
The Application of Profile Matching Method in Decision Support System for Selection of Training Instructors (Case Study at IIB Darmajaya's Training Center)

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ABSTRACT

The Training Center is a technical operation unit responsible for organizing both locally and internationally certified training programs at Institute Informatics and Business (IIB) Darmajaya. Locally certified training is home-powered and its certificate is issued by the Training Center. Internationally certified training, on the other hand, involves a collaboration with a certification services body and the certificate is issued by reputable organizations or companies such as Microsoft, Foresec, Adobe, etc. IIB Darmajaya's Training Center currently has 67 instructors and experts and offers 32 training programs, either local or international. However, it experiences difficulty in selecting instructors for locally certified training programs since the lecturers who regularly act as instructors only hold international certification. For locally certified training, the instructors are directly appointed by the Director of Training Center, who often finds it difficult to match a training program to a suitable instructor. To solve the issue, this study couples profile matching method with a decision support system to build a viable option for making the right decision based on a set of predetermined criteria. The concept of profile matching method is basically to compare personal competence with expected instructor competence so as to determine the competence gap. The lower the gap is, the higher the score an individual can get, which means a greater chance to be appointed as an instructor. Profile matching has successfully produced reliable information on the rankings of prospective instructors.

Keywords: training, instructor, profile matching

1. INTRODUCTION

Training Center Unit is a technical implementation unit in the field of organizing training at IIB Darmajaya. The Training Center is responsible to the Vice Chancellor I for Academic and Research. The Training Center collaborates with study programs, namely Business Economics and Computer Science IIB Darmajaya in order to provide training in

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accordance with the vision and mission of the study program to improve student competency

The Training Center organizes local and international certified training. Local certified training is training where training resources are held by Training Centers and certificates are issued / printed by Darmajaya IIB Training Center. International certified training is training held in collaboration with certification service companies and certificates issued by well-known vendors, such as Microsoft, Foresec, Adobe, and others.

The training, which is held locally, is divided into two groups, namely Economics and Business, Computer Science. Training in economics and business such as 1) SPSS, 2) MYOB Accounting, 3) Zahir, 3) Tax Brevet, 4) Research Methods, etc. Training in computer science such as 1) Programming Training (Java, Delphi, VB .NET, PHP, etc., 2) Research Methods, 3) Analysis and Design (Object Oriented, Structured), Computer Networks, Troubleshooting, etc

Internationally certified training is divided into two groups, namely Economics and Business, Computer Science. Training in economics and business such as 1) Microsoft Office Specialist (MOS). Training in computer science such as 1) Adobe Certified Associate (ACA), Software Development Fundamentals (SDF), Database Administration Fundamentals (DAF), Foresec Certified Network Security (FCNS), HTML 5, etc

The Training Center has 67 (sixty seven) internationally certified trainers and is spread across several fields of science, such as CCNA, CIBIA, DAF, SDF, ACA, MOS, FCNS, Project Management, CIBIP, HTML 5, CITSM, etc.

The current number of training offered is 32 types of training, both local and international. At present the process of determining presenters for locally certified training activities is still difficult because the lecturers who become presenters in Training only have international certification, for local certification themselves Training still determines training presenters based on direct appointment from the head of the Training Center. The Head of the Training Center often has difficulty determining the presenters of the training activities to be carried out. Decision support system is a system that can be used to help make decisions based on existing criteria

2. LITERATURE REVIEW

2.1 System

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Systems that regulate procedures or components that are interrelated to one another, work together in accordance with the rules applied to make a common goal, whichever is in the system that can be done just one part that does not work or is damaged, then what goals can occur errors results or outputs. The system is a collection of interrelated elements that are responsible for receiving input (input) so as to produce outputs (Source: Kusrini,)

2.2 Decision Making

Decision Making is the preparation of decision models is a way to develop logical relationships that underlie the decision problem into a mathematical model, which reflects the relationships that occur between the factors involved. (Hermawan, Design of Decision Support Systems, 2005, H: 36) This process consists of three phases, namely: 1. Intelligence Phase in which the process of tracing and detecting the scope of the problematics and problem recognition process is carried out. Input data are obtained, processed and tested in order to identify problems. 2. Design Stage where the process of finding, developing and analyzing alternative actions that can be done, includes the process to understand the problem, lower the solution and test the feasibility of the solution. 3. Choice Stage where the selection process is carried out among various alternatives, including searching, evaluating and recommending a solution that is right for the model

2.3 Decision Support Systems

Decision Support Systems are usually developed for users at the middle and highest management levels. In the development of information systems, Decision Support Systems can only be developed if the transaction processing system (first level) and management information system (second level) are already running well. Decision Support System or Decision Support System, which is also defined as a system that is able to provide the ability, both the ability to solve problems and the ability to communicate to semiterstructured problems. In particular. Decision Support System is defined as a system that supports the work of a manager or group of managers in solving semi-structured problems by providing information or proposals leading to certain decisions.

