Nat. Volatiles & Essent. Oils, 2021; 8(6): 6081-6096

NVEO
Natural Volatiles & Essential Oils

Decision-Making Strategy In Developing The Revolution In Military Affairs (RMA) Index In Indonesia To Support National Defense

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Abstract

Revolution in Military Affairs (RMA) is a revolution – a fundamental change – that provides the foundation for a set of military capabilities. The concept of change in military affairs which is driven by technological developments has been adopted by a lot of developed countries, thus making changes to the map of the defense forces of countries globally. This study on the RMA Index in Indonesia is important to measure the extent to which strategic policy plans in the field of defense are able to offset the deterrence effect in the defense landscape both regionally and globally. In this study, the Analytical Hierarchy Process (AHP) method was used to analyze the weighting of the criteria in the RMA Index. The criteria which are the supporting factors in the compilation of the revolution index in military affairs are the result of the perceptions of researchers which are also supported by the expert's judgement in the defense sector. The results of the analysis in the preparation of the RMA Index are expected to become a reference, comparison, and recommendation in designing strategic policy plans in order to increase the capability of national defense in the future.

Keywords: Decision Making, Revolution Military Affairs (RMA), Analytical Hierarchy Process (AHP).

Introduction

National Defense of Indonesia was organized to preserve sovereignty of the state and integrity of territory of the Unitary State Republic of Indonesia, yet the safety from threats and disruption of the integrity of the nation and the state.[1] In terms of its philosophy, each country has a unique defense system for each nation. Sukarno to welcome the inauguration of the National Resilience Institute (Lemnhanas) on 20th May, 1965 confirms that in the composing defense, Indonesia should have knowledge and understanding, knowing all the elements of the homeland and the nation. By knowing well the homeland condition, the homeland geographic, the homeland constellation, the origin of the Indonesian people, nation's character, nation's economic nationally and nation's culture of Indonesia, then Indonesia can determine the system of national defense.[2]

[1] *Buku Putih Pertahanan Indonesia*, (Kementerian Pertahanan Republik Indonesia, 2015).

[2] Footage of the Speech of the First Presiden of Indonesia, Soekarno at the opening of Lemhannas RI, *Revitalisasi, Profil and Direktori Lemhannas RI,* 2007.

State defence system is universal, which involves the role of active citizens of the state, region, and a source of other power, and prepared it early by the government and held in total, integrated, focused and sustained. The strong defense system of states is not detached from the aspect of strategy, doctrine, posture power of the military, and how the mastery of a country military technology as back bone of its national defense industry development. In designing Indonesia's national defense capability that is strong, capable of creating a deterrence effect, as well as visionary according to the perspective of threats, challenges, and how war strategies are implemented to ensure victory, the military technology factor is increasingly taking on an important role.

For some countries developed, the use of military technology with the goal of war against forces armed conventionally has brought an idea that the revolution in military affairs (RMA) was underway. RMA is simply can be interpreted as a revolution or fundamental change which provide the foundation for a set of military capabilities.

The idea of revolution is the first time appointed by the Soviets in the 70- early with the title Military-Technical Revolution (MTR). In the 90s, America elaborated on the MTR concept, focusing not only on the technological revolution, but also on other military dimensions such as operational and organizational. Then, comes the conception RMA revolution which is implemented into the systems such as ISR (Intelligence, Surveillance, Reconnaissance), C4 (Command, Control, Communications, Computers and Systems Integration), IW (Information Warfare) and ILSS (Integrated Logistic Support System). Currently, this RMA has been adopted by other countries such as Australia, Singapore,[3] Canada, and even China is also adopting a conception of RMA mentioned.

The concept of RMA itself continues to develop, considering the awareness of the advanced technology application in the fields of information technology, sensors, telecommunications and computing are the most important elements of a modern military. [4] The United States adopted that concept. William S. Cohen, secretary of defense of the USA confirmed that the RMA takes place when the power of the national military United States organize themselves to carry out the transformation strategy, doctrine, training, education, adjustment of the structure of the organization, equipment war, system operation, up to tactics in order to achieve the level of military forces which determine through the new ways of fundamental change.

This Cohen's belief is set off from the reality of how the development of new technology in the military world can encourage the mission achievement of United States military. With the promising application of new technology would be able to encourage the birth of a new weapon system, or an operational concept that allows a variety of new missions can be carried out. Simple Example is the application of global positioning system (GPS) technology to provide navigation for a precision military weapon.[5]

RMA itself has three elements. First, Precision Strike. The concept is first time applied in the use of bombs were guided by technology laser (laser-guided bombs) in Vietnam. Guidance systems to improve the precision attack aspects are continuously being developed. Technology that brings together the data intelligence, communications, data processing, command system and control is required for the achievement of the attack with the level of precision that is increasingly high. That Progress makes a precision striket as a

[3] Joshua Ho and Manjeet S. Pardesi in *IDSS Commentaries*, "Singapore's Security Challenges: How the RMA Fit in?" (RSIS Comentaries No. 28:2004). Singapore RMA nature is RMA-Lite, yet the change is quite substantive, i.e. IKC2 – *Integrated Knowledge Based Command-Control*.

[4] Matthew Morthorpe, "The Revolution in Military Affairs (RMA): The United States, Russian and Chinese Views" in *The Journal of Social, Political and Economic Studies*, Summer 2005, p. 137.

[5] *Ibid*., Wiliam S. Cohen, Secretary of Defense, *Annual Report to the President and the Congress*, Department of Defense, United States of America, (USGPO: Washington, D.C., 1999), p. 86

crucial factor in modern war. Second, the concept of information technology in war. The use of information technology allows for collecting, processing, and use of information that is so much to be processed in a time that is so fast. The impact is a decision making process that are closer to real time, can be taken against the threat of the enemy, and also can be planned again and direct decisions be taken faster. Third, the ability to master maneuvers. The concept is a collaboration of attack precision and guide information for a war in which the detailed information on the enemy with an attack of precision can be applied at weaker enemy point and the results is a form of domination in the battlefield.[6]

By taking lessons from the United States, Russia and Singapore, the implementation of RMA will be followed by changes in strategy and doctrine, or vice versa, strategy and doctrine become the basis for implementing RMA. Note that influence of RMA which is present as an incentive for the development of technology for the benefit of the military such, has led to changes in the war paradigm, changes in the fundamental military technology, the posture of national defense, and also affects the organization, training system, and the military strategic theory development and depiction of war that will come in the future.

