SinkrOn
JURNAL & PENELITIAN TEKNIK INFORMATIKA
Journal Publications & Informatics Engineering Research
Volume 4, Number 1, October 2019
DOI : https://doi.org/10.33395/sinkron.v4i1.10130
e-ISSN : 2541-2019
p-ISSN : 2541-044X

Selection of Selected Flight Attendants Using MCDM-AHP and ELECTRE Method

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Abstract— The number of business interests nowadays, many people use flight services to reach distant areas and must be traveled by very complex flight services. Such conditions have resulted in a large number of airlines requiring flight attendants to service their passengers on the plane. So that the right method is needed to carry out the selection process for flight attendants, the ELECTRE method is one solution that can be done for the flight attendant's selection process. The results obtained from the selection process of flight attendants without a score, because they have used the elimination process through threshold concordance and threshold discordance as follows, out of nine candidates for flight attendants who have passed the selection are flight attendants-3, flight attendants-6 and flight attendants-7, while others are not acceptable. So that through the results of the selection that has been done with the collaboratin AHP and ELECTRE method, by seeing the results obtained from aggregate matrices dominant, So there were 3 flight attendants who passed the selection, and 6 flight attendants were eliminated.

Keywords— AHP, ELECTRE, Elimination, Flight attendants, MCDM.

I. INTRODUCTION

To complete flight conditions, a number of flight attendants who have preparedness are needed, not only from the mentallity aspect (Udayana et al., 2016), but from aspects of physical health conditions that have the most important role. Aspects of physical health must be done in selecting flight attendants, because physical health conditions strongly support the smooth implementation of flight. Health conditions that are very much needed are such as dental health (KG) which greatly affects the balance, eye health (KM) which greatly affects vision, weight (BB) which must be balanced with the ideal level of the body, foot length (PK) which affect the height of body texture, height (TB) adjusted to the standard needs of a flight attendant, and age or age (US) which affects the agility and speed of service to the passengers of the flight.

Testing of the six physical conditions related to the selection of flight attendants is part of the criteria of this study, which is tested using the Analytic Hierarchy Process (AHP) method which is used to determine preference weights in terms of determining preference weighting criteria, while data processing for entry selection flight attendants use the ELECTREE method, because both AHP and ELECTRE methods are one of the methods related to the ranking process (Wu & Huang, 2011), (Yang, Xu, Qiu, & Wang, 2013) which are Multi-

criteria Decision Making (MCDM) (Mary & Suganya, 2016). Can it provide tangible evidence that these two methods can be collaborated in the selection of selected flight attendants with optimal results and what kind of decisions are made.

It has been known before, a number of flight attendants who are data processing as dataset, they are flight attendants in the good category, and who from those who have the best assessment is needed by collaboration testing using AHP and ELECTRE methods (Ermatita, Sri Hartati, Wardoyo, & Harjoko, 2011) of approximately nine people in accordance with the six criteria for preferences measurement.

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II. Literature Review

From several literature sources that can be used as a reference for the supports discussion about selecting the best flight attendants, they will provide insights and insights that complement the content of the research that has been carried out.

A. Analytic Hierarchy Process (AHP).

The Analytic Hierarchical Process (AHP) method has an interest in determining selection and evaluation (Farkas, 2007) in priority terms, using existing rules (Ishizaka & Lusti, 2006) as well as (1) performing decomposition stages into hierarchy models, (2) providing weighting techniques from each criteria level and alternative, (3) the process of testing consistency with the weighting results measured through the acquisition of the eigenvector, (4) the synthesis process at each criteria level and alternative, and (5) determining the level measured from the measured weight of each alternative.

Determination of weights measured through the process of acquiring the eigenvector (Vargas, 2010) is processed in the form of two dimensions arranged in the form of matrices, paying attention to the orderly arrangement of matrices in (Figure 1). The arrangement of matrices must pay attention to the layout of the matrices element A in row (i) and column (j).

$$\begin{bmatrix} a_{1,1} & a_{1,2} & a_{1,3} & \cdots & \cdots & \cdots & a_{1,j} \\ a_{2,1} & a_{2,2} & a_{2,3} & \cdots & \cdots & \cdots & a_{2,j} \\ a_{3,1} & a_{3,2} & a_{3,3} & \cdots & \cdots & \cdots & a_{3,j} \\ \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & \\ a_{i,1} & a_{i,2} & a_{i,3} & \cdots & \cdots & \cdots & a_{i,j} \end{bmatrix}$$

Figure 1. Arrangement of matrices.

