

Determination of the Manufacturing Country on the Procurement of the Indonesia Armed Forces Equipments Using Analytical Hierachy Process and Concept, Assessment, Demonstration, Manufacture, in Service, Disposal (Cadmid) For Strengthening Indonesian Defense Strategies

Mitro Prihantoro^{1*}

¹Indonesia Defense University, Indonesia

ABSTRACT

The Indonesian Defense Strategy was developed based on the unique geographical consideration as an archipelagic country. Geographically, Indonesia is located between two oceans and two continents, and has direct sea and land borders with ten other countries - this could potentially be a challenge for Indonesia as the country is susceptible to border disputes and threats that could affect domestic and regional instability. Therefore, it is necessary to prepare the Indonesian Armed Force's defense equipments to deal with developments in the strategic environment in the 21st century or Indo-Pacific era, which greatly affects national conditions. This research aims to determine the foundation for the manufacture of the Indonesian defence equipments in accordance with the industry standardization and national defense strategy of Indonesia so as to strengthen Indonesian defense strategy. In doing so, the researchers analyze five criterias, namely price, quality, delivery, local content, and technology transfer. The Analytic Hierarchy Process (AHP) and Concept, Assessment, Demonstration, Manufacture, In Service, and Disposal (CADMID) methods were used to determine the country's procurement of Indonesian Armed Force's defense equipments. This research uses a mixed method by studying the data obtained through questionnaires and interviews with a number of respondents and informants, both from the military and academics in the fields of defense and management, as well as literature review. Through AHP and CADMID, four alternative countries were determined for Armed Force's defense equipment procurement, namely Domestic (Indonesia); European countries; East Asian countries; and United States. Following that, the Eigen values method was applied using pairwise comparisons. From these comparative values, the relative rank of all alternatives can be determined.

Keywords: AHP, CADMID, Defence Equipment, Defense Strategy, Manufacturing Country

INTRODUCTION

Si vis pacem para bellum, which means if you want peace then be ready for war. Such is the dictum in Greek which is often used to show the need for a country to have strong defense. However, with the creation of omnicidal weapons or weapons of mass destruction, the dictum seems to have changed to Si vis pacem para armas, which means that if you want peace, keep armed. Therefore, the ownership and modernization of the main weaponry system (Alutsista) is expected to be fulfilled in stages according to budget capacity, priority needs, and the development of scientific and technological advances in the

21st century era or also known as the Indo-Pacific Era. It is deemed necessary to procure defense equipment to deal with increasing intensity and escalation of threats as well as to consider operational needs, namely consistency, sustainability and interoperability.

Within the framework of the Indonesian National Defense Strategy, the Ministry of Defense and the TNI have drawn up a force-building plan by adding, rejuvenating and modernizing combat equipment in a planned manner, based on operational considerations, which are compiled in the Minimum Essential Forces (MEF). The TNI is required to be able to build a force capable of carrying out its duties, one of which is through the procurement of defense equipment. The procurement of Alutsista always creates polemics, including the matter of determining the producing country. In determining the country for the procurement of the TNI's Alutsista, it is appropriate to refer to the continuity of the needs and characteristics of the archipelagic country and to adjust the national defense strategy that has been set by the government.

Indonesia's national defense strategy is structured in the concept of defense in depth which contains the meaning of outward awareness or forward defense which is directed towards meeting the enemy starting from the outer boundaries of Indonesia's territory and introspection or inward defense to tackling domestic threats that are combined with threats from abroad. The three pillars of implementing a defense strategy that need to be considered include deterrence, deep defense, and universal people's defense.

Based on the national defense strategy, the determination of the manufacturing country in the procurement of TNI's Alutsista must be based on a number of considerations of operational and technical needs. Consideration of operational needs adhering to the principles of consistency, sustainability and interoperability in accordance with the operational strategy based on Indonesia's geographic constellation.

Operational and technical aspects are the main considerations of any TNI Alutsista procurement because they affect changes in operational strategies and tactics that rely on joint operations involving three dimensions, namely the TNI AD, TNI AL and TNI AU in the future. This means that the TNI's Alutsista must be able to be used for operational needs and as far as possible remain in touch with previous technology and inter-dimensional connectivity.

The importance of analyzing each of these technical consideration criteria encourages researchers to carry out research using the Multi Criteria Decision Making (MCDM) method, namely CADMID and AHP to measure the qualitative assessment of two different methods is faced with the consideration of operational needs to support Indonesia's defense strategy so that in the end, alternative priorities for the manufacturing country can be determined in the procurement of TNI's Alutsista.

CADMID developed in England has a standard structure that is carefully compiled from the process of determining the needs (user's requirements document) to the process of disposal. The CADMID structure consists of Concept, Assessment, Demonstration, Manufacture, In-Service, and Disposal. Based on the CADMID approach, it can be seen that the series of defense procurement processes should take place in a sustainable manner even though in reality there are gaps between stages. This can be seen from the realization of technical specifications that are driven by the operational needs of users, hampered by bureaucratic/personnel complications between the Ministry of Defense and the TNI as requirement generators and at the same time dealing with procurement that compromises technical specifications. This shows that there is a gap between needs and the procurement process.

