ANALYSIS OF THE HEAD OF NAVAL ACCOUNTING PROSPECTIVE ASSESSMENT SYSTEM OF THE INDONESIAN NAVY BASED ON COMPETENCE BY *ANALYTIC NETWORK PROCESS* (ANP)

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ABSTRACT

In the Navy's Posture Draft at 2005 to 2024, the readiness of Navy organization is determined by the component of Indonesian Navy's force consisting of personel, Alat Utama Sistem Persenjataan (defense system) and the method system it self. The Navy's Financial Accounting Unit as a Level IV Financial Agency is a unit that's asked to assist the Commander / Head of the Unit to managing the management and administration of state finances. The selection or participation process is not only based on job descriptions, but must involve gentle and difficult factors. This study focuses on system analysis with several criteria in the position selection of Head of the accounting unit including soft and hard competencies and using the ANP method. This study aims to develop models and relevant criteria for selection of candidates for the Head of the Accounting Unit and provide alternative selection methods that can help the methods that have been used previously to get potential buyers who able to perform special tasks of the Navy. Furthermore, to process data, a literature study was conducted on the concept of MCDM, the Analytic Network Process (ANP). The Head of Account prospective scoring system application using Hypertext Preprocessor (PHP). The results of the study, obtained 5 criteria in the acquisition of Prospective Head of Accounts, these are Education, Competence, Health, Physical condition and performance. Then it produced a Candidate Account system in the form of software.

Keyword : head of the accountant unit, soft and hard competencies, analytic network process (ANP), hypertext preprocessor (PHP)

1. INTRODUCTION
1.1 Background

In the Navy's Posture Draft at 2005 to 2024 (Navy's Main Base, 2004), the readiness of Navy organization is determined by the component of Indonesian Navy's force consisting of personel *Alat Utama Sistem Persenjataan* (defense system) and the method system it self. A dynamic development of the global environment has led to the emergence of threats that have an impact on the policy of restructuring, reorganization, revitalization and enhancement of new Navy organizations. The development of the Navy's posture which is equipped with strength, ability and a strength projected, is basically oriented towards the competence of the Navy's main tasks (UU-RI, 2004). Faced with the defense budget, defense development is based on priority level and urgent targets. At this situation, the development of the Navy's strength is currently directed at the submission of the Minimum essential Force (MEF) strength based on these three things : organizational policy, equipment sector policy and personal sector policy.

Navy performance in a job at hand is effectiveness and efficiency in the productivity of organizational performance. we also know the optimization of resources used in achieving the main goals that have been set and run by an organization. Human resources an organization have a very important role, in order to ensure the continuity of the organization more effectively and efficiently. Therefore, it is necessary to plan human resources well in order to achieve the objectives of the organization and also an efficiency in optimizing the utilization of resources. (Hasibuan, 2000).

The Navy's Financial Accounting Unit as a Level IV Financial Agency is a unit that's asked to assist the Commander / Head of the Unit to managing the management and administration of state finances. The Navy's Financial Accounting is led by a chief with the rank of commander / lieutenant commander / lieutenant, based on the service unit itself. The Head of the Indonesian Navy Account unit is the man who plays the role of managers, leaders, decision makers, and official that is responsible for the implementation of management of state finances and the

administration of state finances. the changes to rules and policies of the government budget must be responded quickly so that all activity that has been agreed to support unit operations can run smoothly without any constraints at all. Changes in the pattern of budget management issued by the Ministry of Finance that require all work units in the Ministry must use applications issued by the Ministry of Finance. The process of determining the personnel who served as Head of Accounts unit so far only used the appointment in accordance with the Decree of the Chief of Naval Staff based on the job description namely; ranks, length of service, assignments, military education and others. Those selection process has not involved all the factors, hard skills, and shoft skills that needed based on the requirements of the Head of Accounts Unit, so this election model is still not objective and it will be objective if it has accommodated both factors.

The selected personnel who are capable of possessing the competencies and abilities needed to carry out tasks in the field of state financial management and financial administration which are always developing in accordance with the Government's demands in realizing good governance. The end result is that the tasks assigned to them can be carried out very well, so that the vision and mission of the Navy will be quickly realized.

An analysis of information and identification of various important factors concerning candidates is needed to determine the right position through a multi-criteria approach.One method that is well known and compatible with this condition is the Analytic Network Process (ANP). The use of ANP is expected to be able to anticipate if there is an inner dependence between the criteria that exist in the model that has been built. ANP can explain the model of dependent factors and feedback systematically. Decision making in ANP is by validating and considering empirical experience. conflictual if in the condition of a candidate who has good grades in one condition (for example physical condition requirements), but is lacking in other conditions (ex Competency). This condition can be solved by the Multi Criteria Decision Making approach. Analytic Network Process (ANP) can anticipate if there is an innerdependence among the existing criteria.

It is expected that from the results of the analysis, the criteria and weighting model will be obtained from the position of Head of the Navy Account. So that the best officer can be elected to hold that position. then the officers who served as Ka Account of the Navy had capabilities based on established standards. In the end, the existing self potential will be better able to carry out the task even with the challenges of a dynamic task in the future.

1.2 Problem Formulation

Based on the conditions and reality in the description above, the main problems in the discussion are: a. What is the model of decision making for evaluating candidates for Head of Navy Account Unit based on competency using the Analytic Network Process method and b. How are the results of decisions and recommendations given for the competency-based appraisal system for candidates for the Head of Navy Accounts.

1.3 Research Purposes

The research objectives are: a. Creating a system Regarding prospective Navy Account personnel who are objective and based on competence and b. Develop methods for estimating candidates for Navy account personnel based on criteria and with appropriate competence in order to carry out their duties properly.

1.4 Benefits of Research

The pupose of this study are: a. provide input for the TNI and the Navy in particular in determining the appropriate personnel to occupy the position of head of the Navy account unit so that they are able to carry out state financial management and financial administration properly. b. provide input regarding the comparison of selection methods. Associated with professionalism with competency standards because everyone has a portion based on the best available potential
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1.5 Scope of Problem

Limitation of the problem used in this observation are: a. Limitation of the problem is limited only to the selection of position of Head of the Navy Account Unit and b. only on the criteria chosen in the process of evaluating candidates for Head of the Navy Account Unit.

2. Literature Review
2.1 Duties of State Financial Management

Navy Accounting Unit is a unit in charge of the management and administration of the state financial management. Head of account units are personnel who act as managers, leaders, decision makers, and fully responsible for the implementation of the financial management and state financial administration. In the management of state finances use the source of funds for the implementation of activities. Sources of funds obtained from within or outside the country are managed strictly by the government in accordance

with the conceptional and constitutional based on article 23 of the 1945 Constitution of the Republic of Indonesia. The principles of managing state finances include:

a.   The principle of unity is that all state revenues and expenditures are expected to be presented in one budget document;
b.   The principle of universality is so that each financial transaction can be displayed in full in the budget document;
c.   The annual principle is the limitation of the validity period for a certain year, and
d.   The principle of specialty is that the budget credit provided is required to be clearly detailed in its designation (Saidi, 2014).