Indonesia which since the beginning, basing the unique defense philosophy of Indonesia, is so influenced by the geographical condition as archipelagic country, as well as the condition of different people's values, philosophy, culture, has formed a specific point of view about the concept of defense and security. One of them appears on the motto: Indonesia loves peace, but loves freedom more. Therefore, Indonesia defense policy is not designed to build the strength of military for the sake of expansive war interest. The strength of the military is required to protect the entire nation and all over the spilled blood of Indonesia, as well as to actively participate in order to preserve the world order based on perpetual peace and social justice.

With the power of the military as such a main component of Indonesia defense, various things strategically related to the RMA application needs to be considered. It is considering rapid progress in the field of science and technology, and also consider the form of war and threats in the future. In connection with that case, based on various factors located that describes the application of the conception of the RMA, the study is reviewing the aspects of RMA index that covers doctrine, strategy, organization, and technology.

With this RMA, then the needs to identify all four factors mentioned, will take part in determining the Indonesia defense. By understanding the scale of strategic priority to the RMA needs in Indonesia, then the things related to the urgency of the revolution of defense such as strengthening the deterrence effect, interoperability, interconnectivity in a position alongside other countries, through the use of technology that is appropriate for the interests of the military can be done. For example, in the conception of Integrated Net-Centric Warfare in which surveillance, command, control, and use of arms, integrated in a single network connectivity and data communications, making the strategic decision making process becomes faster and more accurate.

Research using Analytical Hierarchy Process (AHP) method is intended to evaluate and analyze the weight factor or criteria that affects the RMA index in context with the affairs of the Republic of Indonesia military. Further, the results of this research will be used to compile RMA Index Indonesia and can be a reference in designing the target of defense capabilities enhancement in the future, especially the significant changes in 4 dimensions of strategic military affairs: Doctrine, Strategy, Organization and Technology.

RESEARCH OBJECTIVE

By seeing the significance of the defense program progress in countries who have been applying the RMA, a research of its importance is needed for a defense policy in Indonesia. In connection with it, proposed the

[6] *Ibid*., Glenn C. Buchan, "The Impact of the Revolution in Military Affairs on Developing States Military Capability", p. 12.

RMA index that includes several factors important that are doctrine, strategy, organization, and technology. All four components that through the method of AHP is determined as criteria, then find as well the sub-criteria based on contextualization of strategic driven factors within the dimensions of Indonesia defense which are justified by expert judgment.

Thus, essentially, the purpose of this study aims to get better understanding in what is Revolution in military affairs (RMA) actually, what are driving factors that support RMA in the context of the Indonesia defense policy. Furthermore, the research is trying to draw up a decision-making strategy with the basic criteria of RMA index that has been adapted to the character of the Indonesia defense by using Analyitc Hierarchy Process methods and then compare it with the implementation in other countries that have influence either in the regional area or global area. Along the side, research can be a benchmark further study due to preparation of the making of more comprehensive Indonesia RMA Index.

RMA Definition

Technology is the initial trigger of revolutionary motion changes in the military affairs. The phenomenon in the war field legitimize that the role of technology greatly affects the victory outcome. The United States's victory over Iraq in the gulf war whereby the might of technology shows the results of a war that exceed the victory expectations achieved with a minimum number of soldiers and victims as well as the time that short. This history reality shows that the RMA is working.

> United States Secretary of Defense, William S. Cohen explained that,
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> "A Revolution in Military Affairs (RMA) occurs when a nation's military seizes an opportunity to transform its strategy, military doctrine, training, education, organisation, equipment, operations, and tactics to achieve decisive military results in fundamentally new ways".[7]

As a concept, deep understanding is needed, some security research analysts use the term transformation to refer to RMA. Studies concerning the RMA itself is built on the theory and insight of history regarding innovation and diffusion of the military to examine how the RMA was underway. The terms " innovation " refers to the radical changes in the structure of the organization, the power resources allocation, doctrine and strategy.[8] Innovation also includes the adaptation process of institutions, war practices and includes socio-politics development.[9] The transformation RMA is more than just a modernization of technology, but it fundamentally has changed the doctrine, organizations and institutions. Required proficiency thoroughly to integrate the military system to the one complex network.[10]

Consequently, even though the technology is one of the key factors that give birth sophisticated weapon advanced with accurate precision and strong fighting power, Adamsky (2008) explains that the existence of smart weapons and technology have not created the RMA. Technological progress needs to be supported by

[7] In Colin S. Gray, *Strategy for Chaos, Revolution in Military Affairs and the Evidence of History*, (Portland: Frank Cass Publishing, 2002), "High Concept" p. 1.
[8] Emily O. Goldman and Thomas G. Mahnken (eds), *Information Revolution in Military Affairs in Asia*, (New York: Macmillan Palgrave, 2004), p. 5.
[9] Emily O. Goldman, *loc.cit*.
[10] Richard A. Bitzinger, "Come The Revolution, Transforming The Asia-Pacific's Militaries" in *Naval War College Review* (Autumn 2005, Vol. 58 no. 4).

a deep understanding of the operational and organizational consequences so that it can be described as RMA. [11]

This understanding of the RMA conception is also explained by Krepinevich (2007). It is said that the RMA appears at the moment whereby the new technology just applied significantly to the number system of the military that is combined with the concept of operations that is innovative and organizational that is adaptive which alter the character and conduct of conflict fundamentaly. [12] The definition of RMA by Krepinevich and Adamsky are what is going to be used next to explain the implementation of RMA in a change of set military capabilities in which the revolution is not just mere use of technology but also fundamental changes in aspects of others such as doctrine and organization in accordance with the technology changes. In the Indonesia conception known by the term Krida Yudha Revolution (Revolusi Krida Yudha) who become modern jargon of weaponry and the transformation of Indonesia defense.