RESEARCH METHODS

This study uses a mixed method research method, which combines the CADMID (qualitative) and AHP (quantitative) methods by mixing the two methods (Cresswell, 2018). This method is used sequentially (sequential exploratory design) but independently (separately) to answer the same problem formulation, namely how to determine the criteria and priorities of the countries making TNI Alutsista. This research draws data from resource persons (experts) within the Ministry of Defense and the TNI in charge of the procurement of goods and services, especially Alutsista.

Data processing with CADMID

The analytical method used in this research is CADMID, which is a structured procurement mechanism with phases so that the procurement of Alutsista gets a product that is in line with the buyers' expectations. CADMID is used to define criteria and is described further.

Concept, is basically a document (URD) that contains information related to the wishes of the buyer. If you take the example of aircraft procurement, for example, the URD can contain technical specifications, maneuverability, complete communication systems, avionics systems, radar types, weapons, and so on. URD will of course have implications for prices, in other words, the more technical specifications, the higher the costs.

Assessment, is a document creation mechanism that contains the system required by users (SRD) who are at the Alutsista to be held or made. SRD is document control of what has been stipulated in the URD. Assessment is manifested in price and quality criteria. Assessment is carried out continuously to get quality Alutsista commensurate with the price paid by the user. Demonstration, is a progressive effort to eliminate risks and improve performance targets, ensuring that the relationship between SRD and URD can be maintained by entering into contracts to fulfill SRD and demonstrating integrated production capabilities.

Manufacture, is the production process for Alutsista in accordance with what is stated in the URD and SRD. In this manufacturing stage, there are three main components that are very important to get attention, namely the suitability of technical specifications, costs and time. The relationship between criteria in the context of manufacture is very clear, where there are criteria for price, quality, and delivery as well as local content.

In-Service, it is intended that the Alutsista has gone through the delivery phase and has been received by the user, where at this stage everything related to maintenance, repair and improvement of the Alutsista capability in the future after the operation of the Alutsista. The In-Service stage is represented by the criteria for price, delivery, and technology transfer. Alutsista maintenance and repairment of Alutsista damage have implications for price. The improvement in the capability of the defense equipment which is readjusted to the development of operational needs has implications for technology transfer criteria.

Disposal, is a mechanism in which Alutsista no longer meets operational requirements. Some of the options for Disposal include deletion from the state inventory list or offered to other parties who require an agreed sale and purchase scheme. The agreement between the two parties has implications for the criteria of price, delivery and technology transfer. Disposal aspects of this study are not part of the research criteria, this is because the defense equipment referred to in this study is a new procurement with a very long lifetime.

From the overall CADMID analysis above, five criteria are determined which are considered to be followed up and quantified using the AHP method, namely price, quality, delivery, local content, and transfer of technology.

RESULTS

Through data processing using the CADMID method in determining criteria and priority synthesis using the AHP method, 5 criterias are obtained from all CADMID stages, namely price, quality, delivery, local content, and transfer of technology. Through data processing using the AHP method in the priority synthesis that produces TPV, researchers found that the quality technical criteria have the greatest weight value

compared to other criteria, with details of quality 51.3%, transfer of technology 17.5%, delivery 11.6%, price 11.3%, and local content 8.3%. Furthermore, researchers conducted a sensitivity analysis to look for the effect of the TPV value of the criteria on the TPV value which found that the assessment and consideration of the criteria would result in the priority of determining the country that made TNI's Alutsista, namely Domestic (Indonesia) of 37.71%, Countries in Europe 35.58%, United States 14.17%, and Countries in East Asia 12.54%.

Comparative Analysis of AHP and CADMID Results

Starting from the description and results of data analysis, it appears that CADMID and AHP have a complementary relationship. It can also be interpreted that the criteria specified in the AHP are derivatives of CADMID elements. If CADMID contains a narrative aspect of an Alutsista procurement mechanism or in other words CADMID is translated using a qualitative approach with an exploratory design analysis method, then AHP is a quantification process of CADMID by first determining the appropriate criteria. The survey was conducted to obtain the required data, then converted it into a measurement result that describes the phenomenon in numerical form. The process of determining the country of producing Alutsista can be synergized, where the criteria resulting from the considerations at the CADMID stage can be analyzed at the AHP method stage.

CONCLUSION

The results of CADMID analysis and data processing using the AHP method and sensitivity analysis to the effect of increasing the TPV technical criteria in all countries that manufacture TNI Alutsista show the results, namely Indonesia (Domestic) as the main priority for the making of the TNI's Alutsista compared to manufacturing countries in Europe, the United States and manufacturing countries in East Asia. Indonesia excels in the criteria of price, delivery and local cargo, and ranks second in quality and technology transfer.

This study proves that the CADMID and AHP methods can be synergized to determine priority alternatives for the selection of the country for the manufacture of TNI's Alutsista. The selection of a good and appropriate manufacturing country will minimize the existing risks, which can properly support consistency, sustainability and interoperability in supporting Indonesia's defense strategy.