Implementation in Profile Matching Techniques Avsec (Aviation Security) Career Development

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A R T I C L E   I N F O

A B S T R A C T

Career development process within the Aviation Security (Avsec) division I Gusti Ngurah Rai International Airport is one of the activities important in preparing the next generation who will determine the direction the development of this division going forward. Large number of personnel, with backgrounds diversity, is a challenge in itself for HR managers conduct an optimal and objective assessment in selecting the right personnel to be promoted. The assessment team should consider using the system right decision support. One of the methods that can be used as decision support system namely Profile matching. The way this method works is by calculating the competency gap, determining the core factor and secondary factor, calculates the total value until it ends at the determination stage ranking. Based on this, the authors will conduct research on implementation of profile matching techniques as a decision support system be objective in selecting personnel candidates to be promoted. This research involving 3 candidates and 5 aspects of the assessment that had been agreed upon previously, namely discipline, integrity, cooperation, service, and self-development. The output of the process the calculation of profile matching is the ranking of the candidate employees who will be get promoted. This will certainly help the assessment team as well as the internal leadership take decisions to determine the eligibility of the personnel to be promoted based on measurable assessments with the level of objectivity good.

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1. Introduction

Human resource (HR) is one of the strategic assets that determine the success rate of a company. Therefore, human resource development becomes an important parameter for organizations in achieving the targets that have been previously set in order to continue to exist in the national and international arena. According to (Labola 2019: 29), the quality of the organization is determined by existing HR and HR development is determined by real changes that lead to organizational growth.

Managing and assessing the performance of an employee appropriately is not an easy matter if it is done to a large number of employees. This assessment will be quite difficult and complex, this is because everyone has heterogeneous thoughts, feelings, status, desires and backgrounds that are brought into the organization. The assessment team needs a precise and objective assessment system in order to determine the extent of the quality of the employees, how well the employees understand their functions and what the prospects for the employee will look like.

I Gusti Ngurah Rai International Airport is one of the airports managed by PT Angkasa Pura 1 (Persero), and the Aviation Security division (AVSEC) is a strategic division in ensuring the safety of operational activities within I Gusti Ngurah International Airport. Rai through the use of human resources, security facilities and procedures in carrying out these functions. Until now, the number of Avsec personnel working at I Gusti Ngurah Rai Airport is 1291 personnel. The large number of personnel with diverse backgrounds presents a challenge for HR management in conducting optimal and objective assessments in choosing the right personnel to be promoted, so that there is no imbalance between candidate specifications and job implementation. HR development management needs to consider the use of an appropriate decision support system.

The decision support system is a method that can assist the assessment team and leadership in decision-making activities based on predetermined standard criteria. One of the decision support system methods is profile matching, this method is able to objectively assess a person's performance and provide a ranking of the people being assessed.

2. Literature Review and Conceptual Framework

2.1 Decision Support System

According to (Yuliantari and Wijaya 2019), a decision support system is a support system for a person or a small group of managers who work as a problem solving team (decision-making team), to make decisions about semistructured problems by providing specific information. According to (Sitanggang and Sibagariang 2019), a decision support system is a system aimed at supporting decision-making management. The system is based on a model consisting of data processing procedures and considerations to assist managers in making decisions in order to achieve their goals.

2.2 Pengembangan Karir (Career development)

According to Ardana in Ricardianto (2018) explains that career development is a personal improvement made by a person to achieve a career plan and an improvement by the personnel department to achieve a work plan in accordance with the organizational path or level.

Mathis and Jackson in Richardianto (2018) explain that development represents efforts to improve the ability of employees to handle various tasks and to increase the capabilities needed by workers. If employees are developed

appropriately, formation vacancies, through HR planning activities, will be filled internally because promotions and transfers show employees that they have a career, not just a job. Career development programs provide many benefits for both organizations and employees in a company. This is explained by Rokhman in Ricardianto (2018), including increasing the ability of the organization to acquire and retain quality employees, ensuring the availability of required experts, increasing employee motivation and maintaining the regeneration process to run well.

