Jupiter-D2

by Sukemi Sukemi

Submission date: 15-Oct-2021 04:13PM (UTC+0700)
Submission ID: 1674559584
File name: paper.pdf (421.4K)
Word count: 3926
Character count: 20032

Selection of Pressed Flower Supplier using the Analytic Network Process (ANP) Method

Fadhilah Dirayati *[1], Samsyuryadi[2], Sukemi[3]
*[123]Jl. Srijaya Negara Bukit Besar, Palembang 30139 Tel. 0711-379249 Fax. 0711-379248
*[1,2,3]Department of Master in Computer Science, Sriwijaya University, Palembang
e-mail: *[1]fadhilahdirayati@gmail.com, [2]samsuryadi@gmail.com, [3]sukemi@ilkom.unsri.ac.id

Abstract

Supplier has an important role because it will supply material in a long and consistent manner. The difficulty in choosing suppliers is because the company has many suppliers and each of them has advantages and disadvantages. The company requires that the supplied material is of good quality and is delivered on time. Mistakes in supplier selection can be very crucial, because they can have a direct impact on the continuity of the production process. Home Industry Camila is a small industrial company that is engaged in the production of household products. Currently, the company has six suppliers in the procurement of pressed flower raw materials for products made from resin. This study aims to determine the criteria for selecting suppliers and to choose the right supplier so that the risk of supplier selection errors can be minimized. This study uses the Analytic Network Process method with the Super Decisions application. Selection of welding wire supplier involves 6 criteria, 17 sub criteria and 6 alternatives. Based on the results of data processing, each criterion weight is obtained from the highest value obtained on the delivery criteria (0.2366) and the lowest supplier relationship (0.0309). This can be interpreted that the delivery criteria is the most important criterion among other criteria. Meanwhile, the results of the evaluation state that the supplier who chooses the highest weight isGreetings of Grace (GOG) with a criteria weight (0.4491) was then selected as a business partner as a pressed flower supplier in the Camila Home Industry.

Keywords : *Selection of Supplier and Analytic Network Process (ANP)*

1. INTRODUCTION

Production processes are activities that involve human labor, materials and equipment to produce useful products. The criteria that must be considered in selecting suppliers are not only the price of raw materials, but also various factors such as product quality, delivery time, supplier performance history and the warranty policy used by the supplier [1]. Home Industry Camila is an industry that is engaged in home decoration. This Camila Home Industry requires pressed flowers as one of the raw materials for making products made from resin.

This supplier selection is done to find suppliers who are competent and able to meet the needs of the company. Each supplier has its own characteristics related to the specified standard criteria. The procedure for selecting raw material suppliers in the Camila Home Industry is divided into several stages, namely initial selection, filling in the list of approved suppliers, and selecting suppliers. The initial selection is carried out by Home Industry Camila to select who will be candidates for raw material supplier candidates. This process is carried out by providing a form that must be filled in by the supplier in question.

After that the purchasing manager provides an assessment and decides whether the supplier can be included in the list of candidate suppliers or not. The contents of the form only contain how long the supplier has supplied raw materials, the address of the supplier, and the price offered. At this stage the purchasing manager assesses subjectively whether the supplier is feasible or not a candidate by looking at the price offered by the supplier in question. The next stage is filling in the list of approved suppliers, after being checked by the purchasing manager, the candidate company data is entered into the supplier list and then the supplier selection process is carried out for both old and new suppliers. The last stage is in the form of supplier selection. In this process,

Then the purchasing manager will reassess which companies are suitable to be suppliers of Camila Home Industry raw materials. At this stage the purchasing manager evaluates subjectively by looking at the difference in prices offered, and also by seeing what features are offered by the supplier. At this stage, several suppliers who have passed the initial selection will be tested for six months and the performance of these suppliers will be monitored whether there is a deviation or not.

