

The Measurement Of Employee Performance With A Human Resource Scorecard Methods: A Study Case in PDAM MEDAN

Khairun Nissa Siregar¹, Sukaria Sinulingga², Meilita Tryana Sembiring³

^{1,2,3}Magister Teknik Industri, Universitas Sumatera Utara, Indonesia

Abstract. The success of an organization or company in carrying out tasks with the aim of realizing the company's vision, mission, and goals can be seen from the performance of its human resources. So far, PDAM Tirtanadi's employee performance measurement is still focused on the financial aspect and based on a preliminary questionnaire, employee performance is in the poor category. So that this research has the aim of designing indicators and measuring employee performance with the Human Resource Scorecard (HRSc) approach. HRSc is a performance measurement based on 4 perspectives, namely finance, employees, internal business processes, and growth. From the results of data collection and processing, 16 indicators and 18 key performance indicators (KPI) were obtained, so that by using the Likert scale method and questionnaire in each perspective, the measurement value was 3.385 with a less category.

Keyword: Performance Measurement, Human Resource Scorecard (HRSc), Analytical Hierachy Process (AHP)

Abstrak. Keberhasilan suatu organisasi ataupun perusahaan dalam menjalankan tugas dengan tujuan untuk mewujudkan visi, misi, serta tujuan perusahaan dapat dilihat dari kinerja sumber daya manusianya. Selama ini pengukuran kinerja karyawan PDAM Tirtanadi masih berfokus dalam aspek finansial dan berdasarkan kuesioner pendahuluan kinerja karyawan masuk dalam kategori kurang. Sehingga penelitian ini memiliki tujuan untuk merancang indikator dan mengukur kinerja karyawan dengan pendekatan Human Resource Scorecard (HRSc). HRSc merupakan pengukuran kinerja berdasarkan 4 perspektif yaitu keuangan, karyawan, proses bisnis internal, dan pertumbuhan. Dari hasil pengumpulan dan pengolahan data diperoleh 16 indikator dan 18 key performance indicator (KPI), sehingga dengan menggunakan metode dan kuesioner skala likert pada masing-masing perspektif diperoleh nilai pengukuran sebesar 3,385 dengan kategori kurang.

Kata Kunci: Pengukuran Kinerja, Human Resource Scorecard (HRSc), Analytical Hierachy Process (AHP)

Received 19 March 2022 | Revised 26 April 2022 | Accepted 17 June 2022

1. Introduction

Human Resource Scorecard (HRSc) is a method designed to measure the role of employees with the aim of assessing and demonstrating the contribution of HR to organizational success [1]. This

*Corresponding author at: Jl. Almamater, Medan, 20155, Indonesia

E-mail address: nissasiregar94@gmail.com

Copyright © Jurnal Sistem Teknik Industri (JSTI) 2022 Published by Talenta Publisher

p-ISSN: 1411-5247 | e-ISSN: 2527-9408 | DOI 10.32734/jsti.v24i2.8566

Journal Homepage: <https://talenta.usu.ac.id/jsti>

method describes the performance appraisal of employees through four perspectives, namely finance, employees, internal business processes, and growth and development [2]. Perspectives will be sorted based on the weight of the paired comparison questionnaire statements using the Analytical Hierarchy Process (AHP) method [3].

Based on the previous study, it was seen that the performance of PDAM Medan employees was still in the poor category and had an average of 53.47, where the preliminary study consisted of 5 statement dimensions [4], which were filled out by 30 employees according to the standard preliminary questionnaire [5]. In addition, unstructured interviews were conducted separately to 10 employees and 5 PDAM division heads. This interview was also conducted as a preliminary study used to support the problem of the low performance of PDAM employees. This shows a problem where many employees cannot complete the work in accordance with the time set because employees often procrastinate the tasks that have been given. Another problem that arises from cooperation is the lack of a cooperative attitude between employees to help each other in completing work because they tend to work individually so that the company's targets regarding service coverage, customer growth, complaint resolution rate, water quality to customers, and domestic water consumption have not in accordance with the company's vision and mission.

In realizing the vision and mission through the intelligible asset (HR) side, the company needs to make efforts to improve the performance of employees who have HR values in creating company value and performance satisfaction [6]. So, it is necessary to pay attention to employee performance using the HRSc and AHP methods [7]. Assessment or measurement of employee performance consists of several perspectives or aspects, namely financial perspective, employee perspective, internal business perspective and growth learning perspective so that efforts are obtained in continuously improving HR performance [8]. Besides that, this method can also determine which weight or priority order is more important for the company to improve through the level of importance based on the sub-criteria of employee performance in the 4 (four) perspectives using the AHP method. The purpose of this research is to formulate indicators of employee performance measures in an effort to improve the performance of PDAM Medan and to obtain a design method for measuring the performance of implementing employees in the HR department in improving PDAM Medan services.