The general principles are needed to ensure the implementation of state financial management in an effort to realize a good governance. This refers to the principles of accountability, proportionality, professionalism, universality in accordance with the principles of good governance, which requires the principle of acting carefully, not confusing authority and the principle of organizing public interests. So that with the existence of general principles of managing good state finances with the aim of realizing the public interest, the welfare of people's lives is based on actions that can be accounted for. Therefore adherence to established principles needs to be maintained and socialized to government officials, state financial managers and related parties.
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2.2 Competencies

Spencer (1993) defines competency as a basic characteristic of individuals who have a causal or causal relationship to criteria that are used as a reference, effective or superior performance in the workplace, or under certain conditions. Basic characteristics mean competence must be basic and include a person's personality and can predict one's attitude in certain situations that vary greatly and in certain work activities. Causal relationship means competence can cause or be used to predict one's performance (superior). Criteria that are used as a reference means that competence will clearly predict someone who is working well or poorly as measured by specific criteria or standards. Five competency characteristics:

a. Motive is something that is consistently desired or thought of by someone who creates an action.
b. Default (trait) is the physical characteristics or habits of a person in responding to situations and information.
c. Self-concept is a person's behavior, values or personal image.

d. Knowledge includes information possessed by someone in a particular field.
e. Expertise is a person's ability to perform physical or mental tasks.
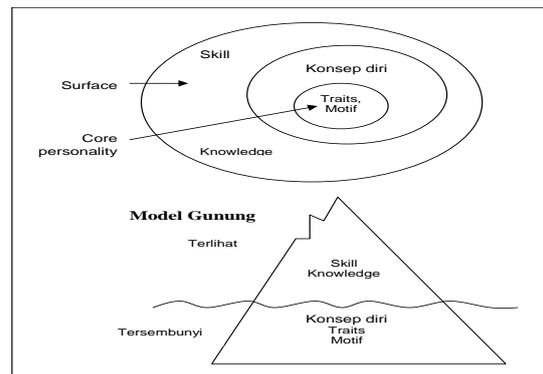

Figure 2.1 Surface and Central Competencies

Figure 2.1 shows that motives, traits, and self-concepts are part of hidden competencies and toward individual personalities. Skills and knowledge are more easily seen and training is the most effective way to improve it. Standard criteria are needed to define a competency to be used to evaluate a personnel. The general Standard criteria that used to are superior performance (above average) and effective performance (the minimum level that can be accepted so that someone is said to be competent in a job).

2.3 Analytic Network Process

Analytic Network Process or ANP is a method of decision making on a problem that requires technical-social (social-technical) based on recommendations (multi-criteria). ANP is a new approach to the qualitative method, developed by Professor Thomas Saaty, a research expert from Pittsburgh University. The advantage of ANP from other methodologies is its ability to help us to measure and synthesize factors in a hierarchy or network. Meanwhile, the simplicity of the methodology makes ANP an easier and more common methodology to be applied in diverse qualitative studies, such as decision making, forecasting, evaluation, mapping, strategizing, resource allocation, and others. The important thing in building the ANP model is the existence of alternative choices and selection criteria. By incorporating expert assessments, through pairing comparisons on the scale of importance 1-9, into the model, results will be obtained in the form of priority choices (Saaty, 2005). ANP is the development of the AHP (Analitical Hierarchy Process) methodology that is used in solving Multi Criteria Decision Making (MCDM) problems that cannot be structured, because it involves the

interaction and dependence of upper elements on lower elements. The ANP method creates a system model with feedback where 1 level may dominate and be dominated directly or indirectly by another level. A unidirectional or bi-directional arrow on each of the different criteria can be said to describe interdependencies in ANP, if interdependencies occur or appear at the same level in an analysis an arrow loop is generally used to describe it
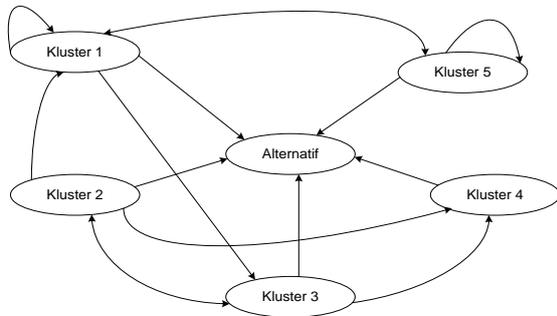
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Figure 2.2 Network Model

In the ANP network process there are several types of feedback that are used according to needs, each network has advantages and disadvantages. Several types of networks can be seen in Figure 2.2. ANP is used to determine the relative importance of an activity in MCDM by using Pairwise Comparison. ANP is applied to the dominance of influence between stake holders or alternatives in relation to attributes or criteria. The pairwise comparison scale used in ANP is shown in Table 2.1

Tabel 2.1 Pairwise Comparison Scale

Level of importances	Definition
1	Both of element are important
3	One element more important than other
5	One element actually more important than other.
7	One element excactly more important than other..
9	One absolute element is more important than another element
2, 4, 6, 8	Midpoint between 2 adjoining assessments

In using the ANP method, the following are the steps:

a. The data obtained from the experts are combined and continued with the geometric mean method to get the combined value from the experts.Geometric Mean is a midpoint between two or more opinions from different decision makers. Calculation of the geometric mean in this final project is carried out by the following formula:

$$\sqrt[n]{\prod_{i=1}^{n} X_i} \qquad (2.1)$$

Explanation :
Xi = Decision on the 1st criteria comparison

b. The first step of the ANP method is to calculate the pairwise comparison matrix at the level of the feedback component so that priority weighting is known. Getting the best alternative from various components and attributes requires some pairwise comparisons where the decision maker will compare 2 components together with criteria at a higher level of control.

The priority in the ANP model with other decision making models is the absence of absolute consistency requirements. ANP models that use decision maker perceptions as input so that inconsistencies may occur because humans have limitations in expressing their perceptions even more so if you have to compare with many criteria. So the decision makers can state whether these perceptions will be consistent or not. Measurement of the consistency of a matrix is based on the maximum eigen value. Thomas L. Saaty has proven that the consistency index of the matrix "n" can be obtained with this following formula:

$$Consistency\ Index\ (CI) = \frac{\lambda_{max} - n}{n-1} \qquad (2.2)$$

n = matrix measurement.

The closer the eigenvalue is to the size of the matrix, the more consistent the matrix will be.

$$Consistency\ Ratio\ (CR) = \frac{CI}{RI} \qquad (2.3)$$

RI = *random index*
Calculation of priority weights and consistency using the Super Decisions software.

c. Eigen vectors for elements with feedback are then made into a super-matrix formation that enables the solving of dependency effects that arise between elements in the system. Supermatrix is a partition matrix where each submatrix is formed from a set of relationships between two levels in graphical modeling. A supermatrix can have certain conditions such as irreducibility, reducibility, primitive, imprimitive, cyclic and acyclic. From the results of identifying the characteristics of the supermatrix can be calculated to obtain a matrix limiting from the supermatrix which then the condition of convergence will be obtained after going through several iterations then the resulting weighting will be stable and can be used for further analysis. This process will be carried out using the Super Decisions software.

d. Choose the best alternative, which has the biggest weight among alternatives from the results of the limiting matrix.

3. Methodology
3.1 Method Approach

The research methods carried out include research procedures and techniques. The research method is an important step in solving problems that exist in research. By the new research methods, it can solve various research problems and also develop scientific fields that are mastered. Based on the type of data, the research approach used in this research is descriptive quantitative by means of searching for information on existing phenomena, defining clearly the objectives to be achieved, planning the approach, collecting data as a report.

The type of research approach is descriptive. Descriptive research is research that will explain current problem solving based on data. The type of descriptive qualitative research is used to obtain objective information about the evaluation system for candidates for Navy Chief of account unit based on criteria relevant to the competencies needed and comprehensive.. In addition, qualitative discussion is expected to discuss what is needed in developing models and relevant criteria.