DRIVING FACTOR AND IMPLEMETATION OF RMA

Implementation of RMA in a country driven by several driving factors. According to Goldman (2004), this revolution in military affairs was driven by 4 main driving factors: (1) Security. (2) Political Economic. (3) Technology. (4) Institutional.[13]

The security factor becomes the driving force for the emergence of a competitive logic in the security dilemma conditions in the geopolitical perspective of regional countries. The military tends to imitate the military developments of other countries, even from distant countries. This factor is also related to the sphere of influence and the reasons for alliance abligation to equalize interoperability with other alliance member countries. Inside, a factor of political economic and technological pressures not only focuses on the military or community defense of the national, but also other parties such civil commercial sectors, institutions of education, as well as companies and organizations that play a role important in the knowledge development and new application for the sake of competitive advantage in a global economy.

The institutional factor has an important role. Even if the military detects threats and rationally interested to think effective strategy to secure the country, the institutions will still consider the benefits to the organization's mission. Innovations that risk limiting autonomy, absorbing large amounts of resources will tend to be opposed. RMA will be accepted if truly bring change, benefit compared to the cost that is incurred on the application.[14] Thus, RMA can not be separated from the context of politics. RMA will be success when successfully decoded and assigned to the political purpose.[15] Implementation of the RMA can run smoothly if there is support from policy holders, namely the government and the DPR (the People's Representative Council) who are responsible for defense policy, while the military is responsible for formulating operational strategies and defense tactics. [16]

[11] Dima P. Adamsky, "Through the Looking Glass, the Soviet – Military Technical Revolution and the American Revolution in Military Affairs" in *the Journal of Strategic Studies, Vol. 31 No. 2*. Hal 257-294, April 2008.
[12] Andrew P. Krepinevich, The State of the Art in Global Defence Industry: Implications for Revolution in Military Affairs (RSIS, 2007).
[13] *Op.cit*., See Emily O. Goldman, p. 5
[14] Michael E. O'Hanlon, The Science of War, Defense Budgeting, Military Technology, Logistics and Combat Outcomes (Princeton: Princeton Unversity, 2009)
[15] Colin S. Gray, *Strategy for Chaos, Revolution in Military Affairs and the Evidence of History* (Portland, Frank Cass Publishing, 2002). Example: in Napoleon era, World War I and nuclear RMA era. All had political positions at the time.
[16] Kusnanto Anggoro, "Keamanan Nasional, Pertahanan Negara and Ketertiban Umum" as Peper for the VII National Law Development Seminar, 2003

Michael Raska (2001) describes the stages of implementing RMA running linearly on: (1) Path: emulations, adaptation, innovation. (2) Patterns: speculation, experimentation, implementation. (3) Magnitude: exploration, modernization, transformation.[17]

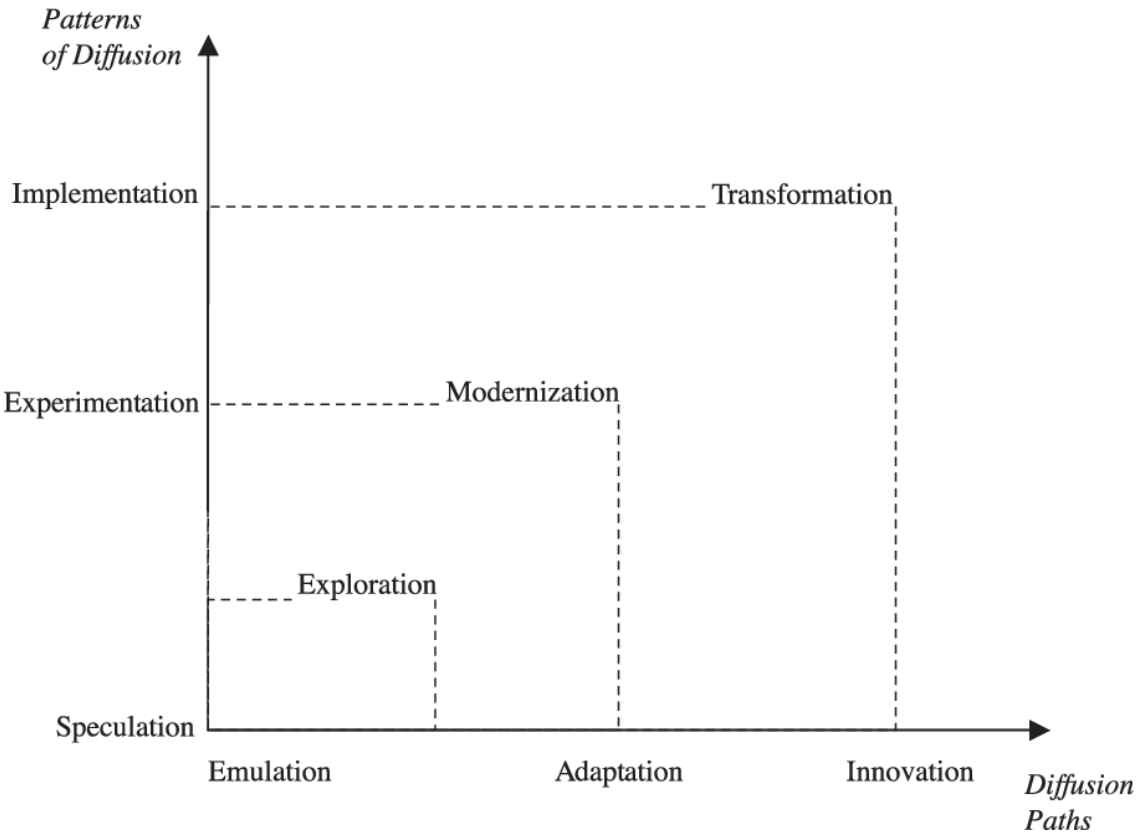


Figure 1. Trajectory concept of RMA Implementation

The first stage, the pattern originated from speculation in vigilance against any potential threat defense. In the same time, the road that is taken is by emulation, see also the defense of other countries. As an initial stage, this process enters the exploration level.

The second stage, the speculation pattern that develops will give rise to the experiment, a " war laboratory ". At this stage, military leaders from the elements of the armed forces can hold a strategic consensus to adopt, adapt or improve operational concepts related to combat tactics, structures, weapons systems and new technologies. Scale level is linear sign in a stage of modernization.

The final stage, an adaptation from time to time will bring the organization at the level of innovation. Innovations are referred to in the context of the RMA means that changes significantly in the dimensions of fundamentals such as doctrine, strategy, organization, and technology.[18] The magnitude at this level is already up to the stage of transformation with novelty point of view that could be seen from a number of indicators such as the revision of the doctrine to accommodate the new way of war, strengthening the source of power support, new strategic transformation, innovative military units with a new power map, a new field training as well as sophisticated weapons systems.[19]

[17] *Op.cit*., Michael Raska, 2011.

