



## Web-Based Lecturer Performance Selection Information System Using Weighted Product (WP) Method

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### ARTICLE INFO

### ABSTRACT

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Academic Informatics Management (AMIK) Bogor is a college in Bogor, where the performance appraisal process uses a questionnaire distributed to students for lecturer performance appraisal, the assessment set at the Informatics Management Academic is done by simple calculations looking for the highest score. It is still quite difficult and not accountable in concluding the performance results of a lecturer because the assessment is only done by students. So from these problems the calculation using the weight product method is able to calculate the performance of lecturers with precise accuracy

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## 1. Introduction

Introduction Assessment of lecturer performance in a college is an activity to evaluate the performance of each lecturer in a university [1]. Decision making is done with a systematic approach to problems through the process of collecting data into information and adding to the factors that need to be considered in decision making [2]. Decision making is the process of selecting alternative actions to achieve certain goals or objectives [3]. Informatics Management Academic (Bogor) is a college, where the performance appraisal process for each lecturer is carried out at the end of every odd and even semester [4]. Performance appraisal at (Amik) only uses a questionnaire that is distributed to students for lecturer performance appraisals, and how to calculate the performance appraisal is looking for the highest score. The method of performance appraisal at the rassa is still quite difficult and has not been accountable in concluding how the performance of a lecturer is [5]. because the assessment process is only carried out by students for the assessment of lecturer performance.

So from these problems the calculation using the weight product method is able to calculate the performance of lecturers with precise accuracy. Because lecturer performance assessments are assessed by students, peer lecturers, themselves, leaders, and LPPM. The results of the lecturer performance appraisal will be used as evaluation material to improve the performance of lecturers and each lecturer with the best performance will be rewarded to help the assessment process requires a system capable of supporting lecturer performance decisions [7]. So that in this study designing an information system application for the selection of the best lecturer performance using the waterfall system development method, applying the product weight calculation model.

## 2. Related Work

Information systems are systems that provide information for management in making decisions and also for running operations. The information system is a combination of people, information technology, and organized procedures. Information systems can also be referred to as systems whose job is to collect, store, and analyze information for certain specific purposes. Information systems consist of inputs (data, instructions) and outputs. Information systems process input and produce output that is sent to users or other systems [8].



Performance is performance or performance. Performance can also be interpreted as work performance or work implementation or performance results. Performance is the success of a person or group of people in carrying out their duties and responsibilities as well as the ability to achieve the goals and standards that have been set. Lecturer performance is the ability shown by the lecturer in carrying out his duties or work. Performance is said to be good and satisfying if the results achieved are in accordance with predetermined standards (Rachmawati&Daryanto, 2013)[9].

Decision Support System (DSS) or Decision Support System (DSS) is a system that is able to provide problem solving skills and communication skills for problems with semi-structured and unstructured conditions. This system is used to assist decision making in semi-structured and unstructured situations, where no one knows for sure how decisions should be made (Turban, 2001)[10].

According to Sianturi Ingot Seen "The Weighted Product (WP) method is one of the methods used to solve problems. The Weighted Product (WP) method uses multiplication to connect attribute values (criteria), where the value of each attribute must first be raised to the power of the attribute weight (criteria) in question . According to Putra Jaya, "The Weighted Product method requires a normalization process because this method multiplies the results of the assessment of each attribute. The multiplication result is not meaningful if it has not been compared (divided) with the standard value. The weight for the benefit attribute functions as a positive power in the multiplication process, while the cost weight functions as a negative power. The Weighted Product method uses multiplication as a means of connecting attribute ratings, where the rating of each attribute must first be raised to the power of the corresponding weight [11].

System development method using the waterfall method The software development model introduced by Winston Royce in the 70s is a simple classic model with a linear system flow — the output of the previous stage is the input for the next stage. Development with this model is the result of adaptation of hardware development, because at that time there were no other software development methodologies. This highly structured development process makes the potential loss due to errors in the previous process very large and often expensive due to the swelling costs of redevelopment[12].

The system design uses a structured approach with tools or with design tools in the form of DFD (Data Flow Diagrams), ERD (Entity Relationship Diagrams), and flow charts (Flowcharts) [13].