3.2 Data Resource, Subject dan Object Research

This research was conducted from various sources with the aim of enriching the desired study results. Data sources in research are: a. Primary data sources are those collected directly by researchers (or their officials) from direct sources, namely the head of the Naval Account unit and b.

Secondary data sources are data directly collected by researchers as a support from the first source. Or data arranged in the form of documents. The questionnaire is a secondary data source in this study.

This study aims to develop relevant models and criteria used for the selection of candidates for heads of naval units and develop objective assessment method based on relevant criteria with good competence.Therefore, suitable subject parameters are needed to enable data to be obtained. The parameters are experts who truly understand the duties and responsibilities of the Navy Account Chief. The object of this research is the Head of the Navy Account in relation to his duties and responsibilities.

3.3 Design of Research
3.3.1 Data Collection Techniques

There are several methods of data collection techniques carried out in research activities to obtain data and information from experts. Some of the techniques performed include:

    a. *Interview/Brainstroming*
    b. Kuesioner

3.3.2 Data Collection instrument
The instruments used in this study are as follows:

    a. Security Clearance Data
    b. Questionnaire from the Expert
    c. Software *Super Decision*

3.3.3 Data Analytical Techniques

By using the ANP method, the analysis in this study is to analyze the results of data processing to obtain priority weights that are in accordance with the criteria in order to clarify data processing. Analysis is carried out on the connectedness model that occurs, the criteria that are taken into consideration in the selection and the weight of each criterion, and alternative priorities that occur. Analysis is also done by comparing the output of the model with the priority output of the system to get the advantages and disadvantages of each.

4. Analysis and Discussion
4.1 Determination of Criteria and Sub Criteria

Determination of criteria and sub-criteria based on Presidential Regulation Number 7 of 2016 concerning treasurer certification at the State Budget Management Unit, Minister of

Finance Regulation on procedures for implementing treasurer certification at the state budget management unit number 128 / PMK.05 / 2017, PANG TNI Regulation No Perpang / 138 / XII / 2011 concerning armed force's competency standards in the indonesia armed forces environment, Decree of Naval Chief of Staff No. Kep / 1248 / VIII / 2015 concerning Standard qualifications for personnel of the Navy's administration corps. As an expert-based source, one of the resources in the Personnel Administration Section (Bagminpers) and the development of Naval Supply Corps personnel and one of the Heads of sub-criteria. Then the criteria and sub-criteria requirements are obtained from the results of this increase,

Table 4.1 criteria dan Sub-criteria

No.	criteria	Sub criteria
1	Education	1.1 Military Development Education (Sesko Angkatan/ Susjemenstra/Sederajat, Diklapa/Sederajat, Dikspespa/Sederajat)
		1.2 General Education (S1/S2/S3)
2	Competencies	2.1 Treasurer Certificate (*Hard Kompetensi*)
		2.2 Financial Professional Qualifications (*Hard Kompetensi*)
		2.3 Information Technology (*Hard Kompetensi)*
		2.4 Honestly (*Soft Kompetensi*)
		2.5 Responsibility (*Soft Kompetensi*)
		2.6 Time Management (*Soft Kompetensi*)
3	Health	3.1 Physic
		3.2 Mentality
4	Phisycal Performance	4.1 Batery A
		4.2 Batery B
5	Performance	5.1 Konduite

The definitions of each cluster are presented as follows:

Table 4.2 Description of Criteria and Sub Criteria

NO	Criteria/ SubCriteria	Explanation
1.	Education	Education related to knowledge that must be owned by the Navy Account Chief.
	1.1 Military Development Ed.	Military Education is related to the development of knowledge and understanding of knowledge about the navy.
	1.2 General Education	It is an education carried out at universities - both domestic and abroad for undergraduate, doctoral or doctoral levels, in order to improve knowledge.
2.	Competency	Competencies that must be do by the Head of Navy's Account
	2.1 Treasurer Certificate	Treasurer Certificate issued by the Ministry of Finance as a condition to become a treasurer who manages state finances.
	2.2 Financial Professional Qualifications	The ability of the financial profession to carry out their duties and responsibilities in managing and managing state finances in accordance with state financial regulations.
	2.3 Information technology	a skill in utilizing information technology as a result of understanding and good knowledge about information technology.
	2.4 Honesty	Traits that must be possessed in order to carry out the duties and responsibilities as treasurer.
	2.5 Responsibilty	A form of consequences that are carried out in order to carry out duties as treasurer.
	2.6 Time management	The ability to manage all activities so that in

		accordance with the objectives.
3.	Healthy	Health Test is a system of physical and mental health examination of a person that will be used to determine their health status.
	3.1 Physical health	A physical health examination of someone who is used to determine and determine their health status.
	3.2 Mentality Health	A mental health examination of someone who is used to determine and determine their health status .
4.	Phisical Performance	A criterion related to physical abilities that absolutely must be possessed, including Batteries A and B.
	4.1 Batery A	A criterion related to physical abilities "run 12 minutes" that absolutely must be had.
	4.2 Batery B	A criterion related to the physical abilities "push up, sit up, pull up, suttle run" that must be possessed.
5.	*Performance*	The behavior, attitudes and activities of day-to-day personnel activities covering various aspects of the conduct assessment. There are 18 aspects of conditional assessment.
	5.1 Konduite	An assessment carried out on TNI personnel with several aspects of evaluation.

4.1.2 Making the ANP Network Model

After determining the assessment criteria and sub-criteria, then formed into a network model in the super decision software, to identify the relationship that affects logically. Criteria will be grouped in 5 clusters, namely Education, Competence, Health, Physical endurance, Performance and 1 Goal. Here is the ANP Software Super Decision Network model:
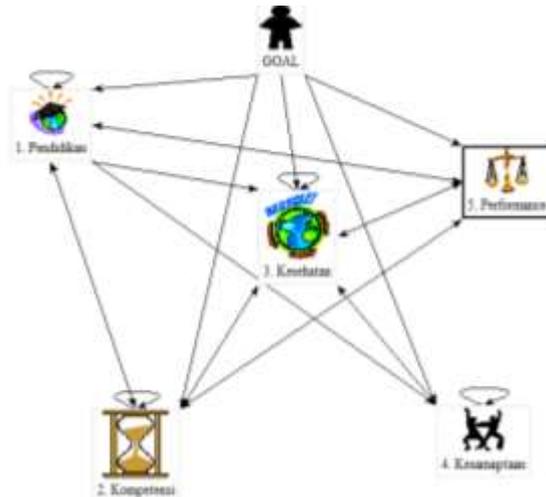

Figure 4.1 Network ANP cluster Model

4.1.3 Relationship of Innerdependence and Outerdependence

Figure 4.2 illustrates the ANP network which consists of inner-dependent and out-dependent relationships about clusters and elements.The arrows in the image are influences, the base of the arrows means the criteria elements are affected, while the incoming arrows means the criteria elements that influence. The relationship that occurs in determining the relationship between innerdependence and outdependence is the result of brainstorming of experts in accordance with the experience of the experts who are experienced officials in the administration corps. The criteria in each cluster are depicted in a different color. The criteria in each cluster are depicted in a different color.
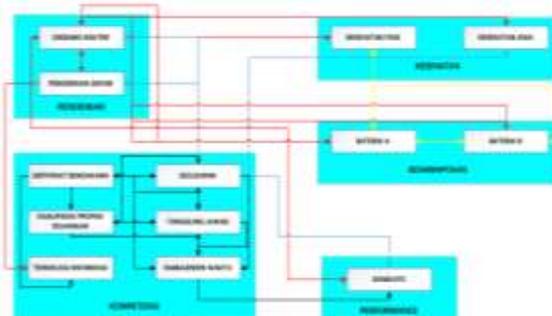

