Implementation Decision Support System on Decision Making in the Organization of Himpunan Mahasiswa Islam

Ilham Djufri
Akademi Ilmu Komputer Ternate, Indonesia
idjufri@akom.ac.id

Ismail Suardi Wekke
Institut Agama Islam Negeri (IAIN) Sorong, Indonesia
Asosiasi Dosen Insan Cita Indonesia, Indonesia
iswekke@gmail.com

Ibnu Hajar Sainuddin
Sekolah Tinggi Agama Islam Darud Dakwah Wal-Irsyad Makassar, Indonesia
dewaibnuhajar@gmail.com

Muhammad Makbul
Institut Sains dan Teknologi An-Nuriyah Makassar, Indonesia
makbulm013@gmail.com

Abstract

Himpunan Mahasiswa Islam as one of the oldest organizations in the Republic of Indonesia must have a structured organizational management system. Information is available in periodic and special reports, and the output is presented in mathematical models. In many cases, the various information systems used are not sufficient to make specific decisions to solve a particular problem DSS is a support system that can automatically perform certain decision-making procedures, which is very important for HMI as a structural organization. In solving a problem, it may take many decisions to be made. A decision is a series of actions that must be carried out in solving a problem to avoid or reduce negative impacts or take advantage of opportunities. In making decisions, HMI is usually influenced by external politics, therefore it is interesting to see the implementation of a Decision Support System in Decision Making in Islamic Student Law Organizations (HMI).

Keywords

Decision Support System, Decision Making, Islamic Student Association (HMI)

1. Introduction

The technological development of the industrial revolution 4.0 is very influential on the development of modern organizations. The Islamic Student Association (HMI) functions as a cadre organization and acts as a struggle organization that should no longer be managed by merely relying on conventional methods (Heryati, & Rusdiana, 2018). It must have a new strategy to compete with other organizations. To support an organization, many technologies, such as Information Systems, need to be developed (Fatoni, & Dwi, 2016). One type of information system like the Decision Support System (DSS) plays a major role in running a complex organization and can even directly support it to run smoothly (Sanusi, A., Purwanto, M. R., Wekke, I. S., Utu, L., & Laxmi Lydia, E. 2020). The DSS concept began in the late 1960s with computer timesharing (Muthohir, 2013). For the first time, humans could interact directly with computers without having to go through information specialists. In 1971, G. Anthony Gorry and Michael S. Scott Morton, two MIT Professors, introduce the DSS concept (Saliman, 2018). They felt the need for a framework to direct computer applications to management decision making and developed what has become known

as the Garry & Scott Morton Grid. This matrix (Grid) is based on Simon's concept of programmed and nonprogrammed decisions and levels of management (Yusuf, M., & Wekke, I. S. (2020).

The DSS is a support system (Whetyningtyas, 2011) that can automatically perform certain decision-making procedures, which are very important for HMI as a structural organization. In solving a problem, it may require many decisions to make. Decisions are a series of actions to be implemented in solving problems to avoid or reduce negative impacts or to take advantages of opportunities In making decisions, HMI is usually influenced by external politics. (Ismail, R., Wekke, I. S., Dinesh Kumar, A., Pandi Selvam, R., Shankar, K., & Nguyen, P. T. (2019).

A problem is a condition that has the potential to cause extraordinary losses or generate extraordinary benefits (Kusrini, 2007). The act of responding to a problem to suppress bad consequences or take beneficial opportunities is called problem solving. It does not focus on the amount of time spent but, on the consequences, namely whether or not it can suppress as much benefits as possible. Various problems that occur at every momentum of leadership succession in HMI are not because of the mechanism that has been regulated in the Memorandum of Association/Articles of Association but because of different perspectives on the interpretation of organizational mechanisms, thus giving rise to long debates (Makin, & Makin, 2016). For this reason, HMI needs a model to solve its problems, namely a decision-making system algorithm model to reduce risk factors.

2.1 The Objectives of the Decision Support System

The DSS is composed of the following components:

1. Database: a collection of data structured in an electronic format and easily processed by a computer program. The data are those relevant to the problem to be solved through simulation.
2. Model Base: a collection of knowledge that has been translated into a language that is easily understood by computers, including problem objectives, related components, existing limitations, and other related matters.
3. Software System: the main program that controls the entire system.
4. User Interface: the display of computer programs.

Peter G. W. Keen, another DSS pioneer, in collaboration with Scott Morton, defined three objectives to be achieved by a DSS (Khaerudin, 2018). These objectives relate to the three basic principles of the DSS concept, namely, Problem Structure, Decision Support, and Decision Effectiveness. They believe that DSS should:

1. help a leader make decisions to solve semi-structured problems,
2. support the manager's assessment, not replace it, and
3. increase the effectiveness of the manager's decision-making, rather than its efficiency.

