The Best Village Apparatus Decision Support System in Beji Village with the Competency Gap Method

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Abstract:

Human resource management is a determining aspect of the work success of a company. The company is expected to run all its business processes properly if employee performance can be adequately managed. This study aimed to determine the best village apparatus using the Gap Competency method. This method can be used to determine the best employees from predetermined criteria. The criteria assessed are Professionalism, Discipline, and the ability to work together. Based on the analysis of the ten performances of the Beji village apparatus, the first rank was Muslikh with a value of 3.76, the second was Romani with a value of 3.524, and the third was Samingun with a value of 3.504.

Keywords: Human Resources, Profile Matching, Competency Gaps, Decision Support System, Competency Gap Method

1. INTRODUCTION

Nowadays, technology is increasingly advanced, not only in fields related to things that are all about the latest technology, which has begun to be carried out as a supporter to get the expected results. Employee-owned human resources (HR) is an essential element in a company. Human resource management is a determining aspect of the work success of a company. The company is expected to run all its business processes properly if employee performance can be adequately managed. Employee performance appraisal is usually done subjectively. This is a problem for companies in selecting the best employees because in the assessment carried out subjectively and manually; it is difficult for companies to determine whether or not an employee is worthy of being the best employee.

The Profile Matching method can find the best employees from predetermined criteria. This method was chosen because it is able to select the best alternative from a number of other options; in this case, the intended alternative is the one that deserves to be the best employee. The research was conducted by determining the aspects and sub-aspects and looking for the weight value for each sub-aspect, looking for the gap between the profiles and the state of the data from the employees. By using this method, the percentage of both aspects and total elements is determined, then a ranking process is carried out, which will determine the optimal alternative, namely the best employee. In

this study, the Profile Matching method provides recommendations in the form of the best employees based on rank who are entitled to be promoted or get bonuses. The aspects assessed are Professionalism, Discipline, and the ability to work together. Based on the description above, a decision support system application will be designed by taking a research entitled *"Decision Support System for Determining the Best Village Apparatus in Beji Village Using the Competency Gap Method."*

2. THEORY

2.1 Competency Gap Method Overview

Research conducted by Monica Hattinger and Kristiana Erikson under the title "Think of the Gap: A Collaborative Competency e-Learning Model between Universities and Industry" using the Gap Comp method and collaborative AR resulted in universities and industry crossing boundaries and becoming aware of their different organizational work practices when they jointly generate knowledge in e-learning practices [1]. Furthermore, research conducted by Risky Ayu Febriani, Suseno, Jata Budiman, Agus Surjana Saefudin, and Akil Priyanggala Danadibrata with the title "Competency Gap Analysis for Graduates of Manufacturing Engineering Department with Industry" using the Gap Comp and Importance Performance Analysis (IPA) methods resulted in Graduates, IDUKA, Lecturers, PLP, and final year students of each study program with the number of data entered: 38 graduates, 16 ICUKA, 31 PLP lecturers, and 23 last year students[2]. Then the research conducted by Adéle Bezuidenhout with the title "Analyzing the Important Gap-Competency of Distance Educators by increasing the use of online learning Strategies in the Context of Developing Countries" using the Gap Comp GAP method and the Post-Positive Paradigm resulted in the training program itself not being good enough to bridge the learning competency gap. Distance academics in a developing world context, it is, therefore, necessary to direct available resources promptly towards interventions that will empower faculty[3]. Then research by Wawan Karsiwan, Naufal Ramadian, and Jasra Putra with the title "Analysis of Teacher Professional Competence Gaps in Teacher Professional Development" using the Gap Comp method produces an appropriate professional competency gap analysis that can determine an effective and efficient teacher professional improvement program. With the increase in professional competence, it is hoped that teachers will be more motivated to improve the quality of learning carried out by teachers [4].

Research conducted by Adrian Marty, Sonia Frick, Heidi Bruderer Enzler, and Sabine Zundel with the title "The core EPA analysis reveals the gap between curricular expectations and self-perception of medical school graduates competency level" with the Gap Comp method and EPA (Entrustable Professional Activities) results in response was 54%. The need for supervision expressed by graduates varies widely, according to the EPA. The proportion of graduates who rate themselves at high expected levels for "history taking," "physical examination," "and documentation"; media for "prioritizing

