DECISION SUPPORT SYSTEM (DSS) FOR MEASURING SATISFACTION OF E-PROCUREMENT SERVICE PROVIDER USING SIMPLE ADDITIVE WEIGHTING (SAW) AND ANALYTICAL HIERARCHY PROCESS (AHP)

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ABSTRACT

Internet is becoming one of the ways to obtain information in the era of information technology today. E-procurement is the service procurement of goods / services performed electronically by using the Internet, In order to improve quality and the quality it is necessary to evaluate the quality of customer service on the satisfaction of the use of e-procurement. Evaluation of the level of satisfaction in the use of e-procurement as a way to measure the quality of the e-procurement system. This study discusses the evaluation of the level of satisfaction of service providers in the use of e-procurement by using SAW (Simple Additive weighting) and AHP(Analytical Hierarchy Process) with TAM(Technology Acceptance Model). Variable dimensions in this study is convenience (ease to use), utility (usefulness) and confidence (belief).

KEYWORDS: Dss, E-Procurement, Saw, Ahp, Tam

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INTRODUCTION

Business development and technology is moving very quickly, the internet is becoming one of the primary requirements for a company to increase the effectiveness of business processes. Recognizing the increasingly severe competition it is necessary to apply the internet in providing services to an organization called the e-Procurement. E-procurement is the service procurement of goods / services performed electronically by using the Internet. The purpose of the e-procurement is for the procurement of government goods / services become more transparent, effective, efficient and accountable.

The e-procurement is expected to bring benefits to users such as the standardization of procurement processes, transparency and efficiency of better procurement and support responsibility of the procurement process. In addition, satisfaction in the use of e-procurement became a measure of success of an evaluation system to be used as material for the future.

On this basis, the authors are interested in doing research entitled "Decision Support System for Measuring Satisfaction Service provider of e-Procurement Method SAW (Simple Additive weighting) and AHP (Analytical Hierarchy Process)".

2. PLATFORM THEORY
1. Definition of e-procurement
E-procurementis the process of government procurement of goods and services electronically based yangdilaksanakan web / internet with information and communication technology memanfaatkanfasilitas covering secaraelektronik public auction organized by Electronic Procurement Service. DeLone insformasi system success model and McLean (D & M IS Success Model) using multiple factors or components, system quality, information quality, usage, user satisfaction, individual impact and organizational impact (DeLone2002).

2. Definition Decision Support System
Decision Support System (DSS) is a system that is controlled by one or more decision-makers who can memabantu decision-making activities by providing a set of organized toolsyang intended to improve the effectiveness of the decisions.
Decision Support System (DSS) is used to solve problems. Decision Support System (DSS) was created to help decision-makers, rather than replace them.

3. FMADM (Fuzzy Multi Attribute Decision Making)
Kusumadewi (2014) revealed that Fuzzy Multiple Attribute Decision Making (FMADM) is a method used to find the optimal alternative of a number of alternatives to certain criteria. The essence of FMADM is determining the weight value for each attribute, followed by a ranking process that will select the alternative that has been given. Basically, there are three approaches to find the weight values of attributes, that the subjective approach, objective approach and an integrated approach between subjectively and objectively.

Each approach has its advantages and disadvantages. In the subjective approach, the weight value is determined based on the subjectivity of the decision makers, so that some of the factors in the ranking process could alternatively be determined freely. While on an objective approach,

There are several methods that can be used to mnyelesaikan FMADM problems, among others:

1. 1. Simple Additive weighting method (SAW)
2. 2. Weighted Product (WP)
3. 3. ELECTRE
4. 4. Technique for Order Preference by Similarity to Ideal Solution (TOPSIS)
5. 5. Analytic Hierarchy Process (AHP)

4. TAM (Technology Acceptance Model)
Technology Acceptance Model (TAM) is one model that can be used to analyze the factors - factors that affect the acceptance of a system / system information.

Technology Acceptance Model (TAM) first developed by Davis (1986) and then re-used and developed by some researchers as Adam et al. (1992) Szajna (1994), Igbaria et al. (1995) and Venkatesh. And further developed by Davis (2000).