It is difficult to find problems that are completely structured or unstructured. Most of them are semi-structured, in Simon's gray area. It means that a DSS is geared towards areas where most problems differ. Decision Support: a DSS is not intended to replace the role and function of a leader. The computer can be applied to the structured part of the problem, but the leader is responsible for the unstructured part applying assessment or intuition and doing the analysis (Ronda, 2016). The leader and the computer work together as a problem-solving team to solve different problems in a broad semi-structured area (Turoff, Hiltz, Bahgat, & Rana, 1993). Decision Effectiveness: The objective of a DSS is not to make the decision-making process as efficient as possible. The time the leader has is valuable and should not be wasted; getting the main benefit of using a DSS is a better decision. When making decisions, leaders do not always try their best. Any number of mathematical models will do for them. In most cases, however, it is the leaders who must decide which alternative is the best. A leader may spend extra time expanding the solution to reach the optimum, but the increased precision is worth the time and effort expended. Leaders use assessment in determining when a decision will contribute to a problem solution. (Tukwain, S. M. F., Fatimah, F., & Wekke, I. S. 2018).

2.2 Benefits of the Decision Support System

Decision-making is the activity of choosing a strategy or action in problem-solving. The act of choosing a strategy or action that the leader believes will provide the best solution to something is called decision-making. The purpose of the decision-making is to achieve a specific target or action to be taken. The criteria or characteristics of the decision are (Perdana, 2015):

1. Providing more decision alternatives,
2. Assisting in formulating problems,
3. Saving time, effort, and cost,
4. Effective and efficient, and
5. Prioritizing effectiveness over efficiency (development of technology and information systems does not rule out the possibility of prioritizing both of them),
6. Following a pattern or model of behavior, both structured and unstructured.

2.3 Types of Decisions

Making a decision is an activity of choosing a strategy or action in solving the problem (Iskandar, 2016). The criteria for a decision are the existence of many choices/alternatives, constraints/conditions, a pattern/behavior model to be followed, many inputs/variables, and risk factors, and requiring speed and accuracy. Two decision models are often used, including:

1. Programmed decisions are iterative and routine in such a way in which a definite procedure has been established to deal with them, thus not needing to be treated de novo (as something new) every time they occur.
2. Unprogrammed decisions are new, unstructured, and rarely consequential.

There is no definite method for dealing with this kind of problem because it has never existed before, or because of its exact nature and structure that are imperceptible or complicated, or because it is so important thus requiring very special treatment.

2.4 Types of Decisions Support System

There are two known types of DSS, namely: Model-driven DSS and Data-driven DSS. The former is a stand-alone system separate from the organization's information system as a whole. It is often developed directly by each user and indirectly controlled by the information systems division (Caroline, 2018). The analytical capabilities of this DSS are generally developed based on existing models or theories and then combined with user interfaces that make this model easy to use.

The second type, data-driven DSS, analyzes a large amount of data that exists or is incorporated into an organization's information system (Sanmorino, & Isabella, 2017). It assists the decision-making process by enabling users to obtain useful information from data stored in large databases. Many organizations or companies have started to build this DSS to enable their customers to obtain data from their website or the organization's existing information systems (Wekke, I. S., Aghsari, D., Evizariza, E., Junaidi, J., & Harun, N. 2018).

2.5 Decision Making Conditions

There are several situations that may be experienced by decision makers, including:

1. Decision making in certainty; all alternatives are known with certainty.
2. Decision making in various selected risk levels.
3. Decision making under conditions of uncertainty; there are alternatives that are not clearly known.

Of course, decision making will be easy if done with certainty. The stages of decision making, according to Simon (Pomerol & Adam, 2011) are used to determine a problem structure. A structured problem is a problem that has a structure at three stages, namely intelligence, design, and choice. Thus, an algorithm can be created, or alternatives can be identified and evaluated, and a solution can be chosen. An unstructured problem, on the other hand, is a problem that exactly has no structure in Simon's three stages above. Semi-structured problems are problems that have structure only at one or two stages.