Figure 4.2 Relationship of Innerdependence and Outerdependence

A valid model can be drawn up from the assessment system for candidates for Naval Chief Accounts. The following is a picture of the criteria model and sub-criteria for evaluating candidates for Naval Chief Accounts using the Super Decision software
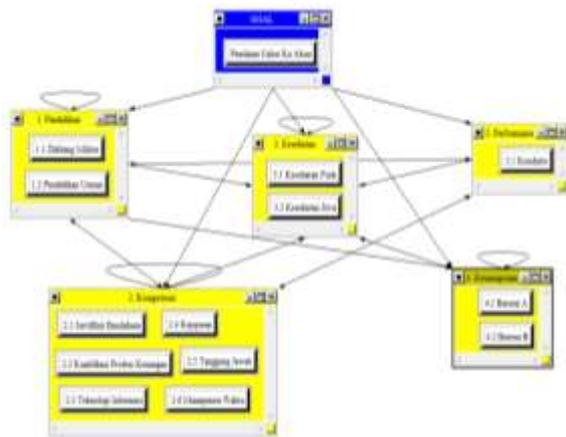
Figure 4.3 Criteria and Subcriteria model

4.1.4 ANP Data Collection

In this case the first step that must be done is to make an ANP questionnaire. The next step is the distribution of ANP questionnaires to experts who have been determined, in this case the Chief Administrative Corps at the Jakarta Headquarters at the Personnel Administration Section (Bagminpers) as the administration of personnel administration and the development of Administrative Corps personnel within the Navy and one of the Head naval Account.

4.2 Data Procces

Data processing at ANP is carried out after the ANP questionnaire results that have been distributed to experts to be filled out and have been collected again. The number of experts is three people. Making a questionnaire using the network model reference that has been formed. Questionnaires are made based on the relationship between sub-criteria both innerdependence and outdependence and the relationship between preferences between criteria and goals (goal) by means of pairwise comparisons between clusters and between cluster nodes. This questionnaire aims to find out how big the relationship is based on the assessment of the experts. The numerical value that is charged for all comparisons is obtained from a scale of ratio 1 to 9 set by Saaty.

4.2.1 Pairwise Comparison Matrix

The following is a pairwise comparison matrix in the evaluation system for candidates for Naval Chief Accounts:

4.2.1 Calculation of Geometric Mean

Testing for the results of filling the questionnaire of experts or decision makers regarding pairwise comparison between criteria and related elements. If the Inconsistency Index shows a number below 0.1, then the choice is consistent and feasible to be combined with the opinions of other decision makers who have tested their consistency. This test uses Superdecision software.

Example calculation of the mean geometric value. Example in Table 4.5 Pairwise Comparison Matrix on the effect of goal, comparison between Competency criteria and Education criteria, the lower value of expert 1 to expert 4 is 5, 5 and 3. Then the mean geometric value is: $\sqrt{5 \times 5 \times 3}$ = 4.22 . So the mean geometric values of the pairwise comparison matrix table are as in the following table:

Table 4.65 Recapitulation of Questionnaires and Geomean Calculations for prospective Account Heads

NO	PERBANDINGAN BERPASANGAN			EXPERT 1	EXPERT 2	EXPERT 3	GEOMEAN	PEMBULATAN GEOMEAN
Pengaruh GOAL (Penilaian Calon Ka Akun)								
1	Pendidikan	vs	Kompetensi	0,20	0,20	0,33	0,24	0
2	Pendidikan	vs	Kesehatan	0,50	0,33	0,33	0,38	0
3	Pendidikan	vs	Kesamaptaan	1,00	2,00	0,50	1,00	1
4	Pendidikan	vs	Performance	0,50	1,00	0,33	0,55	1
5	Kompetensi	vs	Kesehatan	3,00	3,00	2,00	2,62	3
6	Kompetensi	vs	Kesamaptaan	5,00	5,00	2,00	3,68	4
7	Kompetensi	vs	Performance	4,00	3,00	3,00	3,30	3
8	Kesehatan	vs	Kesamaptaan	3,00	3,00	1,00	2,08	2
9	Kesehatan	vs	Performance	1,00	3,00	3,00	2,08	2
10	Kesamaptaan	vs	Performance	0,50	1,00	1,00	0,79	1
Pengaruh Kriteria Pendidikan								
1	Pendidikan	vs	Kompetensi	0,20	0,20	0,33	0,24	0
2	Pendidikan	vs	Kesehatan	0,50	0,33	0,33	0,38	0
3	Pendidikan	vs	Kesamaptaan	1,00	2,00	0,50	1,00	1
4	Pendidikan	vs	Performance	0,50	1,00	0,33	0,55	1
5	Kompetensi	vs	Kesehatan	3,00	3,00	2,00	2,62	3
6	Kompetensi	vs	Kesamaptaan	5,00	5,00	2,00	3,68	4
7	Kompetensi	vs	Performance	4,00	3,00	3,00	3,30	3
8	Kesehatan	vs	Kesamaptaan	3,00	3,00	1,00	2,08	2
9	Kesehatan	vs	Performance	1,00	3,00	3,00	2,08	2
10	Kesamaptaan	vs	Performance	0,50	1,00	1,00	0,79	1
Pengaruh Kriteria Kompetensi								
1	Pendidikan	vs	Kompetensi	0,20	0,20	0,33	0,24	0
2	Pendidikan	vs	Kesehatan	0,50	0,33	0,33	0,38	0
3	Pendidikan	vs	Performance	0,50	1,00	0,33	0,55	1
4	Kompetensi	vs	Kesehatan	3,00	3,00	2,00	2,62	3
5	Kompetensi	vs	Performance	4,00	3,00	3,00	3,30	3
6	Kesehatan	vs	Performance	1,00	3,00	3,00	2,08	2
Pengaruh Kriteria Performance								
1	Pendidikan	vs	Kompetensi	0,20	0,20	0,33	0,24	0
2	Pendidikan	vs	Kesehatan	0,50	0,33	0,33	0,38	0
3	Kompetensi	vs	Kesehatan	3,00	3,00	2,00	2,62	3
Pengaruh Kriteria Kesehatan								
1	Kompetensi	vs	Kesehatan	3,00	3,00	2,00	2,62	3
2	Kompetensi	vs	Kesamaptaan	5,00	5,00	2,00	3,68	4
3	Kompetensi	vs	Performance	4,00	3,00	3,00	3,30	3
4	Kesehatan	vs	Kesamaptaan	3,00	3,00	1,00	2,08	2
5	Kesehatan	vs	Performance	1,00	3,00	3,00	2,08	2
6	Kesamaptaan	vs	Performance	0,50	1,00	1,00	0,79	1
Pengaruh Kriteria Kesamaptaan								
1	Kesehatan	vs	Kesamaptaan	3,00	3,00	1,00	2,08	2
Ybd Node dalam Kriteria Pendidikan								
1	Dikbang Militer	vs	Pendidikan Umum	2,00	3,00	2,00	2,29	2
Ybd Node dalam Kriteria Kompetensi								
1	Sertifikat Bendahara	vs	Kualifikasi Profesi Keuangan	3,00	1,00	3,00	2,08	2
2	Sertifikat Bendahara	vs	Teknologi Informasi	2,00	5,00	3,00	3,11	3
3	Sertifikat Bendahara	vs	Kejujuran	0,33	0,20	0,20	0,24	0
4	Sertifikat Bendahara	vs	Tanggung Jawab	0,50	0,33	0,20	0,32	0
5	Sertifikat Bendahara	vs	Manajemen Waktu	1,00	0,33	1,00	0,69	1
6	Kualifikasi Profesi Keuangan	vs	Teknologi Informasi	3,00	3,00	3,00	3,00	3
7	Kualifikasi Profesi Keuangan	vs	Kejujuran	0,33	0,20	0,20	0,24	0
8	Kualifikasi Profesi Keuangan	vs	Tanggung Jawab	0,50	0,20	0,20	0,27	0
9	Kualifikasi Profesi Keuangan	vs	Manajemen Waktu	1,00	0,33	1,00	0,69	1
10	Teknologi Informasi	vs	Kejujuran	0,14	0,20	0,20	0,18	0
11	Teknologi Informasi	vs	Tanggung Jawab	0,33	0,33	0,20	0,28	0
12	Teknologi Informasi	vs	Manajemen Waktu	0,50	0,33	0,33	0,38	0
13	Kejujuran	vs	Tanggung Jawab	2,00	3,00	3,00	2,62	3
14	Kejujuran	vs	Manajemen Waktu	3,00	3,00	5,00	3,56	4
15	Tanggung Jawab	vs	Manajemen Waktu	3,00	3,00	5,00	3,56	4
Ybd Node dalam Kriteria Kesehatan								
1	Kesehatan Fisik	vs	Kesehatan Jiwa	2,00	1,00	1,00	1,26	1
Ybd Node dalam Kriteria Kesamaptaan								
1	Baterai A	vs	Baterai B	1,00	1,00	1,00	1,00	1
Ybd Node Dikbang Militer dalam Kriteria Kesehatan								
1	Kesehatan Fisik	vs	Kesehatan Jiwa	2,00	1,00	1,00	1,26	1
Ybd Node Dikbang Militer dalam Kriteria Kesamaptaan								
1	Baterai A	vs	Baterai B	1,00	1,00	1,00	1,00	1
Ybd Node Sertifikat Bendahara dalam Kriteria Kompetensi								
1	Kualifikasi Profesi Keuangan	vs	Teknologi Informasi	3,00	3,00	3,00	3,00	3
2	Kualifikasi Profesi Keuangan	vs	Kejujuran	0,33	0,20	0,20	0,24	0
3	Kualifikasi Profesi Keuangan	vs	Tanggung Jawab	0,50	0,20	0,20	0,27	0
4	Kualifikasi Profesi Keuangan	vs	Manajemen Waktu	1,00	0,33	1,00	0,69	1
5	Teknologi Informasi	vs	Kejujuran	0,14	0,20	0,20	0,18	0
6	Teknologi Informasi	vs	Tanggung Jawab	0,33	0,33	0,20	0,28	0
7	Teknologi Informasi	vs	Manajemen Waktu	0,50	0,33	0,33	0,38	0
8	Kejujuran	vs	Tanggung Jawab	2,00	3,00	3,00	2,62	3
9	Kejujuran	vs	Manajemen Waktu	3,00	3,00	5,00	3,56	4
10	Tanggung Jawab	vs	Manajemen Waktu	2,00	3,00	5,00	3,11	3
Ybd Node Kualifikasi Profesi Keuangan dalam Kriteria Kompetensi								
1	Kejujuran	vs	Tanggung Jawab	2,00	3,00	3,00	2,62	3
2	Kejujuran	vs	Manajemen Waktu	3,00	5,00	5,00	4,22	4
3	Tanggung Jawab	vs	Manajemen Waktu	2,00	3,00	4,00	2,88	3