Pairwise matrices can be consistent if they meet the transitive and reciprocal rules (Chupiphon & Janjira, 2016), while the transitive formula can be seen in (equation-1) and the reciprocal formula can be seen in (equation-2) below:

$$a_{ij} = a_{ik} \cdot a_{kj} \qquad (1)$$

$$a_{ij} = \frac{1}{a_{ji}} \qquad (2)$$

Thus the multiplication of matrices can be done by consistency index (CI) and consistency ratio (CR) test, whether the results obtained can be accepted or rejected, consistency test can use (equation-3) and (equation-4):

$$CI = \frac{\lambda_{max} - N}{N - 1} \qquad (3)$$

$$CR = \frac{CI}{RI} \qquad (4)$$

To determine the amount of CR, a random index quantity (Saaty, 2008) is needed in the table arrangement shown in (Table 1).

Table 1. Radom Index

Ordo	RI
1	0
2	0
3	0.58
4	0.90
5	1.12
6	1.24
7	1.32
8	1.41
9	1.45
0	1.49
11	1.51
12	1.58

B. ELECTRE.

ELECTRE method is one of the methods used to rank by using the concept of elimination (Yang et al., 2013), namely by comparing between two alternatives based on criteria that are parameters of measurement and selected based on the threshold magnitude (Govindan & Grigore, n.d.) found in dominant matrices.

The rules of play or stages are carried out using the ELECTRE method (Chen & Hung, 2008) as follows: (1) determine the dataset to be normalized, (2) the normalization process is weighted from the predetermined one, (3) determine the set for concordance and discordance, (4) arrange matrices concordance and discordance, (5) look for the threshold acquisition process to do the elimination stages of matrices elements both concordance and discordance, (6) Look for concordace dominant matrices and discordace dominant matrices, (7) Find matrices aggregate to determine the ranking of each selected alternative.

A number of equations can be used from each stage of ELECTRE as follows, from the acquisition of the dataset (Mary & Suganya, 2016), (Govindan & Grigore, n.d.) the treated must be normalized first, using (equation-5).

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}} \text{ untuk i=1,2,3,…,m dan j=1,2,3,…,n.} \qquad (5)$$

Whereas to find the process of determining weighted normalization, by multiplying the weight set by each dataset table element in matrices normalization, so that the comparison between each row matrices can be processed with the matrices compared to get the set of matrices concordance and set of matrices discordance, as for formulas that can be used follow (equation-6) and (equation-7).

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$$C_{kl} = \sum_{j \in C_{kl}} W_j \qquad (6)$$

With the following conditions:

$C_{kl} = \{ j, y_{kj} \geq y_{lj} \}$, untuk $j = 1,2,3,\ldots,n$

$$d_{kl} = \frac{\max\{|V_{kj} - V_{lj}|\}_{j \in D_{kl}}}{\max\{|V_{kj} - V_{lj}|\}_{\forall j}} \qquad (7)$$

With the following conditions:

$D_{kl} = \{ j, y_{kj} < y_{lj} \}$, untuk $j = 1,2,3,\ldots,n$

After knowing the set of matrices concordance and set of matrices discordance, it will easily be known the amount of threshold concordance and threshold discordance (Yang et al., 2013), (De, 2002), (Mary & Suganya, 2016) as a measure to determine the stages of the elimination process from each element matrices concordance and discordance, the formulas that can be used take note (equation-8) and (equation-9) below:

$$\underline{c} = \frac{\sum_{k=1}^{n} \sum_{l=1}^{n} c_{kl}}{m * (m-1)} \qquad (8)$$

$$\underline{d} = \frac{\sum_{k=1}^{n} \sum_{l=1}^{n} d_{kl}}{m * (m-1)} \qquad (9)$$

Towards the final stage, the process of determining aggregate dominant matrices to determine the ranking of a number of alternatives is available, namely ranking for flight attendants for the needs of airlines.

III. PROPOSED METHOD

The selection process with the ELECTRE method, especially in ranking against alternatives to the concept of elimination, is a concept that is able to provide optimal solutions for the process of selecting flight attendants for each flight. The algorithm that can be used for the selection process for selected flight attendant personnel, pay attention (Figure 2).