3. Results and Discussion

Why should HMI use a DSS? Because a DSS is a system that provides facilities to analyze so that every decision-making process carried out by an organization's management will have more certainty and quality. HMI as one of the oldest organizations in the Republic of Indonesia must have a structured organizational management system (Wekke, Sitompul, & Afkari, 2016). Information is available in periodic and special reports, and output is present in mathematical models. In many cases, the various information systems used are insufficient to make specific decisions to solve specific problems. A system is a collection of objects such as people, resources, concepts, and procedures that are intended to perform an identifiable function or to serve a purpose (Haqi, 2019). For example, HMI, which has a hierarchical system in decision making consisting of the Executive Board to the Commissariat, ideas or rules to carry out the vision and mission of the organization, and services provided to the community (other systems). A DSS is a dialogical computer-based system that helps decision-makers in using data and modeling to solve unstructured problems. This support system assists organizational management decision-making by combining complex data, models, and analytical tools, as well as user-friendly software into one powerful system that can support semi-structured or unstructured decision-making. A DSS provides users with a flexible and high capable tool for critical data analysis. In other words, a DSS combines an individual's intellectual resources with computer skills to improve the quality of decision-making

Besides, there are two important reasons why HMI needs a support system capable of improving the quality of its decision-making:

1. To build an information system that can meet the needs of the organization's management, and
2. To create meaningful reporting and decision-making processes.

DSSs are widely applied in established organizations. There are many ways to implement DSSs to help sharpen the decision-making process. The capabilities inherent in DSSs greatly assist organizations that use them to enable the coordination of both internal and external activities processes in a more accurate manner. Some of the reasons of why DSSs are used in an organization are:

1. Organizations operate on unstable finances.
2. Organizations are faced with increasing internal and external competition.
3. Organizations face increasing difficulty in tracking the number of targeted operations for cadre subsidies.
4. The organizations' computer systems do not support the improvement of the organizations' goals in terms of efficiency, profitability, and seeking entry in truly profitable markets.

3.1 Stages in the Implementation of a DSS

According to Simon (Turban, 2005) the four stages that leaders go through when solving a problem are:

1. Intelligence activities: observing the environment, looking for conditions that need to be improved,
2. Designing: finding, developing, and analyzing various possible alternative actions,
3. Choosing: choosing a particular course of action from the available, and
4. Reviewing: assess past choices.

Intelligence activities are concerned with moving from the system level to the sub-systems and analyzing the parts of the system sequentially. Designing is concerned with identifying and evaluating various alternatives, while choosing is concerned with choosing the best solution. Finally, reviewing is related to examine the solutions having been selected and then make a follow-up.

The best decision making (Tonni, Limbong, et al., 2020) is:

1. Intelligence intelligence can be interpreted in various ways: logical abilities, self-awareness, emotional knowledge, reasoning, planning, creativity, critical thinking, and problem solving. In general, it can be described as the ability to perceive information and retain it as applied knowledge.
2. Design Design is a plan or specification for the construction of an object or system or for the implementation of an activity or process, or the results of a plan or specification in the form of a prototype, product, or process. The verb design expresses the process of developing a design.
3. Choice This stage is carried out to determine a choice from various aspects of search, evaluation, and completion made according to the designed model. The solution by applying a model is the specific value of the chosen alternative.
4. Implementation, Implementation is applied to technology to describe the interaction of elements in a programming language. It is used to identify and use code elements or programming resources written into programs. Simon's model describes the flow of a system by utilizing existing information. The implementation models for DSS are:

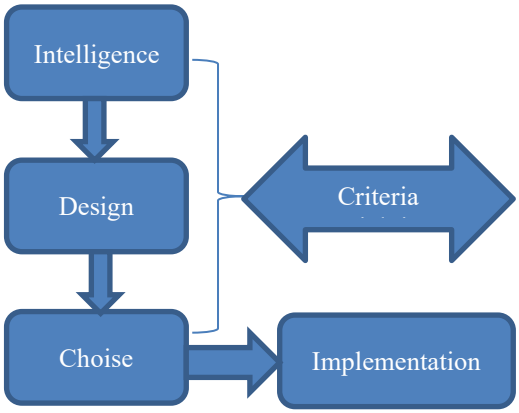

Figure 1. Decision Making Phase

The four stages above describe techniques in implementing a decision support system to making the right decisions. Intelligence is the result of the System's contribution. Choice is the phase used to select the right criteria as

a support in making a decision. Design is the result phase of the contribution of intelligence and design. The decision made consists of several actions that are used as an alternative in achieving several goals in accordance with what has been applied.

These stages can be used as a reference in decision-making by HMI because they are directly related to the steps of the decision-making system approach by HMI, such as in the election of the General Chairperson of the HMI Executive Board that has to use a model including in the administrative filing process to the election of the General Chairperson.

3.2 HMI Organizational Management Decisions

The decisions taken by the leader can be varied according to the level of management. Figure 1 illustrates the level of management in the organization that can be implemented in HMI.