Ybd Node Kejujuran dalam Kriteria Kompetensi							
1	Sertifikat Bendahara	vs	Kualifikasi Profesi Keuangan	3,00	1,00	3,00	2,08	2
2	Sertifikat Bendahara	vs	Tanggung Jawab	0,50	0,33	0,33	0,38	0
3	Sertifikat Bendahara	vs	Manajemen Waktu	1,00	0,33	1,00	0,69	1
4	Kualifikasi Profesi Keuangan	vs	Tanggung Jawab	0,50	0,20	0,20	0,27	0
5	Kualifikasi Profesi Keuangan	vs	Manajemen Waktu	1,00	0,33	1,00	0,69	1
6	Tanggung Jawab	vs	Manajemen Waktu	2,00	3,00	3,00	2,62	3
Ybd Node Kejujuran dalam Kriteria Pendidikan							
1	Dikbang Militer	vs	Pendidikan Umum	2,00	3,00	2,00	2,29	2
Ybd Node Tanggung Jawab dalam Kriteria Kompetensi							
1	Sertifikat Bendahara	vs	Kualifikasi Profesi Keuangan	3,00	1,00	3,00	2,08	2
2	Sertifikat Bendahara	vs	Kejujuran	0,33	0,20	0,20	0,24	0
3	Sertifikat Bendahara	vs	Manajemen Waktu	1,00	0,33	1,00	0,69	1
4	Kualifikasi Profesi Keuangan	vs	Kejujuran	0,33	0,20	0,20	0,24	0
5	Kualifikasi Profesi Keuangan	vs	Manajemen Waktu	1,00	0,33	1,00	0,69	1
6	Kejujuran	vs	Manajemen Waktu	3,00	3,00	5,00	3,56	4
Ybd Node Kesehatan Fisik dalam Kriteria Kesamaptaan							
1	Baterai A	vs	Baterai B	1,00	1,00	1,00	1,00	1
Ybd Node Kesehatan Jiwa dalam Kriteria Kompetensi							
1	Kejujuran	vs	Tanggung Jawab	2,00	3,00	3,00	2,62	3
Ybd Node Konduite dalam Kriteria Kompetensi							
1	Kejujuran	vs	Tanggung Jawab	2,00	3,00	3,00	2,62	3
2	Kejujuran	vs	Manajemen Waktu	3,00	3,00	5,00	3,56	4
3	Tanggung Jawab	vs	Manajemen Waktu	2,00	3,00	4,00	2,88	3

The rounding figures of the Geometric Mean Matrix are the input data in the Superdecision software
.

4.2.1 Processing with Superdecision Software

Furthermore, the Geometric Mean results will be input in the Superdecision program to determine the inconsistency index value. Whenever local priorities are carried out, consistency must be considered. Inconsistency value cannot be more than 0.1. Inconsistency index is stated as good (consistent) if the value is not equal to or exceeds 0.1 or 10%. Following are the results of data processing with Super Decision software:

Figure 4.4 Example of input for Geomean values in GOAL clusters
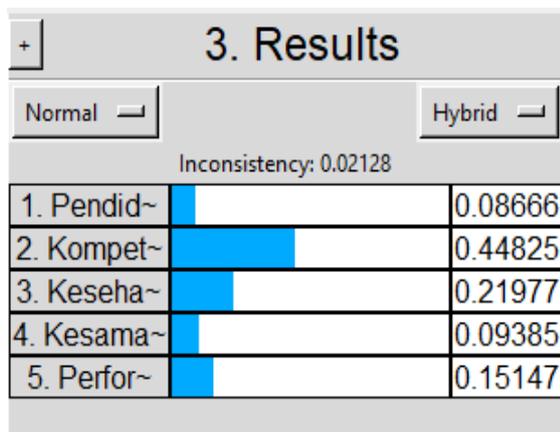
Figure 4.5 Inconsistency Index

Figure 4.5 can be seen that the inconsistency value is not more than 0.1, then the inconsistency index value is stated to be good (consistent) with a value of 0.0218.