The Analytic Network Process (ANP) method is a development of the Analytical Hierarchy Process (AHP) method. The ANP method is able to improve the weaknesses of AHP in the form of the ability to accommodate the linkages between criteria or alternatives. [2] There are 2 types of linkages to the ANP method, namely the linkage in one set of elements (inner dependence) and the linkage between different elements (outer dependence). This linkage causes the ANP method to be more complex than the AHP method. In general, the steps that must be taken in using ANP are: 1) Defining the problem and determining the criteria for the desired solution. 2) Determine the component weighting from a managerial point of view. 3) Creating a pairwise comparison matrix that describes the contribution or effect of each element on each criterion. 4) Comparisons are made based on the judgment of the decision maker by assessing the importance of an element. After collecting all pairwise comparison data and entering the inverse values and the value of one along the main diagonal, the priority of each criterion is sought and consistency is tested. 5) Determine the eigenvector of the matrix created in the third step. 6) Repeating steps 3, 4, and 5 for all criteria. 7) Create an unweight super matrix by entering all the Eigen vectors that have been calculated in step 5 into a super matrix. 8) Creating a weighted super matrix by multiplying each content of the unweight super matrix against the criteria comparison matrix (cluster matrix). 9) Making super matrix limiting by increasing the super matrix continuously until the number in each column in one row is equal, then normalize the super matrix limiting. 10) Take the value of the alternatives being compared and then normalize it to find out the final result of the calculation. 11) Checking for consistency, the consistency ratio should be 10 percent or less. If the value is more than 10%, then the decision data assessment must be corrected.

ANP is able to handle interdependence between elements by obtaining combined weights through the development of a super matrix. The Analytic Network Process (ANP) method is the development of the Analytical Hierarchy Process (AHP) method. The ANP method is able to improve AHP's weaknesses in the form of the ability to accommodate linkages between criteria or alternatives. There are 2 types of linkages in the ANP method, namely inner dependence and outer dependence. This linkage causes the ANP method to be more complex than the AHP method. [3]. The super matrix consists of 3 stages, namely: a) The super matrix stage without weight (unweight super matrix) is a super matrix which is established from the weights obtained from the pairwise comparison matrix; b) The weighted super matrix stage. It is a super matrix obtained by multiplying all the elements in the components of the unweight super matrix by the appropriate cluster weights so that each column in the weighted super matrix has the number 1. If the column in the unweight super matrix already has the number 1, then there is no need to weigh that component. on the weighted super matrix; c) Super matrix limit stage (limit super matrix). Is a super matrix obtained by increasing the weight of the weighted super

matrix. Increase the weight by multiplying the super matrix by itself several times. When the weights in each column have the same value, the limit matrix is stable and the matrix multiplication process is stopped [4]. It is a super matrix obtained by multiplying all the elements in the components of the unweight super matrix by the appropriate cluster weights so that each column in the weighted super matrix has the number 1. If the column in the unweight super matrix already has the number 1, then there is no need to weigh that component. on the weighted super matrix; c) Super matrix limit stage (limit super matrix). Is a super matrix obtained by increasing the weight of the weighted super matrix. Increase the weight by multiplying the super matrix by itself several times. When the weights in each column have the same value, the limit matrix is stable and the matrix multiplication process is stopped [4]. It is a super matrix obtained by multiplying all the elements in the components of the unweight super matrix by the appropriate cluster weights so that each column in the weighted super matrix has the number 1. If the column in the unweight super matrix already has the number 1, then there is no need to weigh that component. on the weighted super matrix; c) Super matrix limit stage (limit super matrix). Is a super matrix obtained by increasing the weight of the weighted super matrix. Increase the weight by multiplying the super matrix by itself several times. When the weights in each column have the same value, the limit matrix is stable and the matrix multiplication process is stopped [4].

Performance Indicator in accordance with company requirements. The final result of the calculation gives priority and synthesis weights. Priority is the weight of all elements and components. In the priority, there are limiting weights and normalized by cluster weights. The limiting weight is the weight obtained from the limit super matrix, while the normalized by cluster weight is the division between the element limiting weight and the number of element limiting weights in one component. Synthesis is the weight of the alternatives. In the synthesis there are weights in the form of ideal, raw and normal. The normal weight is the result of alternative weights as found in the normalized by priority cluster weights. The raw weight is the result of alternative weights such as the priority limiting weights or the limit matrix. There are several methods in selecting alternatives with multi criteria, including: 1) AHP (Analytic Hierarchy Process) method; 2) ANP (Analytic Network Process) method. The AHP method is a functional hierarchy with the main input being human perception. A complex and unstructured problem is broken down into groups then arranged into a hierarchical form. The ANP method is a development of the AHP method, where ANP allows interaction and feedback from elements in the cluster (inner dependence) and between clusters (outer dependence).