3. RELATED RESEARCH
Firdianti Nureni research in 2017 with the title "Election Decision Support System Obstetricians Using TOPSIS". In their study, the data used is an obstetrician experience based on age, consultation rates, rates childbirth, obstetricians popularity based on the number of patients, and the position to be taken from the residence to the gynecologist. The results of this study using TOPSIS method is a recommendation based obstetrician greatest preference value. system testing conducted on 10 user with the weight value of each user should be different. The system was tested by the conformity perangkinan system results with the results of actual data. The results of conformance testing between the results with the results of actual data system resulting in a 40% difference. So the system has an accuracy that made a big mistake and not correct.

Hodiah Maelani research in 2017 with the title "Design of Information Systems in Clinical Practice Midwife Qamarul STIKES Huda". Design of Information Systems Clinical Practice of Midwife on STIKes Qamarul Huda using the method of designing the Unified Modeling Language (UML), which consists of designing Use Case Diagrams, Activity Diagrams, Design Table, Relation Table, Menu Structure and Interface (user interface system), Data collection method using the method of observation, interview and literature study. Midwifery practice information system will produce a system that can facilitate the operations of the practice obstetrics clinic, starting from the registration of the location of the practice, the election supervisor, processing supervisor, placement location of clinical practice in obstetrics and guidance.

Other research on Decision Support System to improve the Quality of Service in the Field of Health conducted by Anny

KartikaSari in 2016. This research is trying to overcome the difficulties faced by the manager or agency leadership in issues associated with product quality measurement services. Area of service the subject of research is health. Decision support systems created can be used to determine the dimension of service

whose quality is weakest. Decision support system that is built based on web. Service dimensions that are relevant to the health sector in terms of data obtained through the questionnaire. The method used in the review is the SERVQUAL method. Furthermore, optimization is applied to maximize quality of service dimensions were weak in accordance with the attributes attribute to the dimension of service is concerned. Because the attributes of attributes in each dimension is a parameter that is not necessarily, then the fuzzy optimization formulation would be more effective. Optimization of fuzzy approach dissatisfaction function solved by genetic algorithm.

4. RESEARCH METHODOLOGY AND DESIGN
1. Method of collecting data
Data collection was conducted to obtain the information needed in order to achieve the research objectives. The goals expressed in the form of a hypothesis is a temporary answer to the question penelitian.metode data collection can be done by:

*a.*Interview
The interview is a form of verbal communication so it kind of conversation aimed at obtaining information [6]. People who are interviewed in this study are a service provider

b. questionnaires
Is a data collection technique indirectly (the researchers did not directly ask the respondent). Instrument or tool data collection is also called the questionnaire contains a number of questions that must be answered or responded to by the respondent. Respondents in the habit of giving answers or response in accordance with presepsinya. Questions from this questionnaire will be used as a reference in determining the functional requirements and non-functional system.

*c.*Observation
Is a method of collecting data by observing and recording accurately and systematically on the symptoms - symptoms (phenomena) are being studied. In this observation activities conducted by collecting data through direct observation of phenomena that occur in the location study.

2. Instrumentation
In this study conducted instruments for data collection, among others:

a. Interview, the instrument used in the form of a list of interview.
b. The questionnaire / questionnaire, the instrument used in the form of granules question.
c. Observation, the instrument used is a research study that observed object.

3. Data analysis technique

The data analysis technique is a way of analyzing the study data to address existing problems. Data analysis techniques in this study using data support the observation, interviews, and questionnaires.

Phase analysis and design with UML object-oriented approach, while the design of the system includes database design, to answer and describe the problems - problems arising from the background and the formulation of the problem, then the method in the study, can be seen in the figure below:
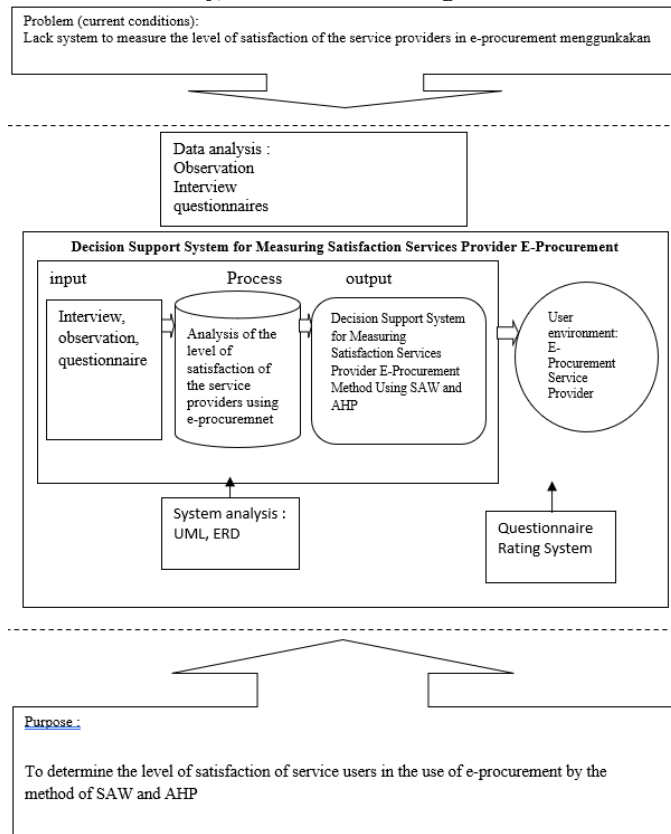
Figure 1: Mindset Troubleshooting