Table 4.66 Recap of Inconsistency Values of Geomean input values

NO	PERBANDINGAN BERPASANGAN	NILAI INCONSISTENCY
1	Pengaruh GOAL (Penilaian Calon Ka Akun)	0.02128
2	Pengaruh Kriteria Pendidikan	0.02128
3	Pengaruh Kriteria Kompetensi	0.03276
4	Pengaruh Kriteria Kesehatan	0.01716
5	Pengaruh Kriteria Kesamaptaan	0.00000
6	Pengaruh Kriteria Performance	0.07069
7	Ybd Node dalam Kriteria Pendidikan	0.00000
8	Ybd Node dalam Kriteria Kompetensi	0.03927
9	Ybd Node dalam Kriteria Kesehatan	0.00000
10	Ybd Node dalam Kriteria Kesamaptaan	0.00000
11	Ybd Node Dikbang Militer dalam Kriteria Kesehatan	0.00000
12	Ybd Node Dikbang Militer dalam Kriteria Kesamaptaan	0.00000
13	Ybd Node Sertifikat Bendahara dalam Kriteria Kompetensi	0.04790
14	Ybd Node Kualifikasi Profesi Keuangan dalam Kriteria Kompetensi	0.07069
15	Ybd Node Kejujuran dalam Kriteria Pendidikan	0.00000
16	Ybd Node Kejujuran dalam Kriteria Kompetensi	0.01716
17	Ybd Node Tanggung Jawab dalam Kriteria Kompetensi	0.02271
18	Ybd Node Kesehatan Fisik dalam Kriteria Kesamaptaan	0.00000
19	Ybd Node Kesehatan Jiwa dalam Kriteria Kompetensi	0.00000
20	Ybd Node Konduite dalam Kriteria Kompetensi	0.07069

After all comparison data between clusters and nodes in the superdecision program has been filled in and the Inconsistency index values are known to all, then we can find out unweighted supermatrix, weighted supermatrix, limit matrix, and priorities.
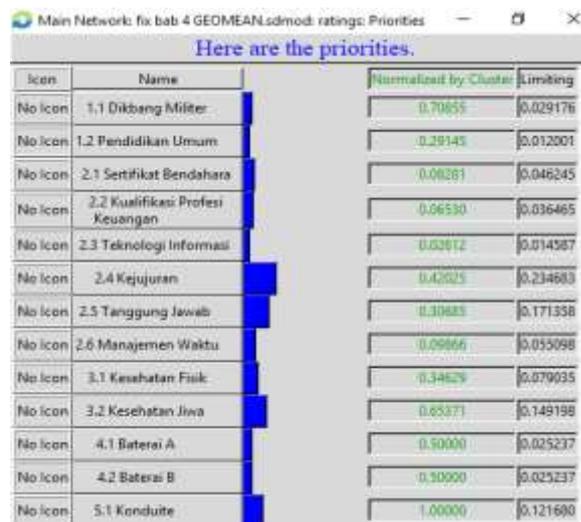

Figure 4.6 Priorities in Sub Criteria

Figure 4.6 can be seen that the Priority results on the sub-criteria that have the greatest weight are Honesty (0.234683), then Responsibility (0.171358), Mental Health (0.149198), Conduite (0.12168), Physical Health (0.079035), Time Management (0.055098), Certificate of Health Treasurer (0.046245), Financial Professional Qualifications (0.036465), Military Education (0.029176), Battery A (0.025237), Battery B (0.025237), Information Technology (0.014587), and the lowest weight is General Education (0.012001). The following is the highest priority sequence data in the table and Percentage Distribution:

Table 4.67 Weight of Sub Criteria

No.	Criteria	weight	Precentage
1	Honesty	0,23	23%
2	Responsibility	0,17	17%
3	Menatlity Helath	0,15	15%
4	Konduite	0,12	12%
5	Phisycal Health	0,08	8%
6	Time Management	0,06	6%
7	Treasure Management	0,05	5%
8	Professional Qualifications	0,04	4%
9	Military Dev. Education	0,03	3%
10	Batery A	0,03	3%
11	Batery B	0,03	3%

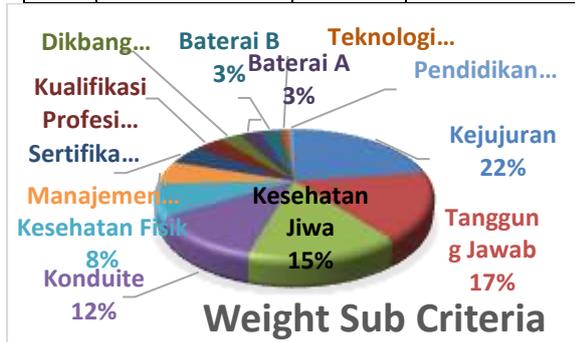| 12	Information Tech.	0,01	1%
13	General Education	0,01	1%
	Total	1	100%

Figure 4.7 Percentage of Sub Criteria

After the weights of each subcriterion are known, the weights of each criterion can also be known. The way to find out the weights of the criteria is to add up the weights of the sub-criteria for each criterion.

Table 4.68 Weights of Criteria

No.	Criteria	Weight	Persentage
1	Education	0,04	4%
2	Competency	0,56	56%
3	Health	0,23	23%
4	Phisical Perf.	0,05	5%
5	Performance	0,12	12%
	Total	1	100%

Based on Table 4.68 about the criteria weights, the results show that the criteria with the highest weights are the Competency criteria (0.56). The next rank is Health (0.23), Performance (0.12), Physical endurance (0.05) and the last rank is Education (0.04). Percentage distribution as shown below:
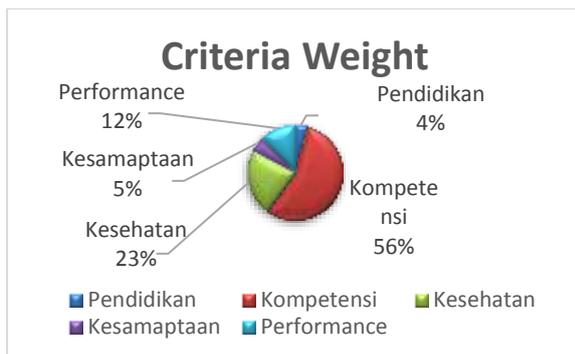

Figure 4.8 Criteria Precentage

4.2.1 Designing the Rating Scale

After obtaining the weight of general competency criteria, an assessment scale is designed. The proposed rating scale is based on the Rating Scales assessment method, for each Sub Criteria in the Criteria can be seen in the following table:

Table 4.69 Rating Scale on Education Sub Criteria

No.	Criteria/ Sub Criteria	Rating Scale	Rating	Explanation
1	Education/Qualification			
1.1	Military Development Educaiotn	5	Sesko Angkatan/ Susmanajen stra	BS (Excellent)
		4	Diklapa	B Good
		3	Dikspespa +	C (Enough)
		2	Dikspespa	K-1(considerable)
		1	Diksarmil	K-2 (Failed)
1.2	General Education	5	S2/S2 Terapan	BS (Excellent)
		4	S1/DIVI	B (Good)
		3	DIII	C (Enough)
		2	DII/DI	K-1(considerable)
		1	SMA	K-2 (Failed)