Like previous studies [9] measuring performance using the HRSc method only obtained 6 indicators and other studies only measured performance weights without looking at the order of performance priorities [10]. In this research, the steps carried out are determining the indicators of each HRSc perspective by making a strategy map and designing key performance indicators for each HRSc indicator, then this research is then weighted using the Analytical Hierarchy Process (AHP) method to see the order of priorities that must be followed. repair was made.

2. Research Method

The research method used is associative research, namely a statement between two or more variables [11]. In this study the population is PDAM Tirtanadi employees who will be used to

assess employee performance through four aspects. The population in the study amounted to 68 people and the sample used in this study remained 68 people because the population was below 100 [12]. HRSc design stages are as follows

- Identify Indicators department indicators

At the problem formulation stage, validation indicators are determined for the HR department which consists of four perspectives, namely financial, employee, internal business process perspectives, and growth developments [13].

- Key Performance Indicator (KPI)

Key Performance Indicators (KPIs) are a series of important and measurable performance indicators that provide information on the extent to which a company has achieved success. Before using KPIs, first create a strategy map by making diagrams that can show the vision and mission that are implemented into daily activities [1]. How to set KPI as follows [14]:

1. From the company's strategic objectives, targets and work plans that have been set in the management contract, identify all data or information relevant to the successful implementation of the company's strategic plan.
2. Weighing KPIs with the aim of determining KPI priorities for the company's overall performance.
3. Set the KPI targets or targets to be achieved, by paying attention to the targets that have been stated in the management contract.
4. In the process of reporting and measuring performance, it can be done periodically.
5. Measurement of the importance of each perspective

- Analytical Hierarchy Process (AHP) Method

The AHP assessment has the necessary mathematical calculations to obtain the weight of the criteria quantitatively, namely by doing pairwise comparisons, multi-participant comparison assessments, element weight calculations, consistency ratio calculations [3].

1. Pairwise Comparison

Pairwise comparisons are used to determine priority weights from the highest to the lowest. The trick is to make a pairwise comparison scale at a predetermined level of importance. The comparison scale can be seen in Table 1

Table 1 Pairwise Comparison Scale

Level of Interest	Definition
1	Two elements are equally important
3	One element is slightly more important than the other
5	One element is more important than the other elements
7	One element is clearly more important than the other elements

Level of Interest	Definition
9	One element is absolutely important compared to the other elements
2.4.6.8	Two elements that have a level of importance close to each other

2. Multi-Participant Comparative Assessment

After filling out the pairwise comparison questionnaire, the geometric mean theory is calculated by finding the average data from the pairwise comparison matrix so that a single matrix is obtained by calculating the geometric mean. The formula is:

$$a_{ij} = \sqrt[n]{z_1 \times z_2 \times z_3 \dots \times z_n} \tag{1}$$

description:

a_{ij} : Average comparison of criteria a_i and a_j

z_1 : Ratio a_i and a_j

I : 1,2,3,...,n

N : Number of respondents

3. Elemental Weight Calculation

After obtaining the a_{ij} matrix, then a comparison of C_i and C_j is carried out, then the A matrix is a matrix with a reciprocal so that the value of a_{ij}^{-1}/a_{ij} . Element a_{ij} is the ratio of the weights between W_i and W_j .

$$a_{ij} = \frac{w_i}{w_j} \tag{2}$$

4. Calculations Measuring Consistency

If the level of consistency is low, it will affect decision making. The steps that need to be taken are:

- a. Perform multiplication for each value from the first column because of the relative priority for the first element, then the value from the second column has relative priority for the second element and so on.
- b. Sum on each row.
- c. The result of the sum is divided by the elements with relative priority

5. Add the above quotient by the number of elements, the result is called max

- a. Calculation of Consistency Index (CI)

$$CI = \frac{(\lambda_{maks} - n)}{(n - 1)} \tag{3}$$

description:

n : matrix size

λ_{maks} : maximum eigenvalue

CI : Consistency Index

Consistency Ratio is used to measure whether the pairwise comparison questionnaire is consistent with the comparison of CI and the average CI.

