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Decision support system for determination Head of Study Program with analytic network process method

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Abstract: Changes in management in institutions are common, but in making changes, it is better to use an analysis with the application of technology and methods used in the application. In structural management changes, especially at the head of the study program, it is still very common to make direct appointments. This can result in errors in making selections and cause problems of ignorance, lack of productivity. So it is appropriate to build an application by applying the method as an analysis. This study aims to analyze the determination of the head of the study program by applying the Analytic Network Process Method, designing and building a decision support system for the determination of the head of the study program. The Analytic Network Process method is used to analyze in determining the head of the study program based on criteria, this decision support system is built on a web-based basis. The research method is the survey research method, which is a survey research method. This is a research method conducted using surveys or collecting data through research respondents. This research is targeted to assist the management in determining the head of the study program. The results of the research that the highest value is 0.18856 followed by 0.15252, 0.05329, 04582, 0.032110, 0.02770 in the limit matrix table.

Keywords: SPK, ANP Method, Head of Study Program

INTRODUCTION

Information technology that is growing at this time really supports the needs of higher education management. Both to realize the effectiveness and efficiency of work as well as in improving services to the community (Infokum, 2020). The performance of employees, especially the head of the study program at a university, is required to be faster in completing work because it is related to student services so that it can satisfy students. Information technology can also help management or structural officials in making decisions, so that decisions issued by agencies are more relevant and acceptable to all parties.

The head of the study program is an important and strategic element in the management of education in higher education. The head of the study program is in charge of leading and carrying out managerial functions such as planning, implementing and controlling the process of academic activities as well as administering supporting activities. Thus, it is only natural that the heads of the study programs should be selected and deemed capable and have high performance, dedication and personality integrity. The head of the study program as an element in higher education management to realize the vision, mission, and goals of the study program that are relevant to the vision, mission, and goals of the institution as a whole (Infokum, 2020). The reward system is one of the important elements and as an element of motivation towards the best performance and plays a role in fostering an academic atmosphere, which in turn can accelerate the development of the present and future scientific community as expected.

STMIK Pelita Nusantara is a private university in North Sumatra. STMIK Pelita Nusantara has 6 study programs including: 1. Informatics Engineering, 2. Informatics Management, 3. Software Engineering, 4. Information Technology, 5. Digital Business 6. Network Computer Engineering Technology. 2 of the Informatics Engineering and Informatics Management Study Programs are Very Good Accreditations and 4 other study programs (Digital Business, Network Computer Engineering Technology, Software Engineering, Information Technology) Good.

Changes in management in institutions are common, but in making changes, it is better to use an analysis with the application of technology and methods used in the application. STMIK Pelita Nusantara in structural management changes, especially at the head of the study program level, is still very common with direct

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appointments. This can result in errors in making selections and cause problems of ignorance, lack of productivity. So it is appropriate to build a decision support system by applying the method as an analysis.

Decision support systems are part of computer-based information systems (including knowledge-based systems) (Barita et al., 2019). used to support decision making in an organization or company. In other words, it is a computer system that processes data into information for making decisions on specific semi-structured problems (Marbun & Sinaga, 2017). A decision support system is not an absolute decision-making tool but is a system whose task is to assist in making a decision by equipping them with information from data that has been processed relevantly and needed to make decisions about a problem.

Decision support systems are part of computer-based information systems (including knowledge-based systems) (T. Limbong et al., 2020). used to support decision making in an organization or company. In other words, it is a computer system that processes data into information for making decisions on specific semi-structured problems. A decision support system is not an absolute decision-making tool but is a system whose task is to assist in making a decision by equipping them with information from data that has been processed relevantly and needed to make decisions about a problem. There are several methods of decision support systems used, one of which is the ANP method.

The Analytic Network Process (Baskoro et al., 2021) method is one method that is able to represent the level of interest of various parties by considering the interrelationships between existing criteria and sub-criteria. This model is a development of AHP so that the complexity is more than the AHP method. So far, it is felt that there is no research that applies the ANP method to the weighting step in the design of a performance measurement system for the BSC model. Therefore, there is a need for research that is applicable to the ANP method for weighting steps in designing a performance measurement system in a company with the BSC model.