Data flow diagrams referred to as DAD (Data Flow Diagrams) can be used to represent a system or software at several levels of abstraction. [14]. An overview that describes and describes the database schema. ERD is also put forward with another opinion, ERD is a model to explain the relationship between data in the database based on the perception that the real world consists of basic objects that have relationships between these basic objects which are described using entity data components, attributes and relationship between entities[15]. PHP: Hypertext Preprocessor is a programming language that runs on the server because it can create, open, read, write, delete and close files on the server and then the results can be displayed on the client. PHP files contain CSS (Cascading Style Sheets), HTML (HyperText Markup Language), JavaScript and the PHP code itself. There is a PHP interpreter on the server side (server-side), if there is no PHP interpreter all PHP scripts and applications will not run. PHP can be used to connect data and manipulate databases. To create a database system, php will be combined with MySQL because this database system will run on the server. MySQL is developed by Oracle Corporation. The data contained in MySQL will be mapped into tables and the data will be related to each other[16].According to (Nugroho: 2004) MySQL is a database management system software SQL (database management system) or DBMS that is multithreaded, multi-user, with about 6 million installations worldwide. MySQL makes MySQL available as free software under the GNU General Public License (GPL), but they are also sold under a commercial license for cases where its use is incompatible with the use of the GPL. MySQL is an implementation of a relational database management system (RDBMS) that distributed free of charge under the GPL (General Public License).

Every user can freely use MySQL, but with limitations the software may not be used as a commercial derivative product. MySQL is actually a derivative of one of the main concepts in a pre-existing database; SQL (Structured Query Language). SQL is a database operation concept, especially for the selection or selection and entry of data, which allows data operations to be done easily automatically. The reliability of a database system (DBMS) can be seen from how the optimization works in processing SQL commands made by users and application programs that use them. As a database server, MySQL supports transactional database operations as well as non-transactional database operations. In the non-transactional mode of operation, MySQL can be said to be superior in terms of performance compared to other competing database

server software.[17]. XAMPP is free software, which supports many operating systems, is a compilation of several programs. Its function is as a stand-alone server (localhost), which consists of the Apache HTTP Server program, MySQL database, and language translator written in the PHP and Perl programming languages. The name XAMPP stands for X (any four operating systems), Apache, MySQL, PHP and Perl. This program is available under the GNU General Public License and is free, is an easy-to-use web server that can serve dynamic web page views[18].

### 3. Method

#### 3.1 Research Model Concept

this concept generally refers to a computer system or information system. Waterfall is a pattern taken to develop a software system, which consists of several stages, namely: analysis, design, implementation, testing, where each phase is interrelated and interacts with one another[8].