Troubleshooting Mindset explanation as used in this study can be explained as follows:
1. Researchers conducted the data analysis stage is to conduct interviews, questionnaires, and observations
2. Researchers will perform system analysis and design with UML, followed by encoding using the PHP programming language and MySQL database.
3. Display applications are built in order to allow a user to use a decision support system to measure the satisfaction of e-procurement service provider.

5. DISCUSSION OF RESEARCH

1. Use Case Diagram

Based on the functional requirements specification and actors involved in the system, it can be modeled by use case diagram. Use case diagrams describe the functionality expected from a system. Use case also illustrates the interactions that occur in the system, that gives the user a picture or actor associated with the system and matters related to the user in the system. Here is the use case diagram Decision Support System to measure the satisfaction of e-procurement service provider:
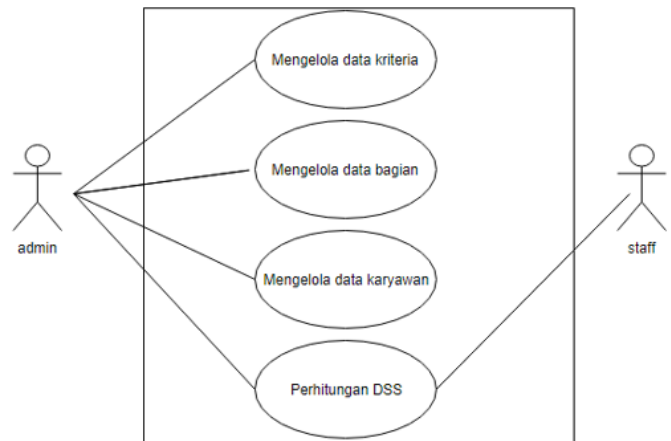
Figure 2: Use Case Diagram

2. Entity Relationship Diagram (ERD)

ERD (Entity Relationship Diagram) is one of the models used to design the database with the aim of describing the data that relate to a database. Here is ERD (Entity Relationship Diagram) Decision Support System to measure the satisfaction of e-procurement service provider:
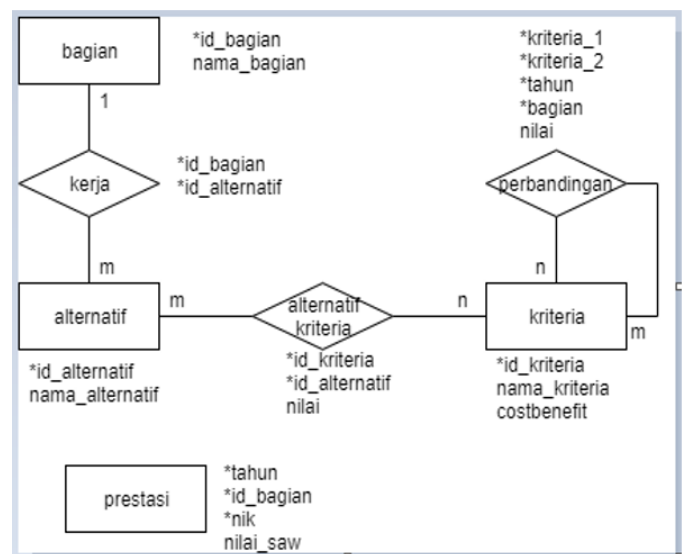
Figure 3: Database Design

3.User Interface

a. Login page

Here is the login page. Users must enter a username and password to access the application. There are two roles, namely the admin and user.