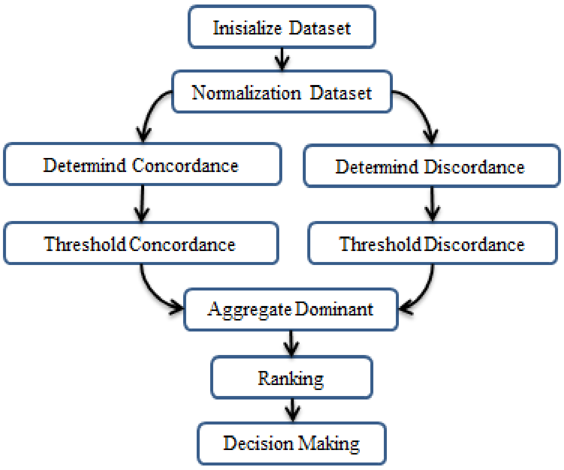

Figure 2. ELECTRE Algorithm.

The uniqueness of the use of Algorithm from the ELECTRE method is that the threshold is determined scientifically from each set arranged in a matrix both concordance and discordance. Therefore the rating process in ELECTRE has a reference that adapts to the condition of the dataset built based on the provisions of the criteria, the meaning of that there is no standard and barometer that must be followed by certain provisions.

IV. RESULT AND DISCUSSION

The preference function used for weight measurement is processed through the AHP method, which is used as the weighting criterion in the ELECTRE method, of the 48 respondents used to fill the accumulated questionnaire using AHP, criteria are formed in the arrangement of pairwise matrices, as shown in (Table 2).

Table 2. Pairwise matrices criteria.

Main Criteria	*KG*	*KM*	*BB*	*PK*	*TB*	*US*
KG	1.000	2.725	2.621	4.051	1.700	2.941
KM	0.367	1.000	2.303	2.902	3.026	2.439
BB	0.382	0.434	1.000	1.989	2.357	2.119
PK	0.247	0.345	0.503	1.000	1.117	1.886
TB	0.588	0.331	0.424	0.895	1.000	1.504
US	0.340	0.410	0.472	0.530	0.665	1.000

The data shown in (Table 2) are obtained through very strict stages, then processed by the algebra matrices method formed with five stages of the optimal eigenvector acquisition process, note (Table 3), which is used as a preference in the ELECTRE method.

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Table 3. Eigenvector as preferences.

Criteria	*Row Count*	*Egenvector*
KG	4576203850647520000000000000000000000000000000000000000000000.0000	0.341
KM	3135131418620800000000000000000000000000000000000000000000000.0000	0.234
BB	2062612960536190000000000000000000000000000000000000000000000.0000	0.154
PK	1256444227568150000000000000000000000000000000000000000000000.0000	0.094
TB	1363721189231940000000000000000000000000000000000000000000000.0000	0.102
US	1013220708426760000000000000000000000000000000000000000000000.0000	0.076
Total	13407334355031400000000000000000000000000000000000000000000000.000	1.000

The eigenvector value is said to be optimal if the condition of Consistency Ratio (CR) <0.1. Note (Figure 3) testing of eigenvector which is the multiplication of master matrices with optimal eigenvector process using algebra matrices.

$$\begin{bmatrix} 1.000 & 2.725 & 2.621 & 4.051 & 1.700 & 2.941 \\ 0.367 & 1.000 & 2.303 & 2.902 & 3.026 & 2.439 \\ 0.382 & 0.434 & 1.000 & 1.989 & 2.357 & 2.119 \\ 0.247 & 0.345 & 0.503 & 1.000 & 1.117 & 1.886 \\ 0.588 & 0.331 & 0.424 & 0.895 & 1.000 & 1.504 \\ 0.340 & 0.410 & 0.472 & 0.530 & 0.665 & 1.000 \end{bmatrix} X \begin{bmatrix} 0.341 \\ 0.234 \\ 0.154 \\ 0.094 \\ 0.102 \\ 0.076 \end{bmatrix} = \begin{bmatrix} 2.156 \\ 1.477 \\ 0.972 \\ 0.592 \\ 0.643 \\ 0.477 \end{bmatrix}$$

Lamda Max	6.318	
Consistensi Index	0.064	
Consistency Ratio	0.051	<10%(Accetptable)

Figure 3. Eigenvector using Algebra Matrices.

