

Determining Strategy of the Indonesian Air Force Military Cargo Aircraft in Supporting the Global Maritime Fulcrum

Tofan Fajar Mulia, Widya Setiabudi Sumadinata, Windy Dermawan

Abstract

This research aims to find the type of military cargo aircraft of Indonesian air force in accordance with the standardization and Indonesia's national defense in supporting the Global Maritime Fulcrum. In doing so, researchers analyze the military cargo aircraft of Indonesian Air Force from the four types of aircraft that became public discourse, namely the C-130J Super Hercules aircraft, AN-77 aircraft, and A-400M aircraft. The selection of the military cargo aircraft of Indonesian Air Force uses the method of Analytic Hierarchy Process (AHP). This research uses a qualitative method by collecting data through interviews with a number of informants, both academics in the field of defense and security and practitioners in the military and documentation studies. Through AHP, it was found that there are four aspects in choosing the military cargo aircraft of Indonesian Air Force, namely: 1) Aspect of technical; 2) Aspect of human resources, facilities, and infrastructure; 3) Aspect of Operational; and 4) Aspect of Government Role. This study found that to support Indonesian national security and Global Maritime Fulcrum, aspects of operations rank the most important among other aspects, reaching 40.8%, aspects of technical at 24.1%, aspects of human resources at 19.6% and aspects of government roles of 15.5%. Based on the results of an analysis of these four aspects, Research findings suggest that military cargo aircraft of Indonesian Air Force which is in line with Indonesia's current needs are C-130J aircraft with a value of 54.9%.



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Introduction

The development of geopolitics and geostrategy at the global, regional and national level today poses challenges to national defense that has been increasingly dynamic and complex. The 2015 Indonesian Defense White Paper (2015: 6) Tensions and conflicts in the East Asia region have raised concerns from various countries, conflicts on the Korea peninsula and territorial disputes in South China Sea region have required Indonesia to deal directly with other countries interests, and thus modernization of the Indonesian Armed Forces main weapons system (Alutsista) based on the 2015 National Defense Posture of the Ministry of Defense of the Republic of Indonesia has become a matter of vital importance to be immediately met. In the Minimum Essential Force (2015: 1) it is realized that efforts to achieve an ideal state defense posture, especially Indonesian Armed Forces posture cannot be realized in a short time due to the limited capacity and budget support. In order to achieve this, the Indonesian Armed Forces minimum essential force (MEF) development priorities are held in stages, while continuing to be directed towards the realization of an ideal Indonesian Armed Forces posture. In addition to the Indonesian Armed Forces MEF (2015: 2), increasing the quality and quantity of Indonesian Armed Forces defense equipment which is increasingly modern has significantly improved the deterrence aspect which in turn, can support the implementation of Indonesian Armed Forces duties to anticipate any possible threats, including support for the Global Maritime Fulcrum.

The idea of Indonesia to become Global Maritime Fulcrum (GMF) opens opportunities to build regional and international cooperation for the prosperity of the people as stated by Indonesian President, Joko Widodo at the East Asia Summit (EAS) on 13 November 2014¹. In his speech, he also delivered his vision and ideas about Indonesia as Global Maritime Fulcrum. He revealed that there are five main pillars that must be considered in order for the idea to be realized. First, rebuilding Indonesia's maritime culture; second, maintaining and managing marine resources; third, giving priority to the development of maritime infrastructure and connectivity; fourth, through maritime diplomacy, inviting all Indonesian partners to cooperate in the maritime sector; and fifth, building maritime defense forces. Through these efforts,

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President Joko Widodo believes that Indonesia will become the global maritime fulcrum, a force that navigates two oceans, as a prosperous and authoritative maritime nation.

To realize the Global Maritime Fulcrum (GMF), the main weaponry system (modern defense equipment) of the Indonesian National Air Force becomes a supporting factor, one of the main defense equipment is military cargo aircraft. The current Military cargo aircraft has been operating for over 35 years to guard the Sovereignty of the Republic of Indonesia and to support the Global Maritime Fulcrum.