[18] Theo Farrel, "Improving in War: Military Adaption and the Brithis in Helmand (2006-2009)" in *Journal of Strategic Studies 33, no. 4 (2010)* p. 567-594 and Stephen P. Rosen, "New Ways of War: Understanding Military Innovation", *International Security* 13 no. 1 (1988), p. 134. "If RMA Exploration until the change of doctrine were innovative, structural change, then it has been up to the limits of innovation.

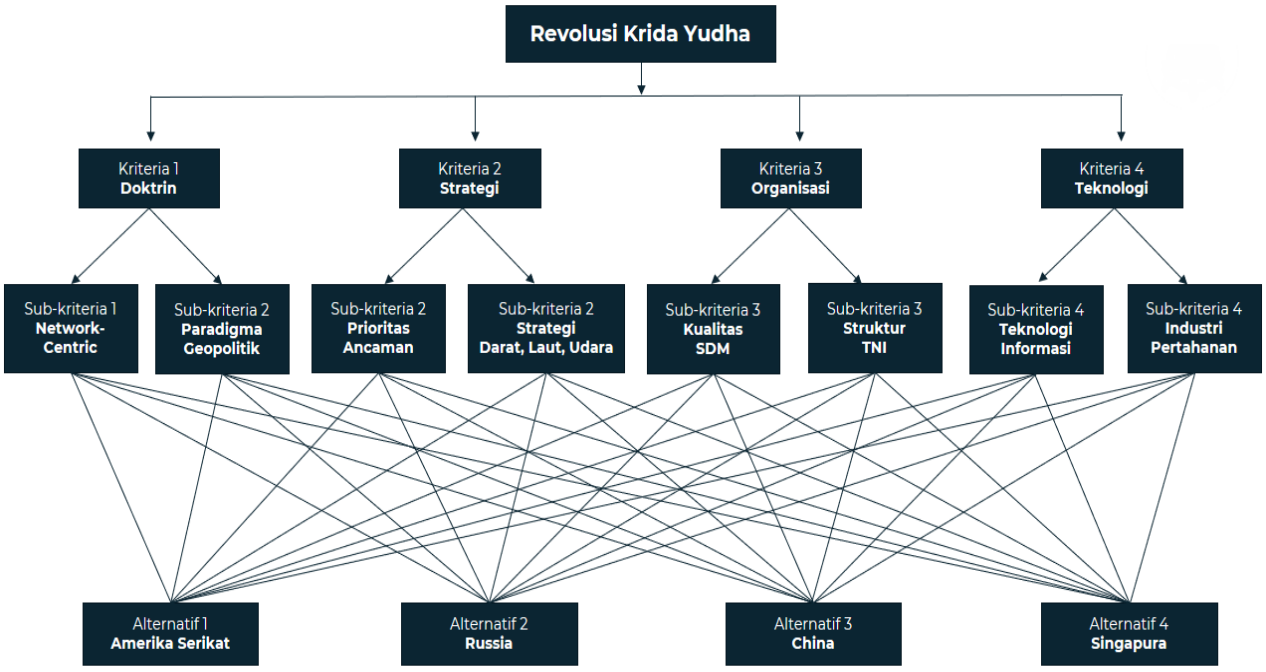
[19] Thomas Mahnken, "Uncovering Foreign Military Innovation" in *Journal of Strategic Studies* 22, no. 24. 1999, p. 373.

Seeing RMA implementation trajectory concept, concluded that RMA application in the defense system policy requires a strategic planning which sustained up to the level of adoption of the RMA at the optimal point in all dimensions.

AHP METHODOLOGY AND ORDERING RMA Indeks

AHP is a method, a framework of a decision making which was developed by a professor of mathematics at University of Pittsburgh, Thomas L. Saaty since the 1970s. This method is commonly used to solve complex issues through the hierachy analysis process. After determining the goal, units of criteria and sub-criteria that influence the goals can be arranged hierarchically. [20] The criteria selected from researcher's perception supported with expert's judgments. Comparison of each criterion will be calculated to produce a sequence of alternative decisions based on the weight of the priority (weight factor). Concisely, AHP method can be divided into three main parts: decomposition, comparative judgments and synthesis priority. With the method it is expected a set of alternatives that may indicate the priority of criteria. Method of AHP is used to dissect the RMA in its application to the character that is typical of the dimension of Indonesia defense. That is why, in Indonesia used term Revolution Krida Yudha to refer the uniqueness of the Revolution in Military Affairs in its implementation in Indonesia. Revolution was run in order to improve the defense capabilities that are set into criteria: Doctrine, Strategy, Organization and Technology. [21]

For each criterion, sub-criteria are derived to break down complexity as well as give relevance to the weighting mechanism. The Defense Doctrine embraces a network centric view and a geopolitical paradigm. Defense strategy include a response on priority threats and grand strategy in the dimension of land, sea and air armed forces. Defense organization consist of developing the quality of human resources and evaluating the structure of Indonesia armed forces. Meanwhile, technology, in particular, saw its main role in the revolution of defense equipment and information technology as well as technological improvements in the development of the national defense industry.



[20] Navneet Bhusnan and Kanwal Rai, "The Analytic Hierarchy Process" in *Strategic Decision Making: Applying the Analytic Hierarchy Process* (India: Springer, 2004), p. 23-30.
[21] Andi Widjajanto, "Revolusi Teknologi Militer And Kemandirian Industri Pertahanan Indonesia," in *Jurnal Pertahanan*, Mei 2012, Vol. 2 No. 2.

Figure 2. AHP hierarchy for compilation of Indonesia's RMA Index

The knot of the AHP method is a comparison between criteria factor in Revolution Krida Yudha with the best practice of RMA implementation in other strategic countries – have strong position either in regional level or global level. This benchmark could be a reference analysis in evaluating the RMA implementation, in particular the technology that became a game changer[22] in the defense system in Indonesia, it can even become a consideration for strategic bilateral or multi-lateral collaboration.

