

The Survey of Thailand's Military Logistics Key Performance Indicators

S.Parapob. *Senior Colonel*, N. Suthikarnnarunai, *Member, IAENG*, P.Buranaprapa

Abstract — To conduct military operations, the logistics mission is considerably significant at strategic, operational or tactical levels and covers large areas of accountability. Logistics therefore is the key element towards every level of achievement. The main objective of military logistics is supporting combat forces to be ready for efficient operation as needed, and continuation to support during operation and safety from the obstacle of enemy. To reach military mission, it is necessary to systematically possess the planning process of logistics with distinct operation, resulting in unity for interoperability among military units. Accordingly, to help combat force units reach a success and achieve victory, a tool to measure or evaluate operation and objective achievement is required. Such an effective tool is called key performance indicators. In the past, there was no one studying this issue in Thailand due to military security reason. However, this study determines to use the key performance indicators to support military operation with an aim to further benefit military logistics development in terms of efficiency, advances and modernization.

Index Terms—Key Performance Indicators, Logistics Key Performance Index, Logistics Management, Military Logistics

I. INTRODUCTION

Logistics originated from Greek language, means “Arts of calculation”. From the past until the present, military logistics and victory or defeat in wars have depended on the strength and weakness of logistics potentials [1]. The meaning of international logistics management defined by the Council of Logistics Management (CLM) is “The process of planning, operation and controlling efficiency and effectiveness of the flow, storing materials, inventories in the process of ready-made goods and information related from the starting point to operating point with an aim to be in accordance with consumers”[2].

Military logistics was first recognized since World War II and the Persian Gulf in the aspect of distributing and storing military equipment and keeping personnel in order with efficiency and effectiveness. Military logistics was

Manuscript received Aug 16, 2009. This work was partially supported by University of the Thai Chamber of Commerce, Thailand.

Senior Colonel Supamanat Parapob has been in military service for over 20 years and now is a student of Ph.D Program in Logistics, Faculty of Engineering, University of the Thai Chamber of commerce, THAILAND. (phone: (+66)851341111, fax: (+66)26918542, e-mail: supamanat@hotmail.com).

N. Suthikarnnarunai is the director of Ph.D. program in Logistics, University of the Thai Chamber of Commerce, Thailand and is currently IAENG member. (e-mail: nanthi_sut@utcc.ac.th, ssjnsj@yahoo.com).

P.Buranaprapa is currently a lecturer in Logistics Department, School of Engineering, University of the Thai Chamber of Commerce, THAILAND.

therefore at that time a key factor for the US forces' victory. Here are some interesting military logistics:

-“Academic field and military operation concerning procurement, transportation, acquisition, equipment maintenance and personnel medical treatment as well as facilities, other services and other related matters”[3].

-“The integration of transportation, procurement and storing in the depots, maintenance, purchase and automation into one function, resulting in the confidence in not placing more importance to other details than sub-optimization in order to achieve the overall objective or strategy, specific objectives or obligation”[4].

- “Logistics”, a military vocabulary, means “Art of the armed forces movement and supplies of food and equipment to the armed forces” [5].

The logistics doctrine of the Royal Thai Armed Forces (RTARF) was originated from the United States Naval Force as indicated in Naval Doctrine Publication (NDP)4 and Naval Logistics [6]. The doctrine consists of principles and guidelines on logistics, logistics planning and information support as well as logistics operations of the US Armed Forces. The RTARF has adhered to the doctrine up to the present.

The military logistics is a mission to be in line with distinct principles and guidelines of operations. The logistics helps support combat force units with efficiency to reach its objectives: need, response, simplicity, flexibility, economy, sufficiency, continuity and safety. Concerning the military logistics principles, it is unnecessary to accomplish all objectives but to count mainly on the priority of each situation as well as the influences on our planning development.

II. LITERATURE REVIEW

Currently, the operation of organizations is more complicated; the process of control and follow-up performs with difficulty. To settle the problem needs to apply the system of measuring or evaluating organizations. Regardless of the follow-up, controlling and evaluation, several problems can arise. The system therefore affects behaviors of administrators and personnel at different levels.

To deal with the problems, organizations have designed a means to develop supporting systems for evaluating performance and activities: indicators for performance; operational development and designing supporting programs for data collection, data processing and report the outcome to be utilized as a guideline for administrative planning and organization operation. Key Performance Index: KPI is the tool for measuring and evaluating, and process development and the performance outcomes. The

KPI affects the strategy, policy and vision of the organizations.