2.3 Aviation Security (AVSEC)

The Aviation Security (Avsec) officer is the person responsible for airport security and aviation security. Based on the dictionary and aviation regulations (Martono, 2007), Aviation Security is a condition that is realized from the operation of flights that are free from disturbances and or illegal actions through the integrated use of human resources, facilities, and procedures. Furthermore, it is explained in the Regulation of the Minister of Transportation of the Republic of Indonesia Number: PM 80 of 2017 concerning the national aviation security program that flight security personnel are licensed personnel who are given duties and responsibilities in the field of aviation security.

Avsec personnel career development activities have been regulated in the Regulation of the Minister of Transportation of the Republic of Indonesia Number: PM 94 of 2016 concerning the National Aviation Security Education and Training Program, where the qualifications of Avsec personnel are divided into 3 main categories namely Basic, Junior, and Senior levels. As for the advanced level, which is an increase in special abilities, personnel are selected based on established criteria. Based on PM 137 of 2015, personnel in the field of aviation security are categorized into several sections, including aviation security personnel, aviation security facility personnel, flight security inspectors, flight security managers and flight security instructors.

2.4 Profile Matching

Profile matching is a very important process in HR management where the competencies required by a position are determined first. The competence or ability must be fulfilled by the holder or candidate for the office holder. In the process of profile matching, in general, it is a process of comparing individual competencies to job competencies so that differences in competence can be seen (also called gaps), the smaller the gap generated, the greater the weight of the value which means that it has a greater chance for employees who occupy that position (Sianturi, 2015).

According to Yuliantari and Wijaya 2019, profile matching is an important process in HR management, where the competencies (abilities) required by a position are determined in advance. The competence / ability must be fulfilled by the holder / prospective office holder. Furthermore, it is also explained that the concept of profile matching calculations will go through the following stages:

a) Determine the competency gap mapping variables,
b) The process of calculating the competency gap,
c) Calculation and grouping of cores and secondary factors,
d) Calculation of the total value of each aspect (if more than one aspect),
e) Rank calculation.

2.5 Conceptual Framework
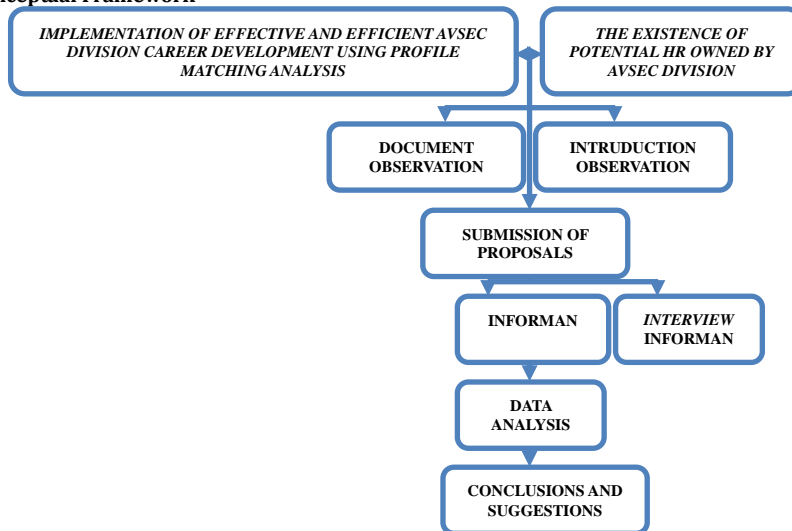
Fig 1. Conceptual Framework

3. Research Methods

This research will be conducted at I Gusti Ngurah Rai airport, the reason for choosing this location is to facilitate the process of collecting research data. Besides, the location which is the object of this research is the work place of the researcher and also the resource person who will be interviewed, so that the data collection process becomes more effective.