differential diagnosis," "interpreting results," and "developing and communicating management plans"; low for "practical skills"; and very low for EPA related to "urgent and emergency care"[5]. Further research by Renata Oczkowska, Sylvia Wiyniewska, and Pawley Lula with the title "Analysis of the Competency Gap Between Vocational Schools Graduates in the Field of Smart Specialization in Poland" using the Gap Comp method resulted that MtCI and SGPI industry representatives gave deficient scores for theoretical knowledge of vocational school graduates in Wiÿtokrzyskie Province (E1 and E2). Graduate knowledge received the highest score from MAFP industry representatives[6]. Further research by Endang Mustikawati and Nurul Qomariah with the title "The Effect of Education, Training, and Competence on Performance Teachers" using the Gap Comp method resulted that each value on the cross-loading factor reached a value above 0.5 with a p-value below 0.001. Thus the convergent validity test criteria were met [7]. Then research by Jaideep Kaur and Vikas Kumar with the title "COMPETENCY MAPPING: GAP ANALYSIS" using the Gap Comp method resulted in higher levels lacking in functional competence, intermediate levels lacking managerial skills, and first-level managers requiring human skills[8].

Furthermore, research by Sewunet Admasu Belachew, Fasil Tilahun, Tirsit Ketsela, and Daniel Asfaw Erku with the title "Competence in metered dose inhaler techniques among community pharmacy professionals in the city of Gondar, Northwest" using Gap Comp and Metered Dose Inhalers (MDI) resulted in: Of the 70 community pharmacy professionals approached, 62 (32 pharmacists and 30 pharmacists or pharmacy technicians) completed the survey with a response rate of 85.6%. Only three (4.8%) respondents were able to demonstrate the vital steps correctly. Only 13 participants scored seven or more, but most missed essential steps, including steps 1, 2, 5, 6, 7, or 8[9]. Then research by ledziewska, Katarzyna; Gabryelczyk, and Renata with the title "Diagnosing the Digital Competency Gap between SMEs in Poland and the EU" using Gap Comp and EDI ERP systems resulted in Poland being ranked 24th low in the list of 28 EU states. For example, Polish companies' digitization rates are twice as low as those recorded in Denmark, Sweden, or Finland.

Regarding electronic data exchange, Polish SMEs use automated and non-automated systems in business with external partners[10]. Research by Quyen Phuong Vo entitled "Re-electing Intercultural Communication Competencies in Teaching English: The Gap Between Lecturer Perspectives and Practices in the Tertiary Context of Southeast Asia" using Gap Comp resulted in almost all participating lecturers (94.4%) realizing the importance of ICC in ELT. Their views are further elaborated on the strong mutual support for effective language communicative competence and a deeper understanding of aspects of the world's countries[11].
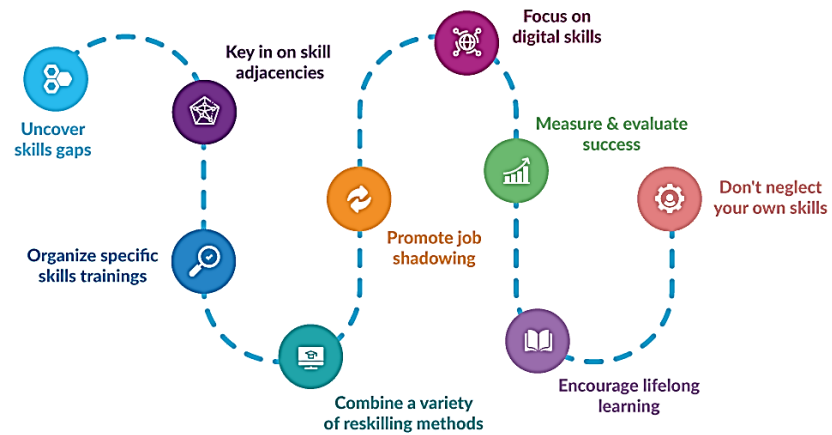
Fig.1 HR Build a Reskilling Program

Then also research by Teresa Mota with the title "Analysis of competency gaps in recognition of Process Skills using Treemaps" using Gap Comp and knowledge trees resulted in the visualization technique used, which is proven to be able to perform gap analysis by revealing areas where the current candidate's level can be improved. The results show that adding new attributes and status split the tree into two groups, satisfied CE and dissatisfied CE, where the white area represents the competency gap [12]. Research by Siti Rochaeni, Siska Nurita, Eny Dwiningsih, and Farahdita Soeyatno with the title "GAP Analysis of Competence for Animal Employees at the Feed Warehouse Department" using Gap Comp resulted in an average core competency level of 3.69 for permanent employees. The expected average value of the company is 4.11. The competency gap is -0.42. The intermediate level of competence in the field of permanent employees is 3.78. The average value expected from the company is 5. The competency gap is -1.22[13].