2.4 Decision Support System Architecture

Decision support systems have several subsystems, among which are:

- a. Data management subsystem Data management subsystem includes a database that contains data that makes sense and is relevant to a situation and is managed by software called a database management system or a data base management system (DBMS). The data management subsystem relates to the company's warehouse, a repository for company or organizational data that is appropriate in the decision making process

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- b. Model management subsystem is software that is included in financial, statistical, management science or other quantitative models so that it can provide analytical capabilities and management tools for custom models also included. The software is often called the model base management system (MBMS). These components can be connected to corporate or external storage media in the model
- c. User interface subsystem. Communication between users and decision support system commands through the user interface subsystem. The user is the part that is considered by the system. The researchers assert that some of the unique contributions of decision support systems come from intensive interactions between computers and decision makers
- d. Knowledge-based management subsystem is a subsystem that supports 3 other subsystems to carry out activities directly as an independent component and is optional. In addition, this subsystem provides intelligence to increase decision making knowledge. This subsystem can be linked to the company's knowledge repository (part of the knowledge management system) company warehouse, a repository for company or organization data that is relevant to decision making

2.5 Training

Training is the process of teaching new or existing things, the basic skills they need. Training is one of the efforts in improving the quality of human resources in the world of work. Employees, whether new or already working need to take part in training because of the demands of work that can change due to changes in the work environment, strategies, and so forth.

2.6 Trainer

Trainer is a person who provides training or training to trainees / trainees. A good trainer is able to make training participants have the skills / expertise in accordance with the material presented training

2.7 Profile Matching

Profile Matching is a decision making mechanism, especially in the management of human resources to determine a predetermined qualification. In the profile matching process it begins with the selection of the required criteria and provides a Target Value for each Aspect. The next stage of comparison is done between the ability of individuals with

qualifications that have been determined so that the gap is obtained where the smaller the value obtained, the greater the weight value. Profile Matching is a very important process in which competencies (abilities) that are required by a speaker are first determined. The ability competency must be fulfilled by prospective presenters to be appointed. In the Profile Matching process in broad outline is the process of comparing individual competencies into scientific competencies so that differences in competencies (called gaps) can be identified

2.8 Reference Text and Citations

1. Research by Nina Sherly in 2013 in the scientific magazine *Informasi dan Teknologi Ilmiah (INTI)* entitled *The Application of Profile Matching Method in Employee Bonus Decision Support System (Case Study: PT. Sanghyang Seri Persero)* in this research there are several stages in the decision support system namely defining the problem, collecting relevant and appropriate data, processing data into information, and determine alternative solutions. This study uses the profile matching method in this decision support system to produce a decision support system application for receiving employee bonuses that can be used at the company. The criteria used in the decision support system for employee bonuses are: intellectual, work attitude and behavior activities
2. Research by Edi Faizal in 2014 at *Journal Speed – Sentra Penelitian Engineering dan Edukasi – Volume 6 No 1* entitled *Implementation of Profile Matching Method for Determination of Acceptance of Internal Research Proposals for STMIK Lecturer El Rahma* This research is to design a decision support system application on the merits of internal faculty research proposals using profile matching method. Assessment and calculation of the value gap based on five criteria: abstract, introduction, literature review, research methods and suitability of the research budget and schedule. research results show that the method of matching profiles can be implemented in a decision support system to assess the feasibility of the proposed research proposal accurately, professionally and proportionately based on predetermined evaluation criteria.
3. Research by Feri Fitriyani¹⁾, Erni Seniwati²⁾ in 2018 at *Intechno Journal Volume 1* entitled *The Application of Profile Matching Method in Decision Support Systems for Determination of Feasibility from Bso to SMEs (Case Study of Student Senate in Yogyakarta Amikom University)*. The study discusses process of determining the feasibility of BSO to become a common problem that often occurs including subjectivity of decision making, especially if there are several prospective SMEs that have feasibility (and several other considerations) that are not much different.