LITERATURE REVIEW

Table 1. Literature Review

No	Researcher Name (year)	Method	Data	Results
1.	(Romindo, 2016)	Analytic Network Process (ANP)	Student Data: Academic Achievement, Economic Factors, Supporting Activities	The best graduate student is STUDENT 2 with a weight of 0.381 as the top priority, followed by STUDENT 1 with a weight of 0.373, the third priority is STUDENT 3 with a weight of 0.245.
2.	(Sinaga & Hasugian, 2019)	Analytic Network Process (ANP)	Questionnaire data for stakeholders	The highest ranking of promotional media is the Internet (0.329), followed by Visits to Schools (0.274), Radio (0.213), and Banners/Billboards (0.185).
3.	(Windarto et al., 2020)	Analytic Network Process (ANP)	Land use and hydrogeology	Testing the ANP method concluded that the higher the classification value in an area, the greater the final value of processing with the ANP method. The basic difference between the ANP method and other methods is the ability to process multi-criteria data with feedback in the form of a network that influences each other.
4.	(Putri et al., 2016)	Analytic Network Process (ANP)	Candidate test result data	In this study using 4 prospective employees as a sample after a comparison of manual calculations and the application of the Analytical Network Process method was obtained, a relative error of 4.137% was obtained. So that the system that has been made can be said to be suitable for use because the relative error is less than 50%.
5.	(Frastian et al., 2018)	Analytic Network Process (ANP)	Lecturer data consists of several assessment criteria, namely Pedagogy, Professional, Personality, Social.	Based on the results of research and questionnaires, an alternative ranking table can be obtained which can be seen from the results of the Alternative Priority Research for Lecturer Performance Ranking using ANP at the University. It can be seen that Lecturer A has the highest total assessment ranking in all lecturer performance criteria.
6.	(Syaifullah et al., 2019)	Analytic Network Process (ANP)	Elementary school data in the Regional Coordinator of the Pakisaji sub-district education office	The results of the manual count show that the results of the school's accreditation status are the same as the results of the calculations using the SIPEKA application. The system can help simulate the determination of school accreditation and help the Regional Coordinator of the Pakisaji District Education Office to manage school accreditation data.
7.	(Sinaga, 2020)	Analytic Network Process (ANP)	The data for the candidate for the head of the study program in the form	Of the four candidates who have been determined, namely 1) Agustina Simangunsong, M.Kom; 2) Fristi Riandari, M. Kom; 3) Penda Sudarto Hasugian, M. Kom; 4) Roy Fahri Siahaan, M. Kom. So the result of the process that became the choice

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No	Researcher Name (year)	Method	Data	Results
			of Experience, Expertise, Field test scores, Functional Positions	was Fristi Riandari, M.Kom with a value of 30.
8.	(Barus & Sinaga, 2020)	Analytic Network Process (ANP)	Alternative data and supporting data, namely the value of each criterion	The researcher concludes that to apply the analytic hierarchical process (ANP) method in data analysis, the determination of official travel employees must follow the ANP processing steps by comparing the value of each criterion so as to produce a comparison of criteria and alternatives. matrix, perform supermatrix calculations (Supermatrix, Weighted, and Limit).
9.	(Abdillah et al., 2018)	Analytic Network Process (ANP)	The results of the questionnaire to 30 students	Based on the value of the selected criteria, the results of calculations using the ANP method are obtained with the first highest value of 3.714%, namely Kos Putri (1) and the second highest value of 3.702%, namely Kos Asenkar.
10.	(Baskoro et al., 2021)	Analytic Network Process (ANP)	54 student data based on 5 criteria, namely: report cards, certificates / charters, personality values, student extracurriculars, and absenteeism.	The results of the ANP calculation get 10 students who are entitled to scholarships for outstanding students in each generation. The test results using the blackbox method, the functional system has been 100% successfully functioning properly.