Through the Minimum Essential Force (MEF) in the second phase of the strategic plan, the Indonesian Air Force has made efforts to build and to modernize the defense equipment as a part of strengthening national defense. Until the second phase of the Strategic Plan, the Indonesian Air Force has made efforts to develop and to modernize defense equipment. The Ministry of Defense of the Republic of Indonesia and the Air Force have conducted an assessment and selection of Military cargo aircraft suitable for Indonesia geographical condition. In the process of selecting these transport planes, based on the interviews with informants, there were three types of Air Force military cargo aircraft offered by the producers to the Ministry of Defense of the Republic of Indonesia. They are Lockheed Martin's C-130J Super Hercules from the United States (bidding 12 / 09/2017), A400 M aircraft made by Airbus Defense and Space France (deals on 5/19/2017), and AN-77 aircraft made by Antonov Company Ukraine (bidding on 10/19/2017).

The purpose of this study is to find the type of Air Force military cargo aircraft that meets standardization and qualification of Indonesia's national defense needs in supporting the Global Maritime Fulcrum. To choose one of the three types of aircraft, we used the Analytic Hierarchy Process (AHP) method, taking into account four aspects, namely: 1) Technical Aspects which includes technical specifications according to operational requirements and maintenance easiness; 2) Aspects of human resources, facilities and infrastructure and infrastructure which includes a certified procurement committee that has gone through a due diligence process, follow-up support and initial spare, and is user friendly; 3) Operational Aspects that includes Air Force operational requirements, safety, and interoperability, and 4) Aspects of the Role of the Government which includes the government budget in procurement of defense equipment, foreign relations, and

transfer of technology. The four aspects are used to choose the type of military cargo aircraft of the Air Force by considering the assessment based on the interviews with a number of informants who are experts in the field of military and defense and security.

In this study, we trace previous studies which are relevant to the research raised. Golec² examines the determination of military cargo aircraft that best suits the country needs by using Multicriteria Decision-Making Techniques. The research shows that a military transport aircraft C type was the best choice using Analytical Hierarchy Process (AHP) and Simple Additive Weighting (SAW) based on five predetermined criteria. Cuskey³ examined the use of AHP as the strategy of determining combat aircraft source by the Hellenic Air Force. It was done by analyzing legislative analyzing, acquisition and relative technical issues related to the procurement process. From this study, it was concluded that AHP could be used as a decision-making tool for the Hellenic Air Force to evaluate the selection of combat aircraft types from several perspectives.

There are also researchers who use methods other than AHP in determining the choice of defense equipment. Among them are Ahmadi⁴ who examines the selection of Indonesian Navy Alutsista using Life Cycle Cost (LCC) and Network Process Analysis (ANP) (Case Study of Trained Sailing Ship). The results of the study concluded that the selected training sailing vessel, Friere's alternative had the highest benefit value of which the biggest weighting criteria was the skills and platform. Besides, it is also economically feasible to be used as a training sailing ship for the navy cadets. Next is Syahtaria⁵ who examined the selection of Indonesian Navy Anti-Submarine Helicopters with Decision Making Trial and Evaluation Laboratory Method (Dematel) and Analytic Network Process (ANP). The study concluded that the selected helicopter was Panther helicopter that had a value of 2,083502321. This helicopter has several advantages, among others, it is considered quite cheap and has similarities in operations with helicopters.

From the research above, it can be seen that the previous researchers tried to overcome the problem of decision-making to choose an alternative solution to the best problem by using several selection methods, one of which was by using AHP developed by Thomas L. Saaty^{6,7}. The AHP method aims to overcome complex multi-factor or multi-criteria problems into an accurate and structured hierarchy. The difference between this study and subsequent research is that this research has

never been conducted in the selection of air force Indonesian Armed Forces military cargo aircraft to support Global Maritime Fulcrum in the perspective of Security Studies.

CEJISS **Literature Review**

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The strategy is defined as a target and long-term goals settings of a company and the direction of action and resources allocation needed to achieve goals and objectives Craig & Grant⁸. Furthermore, the strategy is also a unified, broad and integrated plan that links the strategic advantages of the company with environmental challenges, which are designed to ensure that the main objectives of the company can be achieved through proper implementation by the organization according to Glueck and Jauch⁹. A well-formulated strategy will help the preparation and resources allocation owned by the company into a unique form and can help to survive. A good strategy is compiled based on internal capabilities and weaknesses of the company, anticipating changes in the environment, as well as the unity of movement carried out by enemy spies^{10,11,12}.