Furthermore, research by Chandra Kay Marie Talerico with the title "Assessing Analytical Competency Gaps for Professional Human Resources: Providing Roadmaps for Data-Based Decisions" using Gap Comp resulted in modeling with sub-dimensional supporting mediation analysis of persuasion in analytical competence. Significant results; logical construct mediated persuasion on job performance. Furthermore, given that the direct effect was not substantial, full mediation was confirmed (p = 0.616)[14]. Then a study by Lucy Janda, Liz Rochester, Paul J. Barbour, and Alicia M. Hullinger with the title "Bridging the Team Building Competency Gap: A Literature Review" using the Gap Comp resulted in team coaching research that has been limited to date focused on defining terms, identifying the factors involved. Effectiveness factors and investigation of the efficacy of team coaching [15].

2.2 Competency Gap Method Equations

The competency gap is the difference between a person's and desired criteria. The smaller the resulting gap or distance, the greater the weight of the value. The competency gap can be seen through the following equation 1.

$$Gap = Crop\ Profile - Desired\ Profile \tag{1}$$

After obtaining the Gap value, then the process of assigning a weight value to each Gap value. There are two kinds of calculations, namely the calculation of the Core Factor (Main Factor) and the calculation of the Secondary Factor (Supporting Factor). The first is the calculation of the core factor, which can be shown by equation 2.

$$NCF = \frac{\sum NC}{\sum IC} \tag{2}$$

Where NCF is the Average value of the core factor, NC is the Total value of the core factor, and IC is the number of core factor items, Then do the calculations for the second factor using the following equation 3.

$$NSF = \frac{\sum NS}{\sum IS} \tag{3}$$

NSF is an Average secondary factor, NS is the Total value of the secondary element, and IS is several secondary factor items. The total weight is the result obtained from the percentage of the core factor and secondary factor. Then N is The total value of the criteria, NCF is the Average value of CF, NSF is the Average score of SF, and (x) % is an Entered percent value. Moreover, The ranking process can be calculated, and rank is an (x)% Total Score (criteria), and (x) % is a percentage of the preference weight value of each standard.

Furthermore, DSS is an interactive information system that provides information, modeling, and manipulating data. This system assists decision-making in semi-structured and unstructured situations where no one knows how decisions should be made [18]. Decision Support Systems utilize the resources of individuals intellectually with computer capabilities to improve the quality of decisions. So this is a computer-based support system for management decision-making related to semi-structured problems [19]. The purpose of profile matching is a decision-making mechanism by assuming an ideal level of predictor variables that applicants must have, not a minimum level that must be met or passed [20].

3. METHOD

The method used in this study is the Profile Matching and GAP Analysis method; these methods can be used to provide recommendations in the form of the best employees, based on rank, who are entitled to be promoted or get bonuses. The aspects assessed are Professionalism, Discipline, and the ability to work together. Figure 1 shows the GAP Analysis method flowchart in detail.
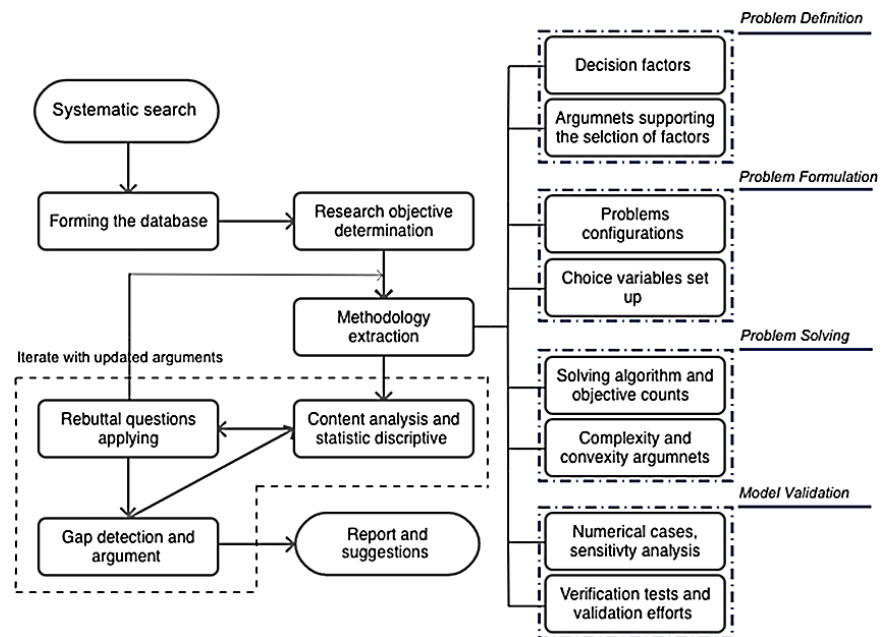
Fig.2 GAP Analysis method flowchart