DISCUSSION

Indonesia RMA Index

The criteria in the Krida Yudha Revolution (RKY) consist of 4 main dimensions. The first is the dimension of doctrine change as a software that became the guidelines in the implementation of the staple tasks in the country defense.[23] In the State Defense Doctrine[24] stated that the war in the 21st century relying on the advantages of technology weaponry, the professionalism of soldiers and modern management. Hence, the preparation of the doctrine necessary to adjust the development of strategic RMA so that the power resource allocation of can be harnessed into a force defense. [25]

One of one of the three areas the main in the transformation of the doctrine is the integration (jointness) in the planning and implementation of the resilience of military. [26] Transformation in the implementation of the doctrine is, in this context, RMA relies on C4ISR technology (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance) which in general are in a system that is usual called Network centric warfare.[27] Doctrinal changes are also influenced by the Indonesia geopolitical paradigm[28] in its position both in the regional as well as global which means view of the existence of state defense may affect the priority doctrine as a whole.

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[22] Shel Leanne. Leadership the Barack Obama Way: Make Change Happen. (New York: McGrawHill. 2010). P. 183. Make technology your friend. Obamas's view that technology is a game changer. "if you're not the best at a key task, outsource – and outsource to the very best".

[23] Doktrin Tridek, Keputusan Panglima TNI Nomor Kep/2/I/2007, Mabes TNI, 2007. The TNI doctrine as a tool software is a guideline military in carrying out the task of the principal and its role as a means of defense of the country, derived from the experience of history, values the value of the intrinsic struggle of the nation and theories ranging from the nature conceptional up with that is operationally implementable, state geographic regions, as well as considering the perception of leadership on the escalation of threats, development of technology and changes in the environment ideally the underlying patterns of thought, patterns of attitudes and patterns of follow-on coaching abilities and the use of TNI force.

[24] Buku *Doktrin Pertahanan Negara*, Kementerian Pertahanan 2007. P. 81. The doctrine of national defense is the basic doctrine that underlies all the main and operational doctrines. This doctrine is stipulated by the Minister of Defense Regulation No: Per/23/M/XII/2007.

[25] Ibid., P. 83.

[26] Evan A. Laksamana, "From Reformasi Militer Menuju Transformasi Pertahanan: Tantangan and Prospek ke Depan" in *Jurnal Indonesian Review RSK and Media*, Vol. 1, Agustus 2010. "Defense Transformation" become the logic answer: fundamental change in doctrine, personnel, organization, training and education, logistic, and role which support by changes in technology. Three main policies area can be identified: (1) jointness in planning and implementing military defense. (2) improving management, personnel quality and compensation, and (3) overhauling the acquisition, research and use of defense technology system.

[27] The doctrine military concept that translate the advantages of information – information technology – as excellence competitive through a network of computers that is stronger than he forces that spread in geographical and informed by good unifies surveillance, command, control and use of weapons in a network, cross-linked by communication and data interfaces.

[28] Makmur Supriyanto, *Tentang Ilmu Pertahanan* (Jakarta: Yayasan Pustaka Obor, 2014). P. 78. Gepolitics is a science that studied the relationship role of elements of earth with politics outside the country who run a country. Geopolitics can influence the direction and strategy of the country to conduct relations with other countries.

The fundamental position of the state defense doctrine demands the development of a national defense strategy. The strategy of defense is important because it relates directly to the "existence and sovereignty of a country" which is the national interest are absolut.[29] Three basic substance of the defense include: goals that want to be achieved (ends), the source of power is used (means), as well as how to achieve the objectives (ways).[30] For that, the dimensions are required careful observations of on going strategic environment development with all priority potential threats within. The development of global security condition needed the integrated grand strategy in the dimension of Land- Sea-Air defense.

Changes in military affairs that focus on effectiveness and technology-based certainly require organizational restructuring in all dimensions of the Indonesia armed forces.[31] The units of the military that is oriented on the RMA will make move more agile, the velocity, high technology, synchronization, precision, etc.[32] It is in this connection that changes in the structure of the Indonesia armed forces is are important. Organization is also reinforced by improvement of the quality of the man power resource. In this case, overhaul of the education system and soldiers-officers training should be a policy that non-negotiable. Without the overhaul of the training system that became the cornerstone of norms and intellectual of military personal, changes in organizational and political will be in vain.[33] Improving the quality of human resources is also supporting innovation that developed research and development area.

In the context of RMA, the technological dimension is a necessity. Technology is the main motor driving revolution in the defense system. this criteria, in particular want raised about the technology of information in the system of defense. It is of course related to network centric warfare where cohesion in the forces that spread in geographically connected in a cross-network and well informed. This information technology can be extended to the realm of cyber defense to anticipate cyber warfare.[34] Another aspect that can not be separated from the technological dimension is certainly related to defense equipment, the defense industry. Innovation of technology in defense industry is never be optimal since only rely on other countries. Thus, it is necessary to invest in defense industry research and development. This stepping stone can be started with the transfer knowledge from countries that have high technology in their defense sector.[35]

In this study analysis, conducted expert judgment by some experts that represent academics, analysts, experts defense and legislative. After doing the calculation and weighting using AHP Calculation Tool, obtained the results as follows:

[29] Ibid., P. 241.

[30] *Strategi Pertahanan Negara* (Departemen Pertahanan Republik Indonesia, 2007) p. 11.