METHOD

The research stages start from identifying the problem to publishing scientific articles, as shown in the following fishbone diagram:

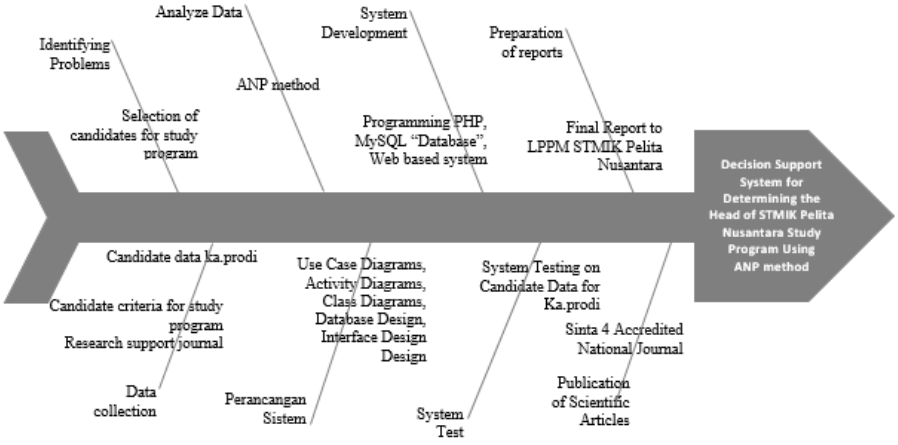

Figure 1. Research Stages

3.1 Identifying Problems

The first step in this study is to identify problems to find out what problems exist in determining the head of the study program at STMIK Pelita Nusantara, so that researchers better understand the problems to be studied. From the observations made by researchers so far, there has been no application of methods and the use of applications in determining the head of the study program. So this research is needed at STMIK Pelita Nusantara.

3.2 Data collection

The steps taken in data collection are the research data sources are divided into 2, namely primary data sources and secondary data sources (Sugiyono, 2015). The primary data in this research is data in the form of candidate for the head of the study program, the criteria data to be used in the evaluation. The secondary data used is to look for journals that support the research to be carried out and in accordance with the research topic.

3.3 Analyze Data

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In analyzing the data that has been obtained, the researcher then analyzes the data with the calculations of the ANP method in order to get the results of the analysis for the candidate for the head of the STMIK Pelita Nusantara study program.

3.4 System planning
In the system design stages that describe the design of the system made by modeling UML (Unified Modeling Language). The design of this system consists of Use Case Diagrams, Activity Diagrams, and Class Diagrams, database design and interface design design.

3.5 System Development
Development of a web-based system with PHP and MySQL as the database. The stages of system development start from the software requirements, including the input, process and output requirements of the system. Furthermore, the system development is in accordance with the design that has been determined at the system design stage to match the system design expectations.

3.6 System Test
At the testing stage of the decision support system, namely by providing training to users with data obtained from the results of data collection. The process of system testing is to prove that the application is in accordance with the initial design of the system that has been designed and has met the expected needs.

3.7 Preparation of reports
At this stage, the researcher compiles the final research report to be collected at LPMM STMIK Pelita Nusantara as a final report on accountability according to the schedule determined by LPMM STMIK Pelita Nusantara.

3.8 Accredited National Journal Publication
In the final stage, the research output is the publication of the Sinta 4 Accredited National Journal.

RESULT

In this study, in the process of calculating the data used as sample data, it was taken directly from the STMIK Pelita Nusantara institution by involving 5 criteria and 6 alternatives.

The criteria in this study can be seen in the following table:

Table 1. Criteria

No	Kriteria
1	Pengalaman menjabat structural
2	Jabatan Fungsional
3	Inpassing
4	Keahlian
5	Nilai Tes Bidang

The alternatives in this study can be seen in the following table:

Table 2. Alternative

No	Alternatif	NIDN
1	Agustina Simangunsong	0122089301
2	Petti Indrayati Sijabat	0120039301
3	Hasanul Fahmi	0112108801
4	Amran Sitohang	0101048903
5	Nera Mayana Br Tarigan	0107089601
6	Yuda Perwira	0127069401

4.1 Discussion of Pairwise Comparison Weights

In-cluster comparisons and inter-cluster comparisons were obtained from questionnaires distributed to respondents. The following are the results of comparisons between criteria in the cluster and comparisons between nodes obtained from the questionnaire as shown in the following table:

Table 3. Comparison between the criteria of "Structural Position Experience" against the criteria of "Functional Position"

Pengalaman Menjabat Struktural	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Jabatan Fungsional