- b. Calculate Consistency Ratio (CR) has the formula

$$CR = \frac{CI}{RI} \tag{4}$$

RI : The random index value can be seen in Table 2 below:

Table 2 Random Index Value

Matrix order	1.2	3	4	5	6	7	8	9	10	11	12	13	14	15
Indeks Random	0	0,58	0,9	1,12	1,24	1,32	1,41	1,45	1,49	1,51	1,48	1,56	1,57	1,59

3. Result and Discussion

After knowing the weight of each indicator, it is continued with an analysis of HR performance criteria using the Likert scale method. This method aims to determine the position of the level or score on each research indicator that falls into any category [15]. The scale [12] criteria can be seen in Table. 3

Table 3 Performance Criteria

No	Scale	criteria
1	1-1,80	Not very good
2	1,81-2,60	Not good
3	2,61-3,40	Not Enough
4	3,41-4,20	Good
5	4,21-5,00	Very good

- Identification of Key Performance Indicators (KPI)

Key Performance Indicators are parameters that are used as a medium for measuring employee performance in companies with a range of numbers, values or percentages [16]. Validation is the process of requesting approval or validation of conformity made to the needs of the company. [17] Validation is carried out by involving experts in the relevant field. The purpose of this validation is to get input from the model created or developed. This validation process uses the expert judgment method, which is based on the opinion of the respondents from the HR department leadership employees who are considered to fully understand the company's activities. KPI validation is done by making a validation questionnaire that is compiled based on the initial KPI design. The results of the validation of the performance measurement design that have been prepared by the leadership can be seen in Table 4 below.

Table 4 Key Performance Indikator (KPI) PDAM MEDAN

Variable	Indicator	KPI
Financial Perspective	A. Increased Employee Productivity	A1. Employee performance results contribute to the increase in PDAM revenue
		A2. Employee performance results increase after attending training
Employee Perspective	B. Improved labor cost efficiency	B1. Intensive expenses according to work performance
		B2. Labor overtime expenses
	C. Increased speed in service	C1. Complete the given job quickly and accurately
		C2. Carry out work in accordance with company procedures
		D. Improved resolution of incoming complaints
D2. Provide explanations to customers in resolving complaints		
Interbal Business Process Perspective	E. Employee Loyalty Improvement	E1. Work together and support each other in getting the job done
		E2. Increase responsibility at work
Growth and Service Perspective	F. Improved employee communication	F1. improve polite and good attitude to colleagues and superiors to support in work
		F2. Respect and implement instructions from superiors
Growth and Service Perspective	G. K3 Improvement	G1. Carry out inspection of work facilities
		G2. Provide high job security to employees
		H. Employee Skill Improvement
H2. have a certificate of competence related to work		
Growth and Service Perspective	I. Employee knowledge improvement	I1. Participate in seminars and general discussions provided by the company
		I2. Participate in any company-given meeting

- Human Resource Scorecard Performance Measurement

Based on the HRSC perspective using a Likert scale [5] with 5 answer choices, namely Strongly Disagree with a value of 1, Disagree with a value of 2, Disagree with a value of 3, Agree with a value of 4 and Strongly Agree from the four perspectives based on Table 5.

Table 5 Weighted Score Calculation

Statement	Weight	Score	weighted score	Total
A. Increased Employee Productivity				
A11	0.3360	4	1.344	3.996
A21	0.6630	4	2.652	
B. Improved labor cost efficiency				
B11	0.4891	4	1.956	4.000
B21	0.5109	4	2.043	

Statement	Weight	Score	weighted score	Total
C. Increased speed in service				
C11	0.5790	3	1.737	3.000
C21	0.4210	3	1.263	
D. Improved resolution of incoming complaints				
D11	0.5990	2	1.198	2.000
D21	0.4010	2	0.802	
E. Employee Loyalty Improvement				
E11	0.3660	2	0.732	2.634
E21	0.6340	3	1.902	
F. Improved employee communication				
F11	0.3360	4	1.344	3.333
F21	0.6630	3	1.989	
G. K3 Improvement				
G11	0.6630	3	1.989	2.997
G21	0.3360	3	1.008	
H. Employee Skill Improvement				
H11	0.5320	3	1.596	2.986
H21	0.4600	3	1.380	
I. Employee knowledge improvement				
I1	0.5320	3	1.596	2.976
I2	0.4600	3	1.380	

- Indicator Weighting Results

Based on the results of the performance criteria assessment carried out for each indicator, then the overall performance calculation will be carried out to determine the performance size of PDAM employees. The results of the assessment can be seen in Table 6.