The KPI has its objective to point out status: identify its current status to stimulate self-development for successful operation. The KPI therefore has been utilized for strategic operation rather than normal activities for the annexation of strategic planning, policy deployment. According to the survey research, the KPI has been applied to different situations. There are differentiated three types of KPI – utilization indices, productivity indices, and effectiveness indices [7]. Those indices refer to a measurement of an input usage which expressed in term of ratio of actual input of resources to some normative value, transformational efficiency which takes the form of input – output ratios, and quality of process output which present as a ratio of the actual quality achieved to some norm, consecutively. There are also several ways to categorize KPIs, such as, quantitative/qualitative KPIs, or directional/actionable KPIs [8]. Balanced Scorecard is one example of the most successful KPI [9]. Velocity Management which is one version of the Six Sigma approach is another example of KPI to measure and improve the performance the customer service process and customer values [10].

The selection of logistical KPIs for the present study was tightly restricted in some respects – transportation [11], procurement [12], and trade logistics activities [13]. Cost and time are two crucial elements in logistics operations. Therefore, cost and time are main indicators to measure the performance of the logistics operations in every business [14]. Those indicators enhance all businesses the competitive advantages over the competitor. For procurement activity, three measurements – price (total product cost), delivery (performance to schedule), and quality (process variability and consistency) – are used to measure direct suppliers' performance [12] and value to the organization.

The Defense Logistics Agency (DLA) of the United States Department of Defense provides logistical support to America's Armed Forces, operating in peace and war, around the clock and around the world to make sure America's troops have the supplies and materials they need. DLA had several goals in mind. For example, it wanted to reduce costly inventories, while improving its military customers' access to supplies and equipment; work with suppliers to ensure better quality products; provide faster, more reliable customer service; and ultimately, lower overall supply chain costs [15]. However, in many ways military logistics are more similar to international humanitarian logistics than supply chains designed for the business sector [16], due to they must be both agile and flexible [17].

Ref. [18] describes how to apply fundamental logistic principles, functions, and elements to the troop operations. It also explains the use of resources of formal planning and logistic information support to attain the basic goal of operational force readiness. The principles of Logistics Doctrine are responsiveness, simplicity, flexibility, economy, attainability, sustainability, and survivability.

III. GLOBAL'S MILITARY KPI

Since World War II, logistics has become one of the

important areas in military education. Logistics has an influence on modern wars as shown in the following case studies: At the beginning of the WWII, 1942, the US troop was attacked, encircled and defeated due to encountering logistics problems. However, in 1944 the US troop was revived and could win the war in 1945. In the Persian Gulf War, logistics was a crucial factor for considering military operational plans and influenced the modern wars.

To consider national security and National Defense needs to pay attention to politics, economics and military simultaneously. The modern wars deal with the overall human conflicts and reality. It can also be said that the economic capability determines the combat forces to be deployed; whereas logistics capability determines combat operations. Accordingly, economics and logistics are the main factors of strategic determination.

According to the fact of modern military economy and the necessity to possess military troops for any situation confrontation, fundamental scrutiny on strategic and logistics policy are greatly significant. To determine policies and principles of national defense, it is not only placing importance on military but also civilian research projects from both public and private sectors.

Consequently, military logistics at global level has been developed and emphasized on how to apply the KPI to study the feasibility and implementation to establish the KPI of the three military services: Army, Navy and Air Force for the efficiency of each country's logistics.; for example, [19] has reported on logistics management for aircraft operations.

IV. THAILAND'S MILITARY KPI

Logistics is one of the duties of supporting combat units since it cover overall activities other than combat operations. In order to provide every support to achieve the operations goals, RTARF divides the levels of logistics into 3 levels as shown in Figure 3.

1) Logistics at strategic level: it is national logistics supporting and maintaining the readiness of operational forces for maintaining national interests and national strategic objectives.

2) Logistics at operational level: it is a minor level from strategic logistics supporting and maintaining the readiness of armed forces in order to support military strategic operations.

3) Logistics at tactical level: it is supporting the interior zone or the areas among special forces. It supports resources from operational units such as the movement or transporting of military supplies and personnel, etc.

Effective logistics is the art that is a good mixture of all levels of logistics in line with territory organization. It should start with the process of production until the products are released. However, each level of logistics requires good organization and training. Moreover, other combat units must also support the logistics. As a result, the logistics could operate consistently and finally lead to accomplishment.