Setting priorities is an important part and needs accuracy in it. This section determines the scale of importance of an element to other elements. The first step in prioritization is to compile pairwise comparisons, that is to compare in pairs all for each of the hierarchical sub-systems. The comparison is then transformed into a matrix for the purposes of numerical analysis, namely the nx n matrix. Suppose there is a hierarchical sub-system with criteria A and a number of elements under it, B1 to Bn. Comparisons between elements for the hierarchical sub-system can be made in the form of an nx n matrix. This matrix is called the pairwise comparison matrix [6]. Based on the background that has been stated above, the formulation of this study is as follows: How to identify the weight of the criteria and sub-criteria used in determining the supplier of raw material for yarn in the Camila Home Industry, and how to determine the main supplier by applying the ANP method.

2. RESEARCH METHOD

The research methodology is a systematic procedure to determine the performance of a project more quickly and accurately which is used as a guide for conducting a study [7] This

study uses the Analytic Network Process (ANP) method to identify the criteria and sub-criteria weights and determine the main supplier. The stages and steps of this research are presented in a flowchart in the following figure:

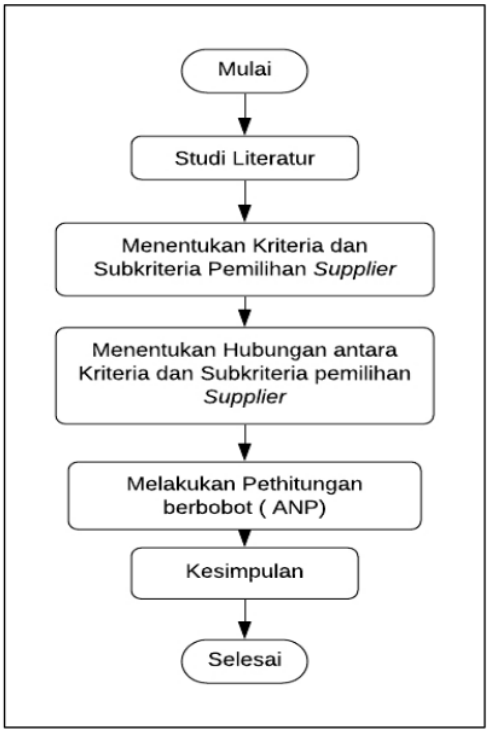

Figure 1. Research Methodology Flowchart

2.1 Literature Study

Literature study is the initial stage carried out in this study by making direct observations on the object of research. In addition, at this stage the research data was obtained by conducting interviews and discussions with related parties in the department*purchasing* Home Industry Camila.

2.2 Determining Criteria and Sub criteria

After going through the literature study stage, the next stage is determining the criteria and sub-criteria for supplier selection. Selection is based on literature studies, observations of the procurement system currently used by Home Industry Camila, and the results of the questionnaire, then distributed to the procurement division and purchasing pressed flower.

2.3 Determining the Relationship Between Criteria and Sub criteria

The next step is to determine the relationships that exist between all the criteria and sub-criteria to describe the structure of the model. Based on the distribution of the second questionnaire to the experts, a network of relationships can be described as in Figure 2 and Figure 3.

