Selection of Dancer Member Using Simple Additive Weighting

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Abstract

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References

Muslihudin, M.; and Latifah, F. (2015). Decision Support System Penilaian Kinerja Karyawan Pada Perusahaan Menggunakan Metode SAW, Magister Teknik Informatika, Jurusan Sistem Infor- masi, STMIK Pringsewu.

Kurniawan, A.; and Kusrini. (2016). Analisis dan Perancangan Sistem Pendukung Keputusan Penilaiaan Kinerja Guru (PKG) menggunakan metode SAW pada SD Negeri 1 Wonokerto Berbasis WEB. Jurusan Sistem Informasi, Magister Teknik Informatika. STMIK AMIKOM Yogyakarta.

Huda, M., Maseleno, A., Shahrill, M., Jasmi, K. A., Mustari, I., and Basiron, B. (2017a). Exploring Adaptive Teaching Competencies in Big Data Era. International Journal of Emerging Technologies in Learning, 12(3), 68-83.

Huda, M., Maseleno, A., Atmotiyoso, P., Siregar, M., Ahmad, R., Jasmi, K.A., Muhamad, N.H.N., Mustari, I.M., and Basiron, B. (2017b). Emerging Big Data Technologies. Insights into Innovative Environment for Online Learning Resources. International Journal of Emerging Technologies in Learning. (In press).

Maseleno, A.; and Hasan, M.M. (2011). Fuzzy Logic Based Analy- sis of the Sepak takraw Games Ball Kicking with the Respect of Player Arrangement. World Applied Programming Journal, 2(5), 285-293.

Maseleno, A; and Hasan, M.M. (2015). Finding Kicking Range of Sepak Takraw Game: A Fuzzy Logic Approach. Indonesian Journal of Electrical Engineering and Computer Science, 14(3), 557-564.

Maseleno, A.; and Hasan, M.M. (2013). Fuzzy logic and dempster shafer theory to find kicking range of sepak takraw game. Proceed- ings of 5th International Conference on Computer Science and In- formation Technology (CSIT). Amman, Jordan, 8-12.

Maseleno, A.; Hasan, M.M.; Muslihudin, M.; and Susilowati, T. (2016). Finding Kicking Range of Sepak Takraw Game: Fuzzy Log- ic and Dempster-Shafer Theory Approach. Indonesian Journal of Electrical Engineering and Computer Science, 2(1), 187-193.

Maseleno, A.; and Hasan, M.M. (2013). Dempster-shafer theory for move prediction in start kicking of the bicycle kick of sepak takraw game. Middle-East Journal of Scientific Research, 16(7), 896-903.

Maseleno, A.; and Hasan, M.M. (2012). Move prediction in start kicking of sepak takraw game using Dempster-Shafer theory. Pro- ceedings of International Conference on Advanced Computer Sci- ence Applications and Technologies (ACSAT). Kuala Lumpur, Ma- laysia, 376-381.

Maseleno, A.; Hasan, M.M.; Tuah, N.; and Muslihudin, M. (2015). Fuzzy Logic and Dempster-Shafer belief theory to detect the risk of disease spreading of African Trypanosomiasis. Proceedings of Fifth International Conference on Digital Information Processing and Communications (ICDIPC). University of Ap-

plied Sciences and Arts Western Switzerland (HES-SEO Valais Wallis), Switzerland, 153-158.
Maseleno, A.; Hasan, M.M.; Tuah, N.; and Tabbu, C.R. (2015). Fuzzy Logic and Mathematical Theory of Evidence to Detect the Risk of Disease Spreading of Highly Pathogenic Avian Influenza H5N1. Procedia Computer Science, 57, 348-357.
Maseleno, A.; and Hardaker, G. (2016). Malaria detection using mathematical theory of evidence. Songklanakarin Journal of Sci- ence & Technology, 38(3), 257-263.
Maseleno, A.; and Hasan, M.M. (2013). The Dempster-Shafer theory algorithm and its application to insect diseases detection. Interna- tional Journal of Advanced Science and Technology, 50(1), 111-119.
Maseleno, A.; and Hasan, M.M. (2012). Poultry diseases warning system using dempster-shafer theory and web mapping. Internation- al Journal of Advanced Research in Artificial Intelligence, 1(3), 44-48.
Maseleno, A.; and Hasan, M.M. (2012). Skin diseases expert system using Dempster-Shafer theory. International Journal of Intelligent Systems and Applications, 4(5), 38-44.
Maseleno, A.; and Hasan, M.M. (2012). African Trypanosomiasis Detection using Dempster-Shafer Theory. Journal of Emerging Trends in Computing and Information Sciences, 3(4), 480-487.
Maseleno, A.; and Hasan, M.M. (2012). Avian influenza (H5N1) expert system using Dempster-Shafer theory. International Journal of Information and Communication Technology, 4(2), 227-241.
Maseleno, A.; and Muslihudin, M. (2015). Ebola virus disease de- tection using Dempster-Shafer evidence theory. Proceedings of IEEE International Conference on Progress in Informatics and Computing (PIC). Nanjing, China, 579-582.
Maseleno, A.; and Hasan, M.M. (2012). Skin infection detection using Dempster-Shafer theory. Proceedings of International Confer- ence on Informatics, Electronics & Vision (ICIEV). Dhaka, Bangla- desh, 1147 -1151.
Maseleno, A.; and Hidayati, R.Z. (2017). Hepatitis disease detection using Bayesian theory. In AIP Conference Proceedings. East Kali- mantan, Indonesia, 050001-1 – 050001-10.
Maseleno, A.; Huda, M.; Siregar, M.; (2017). Combining the Previ- ous Measure of Evidence to Educational Entrance Examination. Journal of Artificial Intelligence, 10 (3), 85-90.
Rosli, M.R.B., Salamon, H.B., and Huda, M. (2018). Distribution Management of Zakat Fund: Recommended Proposal for Asnaf Riqab in Malaysia. International Journal of Civil Engineering and Technology 9 (3), pp. 56–64.
Aminin, S., Huda, M., Ninsiana, W., and Dacholfany, M.I. (2018). Sustaining civic-based moral values: Insights from language learn- ing and literature. International Journal of Civil Engineering and Technology. 9(4), 157-174.
Maseleno, A., Pardimin, Huda, M., Ramlan, Hehsan, A., Yusof, Y.M., Haron, Z., Ripin, M.N., Nor, N.H.M., and Junaidi, J. (2018a). Mathematical Theory of Evidence to Subject Expertise Diagnostic. ICIC Express Letters, 12 (4), 369 DOI: 10.24507/icicel.12.04.369
Maseleno, A., Huda, M., Jasmi, K.A., Basiron, B., Mustari, I., Don, A.G., and Ahmad, R. (2018b). Hau-Kashyap approach for student's level of expertise. Egyptian Informatics Journal, doi.org/10.1016/j.eij.2018.04.001.
Huda, M., & Teh, K. S. M. (2018). Empowering Professional and Ethical Competence on Reflective Teaching Practice in Digital Era. In Dikilitas, K., Mede, E., Atay D. (Eds). Mentorship Strategies in Teacher Education (pp. 136-152). Hershey, PA: IGI Global. doi: 10.4018/978-1-5225-4050-2.ch007.
Huda, M., Teh, K.S.M., Nor, N.H.M., and Nor, M.B.M. (2018a). Transmitting Leadership Based Civic Responsibility: Insights from Service Learning. International Journal of Ethics and Systems, 34(1), 20-31.
Huda, M., Maseleno, A., Muhamad, N.H.N., Jasmi, K.A., Ahmad, A., Mustari, M.I., Basiron, B. (2018b). Big Data Emerging Tech- nology: Insights into Innovative Environment for Online Learning Resources. International Journal of Emerging Technologies in Learning 13(1), 23-36. doi:10.3991/ijet.v13i01.6990
Huda, M., Maseleno, A., Teh, K.S.M., Don, A.G., Basiron, B., Jasmi, K.A., Mustari, M.I., Nasir, B.M., and Ahmad, R. (2018c). Understanding Modern Learning Environment (MLE) in Big Data Era. International Journal of Emerging Technologies in Learning. 13(5), 71-85. doi: 10.3991/ijet.v13i05.8042
Huda., M. & Sabani, N. (2018). Empowering Muslim Children's Spirituality in Malay Archipelago: Integration between National Philosophical Foundations and Tawakkul (Trust in God). International Journal of Children's Spirituality, 23(1), 81-94.
Huda, M., Jasmi, K. A., Mustari, M. I., Basiron, B., Mohamed, A. K., Embong, W., ... & Safar, J. (2017c). Innovative E-Therapy Ser- vice in Higher Education: Mobile Application Design. International Journal of Interactive Mobile Technologies, 11(4), 83-94.
Huda, M., Siregar, M., Ramlan, Rahman, S.K.A., Mat Teh, K.S., Said, H., Jamsari, E.A., Yacub, J.,

Dacholfany, M.I., & Ninsiana, W. (2017d). From Live Interaction to Virtual Interaction: An Exposure on the Moral Engagement in the Digital Era. Journal of Theoretical and Applied Information Technology, 95(19), 4964-4972.

Anshari, M., Almunawar, M. N., Shahrill, M., Wicaksono, D. K., & Huda, M. (2017e). Smartphones usage in the classrooms: Learning aid or interference?. Education and Information Technologies, 22(6), 3063-3079.