Figure 4: Display Log

b. Main menu Admin

On the main menu admin, there are functions that exist in the admin. Namely the master menu, the calculation of the analysis, and provider satisfaction results
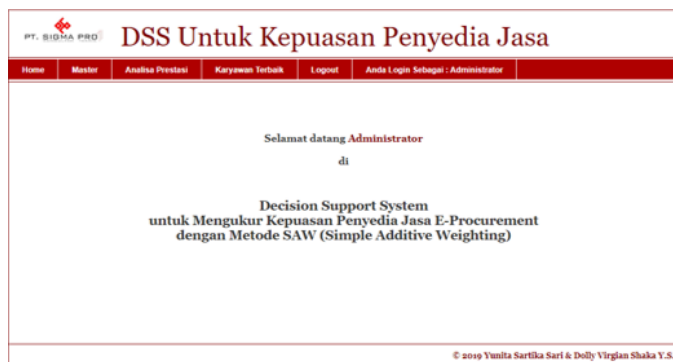

Figure 5: Main Menu Display

c. Master menu admin

On the admin master menu there are sub menus criteria, parts, and employees. In this menu, admiin can specify any criteria for the assessment to the satisfaction of e-procurement service provider.

Figure 6: Display Menu Master Admin

d. Display calculation results

On this page, users can see the results of the calculations on the application decision support system to measure the satisfaction of e-procurement service provider.

Figure 7: Display Calculation Results

e. Display results of the comparison

On this page, users can see the results perbandiingan on the application decision support system to measure the satisfaction of e-procurement service provider.
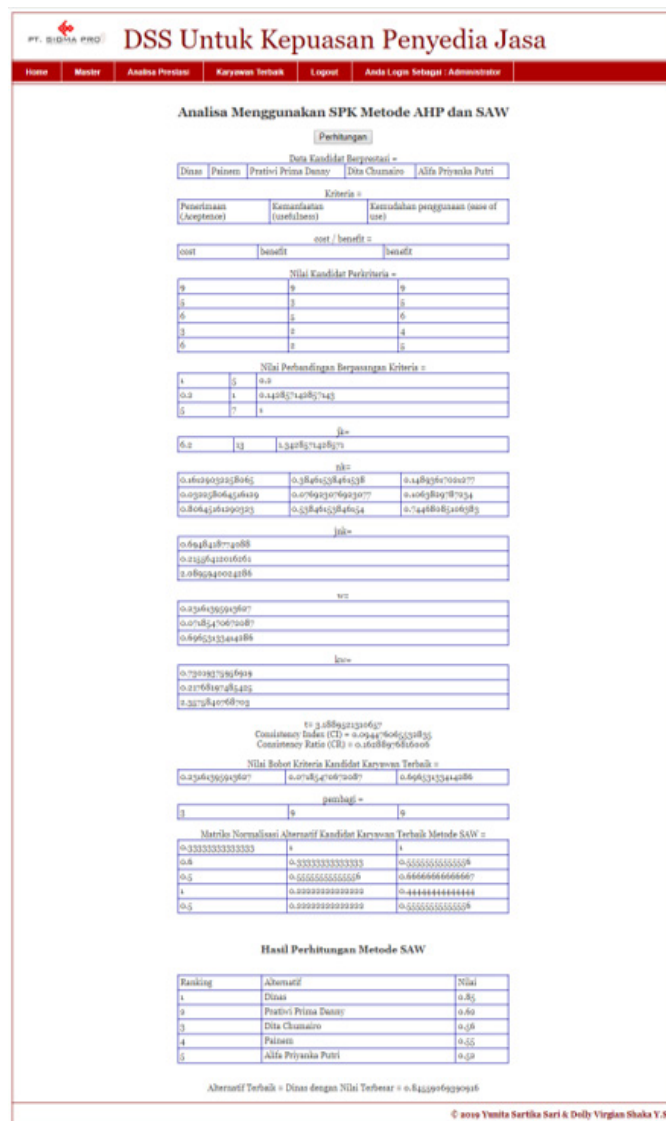

Figure 8: Display Results of the Comparation

6. CONCLUSION

Based on research that has been done, it can be concluded that:

1. Decision Support System to measure the satisfaction of e-procurement service provider can determine how much satisfaction in doing the service provider of e-procurement.

2. Decision Support System to measure the satisfaction of e-procurement service provider proved effective because provide important information related to the implementation of e-procurement.

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