

Strategizing Knowledge Management in the Malaysian Armed Forces: Towards Knowledge-Centric Organization

Ismail Manuri

Royal Malaysian Air Force, MALAYSIA
ismail.manuri@airforce.gov.my

&

Raja Abdullah Yaacob

Universiti Teknologi MARA, MALAYSIA
rary@salam.uitm.edu.my

Abstract: *Military knowledge management (KM) is about the processes and techniques used to swiftly transfer experience and provide a common understanding from an experienced soldier to an inexperienced soldier. As an integral part of the Malaysian Armed Forces (MAF) transformation to achieve Future Force, the KM strategy will play a valuable role in leveraging existing knowledge and converting new knowledge into action. A study on military officers of the MAF attitudes towards' KM applications was conducted to show the importance of KM in the military environment. Focus of the study is to examine the attitudes of MAF personnel toward KM key drivers, which include the knowledge creation, processes, applications, and technology. The findings of the study may be used as the basis to develop a KM implementation strategy in the MAF which should focussed on the tenet of people, process, and technology. The results of the study indicated that the KM key drivers that include knowledge creation, KM processes, KM application and technology were perceived as key elements in the military organization. In order to develop KM implementation strategy successfully, the MAF needs to focus on factors that include people, KM processes, and infostructure*

Keywords: *MAF, Military, Knowledge Management, Knowledge, Technology, Implementation*

INTRODUCTION

Today's soldiers need the ability to rapidly respond in an environment of growing complexity and uncertainty through accessing information, transfer of knowledge and win over the 21st century adversaries. Responding to such environment, the Malaysian Armed Forces (MAF) now needs thinking soldiers, who are innovative and creative to fight digital warfare, which present and future wars will be. The future direction of the MAF need a balanced and credible force guided by sound operational strategies and concepts, equipped with high-tech weapons and manned by competent professionals in all areas of management and operations.

With regards to the future trend, the MAF is envisaged to move from threat-based strategy to capability-based approach. The goal of this approach is to develop core capabilities in

order to meet multi-spectral challenges on several critical goals to focus efforts on protecting critical bases of operations, assuring and conducting effective information operations, providing persistent surveillance, and leveraging ICT. In anticipating future warfare, the MAF future development is projected towards Fourth Dimension MAF (4D MAF), which focuses on three features of Joint Force, Information Superiority, and Multi-Dimensional operational capabilities. In order to manage modern warfare, the MAF readiness strategic plan has acknowledged the importance of Knowledge Management (KM) system as one of its strategic objective.

Consequently, KM supports the creation, organization, application and transfer of knowledge to assist situational understanding and decision making. It is a structured approach to transfer soldier experiential knowledge in order to equip commanders and soldiers a major tactical advantage on the battlefield. The modern warfare relies profoundly on information from many sources that must be assessed and compiled for immediate use. The “information superiority”¹ becomes the determinant of the future war management and requires strategic planning in KM, assurance, exchanging and sharing of superior knowledge (Alberts, Garstka and Stein, 2000). To achieve information superiority, knowledge is seen to be the most essential strategic resource for capitalizing the conduct of battle space management. The awareness of managing knowledge effectively could be achieved through the application of KM. For most organizations without exception to the military like the MAF, the application of KM is regarded as inevitable (Ismail and Raja Abdullah, 2010).

In military context, the application of KM strategy was extensively applied by major military forces in the United States, Britain, Canada, Australia and some countries within this region like Japan, Korea, and Singapore. Browning (2002), remarked that, the KM strategy is the centre of the military’s information revolution, which becomes the enabler for mission operations, knowledge generation, information delivery and technology innovation. Military KM was identified as prime importance and plays a valuable role in leveraging existing knowledge and converting new knowledge into action through the KM cycle (McIntyre, Gauvin, and Waruszynski, 2003).

In order to identify problems that lead to this study, a situational analysis as a preliminary investigation was done. It was found that the MAF does not have any specific KM practices and applications. However, knowledge is available in the MAF organization and is found embedded in the form of doctrines, policies and procedures, operations and training manuals, information systems, work flow and databases. Besides, those elements of KM were presence in silos and not managed in concerted effort. The lack of KM practices and applications in the MAF were perceived as the lack of awareness, understanding and exposure about KM in organisational context among MAF personnel. Thus, this study the attempted to explore the relationships and influences between key drivers of KM implementation which is considered important for the MAF to strategize the KM implementation.