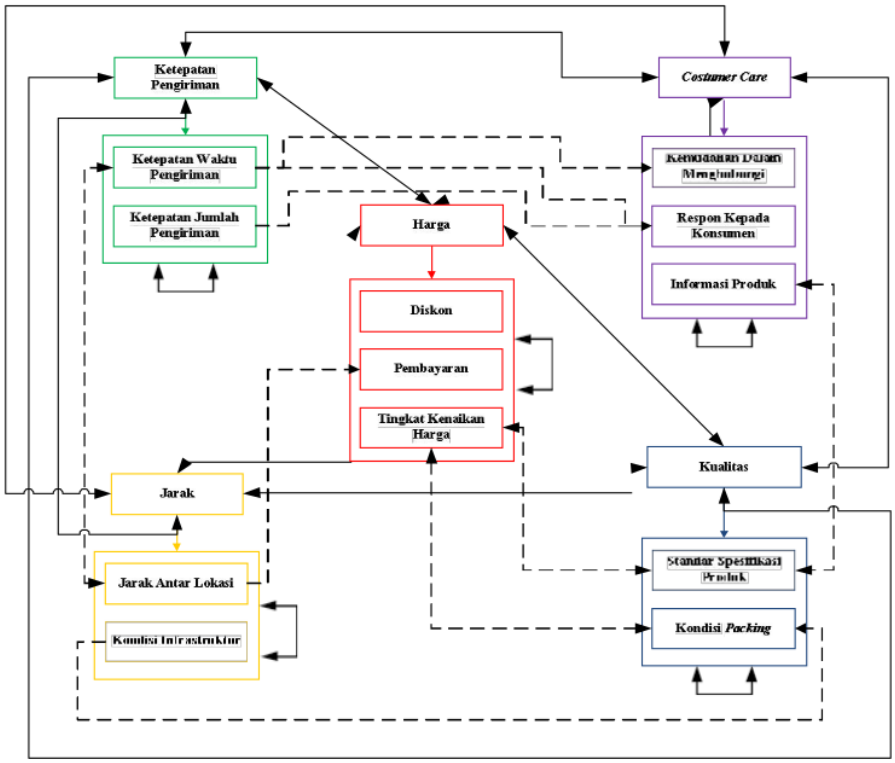

Figure 2. Analytic Network Process Network Model

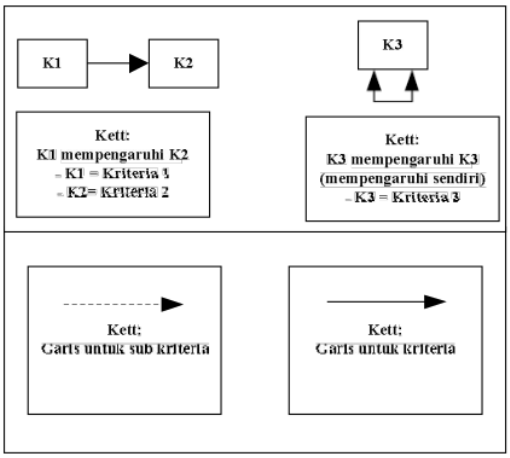

Figure 3. Description of the ANP Network Model

2.3 Perform weighted calculations (ANP).

The next stage, a pairwise comparison was carried out by the experts to calculate the weighting in the ANP. All criteria and sub-criteria that are known to have a relationship based on the results of questionnaire 2 will be compared with each other to determine the level of importance of each, using a 9-point measurement scale. The results of this pairwise comparison will then be processed and then taken into consideration in submitting proposals and drawing conclusions.

2.4 Conclusion

The next stage is the conclusion, this stage is the final stage in the research process. At this stage the researcher will present the results obtained fromresearch that has been done.

3. RESULTS AND DISCUSSION

In this section, the researcher will explain the process carried out in this research. This study itself uses the ANP method. There are several stages carried out in this study such as determining the criteria and sub criteria, and analysis.

3.1 Determination of Criteria and Sub Criteria in supplier selection.

ANP is able to represent the level of importance of multi criteria from various parties by considering the relationship between criteria at the structure level and existing sub criteria. What needs to be done in determining the criteria and sub-criteria itself is to determine the appropriate criteria, sub-criteria and alternatives. There are 6 criteria, 18 sub-criteria, and 6 alternatives that are used in selecting suppliers for the pressed flower and can be seen in Table 1 and Table 2. Based on the identification of the linkages between the sub criteria, it can be seen that in selecting Camila Home Industry suppliers using sub criteria interrelated. Therefore, the correct method used to determine the priority of the supplier to be selected is the ANP method. The decision structure can be seen in Figures 1 and 2.

Table. Criteria and Sub Criteria

Criteria	Sub Criteria
Quality	Suitability of Material with Required Specifications
	Conformity with the Amount Ordered
	Product Warranty
Price	Product Prices
	Discounts
	Rate of Increase in Price
	Payment system
Location	Distance Between Locations
	Infrastructure Conditions
Delivery	On Time Delivery
	Number of Shipment
	Packing Quality
	Delivery Priority
Customer Care	Ease of Communication
	Response to Consumers
	Product Information
Supplier Relations	Past Performance

Table 2. Alternative Suppliers

Alternative	Bloomfields
	Porta Flower
	Greetings of Grace
	Binaflora
	Mangolia
	Woodcreek Drieds

3.2 Analysis

After the data goes through the criteria, sub-criteria, and alternative processes, the next step is to analyze using the ANP method. This analysis itself is divided into weight analysis for each sub-criterion in one criterion and analysis of the criteria weight in general.

3.2.1 Weight Analysis of Each Sub Criteria in One Criterion

The following are Tables 3, 4, 5, 6, 7 and 8 which displaythe weight of the subcriteria in each criterion.

