

# Exploring Malaysia Military Warehouse Practice

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**Abstract:** *The Department of Defense has a very large and complex distribution for its supply system. To store all their goods, they need to set up a very good and organized warehouse for every army unit from different places. The establishment of a Military warehouse is solely to support the military need which contradicting the commercial warehouse which profit is the motivation to maintain competitiveness. As such, there is limited innovation in this operation that leads to inaccurate data recording, loss items, and real-time management. This study aims to investigate the process of military warehouse management and identify the gap for the future improvement of military warehouse management. A framework has been developed to illustrate the model of efficient military warehouse management. A qualitative study was adopted using a focus-group interview to investigate the subject research. A focus group interview is appropriate due to the nature of the research that exploratory by nature. The study revealed that budget constraint has led to the lack of innovation that affects the efficiency of military warehouse management. A framework of military warehouse management was developed to provide an insight on internal and external forces that contribute to the new style of management in managing the military warehouses.*

**Index Terms:** *Supply Chain, Pharmaceutical Logistics, Pharmaceutical Industry.*

## I. INTRODUCTION

Military logistic is an important element in the implementation of military strategies that involve planning and implementing the movement and maintenance of troops in certain circumstances [9]. It also deals with the movement of goods, storage, and distribution just like other commercial warehouse operations. Unfortunately, just like the commercial warehouse, the military warehouse also faces a problem related to ongoing order error, wastage, inventory shrinkage, unnecessary stock count and many more. The objective of the military warehouse is to support the military operation needs which are different from the commercial warehouse objective that focuses on profitability as a motivation to stay competitiveness. The difference in operation objective has affected the way the military warehouse is managed.

Their limited information of the management military warehouses has motivated this study to explore the process in the military warehouse management and identify the factors that influence the management of the military warehouses.

## II. MILITARY LOGISTICS

### A. Overview of Military Logistic

The establishment of military logistic is specifically designed to support military activities. As such, military logistic poses some capability limitations as compared to the commercial logistics. Military logistics is designed to carry out military activities such as transportation, supply, storage, and distribution to support military requirements. It plays a crucial role during the war in transporting the equipment and military supply to the war zone. On the contrary, the role of military logistics is to ensure the continuous supply of the military need for military training or any relief operation during peacetime. In military logistic, there are two dominant functions which are focussing on the historical and operational [13]. The historical is more about the battle and the war while the operation is more specific on the operational study to come out with certain policies, suggestion or solutions on certain issues.

The revolutions in military affairs and provision have led to the implementation of the outsourcing process, whereby the transfer of assets and operation out of the military functions into the non-public sector, have resulted not only in technological advances but the improvement in military logistics role in the supply chain of military [6].

The interest of military Logistics is not to gain a profit from the operation, but they have to defend the public and the long-term security of a country. From a military logistics perspective, the distinction that separates the interests of the general public from the non-public sectors is being distinguished by their interest from the start. Military logistic have no interest to generate revenue as stated by [13] which is contradicting the commercial logistics that profit orientation.

Next, the way of the management also quite different whereby the military logistic must always prepared to support the military requirement at any time. Military logistics is a vital function during military operation which cannot be assigned and sustained by any other entity. Logistic activities conducted by the military are also seen as a result of the bridge between forces to strengthen their strategy in their national defense to accomplish their mission. Once more need to emphasize that military logistic is extremely vital in the national interest because of the protection and security of our country.

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Logistic activities in the military have various scope and task deviations. This is only the general review about what is military logistic is and also why military logistic is significant for our country. The good military logistic unit usually comes from a good basis of the management in every logistic activity.

### B. Scopes in Military Logistic

In military logistic, the military operation must deal with transportation, storage and distribution, maintenance, services and health, and medical support.

Warehousing (storing) is one of the functions in military logistic that crucial to support the military need [2]. The warehousing scope in the military logistics includes activities such as receiving, storing, packaging and distribution of need to various military units.

