

CHAPTER 1

INTRODUCTION

LOGISTICS

Definition

"Disciplined, unified and iterative approach to the management and technical activities necessary to (1) integrate support considerations into system and equipment design; (2) develop support requirement that are related consistently to readiness objectives, to design and to each other; (3) acquire the required support; and provide the required support during the operational phase at the minimum cost. (Blanchard, 1998)

Inherent within the context of this definition is the current requirement dealing with *design for supportability*. This relates to the degree to which a system can be supported, both in term of the built-in design characteristics of the prime mission-related components of the system and the characteristics of the overall maintenance and support infrastructure and its elements (e.g. supply support, test equipment and maintenance facilities). It pertains to such characteristics and standardizations, interchange ability, accessibility, diagnostics, functional packaging and compatibility among the various elements of support and between the elements of support and the prime-mission related elements of the system (Blanchard, 1998).

The civilian or commercial definition of logistics is similar to the military but not the same." *Logistics is that part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from the point of origin to the point of*

consumption in order to meet customers' requirements" (Colorado Technical University, 2003).

Alfred T Mahan, American Naval Strategist, first employed the term logistics in a formal sense in the late 19th century when he introduced the term to the United States (US) Navy. Logistics is a concept whose need is evident, yet it is so broad that it is not easily definable. Taken in its entirety, logistics is the mechanics of timely and sustained provision of materiel and effective management of maintenance and is therefore, a vital foundation of combat power (Mahan, 1840-1914). There is absolute truth in the above statement, as major war campaigns in the past could not have succeeded without good logistics support. History provides many examples of how logistics support has influenced the success or failure of military operations. Combat power and its readiness in this regards would require men and equipments such as weapons, ships and air crafts to be available or ready to be used in time of need. To achieve this, maintenance of these equipments to ensure its readiness and effectiveness is vital.

US Department of Defence and Joint Staff defined logistics as *The science of planning and carrying out the movement and maintenance of forces.* (Colorado Technical University, 2003). In its most comprehensive sense, those aspects of military operations which deal with:

- *design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of material*
- *movement, evacuation, and hospitalization of personnel*
- *acquisition or construction, maintenance, operation, and disposition of facilities*
- *acquisition or furnishing of services.*

This definition both highlights the movement and maintenance of forces and identifies a comprehensive systems approach to logistics.

Logistics in the Royal Malaysian Navy (RMN)

Day-to-day operations in the RMN require our forces to operate in both the open sea and along the littorals. Naval logistics is therefore essential to enable our ships to conduct operations wherever and whenever needed. It consists of providing support to the end user continuously - equipment, supplies, facilities, services, and trained manpower (Kamarulzaman, 2002). This includes the processes such as production, procurement, distribution, training and also maintenance.

The principles, functions, and elements of the logistic processes are fundamental to the mission of supporting operational readiness of the RMN Fleet, at mission-capable state in particular. Combined these fundamentals define the naval logistic process providing the proper products and right level of support to the ships. These interrelated fundamentals provide insights into the complexity and essential capabilities of naval logistics. The logistic principles of war are: responsiveness, simplicity, flexibility, economy, attainability, sustainability, and survivability. Being responsive means providing the right support at the right time and at the right place. This is the most important principle of logistics. Ensuring that adequate logistic resources are aligned to operational needs should be the focus of logistic planning (Kamarulzaman, 2002). Such planning requires clear guidance from the commander to his planners; also, it requires clarity in communication between operational commanders and those who are responsible for providing logistic support. The focus of this paper however will be on the end-users' perception on the effectiveness of the RMN logistics support system focusing on ships' mission readiness status with respect to maintenance and material supply.