Huda, M., Sabani, N., Shahrill, M., Jasmi, K. A., Basiron, B., & Mustari, M. I. (2017f). Empowering Learning Culture as Student Identity Construction in Higher Education. In A. Shahriar, & G. Syed (Eds.), Student Culture and Identity in Higher Education (pp.160-179). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-2551-6.ch010

Huda, M., Jasmi, K. A., Hehsan, A., Shahrill, M., Mustari, M. I., Basiron, B., & Gassama, S. K. (2017g). Empowering Children with Adaptive Technology Skills: Careful Engagement in the Digital Information Age. International Electronic Journal of Elementary Education, 9(3), 693-708.

Huda, M., Jasmi, K. A., Basiran, B., Mustari, M. I. B., & Sabani, A. N. (2017h). Traditional Wisdom on Sustainable Learning: An In- sightful View From Al-Zarnuji's Ta 'lim al-Muta 'allim. SAGE Open, 7(1), 1-8.

Huda, M., Jasmi, K. A., Embong, W. H., Safar, J., Mohamad, A. M., Mohamed, A. K., Muhamad, N. H., Alas, Y., & Rahman, S. K. (2017i). Nurturing Compassion-Based Empathy: Innovative Ap- proach in Higher Education. In M. Badea, & M. Suditu (Eds.), Violence Prevention and Safety Promotion in Higher Education Set- tings (pp. 154-173). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-2960-6.ch009.

Huda, M., Jasmi, K. A., Alas, Y., Qodriah, S. L., Dacholfany, M. I., & Jamsari, E. A. (2017j). Empowering Civic Responsibility: In- sights From Service Learning. In S. Burton (Ed.), Engaged Scholar- ship and Civic Responsibility in Higher Education(pp. 144-165). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-3649-9.ch007

Huda, M. (2018). Empowering Application Strategy in the Tech- nology Adoption: Insights from Professional and Ethical Engage- ment. Journal of Science and Technology Policy Management. doi.org/10.1108/JSTPM-09-2017-0044.

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Research paper

Selection of dancer member using simple additive weighting

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Abstract

Travel and dance form in Indonesia is closely related to the development of community life, both in terms of ethnic structure and within the scope of the unitary state. This study determines the criteria for selecting dancer members and how to apply the qualified Simple method. Based on predetermined criteria is the ability to dance physical flexibility, skilled, nimble, confident, have the ability, fill out the form, and certificate of achievement. From the results obtained values then V_1, V2, V3, V4, V5 is a member of a qualified dancer and has a highest value with a score of 100 which was obtained from V_2.

Keywords: *Dance, Criteria, Simple Additive Weighting*

1. Introduction

Indonesia is admired by other countries because of the many cultures in it. Cultural differences that make the culture in Indonesia to be diverse. One of those cultures is the Art of Dance. The embodiment of cultural expression through the movement that is imbued and tied cultural values into a basic benchmark or standard measure of dance to be studied into the form of dances in Indonesia. The art of dance is needed in various aspects such as welcoming candidates of leaders in various regions, welcoming guests at various events, as well as done at the party of the people in various regions.

Some previous research such as research conducted by Muhamad Muslihudin and Febriani Latifah [1] The use of Decision Support System in determining the performance of the best employees can help and simplify the company in assessing the performance of its employees based on predetermined criteria of discipline, cleanliness, honesty, communication, cooperation and responsibility. Research conducted by Ardi Kurniawan and Kusrini [2] on Decision Support System in determining the Teacher Performance Assessment can be used to complete the decision making in determining the employee's performance based on the criteria that have been determined. Assessment is also as a consideration of decision makers to give awards or reprimands to each employee. The rapid development of research has also led to the study of Big Data [3] [4].

Decision Support System in selecting dance members can help schools, colleges, and an organization select dance members based on predetermined criteria of dancing skills, physical flexibility, skill, deftness, confidence, skill, filling out forms, and achievement certificates. Training in a teaching or giving experience for a person to develop behavior (knowledge, skills, attitudes) in order to achieve something to be desired. Dance is the expression of the human soul which is expressed through rhythmic and beautiful movements.

The study was to determine the criteria for selecting dancer members and how to apply the Simple Additive Weighting (SAW) method to the decision support system to determine the members of the dancers. The SAW method is often also known as the weighted summing method. The basic concept of the SAW method is to find the weighted sum of performance ratings on each alternative to an attribute. The application of Simple Additive Weighting (SAW) method in determining the members of the dancers can make it easier for schools, colleges, or an organization in selecting the best and qualified dancers.

1.1 Problem Formulation

Based on the above background, then the formulation of the problem is:

1. How to determine the criteria of the dancer's members?
2. How to apply the Simple Additive Weighting (SAW) method into decision support system to determine the members of the dancers
3. How to design a decision support system in selecting dancer members based on predetermined criteria.

1.2 Scope of problem

In order that the discussion does not deviate from the subject matter that has been formulated, it can be taken problem limitation as follows:

1. The criteria that are prioritized in nature determine the acceptance of new dancers: the ability to dance, physical flexibility, skill, deftness, confidence, skill, filling out forms, and achievement certificates.
2. The method used is Simple Additive Weighting (SAW)
3. This Decision Support System determines the members of the dancers.

1.3 Purpose of study

Purpose of study are as follows:

1. Applying Simple Additive Weighting (SAW) method in determining the members of the dancers based on the criteria applied by the school, campus or an organization.
2. Add knowledge of Simple Additive Weighting (SAW) method.
3. Produce a valid and accurate selection of member information system.

1.4 Benefit of Research

The benefits provided in this research are as follows:
1. Make it easy in determining the members of the dancers.
2. As information useful for school, college, and an organization in its application.
3. Minimize the time in the selection of dancers.

2. Literature Review

2.1 Decision Support System (DSS)

Decision Support System (DSS) was first stated with the term "Management Decision System". Following the statement, several agencies undertook the research and development of the Decision Support System concept. Decision support systems have been used on research relating to sports [5- 10], the detection of the disease [11 -21] and education [22]. Basically DSS is designed to support all decision-making stages from identifying problems, selecting relevant data, defining approaches used in the decision-making process to evaluating alternative selection. This research is also inspired by researchers [23 – 40].

2.2 Definition of Dance

Dance is a rhythmic expression of motion of aesthetically assessed feeling states, whose symbols of motion are consciously designed for the enjoyment and satisfaction of repeated experiences, expressions, communicates, executes, and from the creation of forms.

2.3 Stages of Decision Making

Several stages of the process that must be passed in decision making namely

a. Stages of search (Intelligence). In this stage the decision maker learns the facts that occur, so we can identify the problems that occur. Usually performed an analysis of the system to its forming subsystem so that the output obtained in the form of a document statement of the problem.
b. Design Stage. In this stage the decision maker finds, develops, and analyzes all solutions, ie through modeling that can represent the real conditions of the problem. From this stage obtained the results of the form of alternative documents solution.
c. Choice Stage. In this stage the decision maker chooses one of the alternative solutions made at the design stage which is seen as the most appropriate action to overcome the current problem. From this stage obtained the solution document and implementation plan.
d. Implementation Phase. The decision maker runs the selected split action sequence in Choice. Successful implementation is marked by the answer to the problem faced, while the failure is marked still a problem that is being tried to overcome. From this stage obtained report the implementation of the solution results.

2.4 Criteria Decision Support System

Decision Support Systems are specifically designed to support a person who must make certain decisions. Decision support systems are related to uncertainty, some research on uncertainty. Here are some criteria of Decision Support System are:

a. Interactive. Decision Support System has a communicative user interface, so the user can access quickly to the data and get the information needed.
b. Flexible. Decision Support System has as many input variables as possible, the ability to process and deliver output that presents decision alternatives to the user.
c. Quality Data Decision support systems have the ability to receive quantitative quality data that are subjective from the user, as input data for data processing.
d. Expert Procedures Decision support systems contain a planned procedure based on formal formulas or also in the form of a person or group's expertise procedure in solving a problem area with a particular phenomenon.

2.5 FMADM

The FMADM method is a further development of MADM. MADM refers to decision-making based on selection of multiple options that each have multiple attributes and inter-attributes that conflict with each other. In decision making where a problem can not be presented correctly into the value of crips, or in other words into boolean values , then the application of Fuzzy logic can be a problem solving. Application of fuzzy logic in MADM, hereinafter referred to as FMADM. The usual MADM method deficiencies against imprecise data, and are within the approximate range of values can be covered.
There are several methods that can be used to solve FMADM problems, among others:

a. Simple Additive Weighting Method (SAW)
b. Weighted Product (WP)
c. ELECTRE
d. Technique for Order Similar Preference to Ideal Solution (TOPSIS)
e. Analytical Hierarchy Process (AHP)

2.5.1 FMADM algorithm

The FMADM algorithm is:

a. Give each alternative value (Ai) on each criterion (Cj) that has been determined, where the value is obtained based on the value of crisp i = 1,2, ... m and j = 1,2, ... n.
b. Gives a weight value (W) which is also obtained based on crisp value.
c. Perform normalized matrices by calculating the normalized performance rating (rij) value of the alternative Ai on the attribute Cj based on the equation adjusted to the type of attribute (attribute benefit / MAXIMUM or cost attribute / cost = MINIMUM). In the case of a profit attribute, the crisp (Xij) value of each attribute lolom is attributed to the crisp MAX (MAX Xij) value of each column, while for the cost attribute, the crisp Min (MIN Xij) value of each attribute column is divided by the crisp (Xij) value each column.
d. Perform the ranking process by multiplying the normalized matrix (R) with the weight value (W).
e. Determine the preference value for each alternative (Vi) by summing the product of the normalized matrix (R) with the weight value (W). Greater Vi values indicate that Ai alternatives more elected.