In terms of transportation, the movement of equipment and personnel is also supported by commercial logistic which will be transported by commercial railways, trucks, ships, barges, and airlines. The participation of commercial logistics in the military logistics operation is part of the modernization in the military to utilize a practical method such as outsourcing to improve the military operation [3]. Besides, a large number of military heavy equipment requires large logistical support which is only available in commercial logistics. In this study, the researcher will be focusing on the specific management in the military warehouse that handles all the supply and needs equipment for their use. So, the next point in the discussion will be focussing on the military warehouse.

### C. Military Warehouse

As stated by [2], the military warehouse is a support function that responsible for receiving, storing, selection and transportation for military requirements. Besides, there are also other activities like packaging, repairing the defence products and consolidating shipment. As for the warehouse operation, based on the business-related academic literature, managing the military logistics price (supply) and inventory especially remains needed. Indeed, inventory management represents a major expenditure among military departments and it continues to be a part of concern in the military warehouse management.

## III. ISSUE AND CHALLENGES IN A MILITARY WAREHOUSE

There are few issues face by the management of military warehouse which discussed in the following sub-heading:

### A. Availability of stocks in the warehouse

Buffer stock is a very critical issue and it was caused by several factors like distance (communication lines), destination (operation hub), demand and also time (expected time). The military needs to plan to store a large buffer stock to overcome the unforeseen contingencies that might happen at any time. Unlike commercial logistic, buffer stock is very not good for the business to operates [11].

### B. Visibility of data management

One way to attain the most impact in warehouse operation is to use modern data systems which capable to generate and

providing correct data in real-time is the most effective action [2]. The main issue in the current practice is the limitation of management approaches to bring innovation and automation in data management. The data usually need to be key in multiple time which consumes a lot of time and pressure to the staff. As an example, for a simple reporting purpose, the officer needs to access multiple databases to get the data [5] & [7]. Data structure alignment refers to the means information is organized and accessed in a storage device. It consists of three separate however connected issues: information alignment, organization padding, and packing. Data misalignment issues such as not consistent data recorded, an inaccuracy that causes a situation where it is difficult to trust and based on the data extracted. This issue usually arises when there is no systematic system being practiced in the warehouse. For example, they still using manual recording data, [5].

### C. Accuracy Planning and Forecasting of stocks

Difficulties in accessing and utilizing information will decrease the Army's ability to attain its mission in the fastest way. It is a necessity for the military to rethink its approach to improve logistics management. If any steps delay, it will cause a huge problem towards fulfilling the requirement because any action must be fast and effective in a military organization. Training is one of the important elements to overcome this problem. Training could be specified according to their major. For example, the logistic unit must be trained to be experienced in this area. A well-trained officer will contribute towards wise planning in decision making [6].

### D. Cost transparency

The military inventory management systems rely on four factors which are policies control on what quantity to order, holding cost, supply and demand, and procurement lead times. Oversupply in inventory level will lead to inadequate controls, and price control issues arise in the Department of Defense inventory management. By overcome these issues, the Department of Defense can avoid wasting cost. Deciding once and the way abundant to order directly affects the operational prices of the opposite supply functions. The decision making always important because of its needs someone that can make the right decision especially relating to demand and planning, stock-holding positions, forecasting, asset optimization, procurement and also financial control [4].

### E. Safety and Security

In terms of security, the adoption of the JIT approach is benefiting the military operation in terms of security and cost savings. These commercial advantages, not without applicability to their military counterparts, gained support within the military management as budgets and resources.

However, the use of automated computer systems and database software is vulnerable to cyber-attacks.



Many countries are already acutely aware of the risks to their computer systems from cyber-attacks from sources such as cyber. Terrorists, state-sponsored cyber units, and lone-wolf actors. Many of the same potential shortfalls in its military counterpart. In 2014 as stated by [1], one of the examples of malware dubbed "Zombie Zero" was introduced into the embedded software of barcode scanners to extract financial information and communicate with an external command and control server.

Besides, security in the warehouse is also one of the issues related to the lack of modern tools for fire monitoring, extinguishing systems and smoke detectors. At the warehouse, there must be fire equipment in every storage or warehouse [2].