From the two opinions above, the strategy can be interpreted as a plan prepared by top management to achieve the desired goals. This plan includes goals, policies, and actions that must be carried out by an organization to maintain its existence and to win a competition or to maintain a particular situation. Especially, institutions or organizations must have excellence in maintaining a situation. This is in accordance with what Mintzberg¹³ stated that strategy of a program or planned steps (a directed course of action) to achieve a set of goals or goals that have been determined is as well as the concept of planning strategies.

Defense and security

The definition of Indonesia defense according to Supriyanto¹⁴ is all efforts to uphold the sovereignty of the state, to maintain the integrity of the Republic of Indonesia and the security of all nations from military and armed threats. The Indonesian Armed Forces have to implement defense policies to uphold the sovereignty of the State to maintain territorial integrity, and to protect the security of the nation, to undergo military operations for war and military operations other than war, and to actively participate in regional and international peacekeeping duties^{15,16}.

Buzan¹⁷ defines the concept of security as follows: “security, in any objective sense, measures of the absence of threat to acquired values, in a subjective sense, the absence of fear that values will be attacked.” Hough¹⁸ said that the definition of security is still a “contested concept”, or a concept that will continue to develop. Viotti and Kauppi¹⁹ define security as the basic defense and protection of a country, and this concept applies to individuals and groups. Whereas the Great Indonesian Language Dictionary defines security as a situation that is protected from harm (objective security), a feeling of security (subjective security) and freedom from doubt²⁰.

National Defense and Security will lead to formatting, or very closely related to sovereignty or the dignity of a country. Therefore, without sovereignty, a state will not be able to carry out its “Rights and Obligations”.

National Interest

National Interest is aimed to achieve in the relation of the state needs or the desired. In this case, the national interests that are relatively fixed and the same among all countries/nations are security (including the survival of their people and regional needs) and welfare. These two main things are security and prosperity. National interests are identified with “national goals.” The improvement of the weaponry belongs to the air force Indonesian Armed Forces (alutsista) is included as one of the aspects of security and prosperity because national security may allow people to feel comfortable and prosperous. This is because the national stability and the government program is achieved, namely one of the air maritime axis. According to Papp²¹, there are several aspects of national interest, such as economics, ideology, strength and military security, morality and legality. National interests are resulted from the needs of a country because each country has different orientations and motivations when developing relations with other countries.

This interest can be seen from the political-economic, military and socio-cultural internal conditions. Interests are also based on a ‘power’ that is aimed to be created so the state can have a direct impact on state considerations in order to get world recognition. The role of a country in providing material as the basis of national interests will undoubtedly be the eyes of the international community as a country that has a relationship attached to its foreign policy²².

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Main Weaponry System

The definition of the main weaponry system according to the Air Force Mabasau²³ is the weaponry system that must be owned by each Force to carry out its main duties. Defense status of a country can be seen from the condition of the main weaponry system (defense equipment) of its armed forces. The stronger, modern, effective and efficient defense equipment of a country is, the stronger the defense is. The Air Force as the air defense Indonesian Armed Forces must have defense equipment that sophisticated as the technological development is, such as the military cargo aircraft^{24,25}. The definition of military cargo aircraft according to 2014 Air Force operational requirements are used for air transport operations missions with air support capabilities according to the needs of the Air Force.

Research Method

Qualitative method is employed in this study. Data collection was carried out with documentation studies and interviews with a number of informants, both the academics in the field of defense and security and the military practitioners. To strengthen the data analysis, this study uses the Analytic Hierarchy Process (AHP) which is used to select several alternatives by conducting a simple paired comparative assessment in order to develop overall priorities based on ranking. The method which used AHP process⁷ is arranged according to rational factors (funds, economic benefits, social, technical and policy benefits) to select a number of alternatives and to be evaluated by several criteria.