Figure 2. Management Hierarchy of HMI

The top-level (Executive Board) is strategic management consisting of HMI Executive Board personnel from top management. Its activities are choosing long-term goals, allocating resources, and compiling the policies needed to achieve these goals, such as preparing human resources, who have competence according to their scientific fields, to be promoted to the public according to the needs of the target market. (Wekke, I. S., Sitompul, A., & Afkari, R. 2016). The tactical management level (Branch Manager) consists of mid-level management personnel. Its activity is to translate long-term goals into more detailed and measurable plans and goals like determining the target of cadre products for each planned cadre production. (Maddatuang, B., Sabara, Z., Wekke, I. S., & Karim, A. 2020).

At the lowest level (Commissioner Management), there is operational management. The number of fields in this level should be large compared to the other levels. The activity is to observe daily activities and ensure that the plans are implemented and the goals are achieved, like observing the daily activities of HMI cadres to ensure that the quota that will be prepared to manage the commissariat as a cadre printing machine is achieved.

3.3 Effects of Using a Decision Support System for HMI

Effects of Using a Decision Support System for HMI are as follows:

1. Semi-structured problems can be solved.
2. Complicated problems can be solved.
3. The system can interact with the user.
4. Compared to intuitive decision making, decision making with a DSS is considered to be faster and the results are better.
5. Generation of reference data to solve problems faced by inexperienced leaders.
6. For recurring problems, a DSS can provide more effective decisions.
7. The facility to retrieve data can provide an opportunity for some managers to communicate better.
8. Increasing the productivity and control of the leader.

For example, the technical implementation of the Decision Making System for the election of the General Chairperson of the HMI Executive Board uses one of the algorithm models for the decision making system, the Weighted Product (WP) method, for the election of the General Chairperson of the HMI Executive Board.
Calculation analysis steps (Khairina et al., 2016):

1. Determining alternatives; using 4 (three) alternative candidates for the General Chairperson of the HMI Executive Board.

2. Determining criteria; Using 4 (four) criteria, namely; Branch support, Mastery of NDP material, Islamic and national insight, international insight.
3. Determining the level of importance of a criterion; the importance of the criteria used are Very Important (VI), Important (I), Less Important (LI) and Not Important (NI).
4. Determining the weight of the criteria; Very Important (VI) = 4, Important (I) = 3, Less Important (LI) = 2.
5. Determining the alternative value of each criterion; Branch support = 2, Mastery of NDP material = 4, Islamic & national insight = 3, and international insight = 3.
6. Determining the category in each criterion: negative if included in the minimum category, and positive if included in the maximum category. Branch Support Criteria is the minimum category, while Mastery of NDP material, Islamic and national insight, and international insight are the maximum category.
7. Refinement or normalization of weights($\sum = 1$)
8. Equation for normalizing criterion weights:
9. $Wi = \frac{Wj}{\sum_{j=1}^{n} Wj}$.....(1)
10. Calculate the value of the vector S using the equation:
11. $Si = \prod_{j=1}^{n} XijWJ$ ....(2)
12. Calculating the value of the vector V which will result in ranking. The largest Vi value indicates that Ai is the chosen one.
13. Determining the value of the vector V using the equation
14. $Vi = \frac{Si}{\prod_{j}^{n}(x_j^+)^{WJ}}$.....(3)

Graph of the calculation of the value of vector V (Djufri et al., 2020).Completion of Algorithm calculations
Completion of Algorithm calculations

1. The match levels used are 1. Very Important, 2. Important, 3. Fairly Important (determined by MPK and SC).

Criteria	Description	Weight
K1	Branch Support	2
K2	Mastery of NDP material	4
K3	Islamic and national insight	3
K4	International insight	3

2. Decision making gives reference weight $W = (2, 4, 3, 3)$ (determined by MPK and SC)

Normalization is the process of scaling attribute values within a certain range (such as 0 to 1), in a way that all behaviors have approximately the same magnitude.

1. Normalization of criteria weights using equation (1) can be seen from W_1, W_2, W_3, and W_4

$W_1 = \frac{2}{2+4+3+3} = \frac{2}{12} = 0.1666$
$W_2 = \frac{4}{2+4+3+3} = \frac{4}{12} = 0.3333$
$W_3 = \frac{3}{2+4+3+3} = \frac{3}{12} = 0.2500$
$W_4 = \frac{3}{2+4+3+3} = \frac{3}{12} = 0.2500$

2. The results of the normalization of the criteria weights can be seen in the following table;

Table 2. The results of normalization of criteria weights

Criteria	Normalization results
K1	0.1666
K2	0.3333
K3	0.2500
K4	0.2500

3. The results of the assessment of the data of the Candidates for the General Chair of the HMI Executive Board by SC and MPK based on the agreed criteria.