RMN Strategic Plan

In recent years, systems has been increasing in complexity with the on-going introduction of new technologies, the industrial base has been changing and the availability of resources has been dwindling, the cost of acquiring new systems and maintaining and supporting the existing systems has been increasing, and the competition has been increasing worldwide. At the same time the requirements for logistics has been increasing at an alarming rate. Given the current economic dilemma of decreasing budgets with upward inflationary trends, there will be even less resources available to get things done. Thus, a more effective and efficient method for managing Royal Malaysian Navy (RMN) resources is required.

The life-span of a warship is normally 25-30 years, during which time the warship and its fitted equipment and systems are maintained regularly according to refit cycle. When half-life is reached, the warship undergoes equipment and systems upgrade known as mid-life refurbishment. In the course of this refurbishment, essential sensors, computer systems, weaponry and services are renewed as necessary to provide the warship the ability to continue meeting its designed roles. The cost of the regular maintenance and servicing required to ensure that the warship can function to its designed role and is operationally available through-out its life are known collectively as through-life costs (Mohd Anwar, 2002). *Pelan Perancangan Strategik TLDM (PPS TLDM)* is a document that lays out the RMN's master plan for service life extension programme of ships, their mid-life modernisation and also end of service life. This plan was promulgated in 1997 by the Chief of Navy. Since this plan has its effective time frame, a continuous review and promulgation of new plan is needed before the current plan expires. The new document should take into account of new asset and ILS considerations.

RMN Maritime Operations

RMN maritime operations demands a full range of operations in which the RMN may become involved. It could be extremely high intensity war-fighting at one extreme and essentially philanthropic humanitarian relief operation at the other. According to British Maritime Doctrine (1999) the broad range of operations can be broken down into distinct categories, each demanding a specific approach to the conduct of operations. There are three general categories into which the RMN operations are grouped namely military (offensive operations against enemy forces), constabulary (anti piracy and fishery protection) and benign (disaster relief). The application of level of operation to be engaged in particular operation may entail the use of force more than one of the three ways (military, constabulary or benign) simultaneously or consecutively. It is vitally important that the RMN maintains an appropriate level of operation capability in order that, should the need arise; the RMN can be brought into effective play in support of national interest. Operational capability means more than simply the ships, aircraft, their weapon systems and other equipment that exists in the inventory. There are five elements capability namely manpower, equipment, collective performance, deployability and sustainability. The maritime operational capability is combination of the ships and aircraft, the people who man them and the training that they undergo individuals and as members of operational units, in order that the RMN are able to meet the readiness states necessary to deploy and achieve and sustain the task given. The operational capability depends on the availability of an appropriate range of equipment for those tasks RMN required to perform. The ships, aircraft, weapon systems and sensors, need to be suitable mix, available in sufficient quality and endowed with reliability, given the conditions in which they are likely to be deployed.

BACKGROUND OF RESEARCH PROJECT

Research Focus

In the RMN, the Fleet Maintenance Depot (FMD) in Lumut is one of the Naval Logistics organisations that is responsible for the provision of maintenance support to the RMN Fleet. Maintenance management is the timely provision of servicing, maintenance and repairs necessary for the continued effective operation of equipment and systems fitted to RMN Fleet assets throughout their life cycles. The goal of this activity is to ensure timely provision of maintenance and repairs so that the RMN Fleet can achieve better than 70% Operational Availability. The RMN Logistic Performance Report for the year 2001 highlighted that the overall maintenance management to support the operational readiness of the RMN Fleet is unsatisfactory (Kamarulzaman, 2002). Fleet Supply Depot (FSD) also in Lumut is the organisation that is supposed to provide the effective and efficient supply of spares and equipment to the fleet. The FSD performance report for 2003 has shown improvement compared to the previous year (data is shown in Chapter 3). Utilising the primary data and comparing it with the secondary data, researchers attempt to establish that either awareness of respondents on the RMN logistic support system or the standard of the logistic support itself being low will result in the low customers' satisfaction.