Table 6 Employee performance measurement

Indicator	Weight	Score	Score x Weight
A. Increased Employee Productivity	0,268	3,996	1,070
B. Improved labor cost efficiency	0,242	4,000	0,968
C. Increased speed in service	0,125	3,000	0,375
D. Improved resolution of incoming complaints	0,141	2,000	0,282
E. Employee Loyalty Improvement	0,059	2,634	0,155
F. Improved employee communication	0,023	3,33	0,077
G. K3 Improvement	0,029	2,997	0,087
H. Employee Skill Improvement	0,068	2,986	0,234
I. Employee knowledge improvement	0,046	2,976	0,137
Total		1.000	3,385

Based on the table above from the assessment of employees and the head of the HR department, the calculation of the employee's performance measurement is 3,385 which is included in the less category but almost close to the good category. That way, the head of leadership and employees must pay more attention to the performance of their employees so that they can improve and achieve better employee performance.

4. Conclusion

The conclusions obtained from the results of the research on determining indicators and priorities in measuring employee performance are the results of the design of employee performance measurement of PDAM Medan using the Human Resource Scorecard method, namely there are 4 perspectives, 9 indicators, and 18 Key Performance Indicators (KPI). in the HR department in improving PDAM Medan services, namely using the Human Resource Scorecard with a Likert scale questionnaire with a value of 3.385 with a less category.

REFERENCES

- [1] D.J.S. Erza Ardentia Wicaksana, "Perancangan Sistem Pengukuran Kinerja Pt. Central Proteina Prima Tbk Melalui Pendekatan Human Resources Scorecard," SEPA, pp. 156-169, 2016.
- [2] Taufiqurrahman, "Pengaruh Kepuasan Kerja Dan Komitmen Organisasi Terhadap Kinerja Karyawan Pada Pt.Puskopkar Riau Pekanbaru," JOM FEKON, pp. 1-14, 2007.
- [3] R. S. d. N. D. P. Kaplan, *Balanced Scorecard: Menerjemahkan Strategi Menjadi Aksi*, Jakarta: Erlangga, 2000.
- [4] B. Brito Neves, "Main Stages of the Development of the Sedimentary Basins of South America and Their Relationship with the Tectonic of Supercontinents," *Gondwana Research*, pp. 175-196, 2002.
- [5] H. M. A. U. D. Becker Brian E, *The HR Scorecard*, Boston: Massachusetts, 2001.
- [6] A. T. Soemohadiwidjojo, *Metode Pengukuran Kinerja Perusahaan Berbasis Statistik*, Jakarta: Raih Asa Sukses, 2017.
- [7] T. Saaty, "Fundamentals of the Analytic Network Process-dependence and Feedback in Decision-making with a Single Network. *Journal of Systems Science and Systems Engineering*," *Journal of Systems Science and Systems Engineering*, pp. 129-157, 2004.
- [8] S. Sinulingga, *Metode Penelitian*, Medan: USU press, 2017.
- [9] N. A. I. K. M. N. Dewi Diniaty, "Pengukuran Kinerja Sumber Daya Manusia Menggunakan Metode Human Resources Scorecard (HRSC) dan Analytical Hierarchy Process (AHP) di CV. X," *Seminar Nasional Teknologi Informasi, Komunikasi dan Industri (SNTIKI)*, pp. 593-600, 2019.

- [10] C. N. R. Juan Welan, "Pengukuran Kinerja Karyawan Dengan Menggunakan Metode Human Resource Scorecard Pada Pt. Hasjrat Abadi Tendeand Manado," *urnal EMBA*, pp. 4123-4132, 2018.
- [11] A. Khorniawan, " Penilaian Key Performance Indicator Sumber Daya Manusia dengan Menggunakan Metode Human Resource Scorecard Pada PT Dua Kelinci Pati," *Klaster Engineering*, pp. 117-125, 2021.
- [12] d. Aulia Ishak, "Kriteria untuk Menilai Teknologi Pengolahan Air Limbah," *JSTI*, pp. 33-40, 2020.
- [13] Mangkunegara, *Evaluasi Kinerja SDM*, Bandung: Refika Aditama, 2014.
- [14] Rusindiyanto, "nalisis Kinerja SDM Dengan Metode Human Resources Scorecard (HRSc) (Studi Kasus Di PT. Arto Metal Internasional Sidoarjo," *Jurnal Penelitian Ilmu Teknik*, pp. 123-130, 2009.
- [15] Sugiyono, . *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*, Bandung : Alfabeta, 2017.
- [16] T. L. P. Warganegara, "Analisis Kinerja Karyawan Berdasarkan Key Performance Indicator Dengan Menggunakan Metode Human Resources Scorecard (HRSC) pada PT PLN (Persero) UP3 Tanjung Karan," *Jurnal Ilmiah Magister Manajemen*, pp. 73-81, 2021.
- [17] S. Vanny, "Strategi Peningkatan Kinerja Sumberdaya Manusia Universitas Trilogi Menggunakan Human Resource Scorecard (Hrsc)," *KOLEGIAL*, pp. 59-72, 2016.