Table 4.70 Rating Scale on Competency Sub Criteria

No.	Criteria/ Sub Criteria	Rating Scale	Rating	Explanation
2	Competence			
2.1	Treasure Certificat	5	Has a certificate and is still valid	BS (Excellent)
		4	Has a certificate and expires applies (proposed extension)	B (Good)
		3	Has a certificate and expires	C (Enough)
		2	Take the Test and do not pass	K-1 (considerable)
		1	No Certificate (No Test)	K-2 (failed)
2.2	Financial Professional Competencies	5	Score ≥ 81	BS (Excellent)
		4	Score 61-80	B (Good)
		3	Score 41-60	C (Enough)
		2	Score 21-40	K-1 (Considerable)
		1	Score ≤ 20	K-2 (Failed)
2.3	Information Technology	5	Score ≥ 81	BS (Excellent)
		4	Score 61-80	B (goog)
		3	Score 41-60	C (Enough)
		2	Score 21-40	K-1 (Cosiderable)
		1	Score ≤ 20	K-2 (Failed)

No.	Criteria/Sub criteria	Rate scale	Assesment	Explanation
		5	Score ≥ 81	BS (Excellent)
		4	Score 61-80	B (Good)
2.4	Honesty	3	Score 41-60	C (Enough)
		2	Score 21-40	K-1 (Diperhitungkan)
		1	Score ≤ 20	K-2 (Tidak Lulus)
		5	Score ≥ 81	BS (Excellent)
		4	Score 61-80	B (Good)
2.5	Responsibility	3	Score 41-60	C (Enough)
		2	Score 21-40	K-1 (Cosiderable)
		1	Score ≤ 20	K-2 (Failed)

Table 4.71 Rating Scale on Health Sub Criteria

No.	Criteria/Sub criteria	Rate scale	Assesment	Explanation
3	Health			
		5	Stakes I	BS (Excellent)
		4	Stakes II	B (Good)
3.1	Phisical health	3	Stakes IIP	C (Enough)
		2	Stakes III	K-1 (Cosiderable)
		1	Stakes IV	K-2 (Failed)
		5	Stakes I	BS (Excellent)
		4	Stakes II	B (Good)
3.2	Mental Health	3	Stakes IIP	C (Enough)
		2	Stakes III	K-1 (Cosiderable)
		1	Stakes IV	K-2 (Failed)

Table 4.72 Rating Scale on the Kesamaptaan Sub Criteria

No.	Criteria/Sub Criteria	Rate Scale	Assesment	Explanation
4	Phisical Test			
		5	Score ≥ 81	BS (Excellent)
		4	Score 61-80	B (Good)
4.1	Batery A	3	Score 41-60	C (Enough)
		2	Score 21-40	K-1 (Cosiderable)
		1	Score ≤ 20	K-2 (Failed)
4.2		5	Score ≥ 81	BS (Excellent)
		4	Score 61-80	B (Good)
	Batery B	3	Score 41-60	C (Enough)
		2	Score 21-40	K-1 (Cosiderable)

		1	Score ≤ 20	K-2 (Failed)

Table 4.73 Rating Scale on Performance Sub Criteria

No.	Criteria/Sub Criteria	Rate Scale	Assesment	Explanation
5	Performance			
		5	Score ≥ 81	BS (Excellent)
		4	Score 61-80	B (Good)
5.1	Konduite	3	Score 41-60	C (Enough)
		2	Score 21-40	K-1 (Cosiderable)
		1	Score ≤ 20	K-2 (Failed)

The rating scale is multiplied by the weight of the criteria. The format of manual assessment can be seen in the following Table 4.74:

Table 4.74 Format of Assessment Determination of candidates for Chief Account of the Navy

ASSESSMENT FACTORS	WEIGHT X VALUE	SCORE
Assesment factor :		
Qualification :		
• Military Dev. Education		
• General Education		
Competency :		
• Treasure Certificate		
• Financial Professional Qualifications		
• Information Tech.		
• Honesty		
• Responsibilty		
• Time Manajement		
Health		
• Phisical Health		
• Mental health		
Phisical Test		
• Batery A		
• Batery B		
Performance :		
• Konduite		
Score Kumulatif		

4.3 Building a computer-based system

In order make speed up the assessment and decision making process, a computer-based system was built. By entering the test results of the candidates to be selected based on Rating Scales, the system will automatically multiply by each percentage of the weight that has been obtained. There are various requirements needed by the system to run the process, those are :

4.3.1 System Requirements

The design of this Assessment System includes:

1. Computer Hardware.
   a. PC (Pesonal Computer) Dual Core or more.
   b. RAM at lease 1 GB SDRAM:
   c. Hard disk
   d. Monitor with VGA specifications that support the Windows operating system.
   e. SVGA at least 16/24-bit color.
2. Computer software.
   a. Microsoft Window 7/10
   b. MySQL as database
   c. Apache as Web server.
   d. The Account Holder Candidate Application System uses PHP.
3. Availability of relevant data. The data needed to implement the results of this assessment system design.

4.3.2 Software Installation

Installing software by installing the program in a directory that is on the hard disk. then this decision support system program can be run.

4.3.3 Running the Program

The first thing the user does is to install the xampp program to run the program. The next step is open an internet browser such as Mozilla and Chrome Goggle, then enter to the localhost address and directory of the data folder for the process of assessing candidates for a Naval Account that has been previously made. Then the display will appear as follows:

Figure 4.9 Initial Display of Software

4.3.4 *Security Access (Login)*

When the user clicks the Login form on the program icon then the Login form will appear. This is a security access that is useful for the user so that all data owned by the user cannot be opened by other people except with the user's permission. The results of the login form look like in Figure 4.10
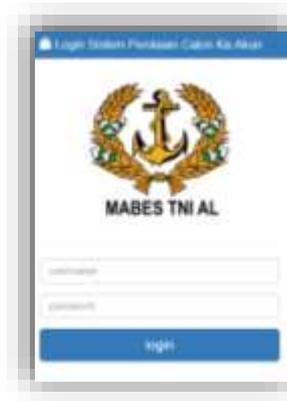

Figure 4.10 Form Security Access (Login)

4.3.5 Main Menu

After the program has finished the procedure. Then user has entered the user name and password then press the Login button, it will display the Main Menu System for Evaluating candidates.

Figure 4.11 Main Menu Form

Main menu of The Naval Chief Accounts' evaluation system has 5 (five) menu sections, namely the Home menu, the Sub Criteria Weight menu and the Goal Value menu, Personnel menu and Menu Results.