2.5.2 Steps to Completion

In this research using FMADM SAW method. The steps are:

1. Determining the criteria that will be used as a reference in decision making, namely Ci.

2. Specifies each alternative's match rating on each attribute.
3. Create a decision matrix based on criteria (Ci), then normalize the matrix based on the equation that is adjusted to the type of attribute (attribute gain or cost attribute) to obtain a normalized matrix R.
4. The final result obtained from the ranking process is the sum of the matrix multiplication normalized R with the weight vector to obtain the largest value selected as the best alternative (Ai) as a solution.

3. Research Method

3.1 Simple Additive Weight (SAW)

The SAW method is often also known as the weighted summing method. The basic concept of the SAW method is to find the weighted sum of performance ratings on each alternative on all attributes. The SAW method requires the process of normalizing the decision matrix (X) to a scale comparable to all available alternative twigs. The SAW settlement measures are as follows:

1. Determining the criteria that will be made in reference in decision making, namely Ci.
2. Specify rating matches of each alternative on each criteria.
3. Preparing the decision matrix by criteria (Ci), then normalized matrix based on the equation n adjusted n with the type attribute (attribute or attributes benefit costs) in order to obtain the normalized matrix R.
4. The end result of the ranking process is the sum of the matrix multiplication normalized R with the weight vector to obtain the largest value selected as the best alternative (Ai) as a solution.

$$r_{ij} = \begin{cases} \dfrac{X_{ij}}{\max_i X_{ij}} \\ \dfrac{\min_i X_{ij}}{X_{ij}} \end{cases}$$

Information:
rij = normalized performance rating value
Xij = attribute value owned by each
Criteria:
Max Xij = the greatest value of each criterion
Min Xij = the smallest value of each criterion
Benefit = if the largest value is the best value
Cost = if the smallest value is the best value
Where rij is the normalized rating of the alternative Ai on the attribute Cj; i = 1,2 ..., m and j = 1,2 ..., n. The preference value for each alternative (Vi) is given as:

$$V_i = \sum_{j=1}^{n} w_j r_{ij}$$

Information:
Vi = ranking for each alternative
Wj = weighted value of each criterion
rij = normalized performance rating value
A larger value of Vi identifies that Ai alternatives are preferred.

3.2 Criteria and Weights

In this study there are weights and criteria set out in determining who will be selected as a member of the best dancers. Criteria of Condition 1 is shown in Table 1. Criteria of Condition 2 is shown in Table 2. Criteria of Condition 3 is shown in Table 3. Criteria of Condition 4 is shown in Table 4. Criteria of Condition 5 is shown in Table 5.

Table 1: Criteria of Condition 1

Criteria	Information	Value
C1	Dancing ability	20
C2	Physical Suspension	20
C3	Order	10
C4	Have Skills	10
C5	Confidence	10
C6	Deft	5
C7	Filling in form	5
C8	Certificate of Achievement	20
		100

Alternative:
A1 = Hana
A2 = Adela
A3 = Dela
A4 = Ana
A5 = Adel

Table 2: Criteria of Condition 2

Criteria	Information	Value
C1	Dancing ability	20
C2	Physical Suspension	15
C3	Order	10
C4	Have Skills	10
C5	Confidence	5
C6	Deft	5
C7	Filling in form	5
C8	Certificate of Achievement	30
		100

Alternative:
A1 = Enggy
A2 = Lady
A3 = Asry
A4 = Sry
A5 = Lad

Table 3: Criteria of Condition 3

Criteria	Information	Value
C1	Dancing ability	10
C2	Physical Suspension	5
C3	Order	15
C4	Have Skills	15
C5	Confidence	15
C6	Deft	10
C7	Filling in form	5
C8	Certificate of Achievement	25
		100

Alternative:
A1 = Sella
A2 = Risky
A3 = Ella
A4 = Isky
A5 = Sky

Table 4: Criteria of Condition 4

Criteria	Information	Value
C1	Dancing ability	20
C2	Physical Suspension	5
C3	Order	10
C4	Have Skills	10
C5	Confidence	2 0
C6	Deft	15
C7	Filling in form	5

C8	Certificate of Achievement	15
		100

Alternative:
A1 = Dwi
A2 = Barrel
A3 = Saty
A4 = Array
A5 = Aty

Table 5: Criteria of Condition 5

Criteria	Information	Value
C1	Dancing ability	10
C2	Physical Suspension	15
C3	Order	10
C4	Have Skills	10
C5	Confidence	15
C6	Deft	10
C7	Filling in form	5
C8	Certificate of Achievement	25
		100

Alternative:
A1 = Anitta
A2 = Princess
A3 = Itta
A4 = Put
A5 = Ani

4. A step before the final submission

4.1 Systems Analysis and Design

In the process of making Decision Support System Selection of dancer members need weighting on each criterion that has been determined by the decision maker or experts in his field. Weighting value is shown in Table 6. For the selection of dancers there are 8 criteria that will be used namely Criteria C1 - C8 which are shown in Table 7, Table 8, Table 9, Table 10, Table 11, Table 12, Table 13, and Table 14.

4.2 System Analysis

Decision Support System The selection of dancer members is a software built to determine qualified dancers by selecting criteria determined under the previous provisions.

4.3 Input Analysis

Data input (Input) to make the decision-making process of several alternatives is done through data entry process in the form of new student ranking criteria that have been applied. Then the decision process will be made using Fuzzy Multi Attribute Decision Making (FMADM) using Simple Additive Weighting (SAW).

4.4 Output Analysis

Data output (Output) resulting from this is an alternative system determines the ranking member of dancers who have the highest value to the lowest value. The final result issued by this Decision Support System comes from the value of each alternative criteria of the dancer's members, because in each criterion has different values.

4.5 Discussion and Results Analysis

Based on the troubleshooting steps using the SAW method described earlier, in this section will discuss about the process of calculation results and the determination of the members of the dancer.

Table 6: Weighting Value

Weight	Value
Very Low (SR)	1
Low (R)	2
Simply (C)	3
High (T)	4
Very High (ST)	5

Table 7: Dancing Capability (C1)

Dancing ability	Weight	Value
Unable	SR	1
Less fortunate	R	2
Capable	C	3
Very capable	ST	5

Table 8: Physical Fluidity (C2)

Physical flexibility	Weight	Value
No Expert	SR	1
Less Experts	R	2
Expert	C	3
Very Expert	ST	5

Table 9: Order (C3)

Not Ordered	Weight	Value
Not good	SR	1
Good	C	3
Very good	ST	5

Table 10: Has Skills (C4)

Have Skills	Weight	Value
Not Good	SR	1
Good	C	3
Very good	S T	5

Table 11: Confidence (C5)

Confidence	Weight	Value
Very low	SR	1
Low	R	2
Enough	C	3
High	T	4
Very high	ST	5

Table 12: Deft (C6)

Deft	Weight	Value
Not Good	SR	1
Not Good	R	2
Good	C	3
Very Good	ST	5

Table 13: Filling Forms (C7)

Filling in form	Weight	Value
Not on time	C	3
On time	T	4

Table 14: Achievement Certificate (C8)

Certificate of Achievement	Weight	Value
Low	R	2
Enough	C	3
High	T	4
Very high	ST	5

4.5.1 Specify a Match Rating

Based on the above data, can be matrix decision X decisions. Alternative condition fitness rating 1 – 5 is shown in Table 15, Table 16, Table 17, Table 18, and Table 19.

Table 15: alternative condition fitness rating 1

Alternative	Criteria							
	C 1	C 2	C 3	C 4	C 5	C 6	C 7	C 8
A1	5	2	3	5	4	3	4	2
A2	2	1	3	5	3	3	4	1
A3	1	3	3	5	2	3	4	1
A4	3	1	3	5	2	3	4	3
A5	2	2	3	5	4	3	4	2

Table 16: alternative condition fitness rating 2

Alternative	Criteria							
	C 1	C 2	C 3	C 4	C 5	C 6	C 7	C 8
A1	3	2	5	1	4	2	3	3
A2	2	1	3	3	2	3	4	2
A3	1	3	3	1	2	3	3	4
A4	5	3	5	3	4	5	4	5
A5	2	1	1	3	2	3	4	3

Table 17: alternative condition fitness rating 3

Alternative	Criteria							
	C 1	C 2	C 3	C 4	C 5	C 6	C 7	C 8
A1	2	1	3	3	3	1	4	2
A2	1	3	5	5	3	2	3	4
A3	3	5	3	3	4	5	4	5
A4	3	2	3	5	2	1	3	4
A5	5	3	5	1	3	2	3	3

Table 18: alternative condition fitness rating 4

Alternative	Criteria							
	C 1	C 2	C 3	C 4	C 5	C 6	4 7	C 8
A1	1	3	1	5	2	5	3	4
A2	3	5	1	1	4	1	4	3
A3	2	1	5	5	3	2	3	2
A4	1	5	3	3	5	3	4	4
A5	5	2	3	1	4	5	4	5

Table 19: alternative condition fitness rating 5

Alternative	Criteria							
	C 1	C 2	C 3	C 4	C 5	C 6	C 7	C 8
A1	3	2	5	3	5	3	4	3
A2	2	1	3	5	4	2	3	4
A3	1	5	1	1	2	5	3	2
A4	5	2	3	5	1	1	4	5
A5	3	1	5	3	3	2	3	3

