS USING ROUGHT SET METHOD

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Abstract

Employees are one of the values of human resources in the Company that must be maintained for the development of the company. Employee performance in the Company has an important role in achieving the goals of the company. Employees must be experts in their fields and employees must also be able to work optimally. A good person's performance can be influenced by Speed in Completing Work, Quality of Work, Teamwork and Service. This research was conducted using the Rought set method which aims to analyze the performance of employees at CV. Vando Jaya Group. The research method used is the rought set with a sample of 10 employees selected based on performance. The data collection techniques used were interviews, observation, questionnaires. Based on the research results show thatBased on the number of 10 samples of CV.Vando Jaya Group employees who have been tested using the Rought set application, it can be seen that the results are that the performance appraisal of 10 employees of CV. Vando Jaya Group shows the results of 2 employees are good and there are 8 employees who have excellent performance. with the number of appearances of the employee name attribute 10 (ten) times, the KMP value attribute 4 (four) times, the KP value attribute 5 times, the KT value attribute 9 times and P did not appear in the test results. So it can be seen that the most influential attribute in decision achievement is the KT attribute (TEAM Cooperation) because it has the highest number of appearances.

Keyword: Employee Performance, Rought Set

INTRODUCTION

Along with increasingly sharp competition due to rapid technological changes and the drastic environment in every aspect of human life, every company needs employees who are competent to provide excellent and valuable service. In other words, the company is not only able to provide satisfactory service (customer satisfaction) but also oriented to value (customer value). So that the company does not merely pursue the achievement of high work productivity but rather on performance in the process of achieving it. The performance of each activity and individual is the key to achieving productivity. Because performance is a result where the people and other resources in the company bring together the final result based on the quality level and standards that have been set. Consequently, companies need employees who have unique skills and abilities in accordance with the company's vision and mission(Hamdiyah et al., 2016)

In general, human resource management is intended to improve the

Submitted : 11 Mei 2021 – Accepted : 29 Juni 2021 – Published : 30 Juni 2021

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performance of wholesalers, so the formation of capable human resources is a must. Therefore, the management and utilization of human resources must be a concern to be developed optimally. Performance is a work result that can be achieved by a person or group of people in an organization, in accordance with their respective authorities and responsibilities in order to achieve organizational goals. External factors are factors that affect employee performance that come from the environment, leadership, actions of colleagues, types of training and supervision, the wage system and the social environment. In improving performance, an organization has a desire to get compensation in accordance with their expectations. If these expectations are met, the employee will always be enthusiastic at work. The personnel department designs and administers employee compensation. If the compensation is given accordingly, employees are more satisfied and motivated to achieve organizational goals. A wholesale shop, of course, has a lot of transactions every day. Every sale one by one must always be recorded so that the shop owner can find out the income earned within a certain period of time. Before counting machines such as computers existed, recording was done using the manual method, namely with paper and making tables for easy processing. Seeing the importance of fast and precise operational data processing for customer satisfaction, computer information facilities can be an alternative solution to data processing problems, minimize errors and speed up data processing. With computer storage media, the data will be more secure, and if you want to manipulate data, it will be easier and faster.

Data mining is a term used to describe the discovery of knowledge in databases. Data mining is a process that uses statistical, mathematical, artificial intelligence, and machine learning techniques to extract and identify useful information and related knowledge from various large databases. (Turban, et al. 2005) The general definition of data mining itself is the process of searching for hidden patterns in the form of previously unknown knowledge from a set of data where the data can be in a database, data werehouse, or other information storage media. Important things related to data mining are: 1. Data mining is an automatic process of existing data. 2. The data to be processed is in the form of very large data. 3. The purpose of data mining is to find relationships or patterns that may provide useful indications.(Kusrini, 2009)

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In this study, the data used is CV VANDO JAYA GROUP, which has a total number of 25 employees located in Payakumbuah with the aim of analyzing employee performance. Every company needs to assess the performance of its employees. The assessment should provide an accurate picture of the employee's work performance. For this purpose assessment systems must be job relateted, practical, have standards and use a variety of reliable measures.

No.	Employee name
1	Gilang rendika
2	Zulkifli
3	Fadjri
4	Andri Anof
5	Adri
6	Sandra Wahyuni
7	Delvani Anggelina
8	Annisa Nurfahana
9	Rahmi Mardhotillah
10	Rido Rinata

Table 1. Sample of Employees CV.Vando Jaya Gorup

METHOD

Data mining is the process of finding interesting knowledge, patterns, and information from large data sets through descriptive, understanding and predictive processes using a model or algorithm(Zaki et al., 2014). Data mining is a process that uses statistical techniques, mathematics, artificial intelligence, and machine learning to extract and identify useful information and related knowledge from various large databases. KDD is the whole process of finding useful knowledge from a data set while data mining is one of the stages in KDD and focuses on efforts to find useful knowledge using algorithms(Sheldon et al., 2005)

In a Rough Set, a data set is represented as a table, where rows in the table represent objects and columns represent the attributes of these objects.(Listiana et al., 2011). The stages in using the Rough Set algorithm are as follows:

1. *Data Selection* (Selection of data to be used)
2. The formation of a Decision System that contains attributes of conditions and attributes of decisions.
3. Equivalence Class formation, namely by eliminating repetitive data.
4. The formation of the Discernibility Matrix Modulo D, which is a matrix that contains a comparison between different data attributes of conditions and attributes of decisions.
5. Generate reduct using the Rough Set method
6. Generating rules (knowledge).