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Table 4. Comparative Evaluation of Criteria "Experience of Structural Positioning" Against the Cluster of "Functional Positions"

	PMS	JF
PMS	5,00	5,00
JF	1,00	1,00
Total	6,00	6,00

After the number of columns is determined, the numbers in the 2.2 matrix are divided by the number of their respective columns so as to produce the following 2.3 column summation results:

Table 5. Node Comparison Weighting Scale "Experience of Structural Positioning" Against the "Functional Position" Cluster

	PMS	JF	Total	*Priority Vector*
PMS	0,83	0,83	1,67	0,83
JF	0,17	0,17	0,33	0,17
Total	1,00	1,00	2,00	

Furthermore, until all the criteria are compared.

Table6. Comparison between the criteria "Experience of Structural Office" against the alternative "Agustina Simangunsong with Petti Indrayati Sijabat"

AGS	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	PIS

Table 7. Comparative Evaluation of Structural Service Experience Criteria against the alternative "Agustina Simangunsong" with "Petti Indrayati Sijabat"

	AG	PIS
AGS	4,00	4,00
PIS	1,00	1,00
Total	5,00	5,00

After the column total is determined, the numbers in the 2.2 matrix are divided by the respective column totals to produce the following 2.3 column totaling results:

Table 8. Weighting Scale Comparison between the criteria "Experience of Serving Stuctural" against the Alternative "Agustina Simangunsong and Petti Indrayati Sijabat"

	AGS	PIS	Total	*Priority Vector*
AGS	0,80	0,80	1,60	0,80
PIS	0,20	0,20	0,40	0,20
Total	1,00	1,00	2,00	

Furthermore, up to all the Comparison Weighting Scales between the criteria "Structural Office Experience" Against alternatives.

Table 9. Comparison between the criteria for "Functional Positions" against the alternative "Agustina Simangunsong with Petti Indrayati Sijabat"

AGS	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	PIS

Table 10. Comparative Evaluation of Functional Position Criteria against the alternative "Agustina Simangunsong" with "Petti Indrayati Sijabat"

	AG	PIS
AGS	5,00	5,00
PIS	1,00	1,00
Total	6,00	6,00

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After the column total is determined, the numbers in the 2.2 matrix are divided by the respective column totals to produce the following 2.3 column totaling results:

Table 11. Weighting Scale Comparison between criteria "Functional Position" Against Alternative "Agustina Simangunsong and Petti Indrayati Sijabat"

	AGS	PIS	Total	*Priority Vector*
AGS	0,83	0,83	1,67	0,83
PIS	0,17	0,17	0,33	0,17
Total	1,00	1,00	2,00	

Table 12. Comparison between the "Infassing" criteria against the alternative "Agustina Simangunsong with Petti Indrayati Sijabat"

AGS	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	PIS

Table 13. Comparative Evaluation of Infassing Criteria against the alternative “Agustina Simangunsong” with “Petti Indrayati Sijabat”

	AG	PIS
AGS	1,00	1,00
PIS	1,00	1,00
Total	2,00	2,00

After the column total is determined, the numbers in the 2.2 matrix are divided by the respective column totals to produce the following 2.3 column totaling results:

Table 14. Weighting Scale Comparison between the criteria "Infassing" against the Alternative "Agustina Simangunsong and Petti Indrayati Sijabat"

	AGS	PIS	Total	*Priority Vector*
AGS	0,50	0,50	1,00	0,50
PIS	0,50	0,50	1,00	0,50
Total	1,00	1,00	2,00	

Table 15. Weighting Scale Comparison between "Infassing" criteria against the alternative "Nera Mayana Br Tarigan and Yuda Perwira"

	NRM	YDP	Total	*Priority Vector*
NRM	0,25	0,25	0,50	0,25
YDP	0,75	0,75	1,50	0,75
Total	1,00	1,00	2,00	

Table 16. Comparison between the criteria of "Skills" Against the alternative "Agustina Simangunsong with Petti Indrayati Sijabat"

AGS	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	PIS

Table 17. Comparative Evaluation of Expertise Criteria against the alternative “Agustina Simangunsong with “Petti Indrayati Sijabat”