This research is a study that uses a qualitative approach, so that the sampling in this study was carried out by purposive sampling technique and also the data collection technique used the triangulation method. The result that the researcher wants to get from this research is an effective and efficient decision support system that is able to support career development activities in the avsec division of I Gusti Ngurah Rai airport.

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The object of this research is the career development of the Avsec division and the research subject is the resource person. Based on the problems raised in this study, the researchers determined key sources who understood and understood the mechanism of AVSEC career development based on the experiences that had been passed, some of the sources that the researcher determined were:

a.   I Made Sudiarta as Airport Security Senior Manager,
b.   Kiki Epriana Arieanti as Airport Security Section Manager,
c.   I Ketut Suardika as Airport Security Team Leader,
d.   I Gede Eka Sanjaya in charge of HR & Academic development.

The type of data the writer will use in this research is the primary data type. Primary data is data obtained directly from the field either through observation or through interviews with informants. Meanwhile, the data collection technique in this study used semistructured interviews. This type of interview is categorized as in-depth interviews, where in practice it is freer when compared to structured interviews. Researchers will use source triangulation to explore the same topic from different informants, and technical triangulation using observation, documentation analysis and in-depth interviews, in order to obtain valid, reliable and objective data.

4.   Findings and Discussion

4.1   Description & Weighting of Personnel Assessment Aspects

Several aspects that have been agreed upon by each leader of the Avsec division at I Gusti Ngurah Rai International Airport regarding the important aspects that must be possessed by an Avsec personnel in the context of career development activities are as follows:

a)   Discipline Aspects (40%)

Table 1
indicators and weight of disciplinary aspects

No	Code	Indicators	Weight
1	D1	The employee concerned always complies with the provisions for work entry, return from work and working hours.	4
2	D2	The employee concerned always works responsibly.	4
3	D3	The employee concerned is always dressed neatly and politely.	3
4	D4	The employee concerned is always polite in speaking	3

b)   Aspects of Integrity (20%)

Table 2
indicators and weight for aspects of integrity

No	Code	Indicators	Weight
1	T1	The employee concerned is consistent and adheres to the applicable organizational ethics and values.	4
2	T2	The employee concerned has the courage to argue and express his opinion.	3
3	T3	The employee concerned is able to invite other people to work in accordance with applicable regulations.	4
4	T4	The employee concerned is able to become an example for other employees in acting / working in accordance with work values and ethics.	4

c)   Aspects of Service (20%)

Table 3
indicators and service aspect weights

No	Code	Indicator	Weight
1	P1	The employee concerned provides services in accordance with applicable regulations.	4
2	P2	The employee concerned always takes anticipatory steps in predicting all the possibilities that will occur.	4
3	P3	The employees concerned are always oriented towards optimizing services that are fast and on target.	4
4	P4	The employee concerned is able to evaluate the errors that occur.	4

d)   Aspects of Cooperation (10%)

Table 4
indicators and weight for aspects of cooperation

No	Code	Indicators	Weigth
1	K1	The employee concerned is active in the group.	4
2	K2	The employee concerned agrees and supports the group decision by completing the task together.	3
3	K3	The employee concerned actively encourages colleagues / team members to increase group productivity.	4
4	K4	The employee concerned participates by contributing to the group.	4

e)   Aspects of Personal Development (10%)

Table 5
indicators and the weights of self-development aspects

No	Code	Indicators	Weight
1	N1	The employees concerned have the enthusiasm to improve their abilities through formal education.	3
2	N2	The employees concerned have the passion to improve their abilities through informal education.	3
3	N3	The employee concerned has the ability in technology.	3
4	N4	The employee concerned has the ability in both national and international regulatory fields.	3

4.2   The Assessment Process Using Profile Matching Techniques

The assessment process is carried out by the team leader of the airport security screening check point personnel for the international group d-1 at the international airport, I Gusti Ngurah Rai. From the results of the assessment, the following names were obtained:

Table 6
names of personnel who will be promoted

No	Employee Code	Employee name	Position	Level	Years of service
1	K01	I Wayan Oka Muliadi	*Squad Leader*	Senior	23 th
2	K02	I Gede Cipta Antara	*Officer*	Junior	07 th
3	K03	Faddy Suryo. S	*Officer*	Junior	05 th

4.3   Personnel Competency Gap Calculation

The initial calculation is to determine the value of the gap from each aspect by reducing the assessment score with the standard values that have been set in each indicator. The process of calculating the personnel competency gap can use the following formula:

$$GAP = \text{Employee Profile} - \text{Job Profile}$$

The results of calculating the Gap value from each aspect are as follows:

a)   Discipline Aspects

Table 7
grouping gaps in the discipline aspect

No	Employee Code	D1	D2	D3	D4	Gap	
1	K01	4	4	4	4		
2	K02	3	4	3	3		
3	K03	4	4	4	4		
Profil		4	4	3	3	(+)	(-)
1	K01	0	0	1	1	2	0
2	K02	-1	0	0	0	0	-1
3	K03	0	0	0	0	0	0

b)   Aspects of Integrity

Table 8
grouping gaps for integrity aspects

No	Employee Code	T1	T2	T3	T4	Gap	
1	K01	4	3	4	4		
2	K02	3	3	4	4		
3	K03	3	4	3	4		
Profil		4	3	4	4	(+)	(-)
1	K01	0	0	0	0	0	0
2	K02	-1	0	0	0	0	-1
3	K03	-1	1	-1	0	1	-2

c)   Aspects of Service

Table 9
classification of service aspect gaps

No	Employee Code	P1	P2	P3	P4	Gap	
1	K01	3	4	4	4		
2	K02	3	3	3	3		
3	K03	4	4	4	3		
Profil		4	4	4	4	(+)	(-)
1	K01	-1	0	0	0	0	-1
2	K02	-1	-1	-1	-1	0	-4
3	K03	0	0	0	-1	0	-1

d)   Aspects of Cooperation

Table 10

grouping gap aspects of Cooperation

No	Employee Code	K1	K2	K3	K4	Gap	
1	K01	4	3	4	4		
2	K02	4	3	4	4		
3	K03	4	3	4	4		
Profil		4	3	4	4	(+)	(-)
1	K01	0	0	0	0	0	0
2	K02	0	0	0	0	0	0
3	K03	0	0	0	0	0	0

e)   Aspects of Personal Development

Table 11

grouping gaps in self-development aspects

No	Employee Code	N1	N2	N3	N4	Gap	
1	K01	4	3	3	4		
2	K02	4	3	3	3		
3	K03	4	3	4	4		
Profil		3	3	3	3	(+)	(-)
1	K01	1	0	0	1	2	0
2	K02	1	0	0	0	1	0
3	K03	1	0	1	1	3	0

4.4 Weight Value Calculation

After obtaining the gap value from each personnel, then each profile is given a weighted value with a benchmark in the gap value weight table as can be seen in the table below.

Table 12

weight table gap value

No	Difference (GAP)	Weight Score	Information
1	0	6	No Gap (Competence as needed)
2	1	5,5	Individual competence is 1 level excess
3	-1	5	Individual competence is 1 level deficient
4	2	4,5	Excess individual competence of 2 levels
5	-2	4	Individual competence lacks 2 levels
6	3	3,5	3 levels of excess individual competence
7	-3	3	Individual competence lacks 3 levels
8	4	2,5	4 levels of excess individual competence
9	-4	2	Individual competence lacks 4 levels
10	5	1,5	Individual competence is 5 levels excess
11	-5	1	Individual competence lacks 5 levels

After determining the weight value of the gap, the next step is to convert the weight value of each employee based on the calculations that have been done previously. The mapping of competency gaps for each aspect can be seen in the table below.