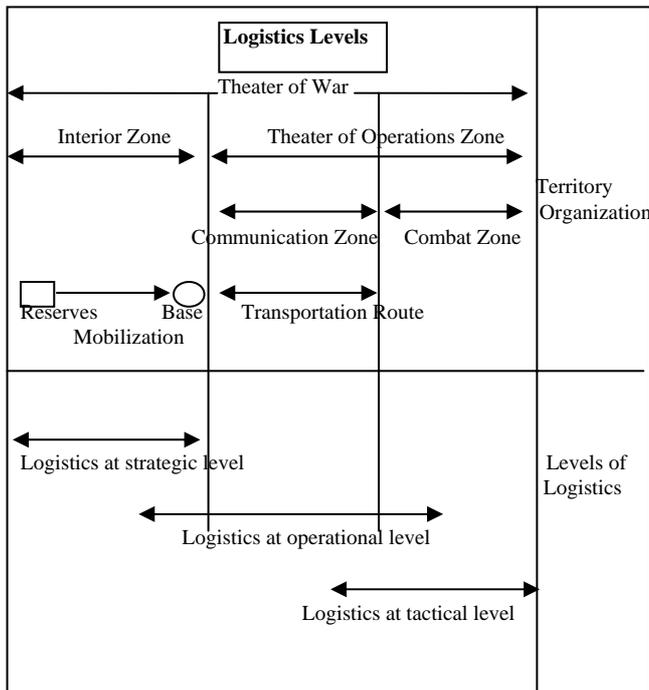


Figure 1: The Relations between Territory Organization and Levels of Logistics

Since logistics also provides sufficient, constant and timely supplies and services for combat readiness, therefore, RTARF has facilitated works and organized responsible units into six areas of functions – logistics, maintenance, transportation, bases, medical service, and personnel service and others. The main activities under the logistics unit are requirement planning, procurement, storage, and distribution. Other activities apart from mentioned may require and flexibly operate as the appropriate applications.

As of today, there is no evidence shown that there has been any application of international logistics key performance indicator to Thai military. However, at present the RTARF is adhered to the key performance indicators of governmental performance approval and operational evaluation.

The governmental performance approval therefore is now a single tool that the Thai government uses for public administration. This tool helps foster good governance especially accountability to answer questions or to provide various information to the public. The information contains governmental authorization and utilization with efficiency of the government budget spending in terms of value-of-money, efficiency, and quality. This evaluation must be in accordance with the Royal Decree on criteria and good governance approaches in 2003, article 12 and sub-article 8 on government performance evaluation. Since the fiscal year of 2004, government agencies and provinces have introduced pilot projects of strategic planning and set up the key indicators to evaluate performance for the annual governmental performance approval, leading to the system of performance evaluation process. Later the government generated the 4-year Governmental Administration Plan (2005-2008) under the policy communiqué of the cabinet towards the parliament. Each government agencies and province amended the content of former strategic plans (later renamed 4 – year Government Performance Plan) to be in line and related with strategic issues, strategic

objectives and tactics in Government Administration Plan. Figure 2 represents the transferring process of downward strategic levels.

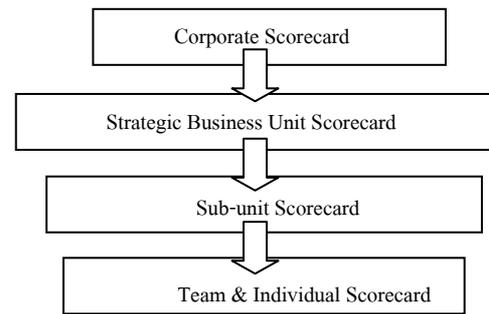


Figure 2: Measuring and Evaluating Levels

The measuring and evaluating performance outcome in the government performance approval under government performance plan of each agency was applied from balanced scorecard which is divided into 4 dimensions and determined weight for scores to take balance between internal drive of organizations and successful results affecting the public and the society. The committee of governmental system development has appointed the experts to negotiate with administrators of agencies relating to indicators and objective value to be appropriate with characteristics of each job and the facts of each ministry, department and provincial group/province.

The follow-up performance outcomes are divided into 2 times: every 6 month and 9 month including 12-month performance evaluation. Each government agency and province does Self-Assessment Report: SAR and the central information of governmental agencies and private enterprise agencies concerned such as data of Growth Provincial Product of provinces, traveling, unemployment rate, border-trade value, together with public hearing so that the public could assess the service quality. Moreover, the cross-check system with the third assessors' mechanism was also initiated for correctness and reliability.