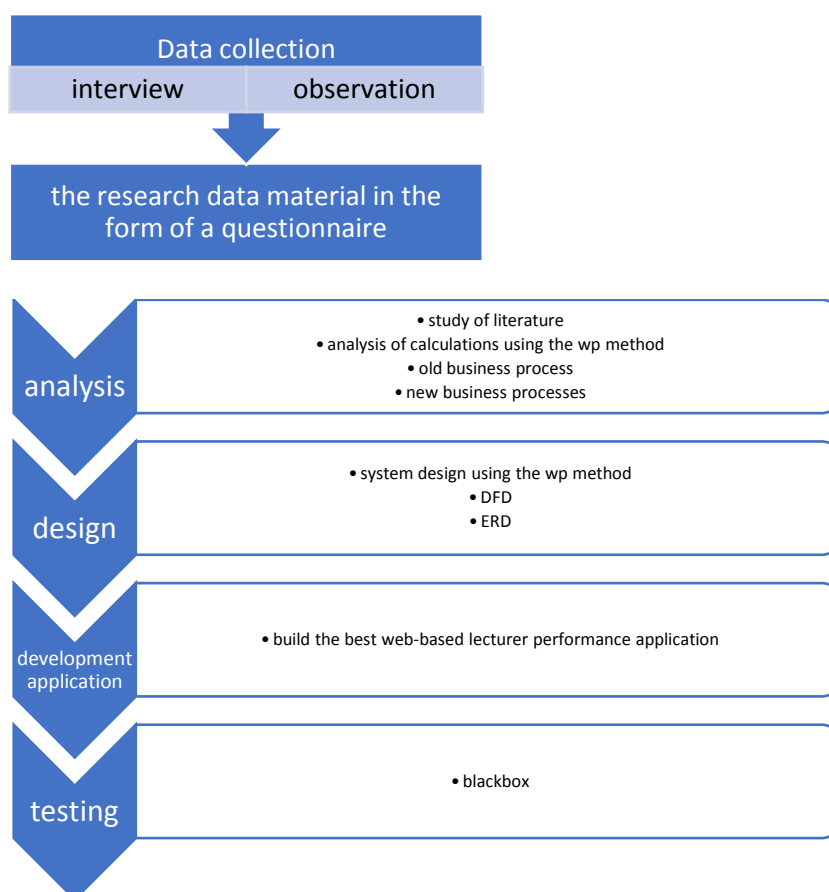


Fig 1. Research Method

#### 3.2 Analysis off data using the weighted product(wp) method

Weighted Product (WP) is a method using multiplication to relate the attribute rating, where the rating of each attribute must be ranked first with the attribute's weight. This process is the same as the normalization process[9]. Determining the best lecturer performance is the lecturer who has the highest score in a university. Where the highest score is considered by the lecturer, it is deemed that there is no need for coaching by the head of the study program, while the lecturer who has the lowest score will be coached by the head of the study program with predetermined criteria[10]. With the existing data applying the WP Weighted Product Method. To solve the problem[11]. criteria and weights are needed in doing calculations so that the best alternative to the criteria is shown in Table 1 below.

**4. Result**

**Table 1**  
Performance Criteria of AMIK Bogor Best Lecturers

Kode	Criteria
C1	Student Assessment
C2	Peer lecturer assessment
C3	Leader assessment
C4	Educational Qualification
C5	Scientific research
C6	Journal
C7	Training
C8	Seminar
C9	Community dedication
C10	Academic position

**Table 2**  
Examples Of Assessment Data

Alternatif	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
A1	3,72	4,2	4,2	1	3	5	3	2	3	1
A2	3,76	3,6	4	1	3	5	2	3	2	2
A3	3,84	3,6	4	1	2	5	3	2	3	1
A4	3,8	3,8	3,8	1	3	5	3	3	4	2
A5	3,52	3,6	3,6	1	3	5	2	3	4	1

Previously we will do the repair first, the initial weight  $W=(3,4,3,5,5,5,3,3,4,4)$ , will be fixed so that the total weight  $\sum W_j=1$ , by way of

- a. Vector S represents the alternative preference value Then the vector S is calculated using the equation

**Table 3**  
Example Of Vector S Value Data

Alternatif	Score S
A1= Gunawan,SE,S.kom	2.6021
A2= Hidolasyamsito,M.kom	2.6303
A3= Hartanto S.N.,S.kom	2.4284
A4= Dr.Dodo SDW.,SH.,MH	2.9206
A5=Drs.M.Harry	2.5958

- b. After getting the value of the Vector (S), the next step is to determine the vector value (V) vector V represents the determination of the relative preference value. The formula is carried out as follows:

$$V_i = \frac{\prod_{j=1}^n x_{ij}^{w_j}}{\prod_{j=1}^n (x_j)^{w_j}} ; i=1,2,\dots,m$$

- c. After all the steps are done then look for the biggest value, because based on the calculation with the Weighted Product (WP) method the best value is the largest value of all alternatives

**Table 4**  
Waspas Examples Of Vector Value Data V

Alternatif	Score v	Ranking
A4= Dr.Dodo SDW.,SH.,MH	0.2216	1
A2= Hidolasyamsito,M.kom	0.1996	2
A3= Gunawan.SE.S.Kom	0.1975	3



## 5. Conclusion

Based on a series of studies and analyzes carried out related to the best lecturer performance information systems, the following conclusions can be drawn:

- a. The results of the analysis of this study produce a design in the form of information on ongoing system analysis, the proposed system, and user needs.
- b. Through the design obtained, the system was successfully built with the function of seeing the best lecturer performance

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