Table 3. Weights of Sub-Criteria on Quality Criteria

Criteria	Quality	Priority Weights
Weight	0.24	
Product Standards	0.0691	0.0327
Number of Products	0.0014	0.0101
Product Warranty	0.0056	0.0218

Table 4. Weights of Sub Criteria on Price Criteria

Criteria	Price	Criterion Weights
Weight	0.20	
Product Prices	0.0469	0.0147
Discounts	0.0625	0.0232
Price increases	0.1123	0.0423
Payment Process	0.0561	0.0102

Table 5. Weights of Sub Criteria in Location Criteria

Criteria	Location	Priority Weights
Weight	0.21	
Distance	0.1011	0.0205
Infrastructure Code	0.0401	0.0023

Table 6. Weights of Sub Criteria on Delivery Criteria

Criteria	Delivery	Priority Weights
Weight	0.24	
On time	0.1188	0.0919
Right amount	0.1267	0.0818
Packing Quality	0.0527	0.0712
Priority Delivery	0.0572	0.0585

Table 7. Weights of Sub Criteria on Customer Care Criteria

Criteria	*Customer Care*	Priority Weights
Weight	0.12	
Ease of Contact	0.0376	0.0056
Consumer Response	0.0399	0.0098
Product Information	0.0375	0.0122

Table 8. Weights of Sub Criteria on Supplier Relationship Criteria

Criteria	Supplier relationship	Priority Weights
Weight	0.06	
Past Performance	0.0309	0.0118

3.2.2 General Analysis of Sub-Criteria Weights

The amount of weight of the sub-criteria for each criterion does not indicate which sub-criteria is the most significant overall. For this reason, it is also necessary to look at the weight of the sub-crite19 in general as shown in Table 6.

After calculating the priority weight of each sub-criterion, then calculating the priority weight for each alternative to the existing sub-criteria. There are 6 alternative suppliers for supplier selection, namely Bloomingfiels (B), Porta Flower (PF), Greetings of Grace (GOG), Binaflora (BF), Mangolia (M), and Woodcreek Drieds (WD). The six suppliers are suppliers who have become Camila's Home Industry business partners in the procurement of Pressed Flowers. Of the four suppliers, a supplier who has a good performance is looking for a weight value that will be compared 9gainst each sub-criterion. In this analysis, the same as the comparison matrix analysis of criteria and sub criteria, the value of the priority weight is the largest, so the alternative becomes the main choicethe most important of the sub criteria. Below is table 9 of the recapitulation of alternative priority weights:

Table 9. Weights of Alternative Level Global Priorities (ANP)

Criteria	Weight	Sub Criteria	Weight	B	PF	GOG	BF	M	WD
Quality	0.0761	Product Standards	0.0691	0.0218	0.0125	0.0225	0.0108	0.0148	0.0138
		Number of Products	0.0014	0.0156	0.0103	0.0135	0.0156	0.0236	0.0222
		Product Warranty	0.0056	0.0102	0.0322	0.0342	0.0084	0.0178	0.0158
Price	0.2309	Product Prices	0.0469	0.0328	0.0245	0.0245	0.0106	0.0128	0.0128
		Discounts	0.0625	0.089	0.0189	0.0089	0.0129	0.0234	0.0234
		Rate of Increase in Price	0.1123	0.0107	0.0176	0.0076	0.0224	0.0174	0.0114
		Payment system	0.0561	0.0129	0.0102	0.0402	0.0367	0.0267	0.0267
Location	0.1412	Distance Between Locations	0.1011	0.0103	0.0103	0.0123	0.0223	0.0223	0.0209
		Infrastructure Conditions	0.0401	0.0091	0.0111	0.0111	0.0191	0.0145	0.0166
Delivery	0.2366	On Time Delivery	0.1188	0.0092	0.0092	0.0092	0.0053	0.0067	0.0087
		Number of Shipment	0.1267	0.0056	0.0056	0.0456	0.0056	0.0189	0.0109
		Packing Quality	0.0527	0.0234	0.0324	0.0324	0.0134	0.0104	0.0197
		Delivery Priority	0.0572	0.0278	0.0234	0.0234	0.0234	0.0344	0.0187
Customer Care	0.1115	Ease of Communication	0.0376	0.0137	0.0137	0.0337	0.0346	0.0072	0.0276
		Response to Consumers	0.0399	0.0284	0.0284	0.0284	0.0274	0.0019	0.0087
		Product Information	0.0375	0.0192	0.0152	0.0452	0.0332	0.0232	0.0155
Relationship *Supplier*	0.0309	Past Performance	0.0309	0.0164	0.0064	0.0564	0.0104	0.0186	0.0274
Priority Weights			1	0.3561	0.2819	0.4491	0.3121	0.2946	0.3008