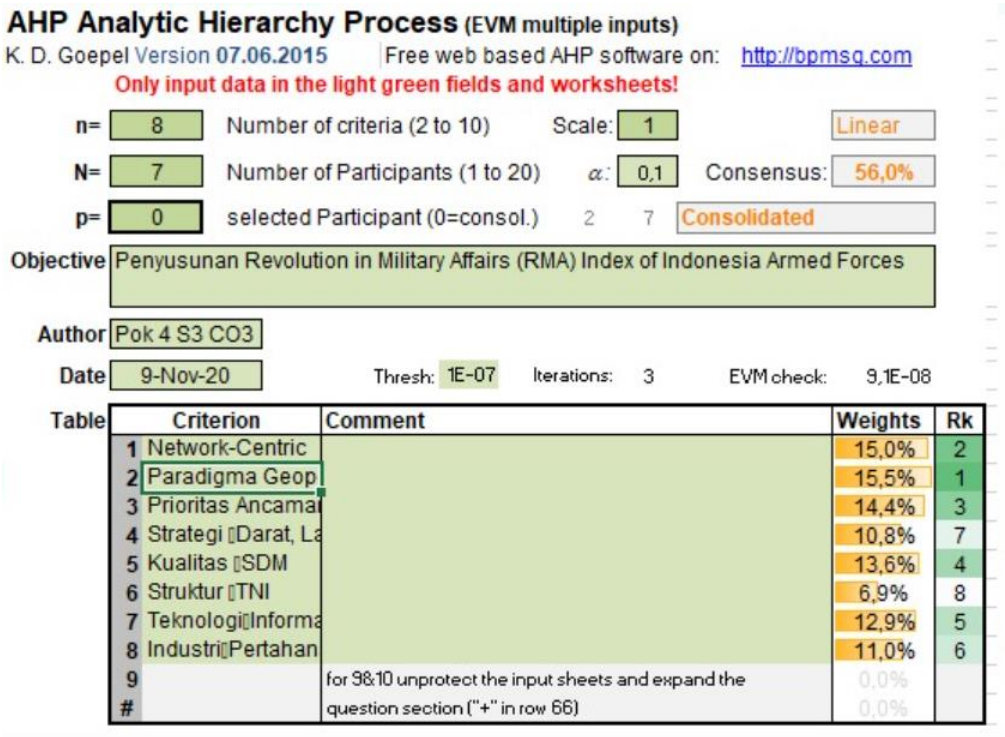
[31] Buku Putih Pertahanan RI, op.cit., p. 120.

[32] Michael Raska, 2009, p. 3.

[33] Evan A. Laksmana, "Going Beyond Cash, Guns, and Ballots," *The Straits Times*, 10 May 2008

[34] Bagus Artiadi Soewardi, "Perlunya Pembangunan Sistem Pertahanan Siber (*Cyber Defense*) yang tangguh bagi Indonesia". War in the wolrd of cyber is a war that is already using a network of computers and the internet, or the realm of cyber (cyber space) in the form of strategy of defense or attack systems information opponent. https://www.kemhan.go.id/pothan/wp-content/uploads/migrasi/admin/Cyber%20Defence.pdf.

[35] Agenda Riset Nasional 2010-2014 (Lampiran II Keputusan Menristek Nomor 193/M/Kp/IV/2010). Hal 108-110. Research fields of defense include: Technology supporting of power motion, the technology of power combat, technology provision soldier, technology support equipment specifically as a tool of intelligence, and technology supporing the independence of the other related to technology defense and security nationwide.



AHP Analytic Hierarchy Process (EVM multiple inputs)

K. D. Goepel Version 07.06.2015 Free web based AHP software on: http://bpmsg.com

Only input data in the light green fields and worksheets!

n= 8 Number of criteria (2 to 10) Scale: 1 Linear

N= 7 Number of Participants (1 to 20) α: 0,1 Consensus: 56,0%

p= 0 selected Participant (0=consol.) 2 7 Consolidated

Objective: Penyusunan Revolution in Military Affairs (RMA) Index of Indonesia Armed Forces

Author: Pok 4 S3 CO3

Date: 9-Nov-20 Thresh: 1E-07 Iterations: 3 EVM check: 9,1E-08

Table

	Criterion	Comment	Weights	Rk
1	Network-Centric		15,0%	2
2	Paradigma Geop		15,5%	1
3	Prioritas Ancamai		14,4%	3
4	Strategi Darat, La		10,8%	7
5	Kualitas SDM		13,6%	4
6	Struktur TNI		6,9%	8
7	Teknologi Informa		12,9%	5
8	Industri Pertahan		11,0%	6
9		for 9&10 unprotect the input sheets and expand the	0,0%	
#		question section ("+" in row 66)	0,0%	

Figure 3. RMA Index Calculation using AHP

Based on the weight-factor calculation using AHP method, concluded that sub-criteria paradigm of geopolitics (in Doctrine dimension) has the highest score of the other eight criteria. It is demonstrated that the paradigm of geopolitics could be considered as the most urgent issue in the preparation of the defense system including the RMA index factors, followed in sequence is the sub-criteria of Network-Centric warfare, potential priority threats, developing quality of human resources, utilization of information technology and so on.

Interesting to observe that the weight of the highest sub-criteria that are on the order of the first and the second that is the paradigm of geopolitics and network-centric both are the sub-criteria of doctrine dimension, while priority threat to be in the scope of strategy dimension. Therefore, the urgency and effectiveness of the RMA implementation firstly require changes to the fundamental of the defense doctrine. Aftewards, the existing doctrine should be revealed in the strategy to respond to the priority threats from the strategic environment in the future.

BEST PRACTICE

The development of technology and revolution in the military affairs that is applied by some countries, each has its own focus and character, in which tailored to the national interest as well as an existing source of power. Thus, it is important to look at the practical implementation of the RMA that exist in other countries in order to obtain a reference or standard that can be used as an attainment target so that Indonesia can take part in the contribution of “balance of power” between the state actors. The four country selected are United States of America and Russia as global state superpower, then China as one of the strong state actor in Asia and Singapore, neighboring countries on the regional area that already implement the RMA and have adequate influence in the region.

Implementation of RMA in the United States began in the year 1990 by the Ministry of Defense US. In the year 1998, the congress of the United States requested the Minister of Defense to establish the Defense Science Board Task Force to check and manage the preparation of the military transformation. In 2001, the

Office of Force Transformation was formed.[36] Historically, at least it takes time over 11 years to set up and prepared RMA policies within the defense system of the country. RMA Implementation is bringing change significantly starting from the creation of war laboratory and designing experiments and doing game simulation of war. One of the results of the RMA application is network centric warfare and elements of precision that is continuously developed in weaponry which can even provide the precise data, the needs of navigation in extreme positition, the target geolocation and characterization of targets.[37]

The application of RMA in Russia has a different conception. The Soviet Union at the end of the 1980s, through Marshal Nikolai Orgarkov had created the term of Military Technological Revolution (MTR) when convinced that fundamental change that occur in the military field will be able to increase the potential of conventional weapons for at least ten times as much.[38] At first, Russian anticipated between 2000 and 2010, or 2015, the deployment of directed energy weapons, earth penetrating weapons and advanced robotics. The techonogical trends has reprioritized quality over quantity in future military development.[39] But in its development, Russian military views outer space as a potential theatre of military action. Thus, Russia is emphazising on technological development in outer space as a strategic future defense sphere.