Table 3. The results of the assessment of the data of the Candidates for the General Chair of the HMI Executive Board by SC and MPK

CANDIDATE/ ALTERNATIVE NAME	CODE	CRITERIA/WEIGHT

		K1	K2	K3	K4
ANDI	A1	0.2924	0.1779	0.2295	0.3002
FULAN	A2	0.2867	0.2614	0.2246	0.2273
SINTA	A3	0.1849	0.2841	0.1796	0.3514
AKBAR	A4	0.2432	0.2408	0.2646	0.2514

4. Determining the Value of the Vector (S).

Determining the value of the Vektor (S) can be done using the following equation;

$$Si = \prod_{j=1}^{n} Xij\ WJ \text{.....(2)}$$

$S_1 = (0.2924^{-0.1666})(0.1779^{0.3333}(0.2295^{0.2500})(0.3002^{0.2500}) = 0.3537$

$S_2 = (0.2867^{-0.1666})(0.2614^{0.3333}(0,2256^{0.2500})(0.2273^{0.2857}) = 0.3747$

$S_3 = (0.1849^{-0.1666})(0.2841^{0.3333}(0.1796^{0.2500})(0.3514^{0.2857}) = 0.4365$

$S_4 = (0.2432^{-0.1666})(0.2408^{0.3333}(0.2646^{0.2500})(0.2514^{0.2857}) = 0.3999$

3. Determining the value of the vector V using the following equation to calculate preference for ranking;

$$Vi = \frac{si}{\Pi_j^n (x_j^*)\ wj} \quad \text{.....(3)}$$

$$V_1 = \frac{0.3537}{0.3537+0.3747+0.4365+0.3999} = \frac{0.3537}{1.5648} = 0.2260$$

$$V_2 = \frac{0.3747}{0.3537+0.3747+0.4365+0.3999} = \frac{0.3747}{1.5648} = 0.2395$$

$$V_3 = \frac{0.2874}{0.3537+0.3747+0.4365+0.3999} = \frac{0.4365}{1.5648} = 0.2789$$

$$V_4 = \frac{0.3786}{0.3537+0.3747+0.4365+0.3999} = \frac{0.3999}{1.5648} = 0.2556$$

Preference value of V (V_1 = 0.2260, V_2 = 0.2395, V_3 =0.2789, V_4 = 0.2556).

Table 4. The results of the ranking of the candidates for the General Chairperson of the HMI Executive Board

Ranking	Candidate/Alternative Name	Code	Results
1	FULAN	A1	0.2789
2	AKBAR	A2	0.2556
3	SINTA	A3	0.2395
4	ANDI	A4	0.2260

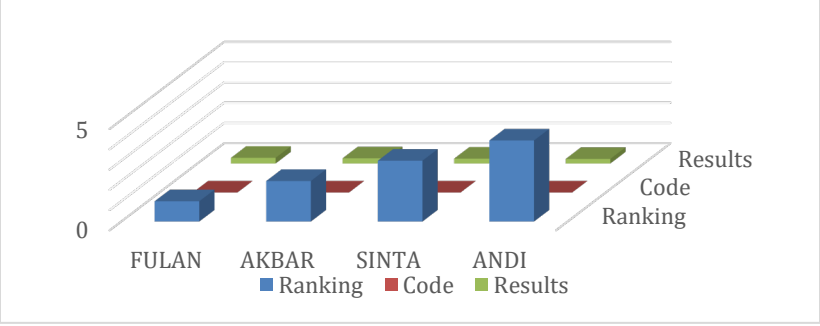

Figure 3. Preference value of V

Based on Figure 3, the preference values of V based on the algorithm analysis of the Weighted Product (WP) method for each candidate for the General Chairperson of the HMI Executive Board, namely Fulan, Akbar, Sinta, and Andi were 0.2789, 0.2556, 0.2395, and 0.2296, respectively. The decision-making then depends on how many alternatives

or candidates for the General Chairperson of the HMI Executive Board have been agreed upon in the previous election mechanism to enter the next stage (election). For the election stage, namely the decision-making about who is elected as the General Chair of the HMI Executive Board, the mechanism is no longer choosing people but the criteria. (Afkari, R., & Wekke, I. S. 2018).

This article shows that the work of the Islamic Student Association is not only the oldest student organization in Indonesia but also the political activism of Islamic students towards the development of democracy after the New Order. It was stated by (Hidayat, & Taufikurrahman, 2020) that the Islamic Student Association helped build a political system that was pro-democracy and participated in the process of developing civil society. It was also stated by (Heryati, & Rusdiana, 2018) that in itself the importance of implementing the basic values of the Islamic Student Association struggle was then adjusted to the activities of HMI as a student organization. (Sumantri, 2019) also emphasized that in expressing the ideals of HMI cadres both religiously and nationally, it is necessary to understand the typology of the student movement through student organizations. (Wekke, I. S., & Mukhtar, S. 2007).