In addition, according to Azis⁶, AHP is a method to rationally capture human perception though there is a degree of inconsistency in the input. The main input in this model is the perceptions of the “experts” or those who understand the problem correctly, feel the consequences of a problem or have an interest in the problem. AHP uses qualitative input (human perception). Therefore, the AHP model is a comprehensive decision-making model because it considers both qualitative and quantitative aspects. In addition, the advantages of the AHP is its ability to solve the problem of ‘multi objectivity’ and multicriteria’, while other models use ‘single objective’.

In this method, decision makers must create a structure of decision problems. It is a hierarchy with three levels. The objective of the decision is at the top level, followed by the criteria at the second level and the selection of alternatives at the third level. The main steps that must

be taken in using AHP have been illustrated in the research framework (AHP hierarchy) by:

1. Determining focus, criteria or sub-criteria and alternatives.
2. Weighing the criteria.
3. Comparing, giving values for alternatives according to each criterion.
4. Synthesis; final score.

The simplest form used in making decisions with hierarchies consists of three levels:

1. First level: goal or target
2. Second level: problem criteria
3. Third level: choices or policies

The purpose of this structure is to assess the importance of variables at a particular level. The steps in the AHP method include:

1. Defining the problem and determining the desired solution.
2. Creating a hierarchical structure that begins with general objectives, followed by sub-goals, criteria and possible alternatives at the lowest criteria level.
3. Containing a paired comparison matrix that describes the relative contribution or the influence of each element to each goal or criteria one level above. Comparisons are made based on the choice of the decision maker by assessing the importance of an element compared to other elements.
4. Making pairwise comparisons so that all choices are obtained.
5. Calculating the eigenvector value and test its consistency, if it is not consistent then the data retrieval is repeated.

The experts as informants are expected to fill out the research questionnaire which refers to the hierarchy that is determined and to fill in the comparison fields between the right or left factors with the priority scale. This AHP method helps solve complex problems by structuring a hierarchy of criteria, interested parties and by drawing various considerations to develop the weight or priority of the right policy strategy according to the AHP hierarchy.

Analysis

The selection of the Air Force Military cargo aircraft in supporting the Global Maritime Fulcrum.

The first stage in AHP is to determine the focus, criteria or sub-criteria and alternatives so that the strategy for selecting military cargo aircraft

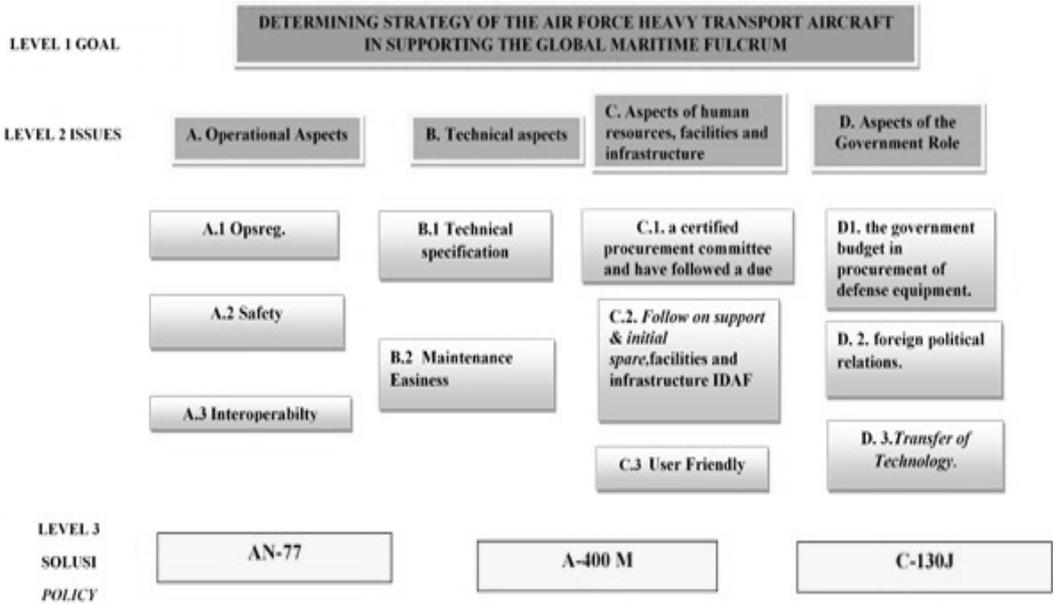
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of the Air Force to support the Global Maritime Fulcrum can run well. Identification of criteria is carried out by researchers by studying various documentation and interviews with various parties (resource persons) who are believed to be an expert in the issue. From the results of documentation and interview studies, the criteria are then determined in the AHP hierarchy scheme.