In Russian point of view, the outer space will be a determination that shortly associated with the operation in order to control the earth. With this conception, the deployment of troops in the large number no longer necessary, and replaced with a system of weaponry that is all controlled from a distance away with the weapons yet more precise.[40] Therefore, the outer space will be a sphere which show the military power, whereby the entire design of the operation military carried out a position in outer space which is adjacent to the earth. Some military operation can be planned: the operation to destroy the enemy's strategic weapons; operations to destroy enemy satellites, or protect Russian satellites; operation defeat the enemy in orbit space and the various goals are important and strategic; and the operation of the attacks the military straight out of the room space also possible.[41]

China has shown an interest in the RMA, General Mi Zhenyu opened the discussion related to respect this, since the year 1988, in a book entitled Chinese National Defense Concept. In the year 1996, China formed a center of research strategically to evoke the concept of the innovative military.[42] In 1998, at the PLA (People's Liberation Army) seminar at the National Defense University, an RMA concept was agreed upon which was composed of 5 revolutions : military officer thinking, military technology, military equipment, strategic theory

[36] Mark D. Mandeles, *Military Transformation Past and Present, Historical Lesson for 21st Century*, (Connecticut: Praeger Security International, 2007), p. 3-4.

[37] Glen C. Buchan, "The Impact of the Revolution in Military Affairs on Developing States" as quoted in Matthew Mowthorpe, "The Revolution in Military Affairs (RMA): The United States, Russian and Chinese Views" in *The Journal of Social, Political and Economic Studies*; Summer 2005; 30; 2; ABI/INFORM Global. P. 145. *The United States concern: "The most feasible of the elements of the RMA open to a developing military capability is that of precision strike weapons…. Elements of the RMA, such as a crude GPS fixes could reduce the need for extreme position in navigation, target geolocation and target characterization.*

[38] *Ibid.* p. 146 as quoted in from Robert R. Tomes, "Revolution in Military Affiairs – A History", Military Review, September – October 2000, 101.

[39] *Loc.cit*., as quoted in from Mary C. Fitzgerald, "The Soviet Military and the New 'Technological Operation' in the Gulf" Naval War College Review, Autumn, 1991, 18.

[40] *Op.cit*. See Mary C. Fitzgerald, "The Soviet Military and the New 'Technological Operation' in the Gulf," in *Naval War College Review, Autumn*, 1991. P. 18.

[41] *Ibid.,* p. 21.

[42] *Ibid*., Hal 264; 288. As quoted in from Michael Pillsbury, *China Debates the Future Security Environment*, (Washington DC: National Defense University, 2000).

and power structure.[43] The commitment to implementation in China is shown by the formation of the General Equipment Department (GED) under the Central Military Commission (CMC) which functions as a research and development of high techonology weapons. China also gave emphasis main priority in the area of military technology including the outer space in which is very strategic in addition to supporting the information technology and advanced weaponry. China also wants to reduce the gap between the technology capabilities by the United States and other NATO nations member.[44]

Singapore is the only country in Southeast Asia that implements RMA. Starting in year 2003 by forming Forces Military Generation Three (third generation force) were prepared in order to anticipate the environmental security of the new result of technology development. Defense conception of Singapore see that the information technology is critical, and very possibly decisive in the future conflict. Singapore formed the Integrated Knowledge-based Command and Control (IKC2) also the Future System Directorate and the Center for Military Experimentation (SCME).[45] This doctrine concept emphasizes the acquisition, development, technology integration in the command and control of ISR (Intelligence, Surveillance, Reconaisance), as well as integrated precision weapons. RMA area which also developed is advanced electronic equipments, communications, warfare electronics, sensors, and unmanned vehicle.[46] Within its geographic limitations, Singapore has a strong orientation in the advancement of defense technology. This is shown by the increase in research and development budget to obtain high technology through collaboration with local and international partners.[47]

Based on the RMA calculation using the AHP method, it can be concluded that the Krida Yudha Revolution is quite close to the Singapore's RMA implementation. Singapore made an effective and fundamental change in defense doctrine that departed from geopolitical paradigm with geographic limitations, and integrated military functions with information technology in a network centric pattern.

CONCLUSION

Revolution in military affairs is not just a trend to show strength in matters of defense but an answer on the complexity of the strategic environmental changes to maintain the sovereignty and existence of the state defense in its position both in the regional and global. The results of the weighted calculation of the criteria for the main dimensions of the Krida Yudha Revolution show that 3 priority aspects that can be underlined are the Geopolitical paradigm, network-centric warfare and priority of threats.

Assessment from the expert (expert judgment) put a criterion geopolitics paradigm with the weight of the highest in the preparation of RMA index. Geopolitics which is a way to analyze whereby the state related one

[43] *Ibid*., p. 149. As quoted in from You Ji, "The Revolution in Military Affairs and the Evolution of China's Strategic Thinking", *Contemporary Southeast Asia*, Desember 1999, 349. *RMA is composed of five revolutions: the military thinking of officers, military technology, military equipment, strategic theory and force structure*.

[44] Ibid. P. 152. Cina claims, "link air and space forces together, under the strategic principle that the one who controls outer space can control the Earth, super powers and military giants are expanding their strength in outer space and the function of air force.

[45] Joshua Ho and Manjeet Pardesi, "Singapore's Security Challenges: How Does the RAM Fits in?" in *RSIS Commentaries*, no. 028 (Singapore: Nanyang Technological University, 2004) Even Tim Huxley catagorize Singapore RMA as RMA-*Lite*, substance shown through 3 labs under SCME: The Command Post of the Future Laboratory, Battle Laboratory and C4I Laboratory.

[46] Richard A. Bitzinger, "Defense Transformation in the Asia Pasific, Implication for Regional Militaries" in *Asia-Pasific Center for Security Studies*, Volume 3 – Number 7, Oktober 2004. P. 3.

[47] Tim Huxley, "Singapore and the Revolution in Military Affairs" in Emily Goldman and Thomas Mahnken, *Information Revolution in Military Affairs in Asia*, (New York: Palgrave Macmillan), p. 185-208.

each other to form groups of interest that is coherent in the world that is increasingly global and worldwide.[48] The geopolitics paradigm can change the doctrine of defense fundamentally in relation with the existence and state defense sovereignty of.