Decision making gives weight, based on the level of importance of each of the required criteria as follows: **Vector Weight W = [20, 20, 10, 10, 10, 5, 5, 20].** Creating a decision matrix X, a match table is created as follows:

$$\text{X Condition1}=\begin{Bmatrix}5\,2\,3\,5\,4\,3\,4\,2\\2\,1\,3\,5\,3\,3\,4\,1\\1\,3\,3\,5\,2\,3\,4\,1\\3\,1\,3\,5\,2\,3\,4\,3\\2\,2\,3\,5\,4\,3\,4\,2\end{Bmatrix}$$

$$\text{X Condition2}=\begin{Bmatrix}3\,2\,5\,1\,4\,2\,3\,3\\2\,1\,3\,3\,2\,3\,4\,2\\1\,3\,3\,1\,2\,3\,3\,4\\5\,3\,5\,3\,4\,5\,4\,5\\2\,1\,1\,3\,2\,3\,4\,3\end{Bmatrix}$$

$$\text{X Condition3}=\begin{Bmatrix}2\,1\,3\,3\,3\,1\,4\,2\\1\,3\,5\,5\,3\,2\,3\,4\\3\,5\,3\,3\,4\,5\,4\,5\\3\,2\,3\,5\,2\,1\,3\,4\\5\,3\,5\,1\,3\,2\,3\,3\end{Bmatrix}$$

$$\text{X Condition4}=\begin{Bmatrix}1\,3\,1\,5\,2\,5\,3\,4\\3\,5\,1\,1\,4\,1\,4\,3\\2\,1\,5\,5\,3\,2\,3\,2\\1\,5\,3\,3\,5\,3\,4\,4\\5\,2\,3\,1\,4\,5\,4\,5\end{Bmatrix}$$

$$\text{X condition5}=\begin{Bmatrix}3\,2\,5\,3\,5\,3\,4\,3\\2\,1\,3\,5\,4\,2\,3\,4\\1\,5\,1\,1\,2\,5\,3\,2\\5\,2\,3\,5\,1\,1\,4\,5\\3\,1\,5\,3\,3\,2\,3\,3\end{Bmatrix}$$

4.5.2 Normalization of Matrices

First, the normalization of X matrix to calculate the value of each criterion based on predetermined criteria, namely:

Condition 1

- **A1**

$R_1 = \frac{5}{Max\,\{5,2,1,3,2\}} = \frac{5}{5} = 1$

$R_2 = \frac{2}{Max\,\{2,1,3,1,2\}} = \frac{2}{3} = 0.6$

$R_3 = \frac{3}{Max\,\{3,3,3,3,3,\}} = \frac{3}{3} = 1$

$R_4 = \frac{5}{Max\,\{5,5,5,5,5\}} = \frac{5}{5} = 1$

$R_5 = \frac{4}{Max\,\{4,3,2,2,4\}} = \frac{4}{4} = 1$

$R_6 = \frac{3}{Max\,\{3,3,3,3,3\}} = \frac{3}{3} = 1$

$R_7 = \frac{4}{Max\,\{4,4,4,4,4\}} = \frac{4}{4} = 1$

$R_8 = \frac{2}{Max\,\{2,1,1,3,2\}} = \frac{2}{3} = 0.6$

- **A2**

$R_{21} = \frac{2}{Max\,\{5,2,1,3,2\}} = \frac{2}{5} = 0.4$

$R_{22} = \frac{1}{Max\,\{2,1,3,1,2\}} = \frac{1}{3} = 0.3$

$R_{23} = \frac{3}{Max\,\{3,3,3,3,3,\}} = \frac{3}{3} = 1$

$R_{24} = \frac{5}{Max\{5,5,5,5,5\}} = \frac{5}{5} = 1$

$R_{25} = \frac{3}{Max\{4,3,2,2,4\}} = \frac{3}{4} = 0.75$

$R_{26} = \frac{3}{Max\{3,3,3,3,3\}} = \frac{3}{3} = 1$

$R_{27} = \frac{4}{Max\{4,4,4,4,4\}} = \frac{4}{4} = 1$

$R_{28} = \frac{1}{Max\{2,1,1,3,2\}} = \frac{1}{3} = 0.3$

- **A3**

$R_{31} = \frac{1}{Max\{5,2,1,3,2\}} = \frac{1}{5} = 0.2$

$R_{32} = \frac{3}{Max\{2,1,3,1,2\}} = \frac{3}{3} = 1$

$R_{33} = \frac{3}{Max\{3,3,3,3,3,\}} = \frac{3}{3} = 1$

$R_{34} = \frac{5}{Max\{5,5,5,5,5\}} = \frac{5}{5} = 1$

$R_{35} = \frac{2}{Max\{4,3,2,2,4\}} = \frac{2}{4} = 0.5$

$R_{36} = \frac{3}{Max\{3,3,3,3,3\}} = \frac{3}{3} = 1$

$R_{37} = \frac{4}{Max\{4,4,4,4,4\}} = \frac{4}{4} = 1$

$R_{38} = \frac{1}{Max\{2,1,1,3,2\}} = \frac{1}{3} = 0.3$

- **A4**

$R_{41} = \frac{3}{Max\{5,2,1,3,2\}} = \frac{3}{5} = 0.6$

$R_{42} = \frac{1}{Max\{2,1,3,1,2\}} = \frac{1}{3} = 0.3$

$R_{43} = \frac{3}{Max\{3,3,3,3,3,\}} = \frac{3}{3} = 1$

$R_{44} = \frac{5}{Max\{5,5,5,5,5\}} = \frac{5}{5} = 1$

$R_{45} = \frac{2}{Max\{4,3,2,2,4\}} = \frac{2}{4} = 0.5$

$R_{46} = \frac{3}{Max\{3,3,3,3,3\}} = \frac{3}{3} = 1$

$R_{47} = \frac{4}{Max\{4,4,4,4,4\}} = \frac{4}{4} = 1$

$R_{48} = \frac{3}{Max\{2,1,1,3,2\}} = \frac{3}{3} = 1$

- **A5**

$R_{51} = \frac{2}{Max\{5,2,1,3,2\}} = \frac{2}{5} = 0.4$

$R_{52} = \frac{2}{Max\{2,1,3,1,2\}} = \frac{2}{3} = 0.6$

$R_{53} = \frac{3}{Max\{3,3,3,3,3,\}} = \frac{3}{3} = 1$

$R_{54} = \frac{5}{Max\{5,5,5,5,5\}} = \frac{5}{5} = 1$

$R_{55} = \frac{4}{Max\{4,3,2,2,4\}} = \frac{4}{4} = 1$

$R_{56} = \frac{3}{Max\{3,3,3,3,3\}} = \frac{3}{3} = 1$

$R_{57} = \frac{4}{Max\{4,4,4,4,4\}} = \frac{4}{4} = 1$

$R_{58} = \frac{2}{Max\{2,1,1,3,2\}} = \frac{2}{3} = 0.6$

Condition 2

- **A1**

$R_1 = \frac{3}{Max\{3,2,1,5,2\}} = \frac{3}{5} = 0.6$

$R_2 = \frac{2}{Max\{2,1,3,3,1\}} = \frac{2}{3} = 0.6$

$R_3 = \frac{5}{Max\{5,3,3,5,1\}} = \frac{5}{5} = 1$

$R_4 = \frac{1}{Max\{1,3,1,3,3\}} = \frac{1}{3} = 0.3$

$R_5 = \frac{4}{Max\{4,2,2,4,2\}} = \frac{4}{4} = 1$

$R_6 = \frac{2}{Max\{2,3,3,5,3\}} = \frac{2}{5} = 0.4$

$R_7 = \frac{3}{Max\{3,4,3,4,4\}} = \frac{3}{4} = 0.75$

$R_8 = \frac{3}{Max\{3,2,4,5,3\}} = \frac{3}{5} = 0.6$

- **A2**

$R_{21} = \frac{2}{Max\{3,2,1,5,2\}} = \frac{2}{5} = 0.4$

$R_{22} = \frac{1}{Max\{2,1,3,3,1\}} = \frac{1}{3} = 0.3$

$R_{23} = \frac{3}{Max\{5,3,3,5,1\}} = \frac{3}{5} = 0.6$

$R_{24} = \frac{3}{Max\{1,3,1,3,3\}} = \frac{3}{3} = 1$

$R_5 = \frac{2}{Max\{4,2,2,4,2\}} = \frac{2}{4} = 0.5$

$R_{26} = \frac{3}{Max\{2,3,3,5,3\}} = \frac{3}{5} = 0.6$

$R_{27} = \frac{4}{Max\{3,4,3,4,4\}} = \frac{4}{4} = 1$

$R_{28} = \frac{2}{Max\{3,2,4,5,3\}} = \frac{2}{5} = 0.4$

- **A3**

$R_{31} = \frac{1}{Max\{3,2,1,5,2\}} = \frac{1}{5} = 0.2$

$R_{32} = \frac{3}{Max\{2,1,3,3,1\}} = \frac{3}{3} = 1$

$R_{33} = \frac{3}{Max\{5,3,3,5,1\}} = \frac{3}{5} = 0.6$

$R_{34} = \frac{1}{Max\{1,3,1,3,3\}} = \frac{1}{3} = 0.3$

$R_{35} = \frac{2}{Max\{4,2,2,4,2\}} = \frac{2}{4} = 0.5$

$R_{36} = \frac{3}{Max\{2,3,3,5,3\}} = \frac{3}{5} = 0.6$

$R_{37} = \frac{3}{Max\{3,4,3,4,4\}} = \frac{3}{4} = 0.75$

$R_{38} = \frac{4}{Max\{3,2,4,5,3\}} = \frac{4}{5} = 0.8$

- **A4**

$R_{41} = \frac{5}{Max\{3,2,1,5,2\}} = \frac{5}{5} = 1$

$R_{42} = \frac{3}{Max\{2,1,3,3,1\}} = \frac{3}{3} = 1$

$R_{43} = \frac{5}{Max\{5,3,3,5,1\}} = \frac{5}{5} = 1$

$R_{44} = \frac{3}{Max\{1,3,1,3,3\}} = \frac{3}{3} = 1$

$R_{45} = \frac{4}{Max\{4,2,2,4,2\}} = \frac{4}{4} = 1$

$R_{46} = \frac{5}{Max\{2,3,3,5,3\}} = \frac{5}{5} = 1$

$R_{47} = \frac{4}{Max\{3,4,3,4,4\}} = \frac{4}{4} = 1$

$R_{48} = \frac{5}{Max\{3,2,4,5,3\}} = \frac{5}{5} = 1$

- **A5**

$R_{51} = \frac{2}{Max\{3,2,1,5,2\}} = \frac{2}{5} = 0.4$

$R_{52} = \frac{1}{Max\{2,1,3,3,1\}} = \frac{1}{3} = 0.3$

$R_{53} = \frac{1}{Max\{5,3,3,5,1\}} = \frac{1}{5} = 0.2$

$R_{54} = \frac{3}{Max\{1,3,1,3,3\}} = \frac{3}{3} = 1$

$R_{55} = \frac{2}{Max\{4,2,2,4,2\}} = \frac{2}{4} = 0.5$

$R_{56} = \frac{3}{Max\{2,3,3,5,3\}} = \frac{3}{5} = 0.6$

$R_{57} = \frac{4}{Max\{3,4,3,4,4\}} = \frac{4}{4} = 1$

$R_{58} = \frac{3}{Max\{3,2,4,5,3\}} = \frac{3}{5} = 0.6$

Condition 3

- **A1**

$R_{1} = \frac{2}{Max\{2,1,3,3,5\}} = \frac{2}{5} = 0.4$

$R_{2} = \frac{1}{Max\{1,3,5,2,3\}} = \frac{1}{5} = 0.2$

$R_{3} = \frac{3}{Max\{3,5,3,3,5\}} = \frac{3}{5} = 0.6$

$R_{4} = \frac{3}{Max\{3,5,3,5,1\}} = \frac{3}{5} = 0.6$

$R_{5} = \frac{3}{Max\{3.3.4.2.3\}} = \frac{3}{4} = 0.75$

$R_{6} = \frac{1}{Max\{1,2,5,1,2\}} = \frac{1}{5} = 0.2$

$R_{7} = \frac{4}{Max\{4,3,4,3,3\}} = \frac{4}{4} = 1$

$R_{8} = \frac{2}{Max\{2,4,5,4,3\}} = \frac{2}{5} = 0.4$

- **A2**

$R_{21} = \frac{1}{Max\{2,1,3,3,5\}} = \frac{1}{5} = 0.2$

$R_{22} = \frac{3}{Max\{1,3,5,2,3\}} = \frac{3}{5} = 0.6$

$R_{23} = \frac{5}{Max\{3,5,3,3,5\}} = \frac{5}{5} = 1$

$R_{24} = \frac{5}{Max\{3,5,3,5,1\}} = \frac{5}{5} = 1$

$R_{25} = \frac{3}{Max\{3.3.4.2.3\}} = \frac{3}{4} = 0.75$

$R_{26} = \frac{2}{Max\{1,2,5,1,2\}} = \frac{2}{5} = 0.4$

$R_{27} = \frac{3}{Max\{4,3,4,3,3\}} = \frac{3}{4} = 0.75$

$R_{28} = \frac{4}{Max\{2,4,5,4,3\}} = \frac{4}{5} = 0.8$

- **A3**

$R_{31} = \frac{3}{Max\{2,1,3,3,5\}} = \frac{3}{5} = 0.6$

$R_{32} = \frac{5}{Max\{1,3,5,2,3\}} = \frac{5}{5} = 1$

$R_{33} = \frac{3}{Max\{3,5,3,3,5\}} = \frac{3}{5} = 0.6$

$R_{34} = \frac{3}{Max\{3,5,3,5,1\}} = \frac{3}{5} = 0.6$

$R_{35} = \frac{4}{Max\{3.3.4.2.3\}} = \frac{4}{4} = 1$

$R_{36} = \frac{5}{Max\{1,2,5,1,2\}} = \frac{5}{5} = 1$

$R_{37} = \frac{4}{Max\{4,3,4,3,3\}} = \frac{4}{4} = 1$

$R_{38} = \frac{5}{Max\{2,4,5,4,3\}} = \frac{5}{5} = 1$

- **A4**

$R_{41} = \frac{3}{Max\{2,1,3,3,5\}} = \frac{3}{5} = 0.6$

$R_{42} = \frac{2}{Max\{1,3,5,2,3\}} = \frac{2}{5} = 0.4$

$R_{43} = \frac{3}{Max\{3,5,3,3,5\}} = \frac{3}{5} = 0.6$

$R_{44} = \frac{5}{Max\{3,5,3,5,1\}} = \frac{5}{5} = 1$

$R_{45} = \frac{2}{Max\{3.3.4.2.3\}} = \frac{2}{4} = 0.4$

$R_{46} = \frac{1}{Max\{1,2,5,1,2\}} = \frac{1}{5} = 0.2$

$R_{47} = \frac{3}{Max\{4,3,4,3,3\}} = \frac{3}{4} = 0.75$

$R_{48} = \frac{4}{Max\{2,4,5,4,3\}} = \frac{4}{5} = 0.8$

- **A5**

$R_{51} = \frac{5}{Max\{2,1,3,3,5\}} = \frac{5}{5} = 1$