4. RESULT AND DISCUSSION

To calculate the selection of the best village apparatus employees, aspects that support the GAP grouping need to be structured. The following are aspects of the design of decision-making, as shown in Table 1. Table 1 is the criteria and sub-criteria viewed from professionalism, discipline, and cooperation.

TABLE I

CRITERIA AND SUB-CRITERIA

No.	Parameter	
	Criteria Aspect	Description of Sub Criteria
1	Professionalism	• Helping At Work (CF) • Accuracy in Completing Tasks (CF) • Responsible for assigned tasks (CF) • Respect for Co-workers and Bosses (SF) • Doing work according to competence (SF)
2	Discipline	• Arrive On Time (CF) • Uniform Conformity (SF) • Maximizing Working Time in the Office (CF)
3	Cooperation	• Collaborating with other employees (CF) • Positive attitude in teamwork (SF) • Appreciate the differences that occur between co-workers (SF)

TABLE II

PROFESSIONALISM GAP

Name	Value_1	Value_2	Value_3	Value_4	Value_5
Salkun	3	2	3	3	2
Sutoro	3	2	2	3	3
Agus	2	3	4	2	2
Romini	3	2	4	2	3
Sri Hartuti	3	2	3	2	3
Akhmad Muhajir	2	2	4	3	4
Muslikh	2	3	2	2	2
Samingan	2	2	2	3	2
Darikun	2	2	4	3	2
Standard Profile	**1**	**2**	**4**	**2**	**2**
Salkun	-2	-1	-1	1	0
Sutoro	0	-1	-2	1	1
Agus	-1	0	0	0	0
Romini	-1	-1	0	0	-1
Sri Hartuti	-1	0	-1	1	2
Akhmad Muhajir	-1	-1	0	1	0
Muslikh	-1	-1	-2	1	0
Samingan	0	-1	0	1	0
Darikun	1	-1	-1	1	1

Information :

1= help at work

2= accuracy in completing tasks

3=. Responsible for the assigned task

4 = Respect co-workers and superiors

5 = Doing work according to the competencies possessed

Furthermore, table 2 shows the professionalism gap taken from several people with the help of an operational parameter, namely their ability to work, accuracy in completing tasks, sense of responsibility in completing missions, respect for co-workers and superiors, and how to work with their competencies. Each Gap can be described in table 3.

TABLE III

DISCIPLINE GAP

Name	Value_1	Value_2	Value_3
Salkun	2	3	2
Sutoro	3	2	2
Agus	1	2	2
Romini	2	2	2
Sri Hartuti	2	2	3
Akhmad Muhajir	2	2	2
Muslikh	2	3	2
Samingan	3	2	3
Darikun	2	2	2
Standard Profile	**1**	**2**	**3**
Salkun	-1	1	-1

Name	Value_1	Value_2	Value_3
Sutoro	0	0	-1
Agus	-2	0	-1
Romini	-2	0	-1
Sri Hartuti	-1	0	0
Akhmad Muhajir	-1	0	-1
Muslikh	0	1	0
Samingan	-1	1	-1
Darikun	-1	0	-1

Information :

1=. Arrive on time

2= Uniform fit

3=. Maximizing working time in the office

TABLE IV

COOPERATION GAP

Name	Value_1	Value_2	Value_3
Salkun	4	2	3
Sutoro	3	3	2
Agus	2	2	2
Romini	3	2	3
Sri Hartuti	3	3	3
Akhmad Muhajir	3	4	3
Muslikh	2	2	3
Samingan	3	2	2
Darikun	2	3	3
Standard Profile	*4*	*3*	*2*
Salkun	0	-1	1
Sutoro	-1	0	0
Agus	-2	0	0
Romini	-1	-1	1
Sri Hartuti	-2	1	1
Akhmad Muhajir	-2	-1	1
Muslikh	0	0	0
Samingan	-1	-1	0
Darikun	-2	0	1

Information :

1= Collaborating with other employees

2= Positive attitude in teamwork

3=. Appreciate the differences that occur between co-workers

After processing the GAP mapping is obtained, the results of the mapping will come out, which are given a weighted value with the following conditions:

TABLE V

VALUE WEIGHT

Weight Value	Differences
0	4
1	3.5
-1	3
2	2.5
-2	2
3	1.5
-3	1

TABLE V

RANK VALUE

Name	Professional	Discipline	Cooperation	Final Result	Ranking
Salkun	3.2	3.2	3.7	3.35	7
Sutoro	3.3	3.7	3.4	3.45	5
Agus	4.36	3.1	2.6	3.454	4
Romini	3.56	3.7	3.3	3.524	2
Sri Hartuti	3.48	3.4	3.3	3.524	2
Jamil	3.18	3.8	2.6	3.192	8
Muslikh	4	3.2	4	3.76	1
Samingan	3.36	4	3.2	3.504	3
Darikun	3.06	3.4	2.7	3.054	10

The next step is the calculation of ranking determination. This ranking determination calculation is the final stage of a GAP mapping method or profile matching. Determination of the ranking refers to the results of certain analyses with a value of percent = 40%, 30%, and 30%. By following the competency gap rules, the decision support system gives the best three employees, the first recommendation is Muslikh, with a value of 3.76, the second recommendation is Romini, with a value of 3.524, and the third recommendation is Samingun, with a value of 3.504.
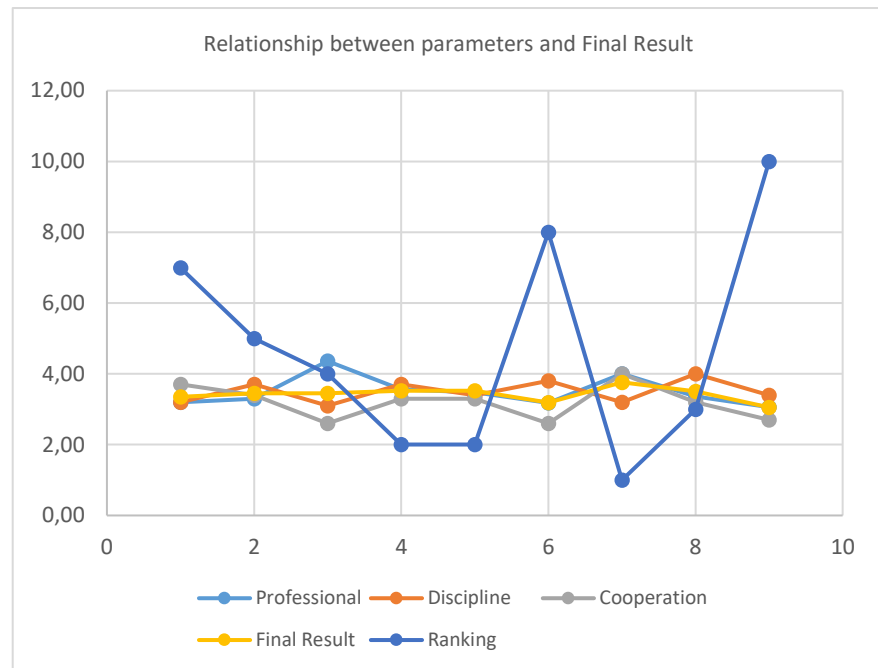
Fig. 3 Relationship between the parameters

4. CONCLUSIONS

From this study, it can be concluded that the Decision Support System provides three recommendations for selecting the best village apparatus employees based on the criteria of professionalism, discipline, and cooperation, including the first, is Muslikh with a score of 3.76, the second recommendation is Romini with a value of 3.524, and the third recommendation is Samingun with a score of 3. value 3,504.

AUTHOR CONTRIBUTIONS

Conceptualization; Muhamad Fahmi Musyafa [MFM], Prameswara Edo Aditama [P.E.A], Hartanto [H], Imam Tahyudin [IT], methodology; [MFM],[P.E.A],[H],[IT]; validation; [MFM],[P.E.A],[H],[IT], formal analysis; [MFM],[P.E.A],[H],[IT], investigation; [MFM],[P.E.A],[H],[IT], data curation; [MFM],[P.E.A],[H],[IT], writing—original draft preparation; [MFM],[P.E.A],[H],[IT], writing—review and editing; [MFM],[P.E.A],[H],[IT], visualization; [MFM],[P.E.A],[H],[IT], supervision; [MFM],[P.E.A],[H],[IT], project administration; [MFM],[P.E.A],[H],[IT], funding acquisition;[IT], have read and agreed to the published version of the manuscript.

ACKNOWLEDGMENTS

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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