a)   Discipline Aspects

Table 13

weight table of the value of the discipline aspect gap

Employee	D1	D2	D3	D4
K01	0	0	1	1
K02	-1	0	0	0
K03	0	0	0	0
Value Conversion				
K01	6	6	5,5	5,5
K02	5	6	6	6
K03	6	6	6	6

b)   Aspects of Integrity

Table 14

weight table of the value of the integrity aspect gap

Employee	T1	T2	T3	T4
K01	0	0	0	0
K02	-1	0	0	0
K03	-1	1	-1	0
Value Conversion				
K01	6	6	6	6
K02	5	6	6	6
K03	5	5,5	5	6

c)   Aspects of Service

Table 15

table weight value gap service aspects

Employee	P1	P2	P3	P4
K01	-1	0	0	0
K02	-1	-1	-1	-1
K03	0	0	0	-1
Value Conversion				
K01	5	6	6	6
K02	5	5	5	5
K03	6	6	6	5

d)   Aspects of Cooperation

Table 16

weight table of the gap value of cooperation aspects

Employee	K1	K2	K3	K4
K01	0	0	0	0
K02	0	0	0	0
K03	0	0	0	0
Value Conversion				
K01	6	6	6	6
K02	6	6	6	6
K03	6	6	6	6

e)   Aspects of Personal Development

Table 17

weight table of the value of the gap in self-development aspects

Employee	N1	N2	N3	N4
K01	1	0	0	1
K02	1	0	0	0
K03	1	0	1	1
Value Conversion				
K01	5,5	6	6	5,5
K02	5,5	6	6	6
K03	5,5	6	5,5	5,5

4.5   Calculation and Grouping of Core Factors and Secondary Factors

After getting the conversion value from each aspect, the next step is to group the core factor (CF) and secondary factor (SF) from each aspect of the assessment. The calculation of the core factor and secondary factor is done using the following formula.

a)   Core factor calculation formula

b)   Secondary factor calculation formula

$$NCF = \frac{\sum NC}{\sum IC}$$

$$NSF = \frac{\sum NS}{\sum IS}$$

Information :
NCF: Average core factor values
NC: The total number of core factor values
IC: The number of core factor items

Information :
NSF: Mean value of secondary factor
NS: The total number of secondary factor values
IS: number of secondary factor items

The description of the core factor and secondary factor for each aspect can be seen in the following table.

Table 18

the translation of the core and secondary factors

Employee code	Discipline				Integrity				Service				Cooperation				Self Development			
	D1	D2	D3	D4	T1	T2	T3	T4	P1	P2	P3	P4	K1	K2	K3	K4	N1	N2	N3	N4
	CF	CF	SF	SF	CF	SF	CF	CF	CF	SF	CF	SF	CF	SF	SF	CF	CF	SF	CF	CF
K01	6	6	5,5	5,5	6	6	6	6	5	6	6	6	6	6	6	6	5,5	6	6	5,5
K02	5	6	6	6	5	6	6	6	5	5	5	5	6	6	6	6	5,5	6	6	6
K03	6	6	6	6	5	5,5	5	6	6	6	6	5	6	6	6	6	5,5	6	5,5	5,5

After describing CF and SF in each aspect, the next step is to calculate the amount of CF and SF based on the formula above. The results of the calculation of the core factor and secondary factor of each aspect can be seen in the following table.

a)   Discipline Aspects

Table 19

table of CF and SF values for disciplinary aspects

Employee code	CF	SF
K01	6	5,50
K02	5,50	6
K03	6	6

b)   Aspects of Integrity

Table 20

table of values for CF and SF aspects of

Employee code	CF	SF
K01	6	6
K02	5,67	6
K03	5,30	5,50

c)   Aspects of Service

Table 21

table CF and SF value of service aspects

Employee code	CF	SF
K01	5,50	6
K02	5	5
K03	6	5,50

d)   Aspects of Cooperation

Table 22

table of the value of CF and SF aspects of cooperation

Employee code	CF	SF
K01	6	6
K02	6	6
K03	6	6

e)   Aspects of Personal Development

Table 23

table of values of CF and SF aspects of cooperation

Employee code	CF	SF
K01	5,67	6
K02	5,83	6
K03	5,50	6

4.6   Calculation of the Total Value of Each Aspect

From the calculation of each aspect, the next step is to calculate the total value based on the percentage of the core and secondary factors which are estimated to affect the performance of each profile. The calculation of the total value for each aspect can be seen in the formula below:

$$60\% \text{ NC} + 40\% \text{ NS} = \text{NT (Total Aspect Score)}$$

Keterangan :