$R_{52} = \frac{3}{Max\{1,3,5,2,3\}} = \frac{3}{5} = 0.6$

$R_{53} = \frac{5}{Max\{3,5,3,3,5\}} = \frac{5}{5} = 1$

$R_{54} = \frac{1}{Max\{3,5,3,5,1\}} = \frac{1}{5} = 0.2$

$R_{55} = \frac{3}{Max\{3.3.4.2.3\}} = \frac{3}{4} = 0.75$

$R_{56} = \frac{2}{Max\{1,2,5,1,2\}} = \frac{2}{5} = 0.4$

$R_{57} = \frac{3}{Max\{4,3,4,3,3\}} = \frac{3}{4} = 0.75$

$R_{58} = \frac{3}{Max\{2,4,5,4,3\}} = \frac{3}{5} = 0.6$

Condition 4

- **A1**

$R_1 = \frac{1}{Max\{1,3,2,1,5\}} = \frac{1}{5} = 0.2$

$R_2 = \frac{3}{Max\{3,5,1,5,2\}} = \frac{3}{5} = 0.6$

$R_3 = \frac{1}{Max\{1,1,5,3,3\}} = \frac{1}{5} = 0.2$

$R_4 = \frac{5}{Max\{5,1,5,3,1\}} = \frac{5}{5} = 1$

$R_5 = \frac{2}{Max\{2,4,3,5,4\}} = \frac{2}{5} = 0.2$

$R_6 = \frac{5}{Max\{5,1,2,3,5\}} = \frac{5}{5} = 1$

$R_7 = \frac{3}{Max\{3,4,3,4,4\}} = \frac{3}{4} = 0.75$

$R_8 = \frac{4}{Max\{4,3,2,4,5\}} = \frac{4}{5} = 0.8$

- **A2**

$R_{21} = \frac{3}{Max\{1,3,2,1,5\}} = \frac{3}{5} = 0.6$

$R_{22} = \frac{5}{Max\{3,5,1,5,2\}} = \frac{5}{5} = 1$

$R_{23} = \frac{1}{Max\{1,1,5,3,3\}} = \frac{1}{5} = 0.2$

$R_{24} = \frac{1}{Max\{5,1,5,3,1\}} = \frac{1}{5} = 0.2$

$R_{25} = \frac{4}{Max\{2,4,3,5,4\}} = \frac{4}{5} = 0.8$

$2_{26} = \frac{1}{Max\{5,1,2,3,5\}} = \frac{1}{5} = 0.2$

$R_{27} = \frac{4}{Max\{3,4,3,4,4\}} = \frac{4}{4} = 1$

$R_{28} = \frac{3}{Max\{4,3,2,4,5\}} = \frac{3}{5} = 0.6$

- **A3**

$R_{31} = \frac{2}{Max\{1,3,2,1,5\}} = \frac{2}{5} = 0.4$

$R_{32} = \frac{1}{Max\{3,5,1,5,2\}} = \frac{1}{5} = 0.2$

$R_{33} = \frac{5}{Max\{1,1,5,3,3\}} = \frac{5}{5} = 1$

$R_{34} = \frac{5}{Max\{5,1,5,3,1\}} = \frac{5}{5} = 1$

$R_{35} = \frac{3}{Max\{2,4,3,5,4\}} = \frac{3}{5} = 0.6$

$R_{36} = \frac{2}{Max\{5,1,2,3,5\}} = \frac{2}{5} = 0.4$

$R_{37} = \frac{3}{Max\{3,4,3,4,4\}} = \frac{3}{4} = 0.75$

$R_{38} = \frac{2}{Max\{4,3,2,4,5\}} = \frac{2}{5} = 0.4$

- **A4**

$R_{41} = \frac{1}{Max\{1,3,2,1,5\}} = \frac{1}{5} = 0.2$

$R_{42} = \frac{5}{Max\{3,5,1,5,2\}} = \frac{5}{5} = 1$

$R_{43} = \frac{3}{Max\{1,1,5,3,3\}} = \frac{3}{5} = 0.6$

$R_{44} = \frac{3}{Max\{5,1,5,3,1\}} = \frac{3}{5} = 0.6$

$R_{45} = \frac{5}{Max\{2,4,3,5,4\}} = \frac{5}{5} = 1$

$R_{46} = \frac{3}{Max\{5,1,2,3,5\}} = \frac{3}{5} = 0.6$

$R_{47} = \frac{4}{Max\{3,4,3,4,4\}} = \frac{4}{4} = 1$

$R_{48} = \frac{4}{Max\{4,3,2,4,5\}} = \frac{4}{5} = 0.8$

- **A5**

$R_{51} = \frac{5}{Max\{1,3,2,1,5\}} = \frac{5}{5} = 1$

$R_{52} = \frac{2}{Max\{3,5,1,5,2\}} = \frac{2}{5} = 0.4$

$R_{53} = \frac{3}{Max\{1,1,5,3,3\}} = \frac{3}{5} = 0.6$

$R_{54} = \frac{1}{Max\{5,1,5,3,1\}} = \frac{1}{5} = 0.2$

$R_{55} = \frac{4}{Max\{2,4,3,5,4\}} = \frac{4}{5} = 0.8$

$R_{56} = \frac{5}{Max\{5,1,2,3,5\}} = \frac{5}{5} = 1$

$R_{57} = \frac{4}{Max\{3,4,3,4,4\}} = \frac{4}{4} = 1$

$R_{58} = \frac{5}{Max\{4,3,2,4,5\}} = \frac{5}{5} = 1$

Condition 5

- **A1**

$R_1 = \frac{3}{Max\{3,2,1,5,3\}} = \frac{3}{5} = 0.6$

$R_2 = \frac{2}{Max\{2,1,5,2,1\}} = \frac{2}{5} = 0.4$

$R_3 = \frac{5}{Max\{5,3,1,3,5\}} = \frac{5}{5} = 1$

$R_4 = \frac{3}{Max\{3,5,1,5,3\}} = \frac{3}{5} = 0.6$

$R_5 = \frac{5}{Max\{5,4,2,1,3\}} = \frac{5}{5} = 1$

$R_6 = \frac{3}{Max\{3,2,5,1,2\}} = \frac{3}{5} = 0.6$

$R_7 = \frac{4}{Max\{4,3,3,4,3\}} = \frac{4}{4} = 1$

$R_8 = \frac{3}{Max\{3,4,2,5,3\}} = \frac{3}{5} = 0.6$

- **A2**

$R_1 = \frac{2}{Max\{3,2,1,5,3\}} = \frac{2}{5} = 0.4$

$R_2 = \frac{1}{Max\{2,1,5,2,1\}} = \frac{1}{5} = 0.2$

$R_3 = \frac{3}{Max\{5,3,1,3,5\}} = \frac{3}{5} = 0.6$

$R_4 = \frac{5}{Max\{3,5,1,5,3\}} = \frac{5}{5} = 1$

$R_5 = \frac{4}{Max\{5,4,2,1,3\}} = \frac{4}{5} = 0.8$

$R_6 = \frac{2}{Max\{3,2,5,1,2\}} = \frac{2}{5} = 0.4$

$R_7 = \frac{3}{Max\{4,3,3,4,3\}} = \frac{3}{4} = 0.75$

$R_8 = \frac{4}{Max\{3,4,2,5,3\}} = \frac{4}{5} = 0.8$

- **A3**

$R_1 = \frac{1}{Max\{3,2,1,5,3\}} = \frac{1}{5} = 0.2$

$R_2 = \frac{5}{Max\{2,1,5,2,1\}} = \frac{5}{5} = 1$

$R_3 = \frac{1}{Max\{5,3,1,3,5\}} = \frac{1}{5} = 0.2$

$R_4 = \frac{1}{Max\{3,5,1,5,3\}} = \frac{1}{5} = 0.2$

$R_5 = \frac{2}{Max\{5,4,2,1,3\}} = \frac{2}{5} = 0.4$

$R_6 = \frac{5}{Max\{3,2,5,1,2\}} = \frac{5}{5} = 1$

$R_7 = \frac{3}{Max\{4,3,3,4,3\}} = \frac{3}{4} = 0.75$

$R_8 = \frac{2}{Max\{3,4,2,5,3\}} = \frac{2}{5} = 0.4$

- **A4**

$R_1 = \frac{5}{Max\{3,2,1,5,3\}} = \frac{5}{5} = 1$

$R_2 = \frac{2}{Max\{2,1,5,2,1\}} = \frac{2}{5} = 0.4$

$R_3 = \frac{3}{Max\{5,3,1,3,5\}} = \frac{3}{5} = 0.6$

$R_4 = \frac{5}{Max\{3,5,1,5,3\}} = \frac{5}{5} = 1$

$R_5 = \frac{1}{Max\{5,4,2,1,3\}} = \frac{1}{5} = 0.2$

$R_6 = \frac{1}{Max\{3,2,5,1,2\}} = \frac{1}{5} = 0.2$

$R_7 = \frac{4}{Max\{4,3,3,4,3\}} = \frac{4}{4} = 1$

$R_8 = \frac{5}{Max\{3,4,2,5,3\}} = \frac{5}{5} = 1$

- **A5**

$R_1 = \frac{3}{Max\{3,2,1,5,3\}} = \frac{3}{5} = 0.6$

$R_2 = \frac{1}{Max\{2,1,5,2,1\}} = \frac{1}{5} = 0.2$

$R_3 = \frac{5}{Max\{5,3,1,3,5\}} = \frac{5}{5} = 1$

$R_4 = \frac{3}{Max\{3,5,1,5,3\}} = \frac{3}{5} = 0.6$

$R_5 = \frac{3}{Max\{5,4,2,1,3\}} = \frac{3}{5} = 0.6$

$$R_6 = \frac{2}{Max\{3,2,5,1,2\}} = \frac{2}{5} = 0.4$$

$$R_7 = \frac{3}{Max\{4,3,3,4,3\}} = \frac{3}{4} = 0.75$$

$$R_8 = \frac{3}{Max\{3,4,2,5,3\}} = \frac{3}{5} = 0.6$$

From the above calculation, then the normalized matrix can be as follows:

$\mathbf{R_{Condition\ 1}}=$
$$\begin{Bmatrix} 1 & 0.6 & 1 & 1 & 1 & 1 & 1 & 0.6 \\ 0.4 & 0.3 & 1 & 1 & 0.75 & 1 & 1 & 0.3 \\ 0.2 & 1 & 1 & 1 & 0.5 & 1 & 1 & 0.3 \\ 0.6 & 0.3 & 1 & 1 & 0.5 & 1 & 1 & 1 \\ 0.4 & 0.6 & 1 & 1 & 1 & 1 & 1 & 0.6 \end{Bmatrix}$$

$\mathbf{R_{Condition\ 2}}=$
$$\begin{Bmatrix} 0.6 & 0.6 & 1 & 0.3 & 1 & 0.4 & 0.75 & 0.6 \\ 0.4 & 0.3 & 0.6 & 1 & 0.5 & 0.6 & 1 & 0.4 \\ 0.2 & 1 & 0.6 & 0.3 & 0.5 & 0.6 & 0.75 & 0.8 \\ 1 & 1 & 1 & 1 & 1.3 & 1 & 1 & 1 \\ 0.4 & 0.3 & 0.2 & 1 & 0.5 & 0.6 & 1 & 0.6 \end{Bmatrix}$$

$\mathbf{R_{Condition\ 3}}=$
$$\begin{Bmatrix} 0.4 & 0.2 & 0.6 & 0.6 & 0.75 & 0.2 & 1 & 0.4 \\ 0.2 & 0.6 & 1 & 1 & 1 & 0.75 & 0.4 & 0.75 & 0.8 \\ 0.6 & 1 & 0.6 & 0.6 & 1 & 1 & 1 & 1 \\ 0.6 & 0.4 & 0.6 & 1 & 0.4 & 0.2 & 0.75 & 0.8 \\ 1 & 0.6 & 1 & 0.2 & 0.75 & 0.4 & 0.75 & 0.6 \end{Bmatrix}$$

$\mathbf{R_{Condition\ 4}}=$
$$\begin{Bmatrix} 0.2 & 0.6 & 0.2 & 1 & 0.2 & 1 & 0.75 & 0.8 \\ 0.6 & 1 & 0.2 & 0.2 & 0.8 & 0.2 & 1 & 0.6 \\ 0.4 & 0.2 & 1 & 1 & 0.6 & 0.4 & 0.75 & 0.4 \\ 0.2 & 1 & 0.6 & 0.6 & 1 & 0.6 & 1 & 0.8 \\ 1 & 0.4 & 0.6 & 0.2 & 0.8 & 1 & 1 & 1 \end{Bmatrix}$$

$\mathbf{R_{Condition\ 5}}=$
$$\begin{Bmatrix} 0.6 & 0.4 & 1 & 0.6 & 1 & 0.6 & 1 & 0.6 \\ 0.4 & 0.2 & 0.6 & 1 & 0.8 & 0.4 & 0.75 & 0.8 \\ 0.2 & 1 & 0.2 & 0.2 & 0.4 & 1 & 0.75 & 0.4 \\ 1 & 0.4 & 0.6 & 1 & 0.2 & 0.2 & 1 & 1 \\ 0.6 & 0.2 & 1 & 0.6 & 0.6 & 0.4 & 0.75 & 0.6 \end{Bmatrix}$$

4.5.3 Calculation

Next will be made multiplication matrix W×R and the sum of multiplication products to obtain the best alternative by ranking the following great values:

Condition 1

V_I = {(1×20) + (0.6×20) + (1×10) + (1×10) + (1×10) + (1×5) + (1×5) + (0.6×20)}
= (20 + 12 + 10 + 10 + 10 + 5 + 5 + 12)
= 84

V_2 = {(0.4×20) + (0.3×20) + (1×10) + (1×10) + (0.75×10) + (1×5) + (1+5) + (0.3×20)}
= (8 + 6 + 10 + 10 + 7.5 + 5 + 5 + 6)
= 57,5

V_3 = {(0.2×20) + (1×20) + (1×10) + (1×10) + (0.5×10) + (1×5) + (1×5) + (0.3×20)}
= (4 + 20 + 10 + 10 + 5 + 5 + 5 + 6)
= 65

V_4 = {(0.6×20) + (0.3 + 20) + (1×10) + (1×10) + (0.5×10) + (1×5) + (1×5) + (1×20)}
= (12 + 6 + 10 + 10 + 5 + 5 + 5 + 20)
= 73

V_5 = {(0.4×20) + (0.6×20) + (1×10) + (1×10) + (1×10) + (1×5) + (1×5) + (0.6×20)
= (8 + 12 + 10 + 10 + 10 +5 + 5 + 12)
= 72

Condition 2

V_I = {(0.6×20) + (0.6×20) + (1×10) + (0.3×10) + (1×10) + (0,4×5) + (0.75×5) + (0.6×20)}
= (12+12+10+3+10+2+3.75+12)
= 64.75

V_2 = {(0.4×20) + (0.3×20) + (0.6×10) + (1×10) + (0.5×10) + (0.6×5) + (1×5) + (0.4×20)}
= (8+6+6+10+5+3+5+8)
= 51

V_3 = {(0.2×20) + (1×20) + (0.6×10) + (0.3×10) + (0.5×10) + (0.6×5) + (0.75×5) + (0.8×20)}
= (4+20+6+3+5+3+3.75+16)
= 60.75

V_4 = {(1×20) + (1×20) + (1×10) + (1×10) + (1.3×10) + (1×5) + (1×5) + (1×20)}
= (20+20+10+10+13+5+5+20)
= 100

V_5 = {(0.4 ×20) + (0.3×20) + (0.2×10) + (1×10) + (0.5×10) + (0.6×5) + (1×5) + (0.6×20)}
= (8+6+2+10+5+3+5+12)
= 51

Condition 3

V_I = {(0.4×20) + (0.2×20) + (0.6×10) + (0.6×10) + (0.75×10) + (0.2×5) + (1×5) + (0.4×20)}
= (8+4+6+6+7.5+1+5+8)
= 45.5

V_2 = {(0.2×20) + (0.6×20) + (1×10) + (1×10) + (0.75×10) + (0.4×5) + (0.75×5) + (0.8×20)}
= (4+12+10+10+7.5+2+3.75+16)
= 65.25

V_3 = {(0.6×20) + (1×20) + (0.6×10) + (0.6×10) + (1×10) + (1×5) + (1×5) + (1×20)}
= (12+20+6+6+10+5+5+20)
= 84

V_4 = {(0.6×20) + (0.4×20) + (0.6×10) + (1×10) + (0.4×10) + (0.2×5) + (0.75×5) + (0.8×20)}
= (12+8+6+10+4+1+3.75+16)
= 60.75

V_5 = {(1×20) + (0.6×20) + (1×10) + (0.2×10) + (0.75×10) + (0.4×5) + (0.75×5) + (0.6×20)}
= (20+12+10+2+7.5+2+3.75+12)
= 69.25

Condition 4

V_I = {(0.2×20) + (0.6×20) + (0.2×10) + (1×10) + (0.2×10) + (1×5) + (0.75×5) + (0.8×20)}
= (4+12+6+10+2+5+3.75+16)
= 58.75

V_2 = {(0.6×20) + (1×20) + (0.2×10) + (0.2×10) + (0.8×10) + (0.2×5) + (1×5) + (0.6×20)}
= (12+20+2+2+8+1+5+12)
= 62

V_3 = {(0.4×20) + (0.2×20) + (1×10) + (1×10) + (0.6×10) + (0.4×5) + (0.75×5) + (0.4×20)}
= (8+4+10+10+6+2+3.75+8)
= 51.75

V_4 = {(0.2×20) + (1×20) + (0.6×10) + (0.6×10) + (1×10) + (0.6×5) + (1×5) + (0.8×20)}
= (4+20+6+6+10+3+5+16)
= 70

V_5 = {(1×20) + (0.4×20) + (0.6×10) + (0.2×10) + (0.8×10) + (1×5) + (1×5) + (1×20)}
= (20+8+6+2+8+5+5+20)
= 74

Condition 5

V_I = {(0.6×20) + (0.4×20) + (1×10) + (0.6×10) + (1×10) + (0.6×5) + (1×5) + (0.6×20)}
= (12+8+10+6+10+3+5+12)
= 66

V_2 = {(0.4×20) + (0.2×20) + (0.6×10) + (1×10) + (0.8×10) + (0.4×5) + (0.75×5) + (0.8×20)}
= (8+4+6+10+8+2+3.75+16)
= 57.75

V_3 = {(0.2×20) + (1×20) + (0.2×10) + (0.2×10) + (0.4×10) + (1×5) + (0.75×5) + (0.4×20)}
= (4+20+2+2+4+5+3.75+8)
= 51.75

V_4 = {(1×20) + (0.4×20) + (0.6×10) + (1×10) + (0.2×10) + (0.2×5) + (1×5) + (1×20)}
= (20+8+6+10+2+1+5+20)
= 72

V_5 = {(0.6×20) + (0.2×20) + (1×10) + (0.6×10) + (0.6×10) + (0.4×5) + (0.75×5) + (0.6×20)}
= (12+4+10+6+6+2+3.75+12)
= 55.75

From matrix multiplication W×R then got results as follows:

Condition 1
V_1 = 84
V_2 = 57.5
V_3 = 65
V_4 = 73
V_5 = 72

Condition 2
V_1 = 64.75
V_2 = 51
V_3 = 60.75
V_4 = 100
V_5 = 51

Condition 3
V_1 = 45.5
V_2 = 65.25
V_3 = 84
V_4 = 60.75
V_5 = 69.25

Condition 4
V_1= 58.75
V_2= 62
V_3= 51.75
V_4= 70
V_5= 74

Condition 5
V_1= 66
V_2= 57.75
V_3= 51.75
V_4= 72
V_5= 55.75

The greatest value of the sum of the above matrix is V_1 thus alternative A_1 (Dancer A_1) is a member of the dancers are good quality and have the best predicate or a dancer with the highest weight value. The criteria of the best dancers above are based on the following intervals:

Condition 1
50 - 70 = Enough
71 - 82 = Good
83 - 100 = Best

Condition 2
40-55 = Enough
60-70 = Good
80-100 = Best

Condition 3
40-55 = Enough
60-70 = Good
80-100 = Best

Condition 4
50-60 = Enough
61 -70 = Good
71-100 = Best

Condition 5
50-60 = Enough
61 -70 = Good
81-100 = Best

5. Conclusion

Decision Support System in the selection of dancers can help and facilitate schools, an organization or campus in selecting qualified dancers based on predetermined criteria of dancing skills, physical flexibility, skill, deftness, confidence, skill, filling out forms, and certificates of achievement. From the result value obtained then $V_{condition1}$, $V_{condition2}$, $V_{condition3}$, $V_{condition4}$, $V_{condition5}$ is a member of a dancer of good quality and has a predicate value of 84, 100, 84, 74, 72. This research is expected that this Information System can be developed further with data processing members of the dancers, more and more widely so that this Information System can really be used as a single picture taking in making the decision of member selection of dancers.

References

[1]. Muslihudin, M.; and Latifah, F. (2015). *Decision Support System Penilaian Kinerja Karyawan Pada Perusahaan Menggunakan Metode SAW*, Magister Teknik Informatika, Jurusan Sistem Informasi, STMIK Pringsewu.

[2]. Kurniawan, A.; and Kusrini. (2016). *Analisis dan Perancangan Sistem Pendukung Keputusan Penilaiaan Kinerja Guru (PKG) menggunakan metode SAW pada SD Negeri 1 Wonokerto Berbasis WEB*. Jurusan Sistem Informasi, Magister Teknik Informatika. STMIK AMIKOM Yogyakarta.

[3]. Huda, M., Maseleno, A., Shahrill, M., Jasmi, K. A., Mustari, I., and Basiron, B. (2017a). Exploring Adaptive Teaching Competencies in Big Data Era. International Journal of Emerging Technologies in Learning, 12(3), 68-83.

[4]. Huda, M., Maseleno, A., Atmotiyoso, P., Siregar, M., Ahmad, R., Jasmi, K.A., Muhamad, N.H.N., Mustari, I.M., and Basiron, B. (2017b). Emerging Big Data Technologies. Insights into Innovative Environment for Online Learning Resources. International Journal of Emerging Technologies in Learning. (In press).

[5]. Maseleno, A.; and Hasan, M.M. (2011). Fuzzy Logic Based Analysis of the Sepak takraw Games Ball Kicking with the Respect of Player Arrangement. World Applied Programming Journal, 2(5), 285-293.

[6]. Maseleno, A; and Hasan, M.M. (2015). Finding Kicking Range of Sepak Takraw Game: A Fuzzy Logic Approach. Indonesian Journal of Electrical Engineering and Computer Science, 14(3), 557-564.

[7]. Maseleno, A.; and Hasan, M.M. (2013). Fuzzy logic and dempster-shafer theory to find kicking range of sepak takraw game. Proceedings of 5th International Conference on Computer Science and Information Technology (CSIT). Amman, Jordan, 8-12.