The method of profile matching or profile matching is a method that is often used in decision making by sharing that there is an ideal level of predictor variable that must be fulfilled by the subject being examined, not the minimum level that must be fulfilled. The BSO profile is compared with the SME profile to determine the ranking that BSO has. The decision support system model that is made can be utilized to assess BSO ranking with model accuracy of 66.67%.

4. Research by Heru Purwanto in 2007 at Jurnal Techno Nusa Mandiri Vol. XIV, entitled The Application of Profile Matching Method in Employee Performance Assessment Decision Support Systems at Pt. Hyundai Mobil Indonesia Kalimalang Branch. This research discusses Leader choice from some of the best candidate is objectively referable to decide a leader in suitable position. Recommendation is not the only one guaranty to choose employee as a leader. It should have a way and method as leader alternative election that suitable with needs. At this research, Profile matching method is used alternatively to give assessment and evaluation of key performance index of each employee as a leader recruitment. There are three aspect of conducting assessment and evaluation. They are Intelligence Aspect, Attitude Aspect, and Behavioral Aspect. There are some levels of Intelligence Aspect; creativity, intelectual activity and solution, initiative, concentration and anticipation. Attitude Aspect has accuracy, responsiblity, control sense, motivation, planning, and carefulness. Lastly, Behavioral Aspect consists of subservience, sincerity, indpendent and dynamic, influence. There is a rank changing from candidate after calculating with profile matching method whose employee within K5 code has first position at 6,55 compared with manually calcualting at second position.

3.METHOD

The next stage is carried out between individual abilities with predetermined qualifications so that a gap is obtained so that the smaller the value obtained the greater the value

3.1 Aspects of Assessment Decision support system

Having a function so that the user in this case is the head of the Training Center can determine aspects of his own assessment so that the system can be developed more broadly. This aspect is determined by the training that will be a reference in determining the training presenters

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3.2 Competency GAP

Gap is Calculation of Competency Gap After the candidate selection process, the next process is to determine which candidate is the most suitable candidate to be the speaker proposed by the training center. In this case the writer uses the gap mapping calculation in the formula below:

Gap = Trainer Profile - Training Needs Profile

3.3 Observation

The author collects data by making direct observations of the object under study with relevant agencies to collect data and information. In this study developed a decision support system with the Profile Matching method in the process of determining presenters at the training center. Literature Study The author studies the related journals and related book sources to be cited as a theoretical reference in supporting the writing of scientific research

3.4 Calculation of GAP Mapping

Competencies Based on Aspects For the calculation of the selection of training instructors the collection of gaps that occur itself in each aspect has different calculations

3.5 Weighting

This stage is done after we get a gap from the prospective presenters, at this stage the weight of the difference is obtained with the provisions in Table 1.

Table 1. Weight of GAP Value

No	Value Weight	Information
0	3.5	Competence
1	3	Certificate
-1	2	Student questionnaire scores
2	1.5	Educational stage
-2	1	Experience

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After determining the weighting, the results of the gap obtained in Table 1 then the results of the weighting can be seen in Table 2

Table 2.	<table><tr><th>id</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td>111111</td><td>3.5</td><td>3</td><td>3</td><td>2</td><td>2.5</td></tr><tr><td>222222</td><td>2.5</td><td>2</td><td>1</td><td>1.5</td><td>3</td></tr><tr><td>333333</td><td>2</td><td>3</td><td>1.5</td><td>2</td><td>1</td></tr></table>	id	1	2	3	4	5	111111	3.5	3	3	2	2.5	222222	2.5	2	1	1.5	3	333333	2	3	1.5	2	1	Search Results
id	1	2	3	4	5																					
111111	3.5	3	3	2	2.5																					
222222	2.5	2	1	1.5	3																					
333333	2	3	1.5	2	1																					
GA Value																										

3.6 Core Factors and secondary factors

Be the next calculation by giving a percentage for both factors. In this study Core factors were given as much as 66% and 34% for secondary factors. Ranking is the process of calculating the Final Results to determine the recommended speakers to fill in training classes related to existing problems. Related information is direct observation at the Darmajaya IIB Training Center in order to find out the process of determining training presenters. In the case examples that have been carried out, competencies 1,2,3 include core factors and competencies 4 and 5 include secondary factors. The equation to calculate the core factor value can be seen in the following equation

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

Information: NCF : The average value of the core factor
NC : Total number of core factor values