The test results with the application of expert choice have similar results with the process of algebra matrices, note (Figure 4) with inconsistency number is 5% and 0 missing judgments, the result can be seen at (Figure-4). CR results of less than 10 percent illustrate that decisions are acceptable.

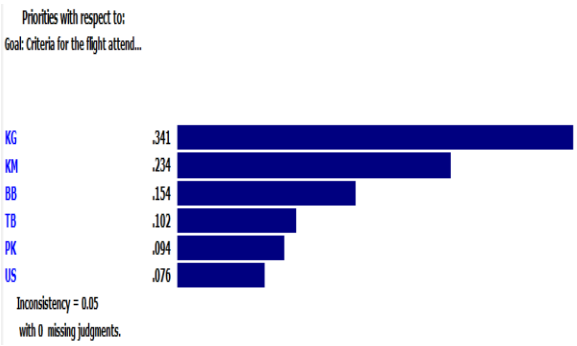

Figure 4. Eigenvector using Expert choices.

The eigenvector value used as a preference and simplified into two digits, starting from the criteria KG = 0.341; KM = 0.234; BB = 0.154; TB = 0.102; PK = 0.094; and US = 0.076. The preference obtained through the AHP method will be used in the ELECTRE method as a measure accepted or rejected against alternative flight attendants. With the ELECTRE method, it starts from the acquisition of data sets that are processed through the selection stages of six criteria as a barometer for selecting selected flight attendants consisting of nine flight attendants with six criteria that are used (1) dental health examination, (2) eye health examination, (3) examination of body condition, (4) measurement of leg length, (5) height measurement, and (5) age aspect.

The parameter scale of each criterion has a range of 1-5. It can be seen from the dataset that each criterion gives different results, but having the same total score for each flight attendant is 20 (twenty), this is the highest measure of value and is said to be the selection of selected flight attendants. Describe the dataset produced from 9 (nine) flight attendants accordingly (Table 4). The selected stewardesses have the same highest grade criteria, so we need the right selection method to be selected from them through the weight criteria obtained from the AHP method.

Table 4. Dataset

Alt	C1	C2	C3	C4	C5	C6
P1	3	3	5	5	2	2
P2	5	3	4	5	1	2
P3	4	5	3	1	2	5
P4	3	2	5	4	5	1
P5	3	5	2	4	1	5
P6	2	4	5	4	4	1
P7	5	2	4	1	5	3
P8	5	5	1	2	5	2
P9	2	5	2	3	4	4

For the stages of data processing, of course using a method, namely ELECTRE, then the data must be normalized first to determine the range of each data and the position of the data. Normalization results obtained using (equation-5) as shown in (Table 5). To be processed further by the ELECTRE method, the normalization stage is needed as a placement of the range of data used. Thus the position of the data is arranged regularly and can be processed by the ELECTRE method.

From the results of normalization obtained, the use of the preferences obtained such as (Figure-3) and (Figure-4) using AHP and the Expert Choice Application are the best ways to determine the normalization weight,

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Table 5. Normalization.

Weight	0.341	0.234	0.154	0.094	0.102	0.076
Criteria	K1	K2	K3	K4	K5	K6
P1	0.267	0.252	0.447	0.470	0.185	0.212
P2	0.445	0.252	0.358	0.470	0.092	0.212
P3	0.356	0.420	0.268	0.094	0.185	0.530
P4	0.267	0.168	0.447	0.376	0.462	0.106
P5	0.267	0.420	0.179	0.376	0.092	0.530
P6	0.178	0.336	0.447	0.376	0.370	0.106
P7	0.445	0.168	0.358	0.094	0.462	0.318
P8	0.445	0.420	0.089	0.188	0.462	0.212
P9	0.178	0.420	0.179	0.282	0.370	0.424

With the discovery of normalization, the role of preferences through the process of acquiring eigenvectors can determine weighted normalization which is a normalization multiplication with preferences and the results can be seen in (Table 6).

.

Table 6. Weight Normalization.