	AG	PIS
AGS	1,00	1,00
PIS	1,00	1,00
Total	2,00	2,00

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Table 18. Comparison between the criteria for "Field Test Values" against the alternative "Agustina Simangunsong with Petti Indrayati Sijabat"

AGS	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	PIS

Table 19. Comparative Evaluation of Field Test Score Criteria against the alternative "Agustina Simangunsong with "Petti Indrayati Sijabat"

	AG	PIS
AGS	5,00	5,00
PIS	1,00	1,00
Total	6,00	6,00

After the column total is determined, the numbers in the 2.2 matrix are divided by the respective column totals to produce the following 2.3 column totaling results:

Table 20. Weighting Scale Comparison between criteria "Field Test Values" against Alternatives "Agustina Simangunsong and Petti Indrayati Sijabat"

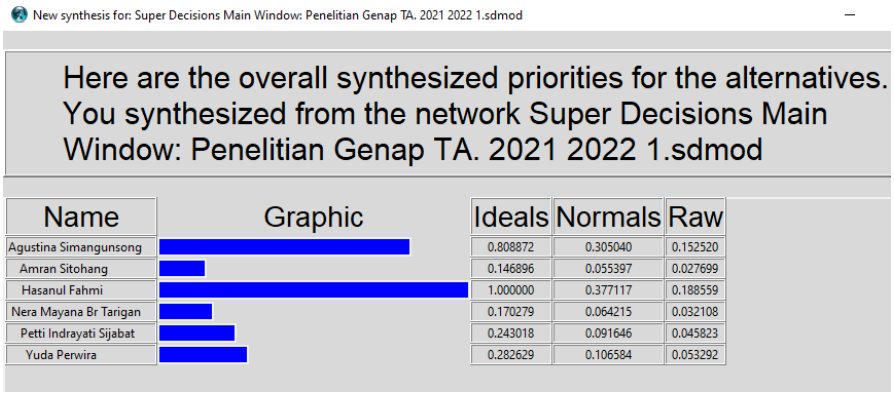
	AGS	PIS	Total	*Priority Vector*
AGS	0,83	0,83	1,67	0,83
PIS	0,17	0,17	0,33	0,17
Total	1,00	1,00	2,00	

From the analysis results, the Limit Matrix is obtained as follows:

Table 21. Limit Matrix

	AGS	AMR	HSN	NMR	PIS	YDP	GOAL	Inpassing	JaFung	Keahlian	Nilai Tes Bdg	Penga.STRL
AGS	0.15252	0.15252	0.15252	0.15252	0.15252	0.15252	0.15252	0.15252	0.15252	0.15252	0.15252	0.15252
AMR	0.02770	0.02770	0.02770	0.02770	0.02770	0.02770	0.02770	0.02770	0.02770	0.02770	0.02770	0.02770
HSN	0.18856	0.18856	0.18856	0.18856	0.18856	0.18856	0.18856	0.18856	0.18856	0.18856	0.18856	0.18856
NMR	0.03211	0.03211	0.03211	0.03211	0.03211	0.03211	0.03211	0.03211	0.03211	0.03211	0.03211	0.03211
PIS	0.04582	0.04582	0.04582	0.04582	0.04582	0.04582	0.04582	0.04582	0.04582	0.04582	0.04582	0.04582
YDP	0.05329	0.05329	0.05329	0.05329	0.05329	0.05329	0.05329	0.05329	0.05329	0.05329	0.05329	0.05329
GOAL	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Inpassing	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000
JaFung	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000
Keahlian	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000
Nilai Tes Bdg	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000
Penga.STRL	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000	0.10000

Then the final results of the study are:



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DISCUSSION

After doing the research, the decision support system with the application of the analytic network process method can be used in determining the head of the study program at STMIK Pelita Nusantara. The results of the research show that Hasanul Fahmi has the highest score in determining the head of the study program at STMIK Pelita Nusantara, followed by Agustina Simangunsong, Yuda Perwira, Petti Indrayati Sijabat, Nera Mayana Br Tarigan and Amran Sitohang with the use of the superdecision application.