In another article (Renaldo, Nungsiyati, Muslihudin, Wulandari & Oktariyan, 2015) a decision support system which is an interactive computer-based system can help and support a decision and support problem solving. In line with (Effendi, Astuti, & Kridalaksana 2016) who said that it was necessary to ensure that the training presenters went through the required support system. Therefore, this article suggests that in order to make decisions, it is necessary to realize a decision support system that is built systematically in it.Furthermore, it was emphasized by (Kusumantara, Alfian, Yodistina, 2019) that the AHP and SAW methods can support a decision in the leadership selection process. On the other hand, using Fuzzy Multiple Attribute Decision Making (FMADM) can help a decision support system. Therefore, the use that has been determined can facilitate the process of taking and determining it. Likewise in the sustainability of an organization (Watrianthos, Kusmanto, Simanjorang, Syaifullah, & Munthe, 2019).

Finally, this article states that realizing a good organization in the decision-making process cannot be separated from the methods that support and have been determined both application and systemically (Sabri, M., Ikhsan, M., & Wekke, I. S. (2018). Support systems in decision making can be implemented in the Islamic Student Association (HMI) organization and encourage cadres to implement the basic values of struggle as a way of life for Islamic Student Association cadres.

4. Conclusion

HMI implements a decision support system to take the right decisions. Intelligence is the result of the System's contribution. Choice is a phase that is used to choose the right criteria as a support in making decisions. Design is the outcome phase of the contribution of intelligence and design. The decisions made consist of several actions that are used as alternatives in achieving several goals that are applied.

These stages can be used as a reference in decision-making by HMI because they are directly related to the steps of the decision-making system approach by HMI, such as in the election of the General Chairperson of the HMI Executive Board which must use the model included in the administrative submission process for the election of the General Chair. The work of the Islamic Student Association is not only the oldest student organization in Indonesia but also the political activism of Islamic students towards the development of democracy after the New Order. The Islamic Student Association helped build a pro-democratic political system and participated in the process of developing civil society. both in the decision-making process can not be separated from the methods that support and have been determined both in the application and the support system in decision-making can be applied in the organization of the Islamic Student Association (HMI) and encourage cadres to implement the basic values of struggle as a guideline for cadres of the Student Association Islam.

References

Afkari, R., & Wekke, I. S. (2018). Intelektual Mahasiswa Islam. Deepublish.

Caroline, A. (2018). Kajian Konsep MIT 90's Sebagai Salah Satu Kerangka Kerja untuk Membangun Sistem Informasi Bisnis. *JuTISI (Jurnal Teknik Informatika dan Sistem Informasi)*, *4*(1), 93-102.

Djufri, I., Abdullah, M. H., & Turuy, S. (2020). Implementasi Metode Weighted Product (Wp) Dalam Sistem Pengambilan Keputusan Dosen Terbaik Teknik Komputer Akademi Ilmu Komputer Ternate. Jsai (Journal Scientific And Applied Informatics), 3(3), 175–182. Https://Doi.Org/10.36085/Jsai.V3i3.1166

Effendi, H., Astuti, I. F., & Kridalaksana, A. H. (2016). Sistem Penunjang Keputusan Penentuan Pemateri Pelatihan Dengan Fuzzy Inference System (Fis) Tsukamoto (Studi Kasus: Himpunan Mahasiswa Islam Cabang Samarinda). *Informatika Mulawarman: Jurnal Ilmiah Ilmu Komputer*, *7*(2), 58-65.

Fatoni, A., & Dwi, D. (2016). Rancang bangun sistem extreme programming sebagai metodologi pengembangan sistem. *PROSISKO: Jurnal Pengembangan Riset dan Observasi Sistem Komputer*, *3*(1).

Haqi, B. (2019). Aplikasi Spk Pemilihan Dosen Terbaik Metode Simple Additive Weighting (Saw) Dengan Java (Pertama, D). Cv. Budi Utama.

Heryati, H., & Rusdiana, Y. T. (2018). Implementasi nilai dasar perjuangan himpunan mahasiswa Islam terhadap pembinaan kader hmi kota palembang. *HISTORIA: Jurnal Program Studi Pendidikan Sejarah*, *6*(1), 29-44.

Hidayat, W., & Taufikurrahman, T. (2020). Aktivisme Politik Mahasiswa Islam Membangun Demokrasi Pasca Orde Baru. *SANGKéP: Jurnal Kajian Sosial Keagamaan*, *3*(2), 129-144.