LITERATURE REVIEW

In relation to managing knowledge within organization, Raja Abdullah (2005) described that KM deals with both tacit and explicit knowledge in an organization, with regards to

knowledge creation, sharing, and how these activities promote learning and innovation. Knowledge assets within an organization is the capitalization of the members of the organization, collaborative work in terms of sharing and using information which marks the effective use and promotion of knowledge (Milam, 2001). The true process of creating new knowledge, takes place subsequently when the different pieces of knowledge are set in context, organized, linked to one another and compared to the individuals' previous experiences (Gauvin and Lecocq, 2004).

In a study on US Military, Bartczak (2002) identified the crucial elements that act as barriers to the KM innovation were the elements of managerial, resources, and environmental influences in the military. It was also suggested that, to implement KM there must be a continuous leadership guidance, support, reinforcement of KM systems, and technology support (Semmel, 2002). Linkage (2000), suggested that, the crucial step to strategize implementation of KM in military environment was the evaluation of personnel attitudes toward KM, identification of barriers to the implementation of KM strategy, and the education and exposure on KM practices in the organization.

As the transition continues, the evolution of KM has become the current organizational learning theme (Hackney R., et al., 2000), to which the knowing organization is prepared to sustain growth and development in a dynamic environment (Choo, 1998). By identifying salient alternatives, Wiig (1995) suggested methods for dealing with them and conducting activities to achieve the desired results. KM is then viewed as an increasingly important discipline that promotes the creation, sharing, and leveraging of the organizational knowledge (Fernandez et al. 2004). KM facilitates the creation and use of knowledge for increased innovation and value, could have a profound influence on the organizational excellence. Therefore, knowledge has become the key resource, for a nation's military strength as well as for its economic strength of any organization in the knowledge society (Drucker, 1994).

Knowledge and Knowledge Management

Knowledge is an actionable information in term of its relevance and available in the right place at the right time, in the right context, and in the right way so it becomes the key resource in intelligent decision making, forecasting, design, planning, diagnosis, analysis, evaluation, and intuitive judgment which, was formed in and shared between individual and collective minds (Tiwana, 2002). Knowledge is also regarded as at the highest level in a hierarchy with information at the middle level, and data to be at the lowest level (Fernandez et al., 2004). Knowledge could be stored in a manual or computer-based information system, which receive data as input and produces information as output. Without knowledge, an organization could not organize itself; it would be unable to maintain itself as a functioning enterprise (Davernport and Prusak, 2000). Figure 1, depicts how knowledge, data, and information relate to information systems, decisions, and events. It also shows how knowledge helps to convert data into information (Fernandez et al., 2004).

1 That degree of dominance in the information domain that permits the conduct of operations without effective opposition. The capability to collect, process, and disseminate and uninterrupted flow of information while exploiting or denying an adversary's ability to do the same (The RMAF Air Power Doctrine, 2002).

Figure 1: Relation of Data, Information, and Knowledge to Events

Source: Fernandez, Gonzalez, and Sabherwal (2004)

Based on those elaborations about knowledge, knowledge can be categorized into tacit and explicit.

Tacit knowledge is personal, context-specific knowledge that is difficult to formalize, record, or articulate and is stored in the head of people. It consists of various components, such as intuition, experience, ground truth, judgment, values, assumptions, beliefs, and intelligence (Fernandez et al. 2004). According to the Army, tacit knowledge is knowledge that people carry in their minds and is difficult to access and not easily shared. People are often not aware of this knowledge they possess and how valuable it can be to others. It is considered more valuable because it provides context for people, places, ideas, and experiences (AKM, 2008).

Explicit knowledge is that component of knowledge that can be codified and transmitted in a systematic and formal language, documents, databases, webs, e-mails, charts, etc (Fernandez et al., 2004). Similarly, the Army defines explicit knowledge as the knowledge that has been or can be articulated, codified, and stored in certain media. It can be readily transmitted to others. The most common forms of explicit knowledge are manuals, and documents, or other digital media (AKM, 2008).

In a practical sense, Wiig (1993) elaborated KM as a set of distinct and well defined approaches and processes to find and manage positive and negative critical knowledge functions in different kinds of operations, identify new products or strategies, augment human resource management, and other highly targeted objectives. While Young (2008) defined KM as the discipline of enabling individuals, teams and entire organizations to collectively and systematically capture, store, create, share and apply knowledge, to better achieve their objectives. However, Kidwell, Vander, and Johnson, (2000) holding a different view stated that KM is to make the right knowledge available to the right people at the right time. In simple perception, Barth (2002), perceived KM as the combination of cultural and technological processes of an organisation.