[8]. Maseleno, A.; Hasan, M.M.; Muslihudin, M.; and Susilowati, T. (2016). Finding Kicking Range of Sepak Takraw Game: Fuzzy Logic and Dempster-Shafer Theory Approach. Indonesian Journal of Electrical Engineering and Computer Science, 2(1), 187-193.

[9]. Maseleno, A.; and Hasan, M.M. (2013). Dempster-shafer theory for move prediction in start kicking of the bicycle kick of sepak takraw game. Middle-East Journal of Scientific Research, 16(7), 896-903.

[10]. Maseleno, A.; and Hasan, M.M. (2012). Move prediction in start kicking of sepak takraw game using Dempster-Shafer theory. Proceedings of International Conference on Advanced Computer Science Applications and Technologies (ACSAT). Kuala Lumpur, Malaysia, 376-381.

[11]. Maseleno, A.; Hasan, M.M.; Tuah, N.; and Muslihudin, M. (2015). Fuzzy Logic and Dempster-Shafer belief theory to detect the risk of disease spreading of African Trypanosomiasis. Proceedings of Fifth International Conference on Digital Information Processing and Communications (ICDIPC). University of Applied Sciences and Arts Western Switzerland (HES-SEO Valais Wallis), Switzerland, 153-158.

[12]. Maseleno, A.; Hasan, M.M.; Tuah, N.; and Tabbu, C.R. (2015). Fuzzy Logic and Mathematical Theory of Evidence to Detect the Risk of Disease Spreading of Highly Pathogenic Avian Influenza H5N1. Procedia Computer Science, 57, 348-357.

[13]. Maseleno, A.; and Hardaker, G. (2016). Malaria detection using mathematical theory of evidence. Songklanakarin Journal of Science & Technology, 38(3), 257-263.

[14]. Maseleno, A.; and Hasan, M.M. (2013). The Dempster-Shafer theory algorithm and its application to insect diseases detection. International Journal of Advanced Science and Technology, 50(1), 111-119.

[15]. Maseleno, A.; and Hasan, M.M. (2012). Poultry diseases warning system using dempster-shafer theory and web mapping. International Journal of Advanced Research in Artificial Intelligence, 1(3), 44-48.

[16]. Maseleno, A.; and Hasan, M.M. (2012). Skin diseases expert system using Dempster-Shafer theory. International Journal of Intelligent Systems and Applications, 4(5), 38-44.

[17]. Maseleno, A.; and Hasan, M.M. (2012). African Trypanosomiasis Detection using Dempster-Shafer Theory. Journal of Emerging Trends in Computing and Information Sciences, 3(4), 480-487.

[18]. Maseleno, A.; and Hasan, M.M. (2012). Avian influenza (H5N1) expert system using Dempster-Shafer theory. International Journal of Information and Communication Technology, 4(2), 227-241.

[19]. Maseleno, A.; and Muslihudin, M. (2015). Ebola virus disease detection using Dempster-Shafer evidence theory. Proceedings of IEEE International Conference on Progress in Informatics and Computing (PIC). Nanjing, China, 579-582.

[20]. Maseleno, A.; and Hasan, M.M. (2012). Skin infection detection using Dempster-Shafer theory. Proceedings of International Conference on Informatics, Electronics & Vision (ICIEV). Dhaka, Bangladesh, 1147-1151.

[21]. Maseleno, A.; and Hidayati, R.Z. (2017). Hepatitis disease detection using Bayesian theory. In AIP Conference Proceedings. East Kalimantan, Indonesia, 050001-1 – 050001-10.

[22]. Maseleno, A.; Huda, M.; Siregar, M.; (2017). Combining the Previous Measure of Evidence to Educational Entrance Examination. Journal of Artificial Intelligence, 10 (3), 85-90.

[23]. Rosli, M.R.B., Salamon, H.B., and Huda, M. (2018). Distribution Management of Zakat Fund: Recommended Proposal for Asnaf Riqab in Malaysia. *International Journal of Civil Engineering and Technology* 9(3), pp. 56–64.

[24]. Aminin, S., Huda, M., Ninsiana, W., and Dacholfany, M.I. (2018). Sustaining civic-based moral values: Insights from language learning and literature. *International Journal of Civil Engineering and Technology*. 9(4), 157-174.

[25]. Maseleno, A., Pardimin, Huda, M., Ramlan, Hehsan, A., Yusof, Y.M., Haron, Z., Ripin, M.N., Nor, N.H.M., and Junaidi, J. (2018a). Mathematical Theory of Evidence to Subject Expertise Diagnostic. *ICIC Express Letters*, 12 (4), 369 DOI: 10.24507/icicel.12.04.369

[26]. Maseleno, A., Huda, M., Jasmi, K.A., Basiron, B., Mustari, I., Don, A.G., and Ahmad, R. (2018b). Hau-Kashyap approach for student's level of expertise. *Egyptian Informatics Journal*, doi.org/10.1016/j.eij.2018.04.001.

[27]. Huda, M., & Teh, K. S. M. (2018). Empowering Professional and Ethical Competence on Reflective Teaching Practice in Digital Era. In Dikilitas, K., Mede, E., Atay D. (Eds). *Mentorship Strategies in Teacher Education* (pp. 136-152). Hershey, PA: IGI Global. doi: 10.4018/978-1-5225-4050-2.ch007.

[28]. Huda, M., Teh, K.S.M., Nor, N.H.M., and Nor, M.B.M. (2018a). Transmitting Leadership Based Civic Responsibility: Insights from Service Learning. *International Journal of Ethics and Systems*, 34(1), 20-31.

[29]. Huda, M., Maseleno, A., Muhamad, N.H.N., Jasmi, K.A., Ahmad, A., Mustari, M.I., Basiron, B. (2018b). Big Data Emerging Technology: Insights into Innovative Environment for Online Learning Resources. *International Journal of Emerging Technologies in Learning* 13(1), 23-36. doi:10.3991/ijet.v13i01.6990

[30]. Huda, M., Maseleno, A., Teh, K.S.M., Don, A.G., Basiron, B., Jasmi, K.A., Mustari, M.I., Nasir, B.M., and Ahmad, R. (2018c). Understanding Modern Learning Environment (MLE) in Big Data Era. *International Journal of Emerging Technologies in Learning*. 13(5), 71-85. doi: 10.3991/ijet.v13i05.8042

[31]. Huda., M. & Sabani, N. (2018). Empowering Muslim Children's Spirituality in Malay Archipelago: Integration between National Philosophical Foundations and Tawakkul (Trust in God). *International Journal of Children's Spirituality*, 23(1), 81-94.

[32]. Huda, M., Jasmi, K. A., Mustari, M. I., Basiron, B., Mohamed, A. K., Embong, W., ... & Safar, J. (2017c). Innovative E-Therapy Service in Higher Education: Mobile Application Design. *International Journal of Interactive Mobile Technologies*, 11(4), 83-94.

[33]. Huda, M., Siregar, M., Ramlan, Rahman, S.K.A., Mat Teh, K.S., Said, H., Jamsari, E.A., Yacub, J., Dacholfany, M.I., & Ninsiana, W. (2017d). From Live Interaction to Virtual Interaction: An Exposure on the Moral Engagement in the Digital Era. *Journal of Theoretical and Applied Information Technology*, 95(19), 4964-4972.

[34]. Anshari, M., Almunawar, M. N., Shahrill, M., Wicaksono, D. K., & Huda, M. (2017e). Smartphones usage in the classrooms: Learning aid or interference?. *Education and Information Technologies*, 22(6), 3063-3079.

[35]. Huda, M., Sabani, N., Shahrill, M., Jasmi, K. A., Basiron, B., & Mustari, M. I. (2017f). Empowering Learning Culture as Student Identity Construction in Higher Education. In A. Shahriar, & G. Syed (Eds.), *Student Culture and Identity in Higher Education* (pp. 160-179). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-2551-6.ch010

[36]. Huda, M., Jasmi, K. A., Hehsan, A., Shahrill, M., Mustari, M. I., Basiron, B., & Gassama, S. K. (2017g). Empowering Children with Adaptive Technology Skills: Careful Engagement in the Digital Information Age. *International Electronic Journal of Elementary Education*, 9(3), 693-708.

[37]. Huda, M., Jasmi, K. A., Basiran, B., Mustari, M. I. B., & Sabani, A. N. (2017h). Traditional Wisdom on Sustainable Learning: An Insightful View From Al-Zarnuji's Ta 'lim al-Muta 'allim. *SAGE Open*, 7(1), 1-8.

[38]. Huda, M., Jasmi, K. A., Embong, W. H., Safar, J., Mohamad, A. M., Mohamed, A. K., Muhamad, N. H., Alas, Y., & Rahman, S. K. (2017i). Nurturing Compassion-Based Empathy: Innovative Approach in Higher Education. In M. Badea, & M. Suditu (Eds.), *Violence Prevention and Safety Promotion in Higher Education Settings* (pp. 154-173). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-2960-6.ch009.

[39]. Huda, M., Jasmi, K. A., Alas, Y., Qodriah, S. L., Dacholfany, M. I., & Jamsari, E. A. (2017j). Empowering Civic Responsibility: Insights From Service Learning. In S. Burton (Ed.), Engaged *Scholarship and Civic Responsibility in Higher Education*(pp. 144-165). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-3649-9.ch007

[40]. Huda, M. (2018). Empowering Application Strategy in the Technology Adoption: Insights from Professional and Ethical Engagement. *Journal of Science and Technology Policy Management*. doi.org/10.1108/JSTPM-09-2017-0044.