Https://Books.Google.Co.Id/Books?Id=99tpdwaaqbaj&Pg=Pt61&Lpg=Pt61&Dq=Sistem+Adalah+Kumpulan+Objek+Seperti+Orang,+Sumber+Daya,+Konsep,+Dan+Prosedur+Yang+Dimaksudkan+Untuk+Melakukan+Suatu+Fungsi+Yang+Dapat+Diidentifikasi+Atau+Untuk+Melayani+Suatu+Tujuan.&So

Iskandar, S. M. (2016). Pendekatan keterampilan metakognitif dalam pembelajaran sains di kelas. *Erudio Journal of Educational Innovation*, *2*(2), 13-20.

Ismail, R., Wekke, I. S., Dinesh Kumar, A., Pandi Selvam, R., Shankar, K., & Nguyen, P. T. (2019). Character reorganization and categorization using hybrid algorithms by scanned documents. International Journal of Engineering and Advanced Technology, 8(6 Special Issue 2), 943-948. doi:10.35940/ijeat.F1287.0886S219

Khaerudin, M. (2018). Sistem Penunjang Keputusan - Ppt Download. Https://Slideplayer.Info/Amp/14854627/

Khairina, D. M., Ivando, D., & Maharani, S. (2016). Implementasi Metode Weighted Product Untuk Aplikasi Pemilihan Smartphone Android. 8(1), 1–8.

Kusrini. (2007). Konsep Dan Aplikasi Sistem Pendukung Keputusan (Sigit Suyantoro (Ed.)). C.V Andi Offset (Penerbit Andi).

Kusumantara, P. M., Alfian, M. I., & Yodistina, Y. (2019). Analisis Metode Ahp Dan Saw Pada Pendukung Keputusan Seleksi Ketua Departemen Himpunan Mahasiswa. *Jurnal Sistem Informasi Dan Bisnis Cerdas (SIBC) Vol*, *12*(1).

Maddatuang, B., Sabara, Z., Wekke, I. S., & Karim, A. (2020). Langkah Mewujudkan Insan Cita Pandangan Lintas Disiplin. Penerbit Qiara Media.

Makin, A., & Makin, A. (2016). Revisiting the Spirit of Religious Nationalism in the Era of Pluralism and Globalization: Reading the Text of NDP of HMI. *Preface B. Flexibility and Pragmatism Along the history of the nation of Indonesia, particularly during the New*, *24*(2), 285-310.

Muthohir, M. (2013). Sistem Pendukung Keputusan Untuk Menentukan Rangking Calon Penerima Beasiswa Menggunakan Pendekatan Fuzzy Query (Studi Kasus Pada Stekom Semarang). *Jurnal Ilmiah Ekonomi Dan Bisnis*, *6*(2).

Perdana, S. (2015). Sistem Pendukung Keputusan | Rizal Setya Perdana. Http://Rizalespe.Lecture.Ub.Ac.Id/2015/09/Sistem-Pendukung-Keputusan/

Pomerol, J.-C., & Adam, F. (2011). Understanding The Legacy Of Herbert Simon To Decision Support Systems. In Encyclopedia Of Decision Making And Decision Support Technologies (Pp. 930–938). Igi Global. Https://Doi.Org/10.4018/978-1-59904-843-7.Ch105

Renaldo, R., Nungsiyati, N., Muslihudin, M., Wulandari, W., & Oktariyan, D. (2015). Fuzzy SAW (Fuzzy Simple Additive Weighting) Sebagai Sistem Pendukung Keputusan Dalam Memilih Perguruan Tinggi Di Kopertis Wilayah II (Study Kasus: Provinsi Lampung). *Prosiding SNATIKA*, *3*, 89-98.

Ronda, D. (2016). Pemimpin dan Media: Misi Pemimpin Membawa Injil Melalui Dunia Digital. *Jurnal Jaffray*, *14*(2), 189-198.

Sabri, M., Ikhsan, M., & Wekke, I. S. (2018). Pengalaman Paramadina sebagai Rumah Pengetahuan Berbasis Nilai-nilai Ketuhanan, Tradisi Hikmah, dan Ilmu Pengetahuan. TEOSOFI: Jurnal Tasawuf dan Pemikiran Islam, 8(2), 373-405.

Saliman. (2018). Mengenal Decision Support System (Dss). Https://Studylibid.Com/Doc/153993/Mengenal-Decision-Support-System--Dss-

Sanmorino, A., & Isabella, I. (2017). DIAGRAM ALIRAN DATA DAN KONSEP BASIS DATA SISTEM INFORMASI MANAJEMEN PETERNAKAN BROILER. *Jurnal Informatika Global*, *8*(1).