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RESULT

The data used is Karaywan CV. Vando Jaya Group along with the attributes: Speed in Completing Work**,** Quality of Work**,** **Teamwork** and Service. With the criteria for assessing employee performance analysis as follows:

- Speed in Completing Work (KMP) 40% max
- Quality of Work (KP) Max. 30%
- Team Cooperation (KT)**Max. 20%**
- Service (P)**Max. 10%**
- **Speed in Meget the job done**

1. Can finish the job faster than the specified time

2. My priority is to achieve high work productivity

3. Even though all work has been completed but it's not yet time to go home, I often use the available time to discuss with my boss or coworkers about the work that I have completed

- **Quality of Work**

1. My superiors rated the quality of my work as good

2. The quality of my work is satisfactory because I have an understanding of the work assigned

- **Teamwork**

1. Able to complete work in a team

2. Complete the work according to the direction of the lead

- **Service**

1. provide services that meet customer satisfaction

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6	Sandra Wahyuni
7	Delvani Anggelina
8	Annisa Nurfahana
9	Rahmi Mardhotillah
10	Rido Rinata

Table 2. Sample of Employees CV.Vando Jaya Gorup

Employee name	KMP value	KP value	KT value	P value	Total Value	Decision
Gilang rendika	32	24	19	10	85	Good
Zulkifli	40	28	20	9	97	Very good
Fadjri	38	30	20	10	98	Very good
Andri Anof	34	20	18	10	82	Good
Adri	40	28	20	9	97	Very good
Sandra Wahyuni	40	28	20	10	98	Very good
Delvani Anggelina	40	30	18	9	97	Very good

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Annisa Nurfahana	40	29	20	10	99	Very good
Rahmi Mardhotillah	40	28	20	8	96	Very good
Rido Rinata	38	30	20	10	98	Very good

Table 3. total result of the assessment

The total result of the assessment is then made into a form

category with the following conditions:

<60 is said to be less = 1

61 ≤ X ≤ 75 is categorized as Enough = 2

76 ≤ X ≤ 90 is categorized as Good = 3

91 ≤ X ≤ 100 is categorized as Very Good = 4

For attribute A, it is grouped into 4 groups, namely:

0≤X≤15 = 1

16≤X≤30 = 2

31≤X≤35 = 3

36≤X≤40 = 4

For attribute B, it is grouped into 4 groups, namely:

0≤X≤14 = 1

15≤X≤19 = 2

20≤X≤25 = 3

26≤X≤30 = 4

For attribute C, it is grouped into 4 groups, namely:

0≤X≤4 = 1

5≤X≤9 = 2

10≤X≤14 = 3

15≤X≤20 = 4

For attribute D is grouped into 4 groups, namely:

0≤X≤2 = 1

3≤X≤5 = 2

6≤X≤8 = 3

9≤X≤10 = 4

Employee name	**KMP value**	**Score KP**	**Score KT**	**K value**	**Decision**
Gilang rendika	3	3	4	3	3
Zulkifli	4	4	4	4	4
Fadjri	4	4	4	3	4
Andri Anof	3	3	4	4	3
Adri	4	4	4	4	4
Sandra Wahyuni	4	4	4	4	4
Delvani	4	4	4	4	4

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Anggelina					
Annisa Nurfahana	4	4	4	4	4
Rahmi Mardhotillah	4	4	4	4	4
Rido Rinata	4	4	4	4	4

Table 4. Equivalence Class formation

The formation of the Equivalence Class is done by eliminating data that has similarities, so that in the Equivalence Class the data becomes 1 (one) record. The results of the formation of the Equivalence Class can be seen in Table 5.

	A	B	C	D	K
EC1	3	3	4	4	3
EC2	4	4	4	4	4
EC3	4	4	4	4	4
EC4	3	3	4	4	3
EC5	4	4	4	4	4
EC6	4	4	4	4	4
EC7	4	4	4	4	4
EC8	4	4	4	4	4
EC9	4	4	4	4	4
EC10	4	4	4	4	4

Table 5. Equivalence Class CV. Vando Jaya Group

Information:

Attribute A (**Speed in Completing Work**), attribute B (**Quality of Work**), Attribute C (**Teamwork**), Attribute D (Service) and K (Decision)