#### F. Lack of trained staff

Lack of trained military officers also one of the challenges faced in managing the military warehouse. This is because they do not have experienced to handle the stock until the distribution process. There are so many steps that must be managed well along the chain of the operation in the warehouse. So, the military must assign someone that has experienced or knowledge to handle the military warehouse. When the leader officer is not being trained, it will affect the whole organization. The leader needs to manage the subordinates, in delegating work and also increase the effectiveness of the workplace operation. The training is very important because it can improve their skills in managing the warehouse operation even though the military warehouse does not cost-oriented. But it still needs to be managed well so that it will not be an oversupply or insufficient supply. With proper training, the inventory cost will be accurately controlled can save a lot of budget by supplying that only required [4].

### IV. METHODOLOGY

The focus of this study is on the military warehouse located at Kem Rascom Sibul, Sarawak. The qualitative analysis using focus group discussion was used in this study. The focus group interview method is appropriate to use in this study due to the limitation of information on the subject research. The respondent was selected from various functions in the military warehouse operation that includes logistics officer, packaging and distribution unit; a control unit; account unit, and receiving unit. These respondents have a wide knowledge of warehouse management and pose a different level of experience which enriches the quality of the discussion.

### V. FINDINGS AND DISCUSSION

#### A. Military warehouse management

From the study finding, military warehouse management in Malaysia can be categorized as a centralized organization whereby the decision making is made by the authorized officer in the top management that have high position and knowledge in the logistics field that similar with Bulgarian army as mentioned by [2] for better internal control.

A committee of a qualified officer that has knowledge in the logistic especially in warehouse management must be the leader in the organization in the military logistic unit for Bulgarian army which has the same definition of a leader as

Malaysia and United Nation. United Nations carries out functions through two principal staff officers. The first is the Chief of Administrative Services (CAS) who is responsible for personnel, finance, and procurement; and the second is the Chief of Service Delivery (CSD) who manages the logistics component of the similar warehouse organization structure in Malaysia that the leader had to monitor all job scope including the 66 financing part, then followed by the warehouse officer that only monitored the warehouse operation.

Military warehouse management also involves the inbound and outbound process, procurement process and also technology adoption. For the inbound and the outbound process of military warehouse management, Malaysia has the similarity concept of warehousing location in terms of the inbound process. It is a part of supply chain activities. In the Bulgarian army, they have two bases that store their supply which is RSB and CSB (Central supply Base, Regional supply Bases) as mentioned by [2] that same goes to military in Malaysia which have Central warehouse and Main warehouse. Besides, military Malaysia has units stores that a bit different compared to the Bulgarian army. For the outbound process, the process depends on how the standard management process of the countries and states. Different countries have different requirements for the outbound process. For the outbound process, Military Malaysia had adopted a few strategies like direct purchase from supplier and bidding for the main warehouse and tendering, bidding, direct purchase for the Central warehouse.

For the procurement process, there are a few strategies like outsourcing, just in time concept implementation, direct purchase, tendering and bidding. But the most common use by the organization is outsourcing is one of the important elements. Outsourcing strategies had been used by the military all around the world. Outsourcing is a process contracting out certain tasks to private companies by the military for example like cooking, cleaning to specialized ones. In Afghanistan, outsourcing is very challenging in the military especially with non-combat effort [6]. The same goes for military Malaysia, they also outsource to get supplies by direct purchase and bidding method. This similarity can reflect how the military logistic units work to maintain their performance.

For technology adoption, most countries had invested heavily in technology adoption in managing their warehouses. This is due to their priority that needs their countries to implement technology parallel with the 67 commercial warehouse-like RFID, scanner, automated warehouse system, barcoding system and many more. But in Malaysia, the investment is still lacking. For the current practice, they still use a manual recording system for the main warehouse except for the Central warehouse that has a coding system. The effectiveness of any technological exploitation and RFID in providing chain management is shown in some studies.

This implementation can reduce inventory losses, an increase in the potential of methods and increased accuracy of knowledge was the most widely used RFID technology mentioned by [8]. But, in Malaysia, they have a coding system for the central warehouse for their inventories which is cheaper than the RFID system. Malaysia military should benchmark the other country in terms of its technology advancement that moves very fast through time.