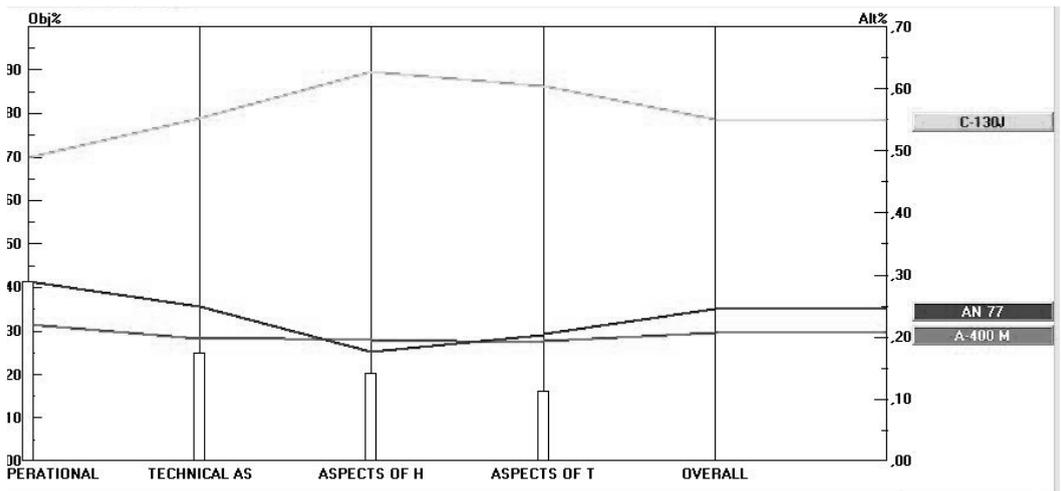
Thus, we formulated four aspects in determining the criteria used in the AHP hierarchy as an effort to select the Indonesian Air Force heavy transport aircraft that supports Global Maritime Fulcrum. From each aspect of the selected criteria, we tried to reduce it into several indicators based on the study of formal juridical (Regulation of the Minister of Defense of the Republic of Indonesia Number 35 of 2015 concerning Implementation of Armed Forces Military Requirements Planning in the Ministry of Defense and Indonesian Armed Forces and the Air Force Technical Guidelines on Planning Procedures Procurement of Main Weaponry System in the Air Force environment, research library and interviews with the experts. The four criteria included are as follows:

- a. Operational Aspects that include Air Force operational requirements, safety, interoperability;
- b. Technical aspects that include technical specifications according to operational requirements, and convenience of maintenance;
- c. Aspects of human resources, facilities, and infrastructure that include a certified procurement committee and have followed a due diligence process, follow-on support & initial spare, user-friendly;
- d. Aspects of the Government Role which includes the government budget in the procurement of defense equipment, foreign political relations, transfer of technology.

Based on the above aspects, a hierarchy of problem-solving strategies can be arranged using AHP which consists of three levels as follows:



Based on the structure above, researcher does AHP calculations using Expert Choice 11 by using the interviews findings and filling out questionnaires from the experts (informants). From these results, a synthesis graph is obtained as follow:



Synthesis Graph of the Strategy for the Election of the Air Force Military cargo aircraft

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Based on the Synthesis of the Strategy for the Election of the Air Force Military cargo aircraft above, the Airplane The C-130J Super Hercules which has the most dominant value in the AHP synthesis analysis (54.9%), AN-77 aircraft (24,5%) and the A-400M aircraft (20,7%). So, the right selection strategy used to determine the Air Force Military cargo aircraft in supporting the Government program is the C-130J Aircraft. The values of the four aspects above are based on the synthesis of each aspect of the Strategy for the Election of the Air Force Military cargo aircraft as follow:

Kriteria Penilaian	C-130J	AN-77	A-400M
Operational Aspects	48.9%	29.0%	22.1%
Technical aspects	55.1%	24.9%	19.9%
Aspects of human resources, facilities, and infrastructure	62.7%	17.7%	19.6%
Aspects of the Government Role	60.3%	20.4%	19.2%

Table 1 – Type of Airplane and Assessment Criteria Results

By looking at the results of the synthesis of the strategy below, the operation aspect has a value of 40.8% which includes the problems of the Air Force's opsreq of 13.9%, safety of 16.2%, interoperability of 10.7%. So, in determining a military cargo aircraft of the Indonesian Air Force, it can be stated that the operational aspect has the highest weight so that it is one of the most important aspects. Furthermore, the technical aspects of 24.1%, covering technical specifications of 13.4%, maintenance easiness of 10.7%. So, in selecting the Air Force military cargo aircraft, it can be said that the technical aspects are one of the next important considerations. From the aspect of human resources, infrastructure and infrastructure obtained a value of 19.8%, which includes a certified procurement committee and and through a due diligence process with a value of 5.6%, follow-on support & initial spare and availability of facilities, infrastructure and infrastructure as much as 7,2%, user friendly at 7.0%. Next, the government's role aspect has a value of 15.4%, which includes the govern-

ment budget in the procurement of defense equipment by 5.6%, foreign political relations by 2.9%, transfer of technology by 6.9%.

Level 1	Level 2	Alts	Prtv
Percent OPERATIONAL ASPECTS (L: ,407)			40,8
	Percent Opsreg (...)		13,9
	AN 77		,040
	A-400 M		,031
	C-130J		,068
	Opsreg (L: ,340)		
	Percent Safety (L: ...)		16,2
	AN 77		,047
	A-400 M		,036
	C-130J		,079
	Safety (L: ,307)		
OPERATIONAL ASPECTS (L: ,407)	Percent Interopera...		10,7
	AN 77		,031
	A-400 M		,024
	C-130J		,052
	Interoperability (L: ,...)		
Percent TECHNICAL ASPECTS (L: ,241)			24,1
	Percent Technical ...		13,4
	AN 77		,033
	Technical specifica...	A-400 M	,027
	C-130J		,074
	TECHNICAL ASPECTS (L: ,241)		
	Percent Maintenanc...		10,7
	AN 77		,027
	Maintenance Easin...	A-400 M	,021
	C-130J		,059
Percent ASPECTS OF HUMAN RESOURCES FACILITIES AND INFRASTR...			19,8
	Percent A Certified...		5,6
	AN 77		,010
	A Certified Procure...	A-400 M	,011
	C-130J		,035
	Percent Follow on ...		7,2
	AN 77		,013
	Follow on support ...	A-400 M	,014
	C-130J		,045
ASPECTS OF HUMAN RESOURCES FACILITIES AND INFRASTRUCTUR...	Percent User frien...		7,0
	AN 77		,012
	User friendly (L: ,3...	A-400 M	,014
	C-130J		,044
Percent ASPECTS OF THE GOVERNMENT ROLE (L: ,155)			15,4
	Percent This Gove...		5,6
	AN 77		,011
	The Government b...	A-400 M	,011
	C-130J		,034
	Percent Foreign p...		2,9
	AN 77		,006
	Foreign political rel...	A-400 M	,006
	C-130J		,017
	Percent Transfer o...		6,9
	AN 77		,014
	Transfer of Techno...	A-400 M	,013
	C-130J		,042
ASPECTS OF THE GOVERNMENT ROLE (L: ,155)			

Synthesis Results of the Strategy for the Election of the Air Force Military cargo aircraft

Based on the synthesis above, the order of aspects that influence the selection strategy is as follows: first, aspects of operations; second, technical aspects; third, aspects of human resources, facilities and infrastructure and infrastructure; and fourth, aspects of the role of the Government.