4. RESULT AND DISCUSSION

4.1 DESIGN

Data design is the initial stage in the design process. The design process uses the profile matching method which can be seen in Figure 1

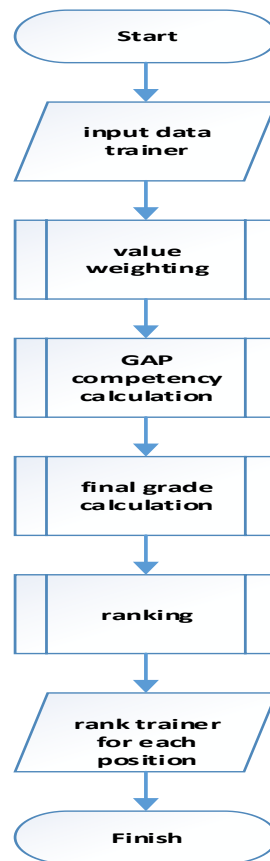


Figure 1. Process Flow

4.2. Determine the value of criteria weights

Determination of criteria weights is used to determine the importance of a criterion. The weighting criteria are in the following table

Table 3. Criteria weights

No	Criteria	(%)
1	Competence	35
2	Certificate	25

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3	Student questionnaire scores	20
4	Educational stage	15
5	Experience	5
Total		100%

4.3 Rating criteria and sub criteria

Each criterion and sub-criterion will be used to calculate the gap. Based on the five criteria used, there is one assessment that has sub criteria, namely preliminary criteria. The scores for each criterion and sub criteria are presented in the following table

Table 4 Description of the aspects value of sub criteria

Sub Criteria Value	80 – 100 : Highly recommended
	70 – 79 : Good
	60– 69 : standard
	50 – 59 : Less
	0 – 49 : Not eligible

5. CONCLUSIONS

Decision support system built can assist the head of training center in determining presenters for training activities based on criteria and value of weighting results. With the existence of this decision support system can improve accuracy of determination of appointment of the patterns professional and proporsional based on criteria assessment has been determined

REFERENCES

- [1] Mustafidah, H. dan Hadyan, H.N., 2017, “Sistem Pendukung Keputusan Penentuan Mahasiswa Berprestasi di Universitas Muhammadiyah Purwokerto Menggunakan Metode Weighted Product (WP)”, JUITA, Volume 5 No 1, hal. 51-61, Mei 2017
- [2] Jamaludin, M., Arik, dan Sofan T., 2015, “Sistem Pendukung Keputusan Pemilihan Ketua Senat Mahasiswa Dengan Logika Fuzzy, STMIK Amikom”, Seminar Nasional Teknologi Informasi dan Multimedia, hal. 235-239, Februari 2015
- [3] Nashrullah, M. I., Abdillah, G., & Renaldi, F. (2016). Sistem Pendukung Keputusan Untuk Rekomendasi Promosi Jabatan Menggunakan Metode Profile Matching Dan Electre. Prosiding SNST ke-7 Tahun 2016 (pp. 196-201). Semarang: Universitas Wahid Hasyim Semarang

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- [4] Lutfi Syafirullah, Penerapan Analytic Hierarchy Process(Ahp) Dalam Menentukan Kelayakan Bakal Calon Presiden Ri 2014 Studi Kasus Smk N 3 Purwokerto, Vol 1, No 1 (2013): Jurnal Evolusi 2013
 - [5] Budi Utomo, Jurnal ; Sistem Pendukung Keputusan Untuk Menentukan Kelayakan Desa Mandiri Berbasis Posdaya Di Kecamatan Mayong Kabupaten Jepara. Universitas Dian Nuswantoro, 2014.
 - [6] Rina, Noviana, Jurnal ; Sistem Pendukung Keputusan Kelayakan Pendonor Darah Menggunakan Metode Profile Matching. Universitas Muria Kudus, 2015.
 - [7] Nina Sherly, 2013, PENERAPAN METODE PROFILE MATCHING DALAM SISTEM PENDUKUNG KEPUTUSAN PEMBERIAN BONUS KARYAWAN (STUDI KASUS: PT. SANGHYANG SERI PERSERO) , Informasi dan Teknologi Ilmiah (INTI):
 - [8] Aditya Sudarmadi, Edy Santoso, Sutrisno (2017) Sistem Pendukung Keputusan Pemilihan Personel Homeband Universitas Brawijaya Menggunakan Metode Profile Matching. Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer. Vol. 1, No. 12, Desember 2017, hlm. 1788-1796