	K1	K2	K3	K4	K5	K6
P1	0.091	0.059	0.069	0.044	0.019	0.016
P2	0.152	0.059	0.055	0.044	0.009	0.016
P3	0.122	0.098	0.041	0.009	0.019	0.040
P4	0.091	0.039	0.069	0.035	0.047	0.008
P5	0.091	0.098	0.028	0.035	0.009	0.040
P6	0.061	0.078	0.069	0.035	0.038	0.008
P7	0.152	0.039	0.055	0.009	0.047	0.024
P8	0.152	0.098	0.014	0.018	0.047	0.016
P9	0.061	0.098	0.028	0.026	0.038	0.032

The basis for finding the concordance set and discordance set is weighted normalization compared to each line element one with the other row elements with equation-6 and equation-7, the results in (Table 9) which will form matrices concordance and matrices discordance with the order of nine.

The matrices concordance shown in (Table 7) is arranged to form a square.

Table 7. Concordance Matrices.

Alt	P1	P2	P3	P4	P5	P6	P7	P8	P9
P1	0.000	0.256	0.248	0.403	0.349	0.511	0.481	0.248	0.589
P2	0.341	0.000	0.589	0.744	0.589	0.511	0.328	0.248	0.589
P3	0.651	0.411	0.000	0.651	0.597	0.651	0.309	0.229	0.571
P4	0.102	0.256	0.349	0.000	0.256	0.443	0.248	0.248	0.691
P5	0.309	0.309	0.094	0.309	0.000	0.651	0.403	0.323	0.511
P6	0.336	0.489	0.349	0.234	0.256	0.000	0.481	0.248	0.248
P7	0.519	0.177	0.597	0.417	0.597	0.519	0.000	0.229	0.597
P8	0.677	0.336	0.537	0.651	0.443	0.752	0.328	0.000	6.000
P9	0.411	0.411	0.195	0.309	0.102	0.309	0.403	0.323	0.000

While the results of matrices discordance obtained from the discordance set can be seen in (Table 8). Both table matrices concordance and discordance as a reference to determine the amount of threshold value which is the basic benchmark for passing through the process of elimination, where the values of matrices concordance and discordance will be eliminated directly.

Tabel 8. Matrices discordance.

Alt	C1	C2	C3	C4	C5	C6	C7	C8	C9
P1	0.000	1.000	1.000	1.438	1.000	1.000	1.000	1.000	1.000
P2	0.155	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
P3	1.467	1.467	0.000	0.880	1.000	0.587	1.000	1.174	1.000
P4	0.696	1.617	1.000	0.000	1.000	1.000	1.000	1.000	1.000
P5	1.718	2.531	0.356	1.174	0.000	0.880	1.000	1.565	1.000
P6	0.426	3.234	1.000	0.240	1.000	0.000	1.000	1.000	1.000
P7	1.000	0.938	0.568	1.651	0.426	1.651	0.000	1.000	1.000
P8	0.938	0.703	1.000	0.935	1.000	1.000	0.701	0.000	1.000
P9	1.101	3.234	3.234	1.718	0.284	1.718	1.550	5.694	0.000

Thus matrices dominant concordance and dominant discordance matrices are easily obtained by using equation-8 and equation-9, with the results can be seen in (Table 10) and (Table 11) which is the process of determining the dominant aggregate matrices. It is necessary to know the threshold concordance is 0.49 which is obtained through matrices concordance and threshold discordance is 1.19 obtained from discordance matrices. The value under the threshold will be zero, on the contrary it is worth one.

Table 9. Set of concordance and discordance.