NT: The total value of the aspects

NCF: Average core factor values

NSF: Mean value of secondary factor

Based on the formula above, we can calculate the total value of each of the existing aspects. The total value of each of these aspects can be seen in the following table.

a)   Discipline Aspects

Table 24

table of the total value of the discipline aspects

Employee code	CF	SF	NT
K01	6	5,50	5,80
K02	5,50	6	5,70
K03	6	6	6

b)   Aspects of Integrity

Table 25

table of the total value of aspects of integrity

Employee code	CF	SF	NT
K01	6	6	6
K02	5,67	6	5,80
K03	5,30	5,50	5,38

c) Aspects of Service

Table 26
table of total value of service aspects

Employee code	CF	SF	NT
K01	5,50	6	5,70
K02	5	5	5
K03	6	5,50	5,80

d) Aspects of Cooperation

Table 27
table of total value of the aspects of cooperation

Employee code	CF	SF	NT
K01	6	6	6
K02	6	6	6
K03	6	6	6

e) Aspects of Personal Development

Table 28
table of total values of aspects of self-development

Employee code	CF	SF	NT
K01	5,67	6	5,80
K02	5,83	6	5,90
K03	5,50	6	5,70

4.7 Ranking Calculation

Ranking refers to the results of the calculation of the total value of each aspect along with the weighting of each aspect. The following is the formula for determining the ranking of airport security personnel.

$$\text{Ranking} : 40\% \text{ ND} + 20\% \text{ NT} + 20\% \text{ NP} + 10\% \text{ NK} + 10\% \text{ NN}$$

Information :
ND: Value of Discipline Aspects   NK: Value of Aspects of Cooperation
NT: Value of the Aspect of Integrity   NN: Value of the Aspect of Personal Development
NP: Value of Service Aspects

Based on the formula above, we can calculate the quality value of the candidate personnel who will be promoted according to the predetermined aspects. The results of ranking calculations can be seen in the following table.

Table 29
calculation table of ranking values

Employee code	ND (40%)	NT (20%)	NP (20%)	NK (10%)	NN (10%)	Skor
K01	5,80	6	5,70	6	5,80	5,84
K02	5,70	5,80	5	6	5,90	5,63
K03	6	5,38	5,80	6	5,70	5,806

After each candidate gets the final score of the assessment as in the table above, then the ranking or ranking of each candidate can be determined. The greater the final score obtained, the greater the chance to get a promotion, and vice versa, so that the ranking of the promotion based on the calculation of profile matching that has been made is as follows:

Table 30
ASS inter d-1 promotion personnel ranking table

Ranking	Employee name	Score
1	I Wayan Oka Muliadi	5,840
2	Faddy Suryo S.	5,804
3	I Gede Cipta Antara	5,630

5. Conclusion

Based on the discussion that has been done, there are several conclusions obtained, namely as follows:
a) The calculation process using the profile matching method for the personnel of airport security at international airport I Gusti Ngurah Rai, produces a ranking score for each personnel. The amount of score obtained can be used as a reference for the personnel's eligibility to be promoted.
b) The number of assessment aspects and the standard value of each aspect are very influential in determining the final score from the profile matching calculation.
In practical terms, this study provides a new assessment mechanism for the leadership of the Avsec division of I Gusti

Ngurah Rai International Airport in making decisions related to personnel promotions. The profile matching assessment has a good level of objectivity, this is because the results of this profile matching assessment can be measured, and the calculation process is carried out gradually for each person and the predetermined aspects of the assessment. Therefore, this research can be used as a benchmark for assessing a person's worthiness. This research is a pilot project in a limited scope, then it can be used in other divisions by adjusting to each case.