KM in Military

In the context of today's military modernization and organizational change efforts, the present is set off from the past by the current heavy reliance on knowledge resources and organizational learning (Proctor and Gubler, 1998). Since a broad range of knowledge potentially affects operations, the commander's information requirements may extend beyond purely military matters. Defining these requirements is an important aspect of KM (CAC, 2010). KM application within military environment requires knowledge processes that are robust and reliable within operational contexts and the knowledge creation and conversion processes must match the pace of the military operations. Elder (2008), in his article stated that KM is about the processes and techniques used to rapidly transfer experience and provide a common understanding from an experienced soldier to an inexperienced soldier. Accordingly, KM can support and improve organizational learning and foster an innovative environment, resulting in an increase in performance.

In military, KM was defined as a strategic approach to achieving defense objectives by

leveraging the value of collective knowledge through the processes of creating, gathering, organizing, sharing and transferring knowledge into action (McIntyre et. al., 2003). However, the Army defined KM as a discipline that promotes an integrated approach to identifying, retrieving, evaluating, and sharing an enterprise's tacit and explicit knowledge assets to meet mission objectives. Lambe (2003) testified that KM, intelligence applications, and decision-making skills have been at the forefront of military doctrine over the past decades. The development of KM in military has been accepted and used extensively for thousands of years, the military have been leaders in adopting and advancing KM practices as applied in the military intelligence.²

In today's modern military management, for example, the Army of U.S. military has launched their Army Knowledge Online (AKO, Figure 2) , which enables the Army personnel to gain quick online access to important Army information, news, education and training opportunities, as well as knowledge centres and e-mail. Integral to Army transformation, AKO crosses the warfighting, business, and intelligence mission areas to support the current and future force (Lord et al., 2010). For an effective KM implementation, the Army had produced the Army Knowledge Management (AKM) framework as the strategy to transform itself into a network centric, knowledge-based Force with KM methods and successfully applied them in its workplace (Santamaria, 2002).

While the Navy Knowledge Online (NKO, Figure 2), gives sailors instant access to all training and educational information related to their chosen occupational fields. KM portal assists in identifying career paths, milestones, and educational tools and opportunities, which provides greater operational efficiency and eliminates organizational redundancies (Walter, 2002).

Accordingly, the U.S. Air Force has developed the Air Force Knowledge Now (AFKN, Figure 2) with features include of customizable discussion forums for fostering worldwide communication among staff members, alert notifications to receive e-mail, notification regarding additions and changes to specific documents, forums and calendars, and links administration for providing access to relevant resources and items of interest.³ AFKN is a virtual workspace that connects people through knowledge sharing. AFKN provides an environment to identify, capture, and transfer knowledge inside of virtual communities.

² The product resulting from the collection, processing, integration, analysis, evaluation, and interpretation of available information. Information and knowledge about as adversary obtained through observation, investigation, analysis, or understanding (The RMAF Air Power Doctrine, 2002).

Figure 2: Example of AKO, NKO, and AFKN Web Portal

With regards to the MAF, the web portal which delivers the same functions as projected by the AKO, AFKN, and NKO was developed in order to support the needs of present and future information sharing. The followings are examples of MAF and the three services web portal that can be accessed by the MAF personnel as well as the public as shown in Figure 3.

Figure 3: Example of MAF and Three Services Web Portal

³ <http://www.afmc.wpafb.af.mil/HQ-AFMC/PA/index.htm>

In military context, the goals of KM are to support and share intellectual capital with no structural or technical barriers, and values good ideas, regardless of their source and collaborates and value collaboration as a means to mission success. Thus, KM in military is about connecting those who know with those who need to know, and leveraging that knowledge across the military organization and to contractors, non-governmental organizations, the other military services and coalition partners.

The objective of the principles is to connect those who know with those who need to know (know-why, know-what, know-who, and know-how) by leveraging knowledge transfers from one-to-many across the Global Army Enterprise (AKM, 2008). The principles are organized around the main tenets of KM: people/culture, process, and technology working together to facilitate knowledge sharing as shown in Figure 4.

Figure 4: Main Tenets of Knowledge Management

Source: Army Knowledge Management Principles, 2008

The AKM Principles could be applied to any military organization that will help preserve tacit and explicit knowledge and accelerate learning as units and personnel rotate in and out of organizations. The principles provide authoritative guidance to military commands and organizations developing or engaging in knowledge management efforts. By adhering to and applying the following principles, the military, as an enterprise, will accelerate individual, team, and organization learning to meet mission objectives (AKM, 2008). The three main tenets of AKM principle dimensions are explained as follows:

People/Culture

- o Train and educate KM leaders, managers, and champions.
- o Reward knowledge sharing and make KM career rewarding.
- o Establish a doctrine of collaboration.
- o Use every interaction whether face-to-face or virtual as an opportunity to acquire and share knowledge.
- o Prevent knowledge loss.