Sumantri, R. A. (2019). Tipologi Gerakan Mahasiswa Melalui Organisasi Mahasiswa Islam Di Purwokerto. *Titian: Jurnal Ilmu Humaniora*, *3*(2), 241-259.

Tonni Limbong, Muttaqin, Iskandar Akbar, Windarto Ap, Simarmata Janner, Mesran, Sulaiman Ko, Siregar Dodi, Nofriansyah Dicky, Napitupulu Darmawan, W. A. (2020). Sistem Pendukung Keputusan: Metode & Implementasi (R. Alex (Ed.); Cetakan 1,). Yayasan Kita Menulis. Https://Kitamenulis.Id/

Tukwain, S. M. F., Fatimah, F., & Wekke, I. S. (2018). Religious expression in coastal area of muslim society west papua. Paper presented at the IOP Conference Series: Earth and Environmental Science, , 156(1) doi:10.1088/1755-1315/156/1/012033

Turban, A. & L. (2005). Decision Support Systems And Intelligent Systems | Pearson. Https://Www.Pearson.Com/Us/Higher-Education/Product/Turban-Decision-Support-Systems-And-Intelligent-Systems-7th-Edition/9780130461063.Html

Turoff, M., Hiltz, S. R., Bahgat, A. N., & Rana, A. R. (1993). Distributed group support systems. *MIS quarterly*, 399-417.

Watrianthos, R., Kusmanto, K., Simanjorang, E. F., Syaifullah, M., & Munthe, I. R. (2019). Penerapan Metode Promethee Sebagai Sistem Pendukung Keputusan Pemeringkatan Siswa. *JURNAL MEDIA INFORMATIKA BUDIDARMA*, *3*(4), 381-386.

Wekke, I. S., & Mukhtar, S. (2007). Gerakan mahasiswa: tradisi intelektual berwawasan keindonesiaan keislaman. Proceeding Persidangan Ilmiah, 17.

Wekke, I. S., Aghsari, D., Evizariza, E., Junaidi, J., & Harun, N. (2018). Religion and culture encounters in misool raja ampat: Marine ritual practice of sasi laut. Paper presented at the IOP Conference Series: Earth and Environmental Science, , 156(1) doi:10.1088/1755-1315/156/1/012039

Wekke, I. S., Sitompul, A., & Afkari, R. (2016). Gerakan Himpunan Mahasiswa Islam dalam Pemikiran dan Dakwah di Indonesia. *INSANCITA*, *1*(2).

Wekke, I. S., Sitompul, A., & Afkari, R. (2016). Gerakan Himpunan Mahasiswa Islam dalam Pemikiran dan Dakwah di Indonesia. INSANCITA, 1(2).

Whetyningtyas, A. (2011). Peranan Decision Support System (Dss) Bagi Manajemen Selaku Decision Maker Aprilia Whetyningtyas * Analisis Manajemen Analisis Manajemen. Analisis Manajemen, 5(1), 102–108.

Yukl, G. (2012). Effective leadership behavior: What we know and what questions need more attention. *Academy of Management perspectives*, *26*(4), 66-85.

Yusuf, M., & Wekke, I. S. (2020). Developing environmental awareness and actualizing complete piety based on quran. International Journal of Advanced Science and Technology, 29(5), 2039-2050.

Biographies

Ilham Djufri is the lecturer in North Maluku. Recently, he is the deputy of director of the institution. His research interests include computer, system, and engineering. He is member of Asosiasi Dosen Insan Cita Indonesia. The organization focus on the lecturers empowering of Indonesia.

Ismail Suardi Wekke is a lecturer at Postgraduate Program in the Department of Islamic Education, State Islamic Institute (IAIN) Sorong, Indonesia, where he serves as chair (2020-2021). Ismail was born in the village namely Camba. A village in Maros Regency, South Sulawesi, Indonesia.

Ibnu Hajar Sainuddin is a permanent lecturer at the Darud Da'wah wal-Irsyad Islamic High School Makassar. Completed his master's studies at the Postgraduate program at the Alauddin State Islamic University in Makassar and earned his Masters in Social Affairs. He was a member of the Islamic Student Association (HMI) Commissariat of Da'wah and Communications and the Manager of the Gowa Raya Branch of the Islamic Student Association (HMI).

M. Makbul, a teacher of Islamic Religious Education at the 5 Makassar State Senior High School, as well as a lecturer at the DDI Islamic College of Makassar City, and now continuing his doctoral education at the Alauddin State Islamic University of Makassar. Makbul was born in Baraka, Enrekang, South Sulawesi, Indonesia. His field of interest and research concentration is currently focused on issues of education, teacher training and religious education, and sometimes also discusses research methods.