Of these aspects, the most dominant aspects are the operations aspects that include Air Force operational requirements, safety, and interoperability. The operating aspect holds the main key in determining the selection of the Air Force military cargo aircraft because it has the first dominant value of 0.392. Operational aspects are the most important consideration because the selected military cargo aircraft must be capable enough to be used by the Air Force for military purposes in strengthening the air and maritime defense forces. This aircraft can also be used for other purposes that support the Global Maritime Fulcrum program, such as the air toll which aims to help distribute logistics throughout the Indonesian archipelago with Indonesia's geographical conditions as an archipelago. This is because the airway can be faster than the sea lane.

Reflection on the selection of the Air Force Military cargo aircraft

The selection of the modern, quality and fits to the needs of the Air Force Military cargo aircraft, and to realize the Global Maritime Fulcrum is certainly related to the level of coordination and communication with the National Indonesian Armed Forces Headquarters and the Ministry of Defense of the Republic of Indonesia, especially in determining the military cargo aircraft of the Indonesian Air Force. Aircraft that fits the results of this study is the C-130J aircraft made by Lockheed Martin USA. Following this, the Air Force needs to do the followings:

1. The process of selecting the Indonesian Air Force heavy transport aircraft in accordance with the planning procedures for the procurement of defense equipment in the Air Force environment by involving all stakeholders, related experts, and users. Through an in-depth study using the AHP method in this study, C-130J was chosen so that it can provide alternative strategies in the selection of defense equipment.
2. Factory Visit by involving a team that has competency/expert in their fields in the framework of the C-130J Super Hercules manufacturing and technical verification of the needs of the Air Force, as well as studying the readiness of transfer of technology and training offered by Lockheed Martin USA at the presentation
3. The procurement process of defense equipment for C-130J aircraft in accordance with the results of this research at the

Ministry of Defense is carried out with intensive coordination with the Indonesian Air Force quickly and accurately so that the Minimum Essential Forces (MEF) program in the phase II 2015-2019 Indonesia Strategic Plan can be realized immediately including preparation of offsets involving the Defense Industry Policy Committee (KKIP) in accordance with the law of the Republic of Indonesia Number 3 of 2012 concerning the National Defense Industry. This is to prevent fraud and achieve the fourth strategic goal in realizing Indonesia as the Global Maritime Fulcrum listed in the 2015 Defense White Paper, which is to realize a strong defense industry that can be realized well.

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Conclusion

From a series of data processing and analysis, we concluded that to obtain a modern, high-quality Air Force Military cargo aircraft in accordance with the needs of supporting the Global Maritime Fulcrum, there are three types of aircraft namely AN-77, A-400M, and C-130J. C-130J Super Hercules aircraft has the most dominant value of 54.3% among other aircraft types with details of AN-77 aircraft with a value of 25.3% and A-400M aircraft with a value of 20.43%. Based on the calculation of the 4 aspects called the Operational Aspects that include Air Force operational requirements, safety, interoperability with a value of 40.8%; Technical aspects that include technical specifications and maintenance easiness with a value of 24.1%; Aspects of human resources, infrastructure and infrastructure which include a certified procurement committee, follow-on support & initial spare and the availability of facilities and infrastructure and infrastructure that is owned by the Air Force, user friendly with a value of 19.6%; and Aspects of Government Role which includes government budget, foreign relations with provider countries, transfer of technology with a value of 15.5%. Of the several aspects mentioned above, the most dominant aspect is the Operational Aspect which covers the Air Force operational requirements, safety, interoperability with a value of 40.8%

At the policy level, currently, (2018) procurement of the Indonesian Air Force's military cargo aircraft is being processed at the Indonesian Ministry of Defense by involving the Indonesian Air Force as users and all relevant parties including the National Development Planning Agency and the Indonesian Ministry of Finance. The final decision is the authority of the Indonesian Ministry of Defense based on the

results of political decisions with various considerations that become dynamic and complex government policies. This study tries to provide policy recommendations on the selection of the Indonesian Air Force military cargo aircraft based on the AHP analysis method by considering four important aspects. The results of this research can either be appropriate or not according to the provisions of the Government of Indonesia.

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