Bobot	0.34	0.23	0.15	0.09	0.10	0.08
C(1,2)	-0.061	0.000	0.014	0.000	0.009	0.000
C(1,3)	-0.030	-0.039	0.028	0.035	0.000	-0.024
C(1,4)	0.000	0.020	0.000	0.009	-0.028	0.008
C(1,5)	0.000	-0.039	0.041	0.009	0.009	-0.024
C(1,6)	0.030	-0.020	0.000	0.009	-0.019	0.008
C(1,7)	-0.061	0.020	0.014	0.035	-0.028	-0.008
C(1,8)	-0.061	-0.039	0.055	0.026	-0.028	0.000
C(1,9)	0.030	-0.039	0.041	0.018	-0.019	-0.016
C(2,1)	0.061	0.000	-0.014	0.000	-0.009	0.000
C(2,3)	0.030	-0.039	0.014	0.035	-0.009	-0.024
C(2,4)	0.061	0.020	-0.014	0.009	-0.038	0.008
C(2,5)	0.061	-0.039	0.028	0.009	0.000	-0.024
C(2,6)	0.091	-0.020	-0.014	0.009	-0.028	0.008
C(2,7)	0.000	0.020	0.000	0.035	-0.038	-0.008
C(2,8)	0.000	-0.039	0.041	0.026	-0.038	0.000
C(2,9)	0.091	-0.039	0.028	0.018	-0.028	-0.016
C(3,1)	0.030	0.039	-0.028	-0.035	0.000	0.024
C(3,2)	-0.030	0.039	-0.014	-0.035	0.009	0.024
C(3,4)	0.030	0.059	-0.028	-0.026	-0.028	0.032
C(3,5)	0.030	0.000	0.014	-0.026	0.009	0.000
C(3,6)	0.061	0.020	-0.028	-0.026	-0.019	0.032
C(3,7)	-0.030	0.059	-0.014	0.000	-0.028	0.016
C(3,8)	-0.030	0.000	0.028	-0.009	-0.028	0.024
C(3,9)	0.061	0.000	0.014	-0.018	-0.019	0.008
C(4,1)	0.000	-0.020	0.000	-0.009	0.028	-0.008
C(4,2)	-0.061	-0.020	0.014	-0.009	0.038	-0.008
C(4,3)	-0.030	-0.059	0.028	0.026	0.028	-0.032

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C(4,5)	0.000	-0.059	0.041	0.000	0.038	-0.032
C(4,6)	0.030	-0.039	0.000	0.000	0.009	0.000
C(4,7)	-0.061	0.000	0.014	0.026	0.000	-0.016
C(4,8)	-0.061	-0.059	0.055	0.018	0.000	-0.008
C(4,9)	0.030	-0.059	0.041	0.009	0.009	-0.024
C(5,1)	0.000	0.039	-0.041	-0.009	-0.009	0.024
C(5,2)	-0.061	0.039	-0.028	-0.009	0.000	0.024
C(5,3)	-0.030	0.000	-0.014	0.026	-0.009	0.000
C(5,4)	0.000	0.059	-0.041	0.000	-0.038	0.032
C(5,6)	0.030	0.020	-0.041	0.000	-0.028	0.032
C(5,7)	-0.061	0.059	-0.028	0.026	-0.038	0.016
C(5,8)	-0.061	0.000	0.014	0.018	-0.038	0.024
C(5,9)	0.030	0.000	0.000	0.009	-0.028	0.008
C(6,1)	-0.030	0.020	0.000	-0.009	0.019	-0.008
C(6,2)	-0.091	0.020	0.014	-0.009	0.028	-0.008
C(6,3)	-0.061	-0.020	0.028	0.026	0.019	-0.032
C(6,4)	-0.030	0.039	0.000	0.000	-0.009	0.000
C(6,5)	-0.030	-0.020	0.041	0.000	0.028	-0.032
C(6,7)	-0.091	0.039	0.014	0.026	-0.009	-0.016
C(6,8)	-0.091	-0.020	0.055	0.018	-0.009	-0.008
C(6,9)	0.000	-0.020	0.041	0.009	0.000	-0.024
C(7,1)	0.061	-0.020	-0.014	-0.035	0.028	0.008
C(7,2)	0.000	-0.020	0.000	-0.035	0.038	0.008
C(7,3)	0.030	-0.059	0.014	0.000	0.028	-0.016
C(7,4)	0.061	0.000	-0.014	-0.026	0.000	0.016
C(7,5)	0.061	-0.059	0.028	-0.026	0.038	-0.016
C(7,6)	0.091	-0.039	-0.014	-0.026	0.009	0.016
C(7,8)	0.000	-0.059	0.041	-0.009	0.000	0.008
C(7,9)	0.091	-0.059	0.028	-0.018	0.009	-0.008
C(8,1)	0.061	0.039	-0.055	-0.026	0.028	0.000
C(8,2)	0.000	0.039	-0.041	-0.026	0.038	0.000
C(8,3)	0.030	0.000	-0.028	0.009	0.028	-0.024
C(8,4)	0.061	0.059	-0.055	-0.018	0.000	0.008
C(8,5)	0.061	0.000	-0.014	-0.018	0.038	-0.024
C(8,6)	0.091	0.020	-0.055	-0.018	0.009	0.008
C(8,7)	0.000	0.059	-0.041	0.009	0.000	-0.008
C(8,9)	0.091	0.000	-0.014	-0.009	0.009	-0.016
C(9,1)	-0.030	0.039	-0.041	-0.018	0.019	0.016
C(9,2)	-0.091	0.039	-0.028	-0.018	0.028	0.016
C(9,3)	-0.061	0.000	-0.014	0.018	0.019	-0.008
C(9,4)	-0.030	0.059	-0.041	-0.009	-0.009	0.024
C(9,5)	-0.030	0.000	0.000	-0.009	0.028	-0.008
C(9,6)	0.000	0.020	-0.041	-0.009	0.000	0.024
C(9,7)	-0.091	0.059	-0.028	0.018	-0.009	0.008
C(9,8)	-0.091	0.000	0.014	0.009	-0.009	0.016