Process

- o Protect and secure information and knowledge assets.
- o Embed knowledge assets (links, podcasts, videos, documents, etc) in standard business processes and provide access to those who need to know.
- o Use standard business rules and processes across the organization.

Technology

- o Use standardized collaborative tools sets.
- o Use Open Architectures to permit access and searching across boundaries.
- o Use a robust search capability to access contextual knowledge and store content for discovery.

With this regards MAF needs to reaffirm that KM is the means to support the MAF’s Strategic Strategy for the 21st Century in transforming itself into a network-centric knowledge-based force. The best way to do this is for the MAF to develop the MAF KM strategy that lays out a vision to shape the entire MAF into a knowledge-based force for the next twenty or thirty years. With a common KM strategy, the MAF would direct its vision to be a credible force in line with MAF 4D to develop a plan to change the current cultural mindset of the personnel to meet its strategic goals. The MAF would affirm these newly developed KM processes through daily use, training and exercises. The strategy should be in tandem with ICT strategy, would tailor the IT resources appropriately to support the KM strategy.

METHODOLOGY

In this study 368 military officers of the MAF were selected based on 95% confidence level and 5% confidence interval for gathering information. Total samples were derived from the sample size table developed by Krejcie and Morgan (1970) and Cohen (1969). The sample size was then confirmed by using sample size calculator⁴ to determine sample size. The population divided according to the three services of the Army, Navy, and the Air Force based on stratified random sampling. The respondents involved in this study were the military officers with the equivalent rank of Lieutenant to Colonel. The study was conducted based on the conceptual framework as depicted in Figure 5.

⁴ Sample size calculator available at: <http://www.surveysystem.com/sscalc.htm>

Figure 5: Conceptual Framework

The questionnaire was designed in order to assess and investigate the attitude of MAF officers about KM in ICT environment. The questionnaire consists of fifty-two (52) items which is divided into Five Parts with five items Likert scale, 1: strongly disagree, 2: disagree, 3: uncertain, 4: agree, and 5: strongly agree. Descriptive statistics are used to describe the results.

FINDINGS AND DISCUSSIONS

Demographic Characteristics

The variables selected to describe the respondent’s background were the type of service (Army, Navy, and Air Force), rank (Lieutenant to Colonel equivalent), academic qualification (graduate: Diploma to PhD, and Others: represent highest secondary school achievement), and level of working experience (between <10 years, 10 to 19 years, and >20 years). The results are shown in Table 1,2,3 and 4.

Table 1: Frequency of Respondents by Type of Service

Type of Service	Frequency	Percent	Cumulative Percent
Army	218	60.1	60.1
Navy	67	18.5	78.5
Air Force	78	21.5	100.0

Total 363 100.0

Table 2: Frequency of Respondents by Rank

Rank	Frequency	Percent	Cumulative Percent
Lieutenant	63	17.3	17.3
Captain	144	39.7	57.0
Major	130	35.8	92.8
Lt Colonel	22	6.1	98.9
Colonel	4	1.1	100.0
Total	363	100.0	

Table 3: Frequency of Respondents by Academic Qualification

Qualification	Frequency	Percent	Cumulative Percent
PhD	1	.3	.3
Masters	33	9.1	9.4
Degree	86	23.7	33.1
Diploma	106	29.2	62.3
Others	137	37.7	100.0
Total	363	100.0	

Table 4: Frequency of Respondents by Level of Working Experience

Length of Service (years)	Frequency	Percent	Cumulative Percent
<10	116	32.0	32.0
10 to 19	163	44.9	76.9
>20	84	23.1	100.0
Total	363	100.0	

Hypotheses Testing Results

In order to derive the results, the hypothesis 1 was developed into four sub hypotheses. The summary of the hypotheses test results are presented in Table 5.