In terms of training, the Military logistics unit in Malaysia has eight (8) classes of warehousing related training that will be assigned based on ranking. Instead of knowledge, this training contributes towards the leadership and management skills of the personnel in the military logistic unit. Usually, the training will be held around three (3) to four (4) months. In contrast with the United Nations Military Logistics Unit, the exposure to the course or training is being taught by module according to specific missions. Such planning ensures a suitable logistics capability is employed in a cost-effective manner including their likely roles and tasks, permitting them to commence their planning and preparation [12]. That means they need to learn the whole of the logistic operations. In Malaysia also, all personnel learn about the whole operation of logistic. But, to be precise they make it specific according to the classes base on ranking. So the knowledge will be limited according to their rank.

### **B. The gap between military warehouse management**

From the finding, there are six (6) issues had been found in this study. There are costs, technology adoption, location and transportation, unexpected demand, shortage of manpower, and infrastructure. Among 68 the 6 issues, the most popular issues among military warehouse management are technology adoption, cost, and infrastructure. The major issue is a budget constraint that affects technology adoption and infrastructure. These issues are discussed below:

#### **i. Budget constraint**

From the finding, the military logistic unit also faced a barrier in terms of the budget constraints. The budget allocation will depend on the GDP of our countries that changes from year to year. This measure affects the military logistic unit including warehouse management which is lacking in technology adoption and having the old infrastructure. Without enough financial resources, the military logistic unit in Malaysia cannot implement technology adoption for their warehouses. Besides the infrastructure of the warehouse cannot be improved The interviewees realize that budget constraints also can affect the efficiency of warehouse management and it's become an issue that needs to face by them. The financial resources will help an organization to add value to its management thus make the management efficiency. In warehousing, they alert that real-time information is important and with the help of the system and manage by skilled workers the entire warehousing process becomes easier. Unfortunately, cost constraints caused the technology implementation in the military warehouse Malaysia had left behind. It coincides with some previous study written by [4], the DOD's inventory management systems rely on policy control. So that government budget contribution plays an important role in

any improvement related to the military logistic unit. This statement also mentioned by most interviewees which stressed that without enough capital technology adoption cannot be applied and the performance of military warehouse management will remain at the same stage without 69 any improvement. The correlation of the information can be seen opposite whereby most of the military warehouses in other countries had already implement advanced technology such as RFID, EDI due to enough budget contributions from their government. After conducting an interview session, the researcher finds out all of the interviewees are not implementing technology adoption in their operation activity because of budget constraints. They agree that technology adoption is important in an organization to avoid miscommunication and having real-time data information. After gathering all the information, all the respondents four companies are expressing the same opinion where budget also an issue for the military organizations to have good warehouse management. Statements below discussed more detail about the technology adoption in the Military warehouse.

#### **ii. Technology adoption**

One of the critical issues in military warehouse management is technology adoption. Most of the other countries, their army had implement advance technology for their warehouse. The emerging new technologies are creating strategic opportunities for the organizations to build competitive advantages in various functional areas of management including logistics and supply chain management. Most of the interviewees are stressed that information technology adoption is very important in warehouse management. It is one of the challenges faced by military Malaysia in managing real-time data for their organization. The researcher seems the similarity of opinion from previous studies and information gained through the interviews conducted. It can be concluded that technology adoption is very important to maintain the efficiency of warehouse management. Here, some of the citation from the previous studies 70 that prove that technology adoption is very important in warehousing efficiency. "The main issue is currently highlighted by the current army is the limitation of management approaches whereby the data usually need to be key in data multiple time which is logistician army will be facing time pressure" [5] in order directors to require the foremost applicable managerial decisions, generating and providing correct data in real-time is the most effective action [2] & [10]. The effectiveness of any technological exploitation and RFID in providing chain management is shown in some studies. This implementation can reduce inventory losses, an increase in the potential of methods and increased accuracy of knowledge was the most widely used RFID technology [8]. GCSS-Army system is an enterprise resource planning. The enterprise resource planning program is planning to increase the efficiency of every stage of supply chain management.