Based on the results of data processing in Table 9 involving six criteria, seventeen sub-criteria, and four alternatives. Then we get the criteria weight from the highest value obtained on the delivery criteria (0.2366) and the lowest supplier relationship (0.0309). This can be interpreted that the delivery criteria is the most important criterion among other criteria. Meanwhile, the results of the evaluation state that the supplier with the highest weight is Greetings of Grace (GOG) with a value criterion weight (0.4491) and then selected as a business partner as a pressed flower supplier in the Camila Home Industry. Followed by Bloomingfiels (B) with a criterion weight of value (0.3561), the third priority by Binaflora (BF) with a weighted value (0.3121), the fourth priority is Woodcreek Drieds (WD) with a criterion weight of value (0.3008),

4. CONCLUSION

The conclusion in this study is that the model used as a decision making in this study is used because it is in accordance with the condition of the company in which there is a

relationship between criteria and sub criteria. Based on the results of data processing using the ANP model, the alternative results chosen as the pressed flower supplier were Greetings of Grace (GOG) with the criteria weight (0.4491) as the main priority.

5. SUGGESTIONS

The suggestions for further research are:

1. Increase the types of criteria and sub criteria in order to get a more choice of determination.
2. Using calculations with the Super Decisions application to speed up the calculation process.

THANK-YOU NOTE

The author would like to thank the editors of the JUPITER journal who have supported the author's opportunity so that this research article can be published.

BIBLIOGRAPHY

[1] Alfian, Ignatius A. Sandy, and, Hanif Fathurahman, 2013, The use of the Analytic Network Process (ANP) method in selecting suppliers of paper raw materials at PT Mangle Panglipur, Journal of Industrial Systems Engineering Vol 2. No.1. October.

[2] Saaty, TL, 2008, Relative measurement and its generalization in decision making why pairwise comparisons are central in mathematics for the measurement of intangible factors the analytic hierarchy network process, P ittsburgh: RWS Publications.

[3] Heizner, J and Barry Render, 2005, Operations Management, Volume 1 Ed. 7. Yogyakarta: Publisher Andi., Salemba Empat. Jakarta,.

[4] Kurniawati, Dewi., Yuliando, Henry., Widodo and, Kuncoro, 2013, Supplier Selection Criteria with Analytical Network Process, Journal of Industrial Engineering (ISSN) 15 (1), 24-32.

[5] Yulianti, and Mega, 2013, Application of ANP and TOPSIS Methods in Supplier Selection, UPI.

[6] Saaty, TL, 2014, Fundamentals of the analytic network process dependence and feedback in decision *making with a single Network*, Pittsburgh.

[7] Suprapto, Johanes, 2006, Operations Research (For Decision Making), Jakarta: University Publishers Indonesia.

Jupiter-D2

ORIGINALITY REPORT

18%	%	18%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Panca Mudjirahardjo, A. Fauzi, Herman Tolle. "The Recommendation System of Thesis Topics Selection Based on Fuzzy-AHP and Fuzzy-ANP (Case Study: D-IV Nursing Program of Health Polytechnic, Department of Health, Malang)", 2018 Electrical Power, Electronics, Communications, Controls and Informatics Seminar (EECCIS), 2018 Publication	3%
2	Ginanjar Setyo Permadi, Tanhella Zein Vitadiar, Terdy Kistofer, Ahmad Heru Mujianto. "The Decision Making Trial and Evaluation Laboratory (Dematel) and Analytic Network Process (ANP) for Learning Material Evaluation System", E3S Web of Conferences, 2019 Publication	2%
3	Qin Juan-juan. "Notice of Retraction: Assessment of the logistics service supply Chain's coordination performance based on ANP", 2011 International Conference on E-Business and E-Government (ICEE), 2011	2%

Publication

4 Nadya Saniyya Ramadhanti, Ari Yanuar Ridwan, Hardian Kokoh Pambudi. "Feasibility Study of Determination a New Distribution Warehouse Location Using P-Median and Analytical Network Process Methods in One of the Cement Industries", IOP Conference Series: Materials Science and Engineering, 2020 — 2%
Publication