V. A COMPARISON OF GLOBAL'S MILITARY KPI AND THAILAND'S MILITARY KPI

The Global Military KPI has its international indicators and standard to measure efficiency and has been developed and utilized in almost every service both in Europe and the US. However, Thailand has still got constraints in security and strategic defense, and safety under the constitution and national interest. To access to the armed forces affairs is therefore an impossible mission. Since 2006, the RTARF has responded to government policies to be examined by conducting the government performance approval as a tool for modern government administration in order to assess effectiveness, value-of-money, efficiency, which is qualitative assessment. Therefore, the researcher has seen the opportunity to develop Thailand's military KPI in comparative with those of international standards in the future research. Those developed military logistics indicators will hopefully be applied to all logistics sections and services of RTARF logistics.

VI. CONCLUSION AND RECOMMENDATION

A qualitative survey is utilized in this paper to scrutinize the relevance between Thailand's military logistics and the key performance indicators. The result reveals that military logistics, especially in developing countries, cannot be easily accessed due to the restrictions of military information classification for national security. Consequently, some confidential information cannot be revealed to the public.

The result also indicates that the military operations appear to be success with the support of logistics activities. Therefore, a further study on how to develop the logistics KPIs for Thai military will be done in the future research. The researcher planned to develop those indices comply with the mathematical tools or modeling to verify the compatibility between military activities and assigned KPIs.

The researcher hopes that under the national budget constraints of the current economic situation, it is necessary for the government to cutback the budget of every Ministry including Ministry of Defense of which budget has not normally been cut. Accordingly, the application of the Key Performance Indicators: KPI to military logistics at every level could more beneficially and effectively contribute to the military administration. Furthermore, it can be a good model for other aspects of RTARF administration and can be more gradually disclosed to the public.

REFERENCES

- [1] Retrieved from <http://www.lgmclub.com>
- [2] The Council of Logistics Management, USA, 1992.
- [3] Retrieved from <http://www.Merriam-Webster.com/dictionary/logistics>.
- [4] Pagonis W., William P., Lieutenant General, "Gulf War Logistics Chief. US Army", 1991.
- [5] Martin Van Creveld., Israel military historian, "Supplying War: Logistics from Wallenstein to Patton"; 1997, 2nd edition, 2004.
- [6] Department of The Navy, Office of The Chief of Naval Operations, Washington, DC and Headquarters United State Corps Washington, DC, "Naval Doctrine Publication 4, Naval Logistics.",USA,1995
- [7] Caplice C, Sheffi Y., "A Review and Evaluation of Logistics Metrics. The International Journal of Logistics Management", 5 (2), 1994.
- [8] Magnus L, Bergstrom P, Anderson K., "The role of key performance indicators for corporate treasury". Journal of Treasury Management, 2007.
- [9] Kaplan R, Norton D., "The Balance Scorecard-Measures that Drive performance. The Harvard Business Review, 1996.
- [10] Dumond J., (2000). "Define-Measure-Improve: The Change Methodology that has propelled the Army's Successful Velocity Management Initiative". Retrieved December 5,2005,from <http://www.rand.org/publications/RB/RB3020/index.html>
- [11] Mc. Kinnon., A.C., "Measuring the Potential for Efficiency Improvement in the Food Supply Chain." Supply Chain Practice, 2,2, School of Management Heriot-Watt University EDINBURGH, UK November 1999.
- [12] Karen M., Fedele, C.P.M. "KPIs:Measuring Indirect Meterial Suppliers and Service Providers", C.P.M.:89th Annual International Supply Management Conference, April 2004.
- [13] Arvis J-F., Musta M-A., Panzer J., Ojala L. and Naula T., "Connecting to Compete, Trade Logistics in the Global Economy: The Logistics Performance Index and its Indicators.", The World Bank, 2007.
- [14] Miller S., "KPI logistics in the Supply Chain. Ezinearticle.com," 2008.
- [15] Shrader, Charles R., "U.S. Military Logistics", 1607-1991, A Research Guide, Greenwood Press, Westport, Ct., 1992.
- [16] Davidson, "Key Performance Indicators Humanitarian Logistics", 2002.
- [17] Edmonson, R.G., "Special Tactics: Disaster-relief Logistics Borrows from Military and Commercial Experience.", Journal of Commerce. September 19, 2005.
- [18] Washington, D. C.: Joint Chiefs of Staff", Joint Publication 4-0, Doctrine for Logistic Support of Joint Operations", .Naval Doctrine Publication 1, Naval Warfare, 1994.
- [19] Yoon K.B., Kim H.S., and Sohn S.Y., "An Air Force Logistics Management Index for elective aircraft operation", Republic of Korea, August 22, 2007.