.
4.3.5 Weight Menu Sub Criteria

Criteria menu is a facility used to display and enter changes in the value of the weight that has been previously known. The Sub Criteria Weight Menu Form Display can be seen in Figure 4.12 as follows:

Figure 4.12 Form Edit Weight Sub Criteria

4.3.7 Goal Value Menu

Goal Value Form is a facility that functions to display and change (Add, Edit & Delete) the scale value of the test results for candidates for the Naval Account. Display Form Menu Destination Value seen in Figure 4.13

Figure 4.13 Goal Value Menu Form

Goal Value form menu, there are an Add and Edit button to add personnel and edit the value of the rating scale of the results of the test results for candidates. The Goal Value Menu Form Display is seen in Figure 4.14.
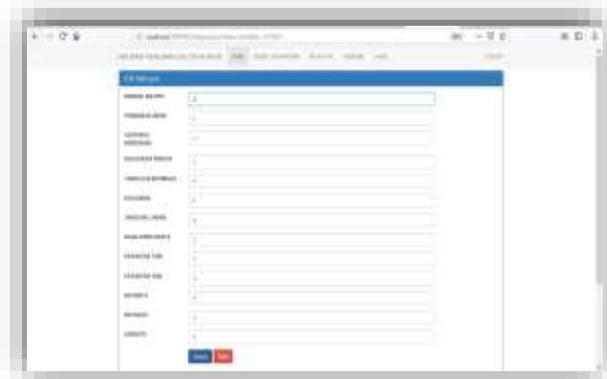
Figure 4.14 Goal Data Edit Menu Form

4.3.6 Personnel Menu

Personnel Menu is a facility that functions to display and change (Add, Edit & Delete) data for candidates for Naval Accounts. Personnel Menu Form Display is shown in Figure 4.15
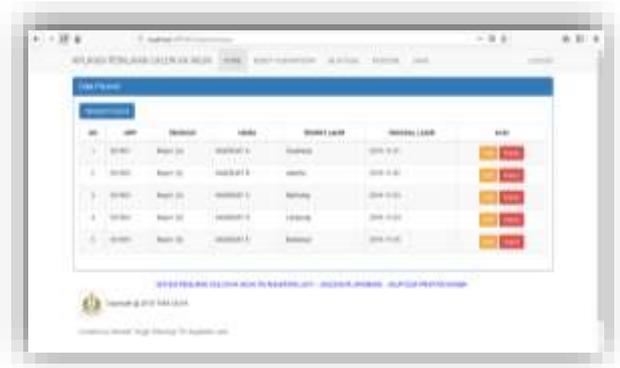

Figure 4.15 Form Menu Personil

4.3.9 Results Menu

The Menu Results is a facility that helps to display the results of the multiplication process between the assessment of sub-criterion values and the results of the rating scale of the results of the testing of candidates for Naval Chief Accounts. The results of the calculation are ranked from highest to lowest, as shown in Figure 4.16 below.

Figure 4.16 Result Menu

4.4 Implementation

Implementation is a process of interaction between goals and actions to achieve them. The effectiveness of implementation is determined by the ability to make connections and logical causation between actions and goals.

4.4.1 Determination of Prospective Ka Accounts with a New Assessment System

Implementation in determining candidates for Chief of Naval Accounts using the new Assessment System that has been designed. Then, this new Assessment System can reduce weaknesses and provide a comparison than before which will make it easier to gather decisions to determine candidates more objectively.

Determination of Candidate Head of Accounts of the Navy with the new assessment system by calculating the results of the assessment of criteria obtained from the

candidates with the weight of the criteria. All existing data values and hypothetical data are processed into the software. The results of the assessment using the new assessment system can be seen in Figure 4.17.

Figure 4.17 List of the chief ranking

4.5 Analysis and Interpretation of Data Processing Results

The results of processing the data in the form of questionnaires, obtained priority weights for each cluster. In addition, a consistency ratio is obtained that the values are below 10% (0.1), so based on Saaty (1993) the design of the new assessment system can be called Consistent. This is the Criteria analysis in each cluster:

4.5.1 Criteria Analysis in the Education Cluster

In the Knowledge Cluster two requirements are Selected. Those are military development education and General Education. In the Limiting Supermatrix table, it can be seen that the Military Development Education criteria have a higher weight than the General Education criteria of 0.029176. This is reflected that military development education is the most important in the Education cluster. So in choosing candidates for Chief of Navy Accounts, the military development education criteria become one of the main criteria to be considered.

4.5.2 Criteria Analysis in Competency Cluster

In the Competency Cluster, there are six criteria from two Competencies (Hard Competencies and Soft Competencies) that are taken into account. These criteria are Treasurer Certificate, Financial Professional Qualifications, Information Technology, Honesty, Responsibility and Time Management. In the Limiting Supermatrix table it can be seen that the honesty criterion has a high weight compared to other criteria in the competition cluster, which is a weight of 0.234683. So in selecting candidates for Navy

Chief Accounts, the Honesty Competency criteria is one of the criteria to be considered.

4.5.3 Criteria Analysis in the Health Cluster

There are two criteria in Health Cluster that are taken into selecting candidates for Head of Navy Accounts. Those are Physical Health and Mental health. based on the Limiting Supermatrix table, it can be seen that candidates for the Navy Chief Account of the Mental Health criteria have the highest weight compared to the Physical Health criteria which is 0.149198. This illustrates that Mental Health is the most influential in the Health cluster. So that the criteria for mental health is one of the main criteria to be considered.

4.5.4 Criteria Analysis in the Kesamaptaan Cluster

In the Physical performance Cluster there are two criteria in selecting candidates for Navy Chief Accounts. These criteria are Battery A (includes 12-minute Running) and Battery B (Register, Sit Up, Pull Up and Run). The Limiting Supermatrix Table can be seen that in the Criteria for Battery A and Battery B have the same weight that is equal to 0.025237. This illustrates that the physical performance cluster, Battery A and Battery B criteria are equally important.

4.5.5 Criteria Analysis in the Performance Cluster

In the Performance Cluster based on personnel conduct values, the table restricting Supermatrix to the Chief of Navy Account shows a weight of 0.121680.

4.5.5 Comparison of the Old Assessment System and the New Assessment System

The main difference between the old appraisal system and the design of the new appraisal system is that some specific criteria are taken into account, such as Hard Competencies such as Treasurer Certificates, Financial Professional Knowledge and Information Technology. And Soft Competencies such as Honesty, Responsibility and Time Management in the determination of candidates for Navy account. In addition, the design of this new assessment system will be more objective, because it is carried out taking into account the weight obtained based on the results of the questionnaire processing that has accommodated the preferences and perceptions of the Trustees of the Administrative Corps.

5.1 Conclusions

The data collection and processing results, then the analysis and interpretation of the data results processing that have been done, the conclusions that can be drawn in this thesis are:

1. The system of assessing candidates for Chief of Navy Accountants is objective and based on relevant criteria and competence. Competency Criteria Factors consisting of Hard and Soft Competencies that are questioned 6 sub-criteria such as Treasurer Certificates, Financial Professional Qualifications, Information Technology, Honesty, Responsibility and Time Management total body weight of 0.5584 or 55.84%

2. While 5 other criteria such as Education, Health, physical endurance and Performance. they have a total weight of 0.4416 or 44.16%. Where 1 Competency Criteria has a value greater than 4 other criteria, so the competency criteria factor is one of the main criteria that needs to be considered.

3. An objective method of evaluating candidates for Navy Accounts based on relevant criteria is to include Competency Factors such as Treasurer Certificates, Financial Professional Qualifications, Information Technology, Honesty, Responsibility and Time Management. And by building a computer-based system can accelerate the assessment process in the process of selecting candidates for the Head of the Navy Account for decision makers in the Navy environment

5.2 Suggestion

The suggestions submitted in writing this thesis are:

1. Just be pay attention and use the competency criteria (Hard skills and Soft Skills) as one of the materials for selection tests for positions within the Navy. And the model of this research can be an alternative method of evaluation.

2. the results of research can continue to be developed by analyzing and determining the criteria and sub-criteria that are in accordance with the criteria / sub-criteria of the position of the Navy.

3. For the next researchers who are interested in similar research can develop and perfect the position selection evaluation system with a better computerized and software system.

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