5 R Andrian, R S Fuadi, R Fahrudin, A Rahman, M Wildanuddin, A Wahana. "Analytical network process method for badminton athlete's scholarship recommendations", Journal of Physics: Conference Series, 2019 — 1%
Publication

6 Agustina Puji Rahayu, Rahmat Nurcahyo, Farizal. "Hazards from the Maintenance Outsource Operation of Container Material Handling Equipment in Port", 2019 IEEE 6th International Conference on Engineering Technologies and Applied Sciences (ICETAS), 2019 — 1%
Publication

7 Asbon Hendra Azhar, Ratih Adinda Destari, Linda Wahyuni. "Improvement Accuracy of Instant Noodle Product Selection Using Method ANP", 2018 6th International — 1%

Conference on Cyber and IT Service Management (CITSM), 2018
Publication

8 Hor, F.C.. "Establishing talent management for company's succession planning through analytic network process: Application to an MNC semiconductor company in Taiwan", Computers and Mathematics with Applications, 201008 — 1 %
Publication

9 "Proceedings of the Twelfth International Conference on Management Science and Engineering Management", Springer Science and Business Media LLC, 2019 — 1 %
Publication

10 Broto Priyono. "Handling Transportation Accidents caused by Human Error", KnE Social Sciences, 2021 — 1 %
Publication

11 C O Doaly, L L Salomon, A K J Arta. "Performance measurement using Balance Score Card and Analytic Network Process in Elastomer Switch Keypad Manufacturer Indonesia", IOP Conference Series: Materials Science and Engineering, 2020 — 1 %
Publication

12 Oktavianus Lumasuge, Vincencius Gunawan, Catur Edi Widodo. "Implementation analytic — 1 %

network process method and geographic information system to determine the freswater fish farming location", 2017 1st International Conference on Informatics and Computational Sciences (ICICoS), 2017
Publication

---

13 "Evaluation of the Implementation of Coastal Community Empowerment Policy in Surabaya City for Supporting Indonesian Maritime Defense", International Journal of Recent Technology and Engineering, 2019 — 1%
Publication

---

14 Mangla, Sachin Kumar, Pradeep Kumar, and Mukesh Kumar Barua. "An integrated methodology of FTA and fuzzy AHP for risk assessment in green supply chain", International Journal of Operational Research, 2016. — <1%
Publication

---

15 Konstantinos Kirytopoulos, Dimitra Voulgaridou, Vrassidas Leopoulos. "chapter 12 Upgrading effectiveness in VEs", IGI Global, 2010 — <1%
Publication

---

16 Hafnidar A. Rani, Moch. Afifuddin, Herry Akbar. "Tourism infrastructure development prioritization in Sabang Island using analytic — <1%

network process methods", AIP Publishing, 2017
Publication

17 Noor Alam Hadiwijaya, Hamdani Hamdani, Andri Syafrianto, Zaidir Tanjung. "The Decision Model for Selection of Tourism Site Using Analytic Network Process Method", International Journal of Intelligent Systems and Applications, 2018 <1%
Publication

18 Asbon Hendra Azhar, Ratih Adinda Destari, Linda Wahyuni, Fitriana Harahap. "Improvement accuracy of oil meal packaging with method ANP", 2017 5th International Conference on Cyber and IT Service Management (CITSM), 2017 <1%
Publication

19 Management Research Review, Volume 34, Issue 7 (2011-07-16) <1%
Publication

20 Mohammad Mahdavi Mazdeh, Seyed-Mostafa Razavi, Roozbeh Hesamamiri, Mohammad-Reza Zahedi, Behin Elahi. "An empirical investigation of entrepreneurship intensity in Iranian state universities", Higher Education, 2012 <1%
Publication

21	Ratih Adinda Destari, Linda Wahyuni. "Application of ANP Methods for Selecting the Best Bread Products", 2018 6th International Conference on Cyber and IT Service Management (CITSM), 2018 Publication	<1%
22	Samira Mahmoudkelaye, Katayoon Taghizade Azari, Mitra Pourvaziri, Elnaz Asadian. "Sustainable material selection for building enclosure through ANP method", Case Studies in Construction Materials, 2018 Publication	<1%
23	Ren-Shuai Chen. "The Policy of High-Tech Industry Development: The Case of Location Assessment for Biotech Industry Parks in Taiwan", Review of Policy Research, 3/2006 Publication	<1%

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	On		