Figure 1. Generating Decision Systems using the Rough set Method

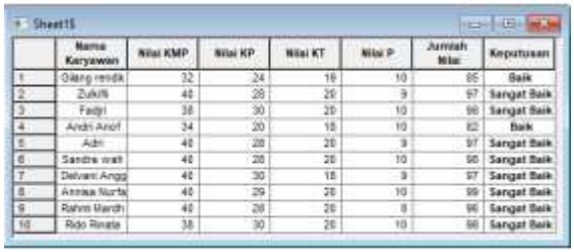


Figure 2. Reduct

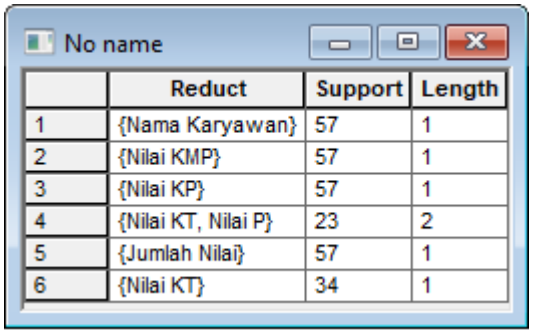
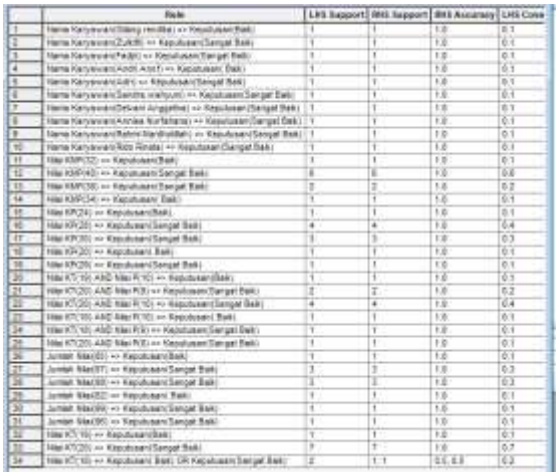


Figure 3. General Rule



Based on the number of 10 samples of CV.Vando Jaya Group employees who

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have been tested using the Rought set application, it can be seen that the results are that the performance appraisal of 10 employees of CV. Vando Jaya Group shows the results of 2 employees are good and there are 8 employees who have excellent performance. with the number of appearances of the employee name attribute 10 (ten) times, the KMP value attribute 4 (four) times, the KP value attribute 5 times, the KT value attribute 9 times and P did not appear in the test results. So it can be seen that the most influential attribute in decision achievement is the KT attribute (TEAM Cooperation) because it has the highest number of appearances.

CONCLUSION

Based on the results of the study conducted by the researcher, the following conclusions can be obtained.The Rough Set Algorithm, which is the simplest data mining method, can be used in employee performance analysis. Attributes: . Speed in Completing Work **(KMP),** Quality of Work (KP) **,** Team Cooperation (KT) and Service (P) can be used in the employee performance analysis process. The implementation of the rough set method is able to answer problems in analyzing employee performance with the results of 2 employees with good performance and 8 employees with very good performance.

BIBLIOGRAPHY

[1] Hamdiyah, H., Haryono, AT, & Fathoni, A. (2016). Improving Employee Performance Through Compensation, Work Environment And Leadership Style At The Banyumanik Supermarkets Semarang. Journal of Management, 2 (2).
[2] Kusrini, ETL (2009). Data mining algorithms. Yogyakarta: Andi Offset.
[3] Listiana, N., Anggraeni, W., & Muhlason, A. (2011). Implementation of the rough set algorithm for early detection and treatment of cow disease. ITS, Surabaya.
[4] Sheldon, KM, Kasser, T., Houser - Marko, L., Jones, T., & Turban, D. (2005). Doing one's duty: chronological age, felt autonomy, and subjective well-being. European Journal of Personality, 19 (2), 97–115.
[5] Zaki, MJ, Meira Jr, W., & Meira, W. (2014). Data mining and analysis: fundamental concepts and algorithms. Cambridge University Press.
[6] Buchegger, S., & Le Boudec, J. Y. (2002, June). Performance analysis of the CONFIDANT protocol. In Proceedings of the 3rd ACM international symposium on Mobile ad hoc networking & computing (pp. 226-236).

Submitted : 11 Mei 2021 – Accepted : 29 Juni 2021 – Published : 30 Juni 2021

ISSN : 1979-9292
E-ISSN : 2460-5611

[7] Johansson, P., Larsson, T., Hedman, N., Mielczarek, B., & Degermark, M. (1999, August). Scenario-based performance analysis of routing protocols for mobile ad-hoc networks. In *Proceedings of the 5th annual ACM/IEEE international conference on Mobile computing and networking* (pp. 195-206).

[8] Sembiring, M. A., & Azhar, Z. (2017). Factors Analysis And Profit Achievement For Trading Company By Using Rough Set Method. *International Journal of Artificial Intelligence Research*, *1*(1), 16-20.

[9] Pawlak, Z. (1997). Rough set approach to knowledge-based decision support. *European journal of operational research*, *99*(1), 48-57.

[10] Ramsay, H., Scholarios, D., & Harley, B. (2000). Employees and high-performance work systems: Testing inside the black box. *British Journal of industrial relations*, *38*(4), 501-531.

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