Another aspect in the doctrine of defense that can be highlighted as the priority is network centric warfare that involves the integration (jointness) to be able to provide the data information field that is growing rapidly and accurately in order to take strategic decisions in battlefield with the information technology as support.

Priority of threats itself needs to define a strategy for the future. Indonesia defines threats to the three forms: military threats, non-military and hybrid. The most likely, potential military threats at this time come from the north. It is the South China sea conflict also the Indonesia-Malaysia's border especially in the Ambalat region. While potential threats from the south coming from the border with Australia. While the threat of non military is caused by the impact of the globalization era when the boundaries between countries increasingly bias that threatens all aspects of the joint life of the nation, both ideological, political, economic and social culture.

Implementation of RMA in the Indonesia defense system is not merely for the sake of strengthening the competence of tradisional armed forces, i.e war (war making capabilities), but also can create a margin or provide value added for the Indonesia's position in geopolitics perspective. Increased in deterrence effect also expected able to reinforce the existence of the sovereignty of the state, to counterbalance the strength of both in a regional and global competitively. Furthermore, can be cultivated strengthening in the economics field of defense who able to give contribution to the National economy through defense industry.

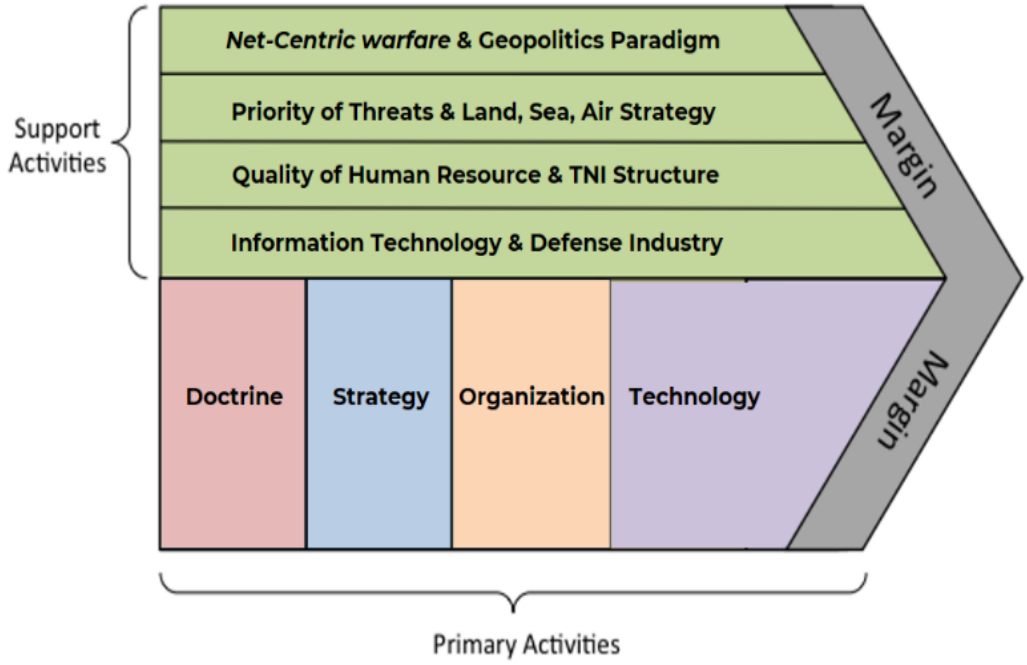


Figure 4: The Krida Yudha Revolution in Michael Porter's Value Chain Chart

Defense road map is required with a future outlook that accommodates the sustainable revolution, warfare model analysis and the future potential threat ahead. Thus, the defense strategy can be arranged as grand strategy in the land, sea and air dimension. Sea power ability and air power must be increased in order to be able to become a power hitter primary (first offensive capability) which supported sector of land as a defense capability. Therefore, the dimensions of the military operations character in defense doctrine are complete,

[48] Purnomo Yusgiantoro and Juniawan Priyono. *Geopolitik, Geostrategi, Geoekonomi*. Bogor: Unhan Press. 2017. Hal 21-22.

both offensive, defensive and deterrence. [49] An outward looking from geopolitical paradigm is also important in responding threats in a complex strategic environment.

RECOMMENDATION

Based on the urgency and the development of strategic environment, takes the advanced study, in particular related to the RMA index or Krida Yudha Revolution with unique characteristics of the typical Indonesia defense. A solid RMA index which is formed can be used to evaluate or re-arrange long-medium-short term strategic planning policy short which is in line with the regulations that have been made previously. [50]

As a strategic decision and a continuous revolution, a special committee is needed[51] which consists of the experts and involve other elements such as technocrats and scientists. The Committee is tasked to formulate application of the Krida Yudha Revolution, to plan strategically in long term defense policy, as well as opening the opportunities of collaboration with other countries in order to technology transfer and strengthen innovation of defense industry. The committee perform the functions of evaluation and monitoring at every motion of developments related to the RMA. Thus, expected that Krida Yudha Revolution can be a reinforcement of military capabilities according nation defense character which strategically can be an access to take part in keeping the peace and order of the world.

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[49] Barry R. Posen, The Source of Military Doctrine: France, Britain and Germany Between the World Wars, (Thaca-New York: Cornell University Press, 1984) p. 34.

[50] Minister of Defense Regulation No. 15 in 2009: Regarding the development of defense technology and industry. The idea of RMA is also already be a discussion in the study at the Nasional Resilience Institute. (2) (2) Presidential Regulation No. 41 in 2010: About Policies General Defense of State from 2010 to 2014 which directs the MEF (Minimum Essential Force) TNI phase I. Tahap II 2015-2019, Tahap III 2020-2024, tahap IV 2024-2029. (3) Presidential Regulation No. 42 in 2010: Establishment fo committee on Policy defense industry to revitalize the defense industry that realized had the strategic role in organizing the defense.

[51] Similar to as The Committee Policy Defense Industry (KKIP: Komite Kebijakan Industri Pertahanan) which once formd by the Minister of Defense Purnomo Yusgiantoro on year 1998 to turn over the defense industry which had failed due to the economic crisis at the same time encourage compliance with minimum standards of military strength. http://nasional.kompas.com/read/2010/04/16/21580988/Pemerintah.Bentuk.KKIP.

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