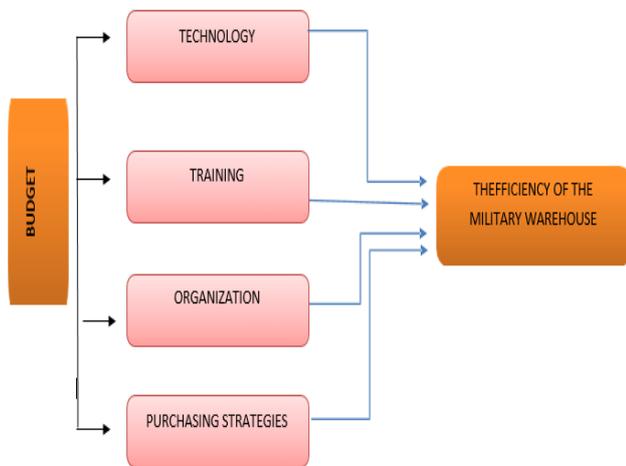
This system is expected to solve the issue in the warehouse, unit supply room and property operation in the military. Besides, it is also expected to avoid miscommunication because it can combine and integrate all the information from the different units.

**iii. Old infrastructure**

Malaysia's military is heavily relying on budget allocation from the government. So, they do not have any other sources for their use. Due to the insufficient budget allocation, facilities of the warehouse had been stunted for the improvement.

**C. A framework of the military warehouse management**

As discussed before, the management of military warehouses is mostly different in terms of working style, logistic activities, organization structure, procurement, technology adoption, and training. From the theoretical framework based on the previous study, technology adoption and cost are indeed the most important factors that give a big impact on the performance of the warehouse. Base on figure 1 below, it's confirmed that the four factors such as technology adoption, training, organization, and strategies are the factors that can affect the efficiency of the warehouse. But, among those factors, budget constraint is the main factor that influences all those factors. Diagram below shows how the budget constraint can influence the management of the warehouse;



**Fig. 1 Military warehouse framework**

Base on the findings, the researcher gets to know how military warehouse management overcome all the critical issues faced by Military warehouses have their style of management where can minimize the error in inventory management and warehousing activities control. As mentioned previously, the military is a centralized organization. So that it's become an advantage for them to have the authority power to control their manpower easily in any warehousing activities. Other rankings can easily follow all the instructions made by their leader without any objection. Aware of the importance of technology adoption, to have accurate data or information flow, all warehousing activities decision making must go through few stages before proceeding to the next stage, so it will directly involve the double-entry checking for the documentation and mistakes

can be avoided. According to information gained from the interview session, a skilled leader will help the organization to perform well in managing the warehouse. So, training plays an important role in managing the warehouse even without advanced technology adoption.

**VI. CONCLUSION**

This study constitutes and offers a theoretical framework that integrates with the efficiency of the military warehouse. This theoretical framework is divided into two categories which independent variable and dependent variable. The independent variable is the efficiency of the military warehouse. Where in the independent variables four factors affect is the efficiency of the military warehouse, which are technology adoption, training, strategies, and organization. For the dependent variable, the efficiency of the military warehouse is been selected based on the research problem statement, in which the inventory system in the study area is not efficient enough within the current system used. Managing stock is the main activity in warehousing either for the commercial or for military logistic. It will play a crucial role in minimizing any issue that can occur in the warehouse. Budget constraint is a new factor can affect the performance of the warehouse which is not mentioned by any previous study. This is because of the nature of the military that needs to rely heavily on the budget allocation from the government for their operation. So, indirectly the efficiency also needs to rely on government budget allocation. Besides, technology adoption is very important in any organization because it can reduce workloads interpreting real data information and reduce delays in any work, and of course, its increase in the efficiency of the warehouse. However, due to certain reasons, some of the locations are hard to adopt advanced technology due to cost and distance. Besides, training, organization style and strategies in management also factor that has the biggest contribution towards the efficiency of the warehouse that needs to look and study more to make some improvement. The four theoretical framework factors are enough to cover all the logistic activities involve in the warehouse and also the issues faced by military Malaysia in logistic, that affects the efficiency of warehouses. For example, the respondent had mentioned about their working style by having a rolling system and centralized organization, it is actually can be concluded under the organization factor that affects the warehouse management. From the theoretical framework, it can give an idea to the Malaysian army to improve their warehouse management with some new initiative or innovation. They can use the framework as a guideline for improving their warehouse performance.

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