CONCLUSION

The conclusions in this study are:

To apply data mining with the C4.5 algorithm to the level of student satisfaction and student services, namely choosing an attribute as the root, based on the highest gain value of the existing attributes. Create a branch for each value, meaning to make a branch according to the number of values of the highest gain variable. Divide each case into branches, based on the calculation of the highest gain value and the calculation is carried out after calculating the initial highest gain value and then the process of calculating the highest gain is carried out again without including the initial gain variable value. Repeating the process in each branch so that all cases in the branch have the same class, repeating all the highest gain calculation processes for each case branch until the calculation process can no longer be carried out.

The results of data analysis on the level of student satisfaction and student services with the application of data mining with the C4.5 algorithm, namely the level of satisfaction.

REFERENCES

Abdillah, M., Ilhamsyah, I., & Hidayati, R. (2018). Penerapan Metode Analytic Network Process (Anp) Berbasis Android Sebagai Sistem Pendukung Keputusan Dalam Pemilihan Tempat Kos. *Journal Coding, Rekayasa Sistem Komputer Untan*, *6*(3), 12–22.

Barita, P., Simangunsong, N., & Sinaga, S. B. (2019). SISTEM PENDUKUNG KEPUTUSAN MENENTUKAN DOSEN BERPRESTASI TINGKAT KOPERTIS WILAYAH I DENGAN METODE ELECTRE BERBASIS WEB. *Jurnal Teknovasi*, *06*, 63–74.

Barus, R. B., & Sinaga, B. (2020). *Decision Support System for Determining Employees for Official Travel with the Analytic Network Process (ANP) Method*. *14*(2), 84–94.

Baskoro, M. I., Andreswari, D., & Johar, A. (2021). *Berprestasi Menggunakan Metode Analytical Network Process (Anp) Berbasis Web*. *9*(1), 14–29.

Frastian, N., Katarina, D., & Heriyati, H. (2018). Sistem Pendukung Keputusan Kinerja Dosen Menggunakan Metode Analytical Network Process (Anp) Pada Universitas. *Faktor Exacta*, *11*(3), 228–232. https://doi.org/10.30998/faktorexacta.v11i3.2599

Infokum, J. (2020). *Election Of The Head Of The Study Program By Applying The SAW Method (Case Study STMIK Pelita Nusantara)*. *9*(1), 91–97.

Marbun, M., & Sinaga, B. (2017). Mahasiswa Dengan Metode Topsis Di Stmik Pelita. *Jurnal Mantik Penusa*, *1*(2), 9–15.

Putri, L. F. D., Statiswaty, & Tajidun, L. . (2016). Implementasi Analytical Network Process (ANP) Dalam Sistem Pendukung Keputusan Penerimaan Karyawan. *semanTIK*, *2*(2), 215–224.

Romindo. (2016). Sistem Pendukung Keputusan Menentukan Mahasiswa Lulusan Terbaik di Politeknik Ganesha Medan Menggunakan Metode Analytic Network Process (ANP). *Riset dan E-Jurnal Manajemen Informatika Komputer*, *1*(Oktober), 18–25.

Sinaga, B., & Hasugian, P. S. (2019). Pemilihan Media Promosi STMIK Pelita Nusantara Medan dengan Metode Analytic Network Process (ANP). *MEANS (Media Informasi Analisa dan Sistem)*, *4*(1), 5–9. https://doi.org/10.54367/means.v4i1.311

Syaifullah, A., Isyriyah, L., & Kristanto, B. K. (2019). Sistem Penunjang Keputusan Simulasi Penentuan Akreditasi Sekolah Dasar Menggunakan Metode Analytic Network Process (ANP) Berbasis Web (Studi Kasus Korwil Dinas Pendidikan Kecamatan Pakisaji). *J-Intech*, *7*(01), 67–71. https://doi.org/10.32664/j-intech.v7i01.407

T. Limbong et al. (2020). *Sistem Pendukung Keputusan: Metode & Implementasi* (Vol. 1). Kita Menulis.

Windarto, Y. E., Pertiwi, I., & Winarto, O. (2020). Jurnal Politeknik Caltex Riau Implementasi Analytic Network Process untuk Penentuan Tempat Pembuangan Akhir. *Jurnal Komputer Terapan*, *6*(1), 47–58.

*name of corresponding author