Table 5: Summary of Hypotheses Testing Results

ANOVA

Hypothesis 1

p
.312

.572
.996
.671
.002*
.648
.134
.495
.006*
.604
.004*
.422
.000*
.444
.426
.668

H
_{A1}

H_{A2}

H_{A3}

H_{A4}

H_{B1}

H_{B2}

H_{B3}

H_{B4}

H_{C1}

H_{C2}

H_{C3}

H_{C4}

H_{D1}

H_{D2}

H_{D3}

H_{D4}

F

1.167
.559
.004
.400
4.425
.621
1.772
.849
5.171
.505
5.555
.866

11.669
.813
.855
.404

A: Type of Service

B: Rank Structure

C: Academic Background

D: Working Experience

Hypothesis 1

Hypothesis 1 focused on the associations of people variable as a key driver of KM with the variables of process and technology for KM. As can be noticed in Table 5, the MAF officer's attitudes of the four variables (knowledge creation, KM processes, technology, and KM applications) are not significantly determined by the type of services. The results of ANOVA tests indicated that attitude of officers from the three services on knowledge creation are the identical. Nevertheless, based on further examination, the results demonstrated that, there were significant differences in officer's attitudes of knowledge creation which are based on individual rank (HB1), academic background (HC1), and working experience (HD1). Thus, respondent's backgrounds implicated significant influence on the creation of knowledge in the organisation.

Other variable that showed differences in officer's attitudes is the technology. The perceptions of technology are found to differ among the officers based on their academic background (HC3). The results indicated that officers who have higher academic qualification demonstrated better perceptions as compared to officers with lower academic qualifications. As shown in Table 5, the results also indicated the generalisability of officer's perception of KM processes, technology, and KM applications did not differ except to knowledge creation.

Hypothesis 2

Hypothesis 2 focused on the associations between technology driver and the process drivers for KM. The data presented in Table 6, which are the results of correlation test between technology and the three variables of KM, indicated a positive relationship with the knowledge creation (H2A) and KM processes (H2B) at $p < .05$. The results of this study showed that technology is an important driver that enables the KM processes and the creation of knowledge.

Table 6: Summary of Hypotheses Testing Results (Technology)

Correlations

Regression

Variables

Knowledge Creation
KM Process
KM Applications

p
.000
.000
.001

p
.000
.000
.000

R2
.295

r
.380(**)
.487(**)
.294(**)

H2A
H2B
H2C

Hypothesis Technology

Findings

Finding 1: Type of service has no influence towards knowledge creation, KM processes, KM applications and technology in the MAF. It was also deduced that the attitudes of officers from the three services do not vary significantly.

Finding 2: The rank structure has no influence towards KM processes, KM applications and technology in the MAF. It was also deduced that the attitudes of officers with different level of rank does not vary towards the three variables.

Finding 3: There is no statistical significant difference in attitudes toward KM processes and

KM applications by the officers with different academic background.

Finding 4: The level of working experience has no influence on the attitudes of KM processes, KM applications and technology.

Finding 5: There is a positive relationship between technology and the knowledge creation and KM processes.

RECOMMENDATIONS

Based on the findings of the study, it was found that the 'people' factor does not significantly influence the process of KM. However, the 'technology' factor was seen as important driver in KM processes. Thus, for the purpose of strategizing KM implementation in the MAF, it is highly recommended that the MAF to address the requirements that is based on a framework that includes the following:

- o **Infostructure:** The ICT (computers, software, architecture, security, communications, programs, and facilities) that required supporting the implementation framework.
- o **Change catalysts:** The policies, resources, management, culture, processes, and education that are required to optimize an adaptive organization and an organizational net-centric environment.

MAF KM Implementation

The MAF should also consider highly several factors that could encourage the successful implementation of KM strategies, as listed below:

- o Improve the infrastructure that must accommodate faster processing capabilities and Dissemination of KM needs.
- o Enhance the single web portal that can be easily accessible with net-centric processes and services.
- o Organize and structure the information that leads to knowledge through content management, metadata, and data hierarchies across the organization.
- o Improve the ability to generate knowledge in transfer and sharing of knowledge requires using techniques such as collaborative processes, virtual teams, and communities of practice.

CONCLUSION

KM is identified as a new area of management which is incorporated with ICT in managing new knowledge for a superior decision making and problem solving in fields of military operations, tactical needs, and development in the military core competence. This study attempted to examine the current situation of KM activities in the MAF through the study of officer's attitudes toward knowledge creation, KM processes, KM applications, and technology variables. The results obtained through the statistical analysis could contribute

to the feasibility of KM implementation in the MAF. One of the greatest benefits of this study is that, it identified the attitudes of the 'people' factor towards KM processes to strategize the implementation for MAF to be at competitive edge in line with its modernization. Finally, a general conclusion based on the findings obtained, indicated that the level of KM availability in the MAF needs greater consideration and awareness in order to implement the KM strategy successfully by the leaderships as well as all level of personnel.

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