Problem Statement

Mission readiness encompasses ships' availability to mobilise and perform their specific designed mission. 'Mission ready' status for a ship is vital for the Fleet Operations Commander (FOC). In simple words, a ship is the basic element of armada mission readiness. Depending on the class of the ships, their specific design and onboard equipment dictates their capability. The efficiency and effectiveness of the logistics support system in the RMN is the means that deliver the ends, the mission ready fleet.

SCOPE OF THE STUDY

Research Objectives

The general purpose of this study is to determine the perception of RMN fleet officers on the effectiveness of RMN logistics support concept in supporting and maintaining RMN fleet at the mission ready state. In defining the limits of this study, IPDA/UM identified the title of the study areas to be addressed. Based on the title given, a detail review has been made leading to the development of the following specific research objectives:

- a. To assess the effectiveness of the RMN logistic support system through the RMN fleet officers' perspective.
- b. To determine the RMN fleet officers' awareness of RMN logistics support system.
- c. To determine the needs of clients.
- d. To recommend changes to the RMN Logistics Support System.

Research Design

The research was conducted through a survey method, using questionnaire. Survey method is chosen because the data required is not available as such the research will be dependent on primary data. Other research methods such as experiment and observation are not suitable. Experiment is not suitable as the researcher is not finding the cause-and-effect, while observation is not feasible as the occurrences are not observable due to cognitive factors and it happens all the time. Commanding Officers, Engineering Officers and Supply Officers of each ship were selected as respondents. These

officers are considered the implementers of RMN policies onboard and appropriate to both represent the whole fleet population and provide professional feedback based on their respective responsibility onboard ships. Their inputs were gathered through questionnaires distributed through appropriate RMN authority to ensure quick and accurate responses. This method is the most efficient as the respondent self-administered the questionnaire. The collection of data was quick, accurate and relatively cheap.

The questionnaire consisted of 25 questions and two open ended questions to obtain feedback and recommendation related to:

- a. Respondent's work experience and knowledge.
- b. Respondents' awareness of procedures and facilities available within RMN logistics support system.
- c. Respondent's satisfaction and expectations.

The questionnaire is divided into four sections. A pilot questionnaire has been tested with representative of respondents for necessary adjustments especially on the technicalities of the questions, the required meaning and understanding and its suitability for respondents to provide their answers

The supporting data of the ships availability was retrieved from the authority to validate the fleet performance as a check-and-balance to observe the perception against the actual reported ship's performance as it is designed to support the RMN's technical and operational policy.

Sample Design

Respondents from RMN ships totalling 62 officers (20 percent of the fleet officer population) had provided data for this study. The study sample is non-random samplings focussed on Commanding Officers, Technical Officers and Supply Officers who are considered sufficient and appropriate to both represent the whole fleet population and provide professional feedback based on their respective responsibility onboard ships. Due to the ships' operational commitment, their selections were based on the first 30 ships available. In the case of ships without Commanding Officers, the acting Commanding Officers or the most senior executive branch officers were chosen as the respondents. For small ships, only the executive branch officers are borne and as such the commanding officers managed the ship in all respect and considered sufficient as a respondent representing the ship.

Data Gathering

The researchers distributed and collect questionnaires through appropriate RMN authority. Fleet Operation Command Headquarters (FOC) and Commander Naval Area 1 Headquarters had been used for this purpose.

Data Processing and Analysis

Standard editing and coding is utilised. Simple tabulation and cross-tabulations has been utilised to analyse the data.

Limitations of the Study

The RMN to some extent has limited control over the maintenance and logistic support of its ships as there are other agencies either up on the hierarchy such as the Ministry of Defence on policy, Ministry of Finance on the control over

the fund and the shipyards and the supplier that have control over the maintenance down time and lead time. The study will not focus on other agencies' contributions to the problem but rather just highlight them appropriately when applicable.

At the same time, some facts and figures being discussed are sensitive and detrimental to the RMN security. Every possible effort has been made to ensure that actual data are not used. Maximum effort will be made to represent them appropriately for the purpose of the study.