6.   References

[1]   Yulyantri, luh made dan Wijaya ADH, IGKG Puritan. 2019, Manajemen Model Pada Sistem   Pendukung Keputusan. Yogyakarta : Penerbit Andi.
[2]   Sugyono. 2018, Metode Penelitian Kualitatif. Bandung : Alfabeta.
[3]   Sulistyani, Ambar Teguh dan Rosidah. 2018, Manajemen Sumber Daya Manusia. Yogyakarta : Penerbit Gava Media.
[4]   Ricardianto, Prasadja. 2018. Human Capital Management. Bogor : Penerbit IN Media.
[5]   Sunarti, (2018). Sistem Pendukung Keputusan Penilaian Kualitas Kinerja Karyawan Menggunakan Profile Matching (Studi Kasus: Apartemen Senayan Jakarta), Techno.COM, Vol. 17, No. 1.
[6]   Adhar, D., (2014). Sistem Pendukung Keputusan Pengangkatan Jabatan Karyawan Pada PT.Ayn dengan Metode Profile Matching, Jatis, Vol. 1 No.1.
[7]   Sudrajat, B., (2018). Pemilihan Pegawai Berprestasi Mengunakan Metode Profile Matching, Jurnal & Penelitian Teknik Informatika, Vol. 3 No.1.
[8]   Amin, M., dan Covriyanti, E. (2017). Sistem Rekomendasi Pemilihan Kandidat Calon Tenaga Kerja Menggunakan Model Profile Matching, Prosding SINTAK.
[9]   Kristiana, T.,(2015). Penerapan Profile Matching Untuk Penilaian Kinerja Pegawai Negeri Sipil. Jurnal Pilar Nusa Mandiri Vol.XI, No. 02 .
[10]   Sitanggang, A., Sibagariang, S,. (2019). Model Pengambilan Keputusan Dengan Teknik Profile Matching, CESS (Journal of Engineering System and Science), Vol.4 No.1.
[11]   Ahmadia, Defitb, S., Na'amc, J., (2018). Identifikasi Anggota dalam Penempatan pada Struktur Organisasi menggunakan Metode Profile Matching, Jurnal RESTI, Vol. 2 No. 2. 452 – 457.
[12]   Frieyadie, (2016). Penggunaan Metode Profile Matching Untuk Sistem Penunjang Keputusan Kenaikan Jabatan Pada Instansi Pemerintah, PARADIGMA Vol. XVIII. No.2, Hal. 75-80.
[13]   Ernawati, Hidayah, N., Fetrina, E., (2017). Rancang Bangun Sistem Pendukung Keputusan Kenaikan Jabatan Pegawai Dengan Metode Profile Matching (Studi Kasus: Kementerian Agama Kantor Wilayah DKI Jakarta), Studia Informatika: Jurnal Sistem Informasi, 10(2), Hal. 127-134.
[14]   Suhartanto, A. , Kusrini, & Henderi, (2016). Decision Support System untuk Penilaian Kinerja Guru dengan Metode Profile Matching, Jurnal Komputer Terapan Vol.2, No. 2.
[15]   Pemarintah Indonesia. 2017, Peraturan Menteri Perhubungan Republik Indonesia Nomor 80 tahun 2017 tentang Program Keamanan Penerbangan Nasional. Jakarta : Kepala Biro Hukum.
[16]   Pemarintah Indonesia. 2015, Peraturan Menteri Perhubungan Republik Indonesia Nomor 137 tahun 2015 tentang Program Program Pendidikan dan Pelatihan Keamanan Penerbangan Nasional. Jakarta : Kepala Biro Hukum.