(Table 9) illustrates development results from the acquisition of weight normalize, to place data in the position of two-dimensional matrices. that are adjusted to the amount of processed data for each row associated with each weight normalize. The data generated after compared with other data, thus giving a picture of a matrices that can be arranged according to the applicable matrices rules and in the end two matrices are formed in the form of concordance and matrices discordance.

Table 10. Concordance dominant matrices.

P1	P2	P3	P4	P5	P6	P7	P8	P9
0	0	0	0	0	1	0	0	1
0	0	1	1	1	1	0	0	1
1	0	0	1	1	1	0	0	1
0	0	0	0	0	0	0	0	1
0	0	0	0	0	1	0	0	1
0	1	0	0	0	0	0	0	0
1	0	1	0	1	1	0	0	1
1	0	1	1	0	1	0	0	1
0	0	0	0	0	0	0	0	0

Table 11. Discordance dominant matrices.

(Tables 10) and (Table 11) are the results obtained from the development of relations in each row, for the row to form concordance matrices and for the colomn will form discordance matrices.

P1	P2	P3	P4	P5	P6	P7	P8	P9
0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0
1	1	0	0	0	0	0	1	0
0	1	0	0	0	0	0	0	0
0	0	0	1	0	1	0	0	0
0	0	0	0	0	0	0	0	0
0	1	1	1	0	1	1	1	0

The two tables with entries in the form of binary numbers, will be used as a reference to determine the chosen alternative, especially to find out the flight attendants received and rejected through such a long process.

By using the binary multiplication process between matrices dominant concordance and matrices dominant discordance, matrices aggregate will be obtained as shown in (Table 12).

Tabel 12. Aggregate dominan matrices.

Alt (i)	Elimination Number									Total
P1	0	0	0	0	0	0	0	0	0	0
P2	0	0	0	0	0	0	0	0	0	0
P3	1	0	0	0	0	0	0	0	0	1
P4	0	0	0	0	0	0	0	0	0	0
P5	0	0	0	0	0	0	0	0	0	0
P6	0	1	0	0	0	0	0	0	0	1
P7	0	0	0	0	0	1	0	0	0	1
P8	0	0	0	0	0	0	0	0	0	0
P9	0	0	0	0	0	0	0	0	0	0

V. CONCLUSION AND SUGGESTION

The results obtained from the combination of the Analytic Hierarchy Process (AHP) method and ELECTRE elimination method, were able to provide optimal results in determining the selection of flight attendants for an airline in need. The conclusions that

Journal Publications & Informatics Engineering Research
Volume 4, Number 1, October 2019
DOI : https://doi.org/10.33395/sinkron.v4i1.10130
e-ISSN : 2541-2019
p-ISSN : 2541-044X

can be made are that for the flight attendants received from nine people, it turns out that only three people were accepted namely flight attendant-3, flight attendant-6, and 7-flight attendant, of which three flight attendants were accepted by the ELECTRE method that did not provide a numerical value each alternative, because the elimination stage has been carried out in comparing between one alternative to another in the threshold stage.

VI. ACKNOWLEDGMENT

Thank you for the smooth running of this article, of course for the STMIK Nusa Mandiri campus, it has provided encouragement and motivation, it cannot be forgotten to the SinkrOn journal which has provided an opportunity for publication and publication of this article.

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