Strategy Research Project

KNOWLEDGE MANAGEMENT: A MODEL TO ENHANCE COMBATANT COMMAND EFFECTIVENESS

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In today's volatile, uncertain, complex and ambiguous (VUCA) environment, it is essential that organizations share and exploit the knowledge contained within the organization. This is especially true for large, highly complex organizations such as combatant commands. An organization that creates a culture that encourages collaboration and knowledge sharing with formal knowledge management (KM) principles is more likely to achieve success in the operational environment. Adopting and applying the Army's 12 principles for KM will enable Combatant Commands to create a collaborative, learning organization that more effectively execute its mission.

This paper explores KM as a critical enabler for combatant commands using the Army's twelve principles for KM. Additionally, this paper explores deficiencies in the application of KM in current operations, focusing on intelligence/information sharing, situational awareness and knowledge codification. Finally, this paper provides recommendations on a KM model that Combatant Commands can leverage to execute effectively its warfighter mission.

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ABSTRACT

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KNOWLEDGE MANAGEMENT: A MODEL TO ENHANCE COMBATANT COMMAND EFFECTIVENESS

The environment that strategic leaders and warfighting organizations operate in is volatile, uncertain, complex and ambiguous (VUCA).[1] It is essential that in this environment warfighters share and exploit the knowledge contained within their organizations. This is even more critical for large, highly complex organizations such as joint forces and combatant commands. In full spectrum operations, the joint force's ability to adapt through innovation and act faster than the enemy often determines the success of that force in the operational environment. An organization that creates a culture that encourages collaboration and knowledge sharing with formal knowledge management principles is more likely to achieve success in full spectrum operations. Adopting and applying the Army's twelve principles for knowledge management will enable Combatant Commands to create a collaborative, learning organization that more effectively execute its warfighter mission.

This paper explores knowledge management as a critical enabler for combatant commands/joint forces using the Army's twelve principles for knowledge management while focusing on intelligence/information sharing, situational awareness and knowledge codification. Additionally, this paper explores deficiencies in the application of knowledge management in current warfighting operations. Finally, this paper provides recommendations on a knowledge management model that Combatant Commands can leverage to execute effectively its warfighter mission.

Learning Organizations

To explore fully knowledge management as a critical enabler at the combatant command level it is important to understand key concepts that relate to organizational

behavior, specifically the characteristics of learning organizations. A learning organization as defined by David Garvin is "an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights."[2] This definition has two key components – classification of knowledge and then acting on that knowledge. These two components are completely interrelated. The management of knowledge is not the main aim of an organization but the ability to use the knowledge to make better and faster decisions to achieve organizational objectives is the ultimate goal. If an organization does not learn as fast as the environment changes, it is doomed for failure.[3] Therefore, to explore fully knowledge management this paper requires a discussion of the characteristics of learning organizations. The knowledge management principle that says that the integration of knowledge management and organizational learning creates more value to an organization than either one alone supports this argument.[4]

The volatile, uncertain, complex and ambiguous environment that combatant commands/joint forces operate in mandates the need to become a learning organization as defined by Gavin. Army Field Manual 3-24, *Counterinsurgency*, describes Army counterinsurgency (COIN) doctrine and recognizes this fact. FM 3-24 states "in COIN, the side that learns faster and adapts more rapidly—the better learning organization—usually wins."[5] The manual goes on to describe COIN as a competition in learning and identifies "learn and adapt" as a COIN imperative.[6] Adversaries that combatant commands/joint forces face in the current operational environment are continuously adapting their tactics, techniques and procedures to target the weaknesses of a joint force. The use of the improvised explosive device by insurgents in Iraq and Afghanistan

is one example of an adversary adapting their tactics. An organization that fails to learn and adapt will fail.

The amount of information or knowledge that is available to a combatant command operating in a volatile, uncertain, complex and ambiguous environment is enormous and rarely does one strategic leader posses the total knowledge required to lead the organization.[7] Peter Senge, one of the leading scholars in organizational learning has defined five disciplines of a learning organization: systems thinking, personal mastery, mental models, building shared vision and team learning.[8] These five disciplines are the essential elements of any learning organizations and the application of organizational learning.[9] Learning organizations use forecasting techniques and a system of systems approach to looking at their environment and making decisions.[10] They create an organizational culture that emphasis learning based upon the creation and sharing of knowledge.[11] Ultimately, any combatant command executing full spectrum operations use information systems to create and share knowledge so that it can maintain situational awareness, adapt and act faster than the enemy acts.

Organizational Knowledge

Knowledge management is a required component for any learning organization and each one is dependent on the other. The close linkage between the disciplines of organizational learning and knowledge management mandates an examination in unison.[12] Thomas Davenport and Laurence Prusak (1998) define knowledge as follows:

> Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.[13]

Knowledge management is much more than the storage and retrieval of information or data using information systems. Data describes facts about discrete events that occur in isolation.[14] Information also contains data but has "relevance and purpose."[15] People transform data into relevant information through contextualization, categorization, calculation, correction and condensation.[16] Knowledge on the other hand has even a higher meaning than information. It is people oriented and has several characteristics. People develop knowledge from information based upon personnel experiences. Knowledge contains ground truth or the occurrence of actual events, deals with complexity, contains judgment, works through rules of thumb, and affected by values and beliefs.[17] Knowledge management deals with tacit and explicit knowledge. Tacit knowledge is in a person's brain and is hard to document or transfer. Explicit knowledge is knowledge that anyone can access and document. Knowledge management attempts to take an organizational member's tacit knowledge and make it explicit so that the entire organization is able to use that knowledge.

Knowledge management is about the influences of people on information. Organizations that have a stable work force with little turn over tend to maintain organizational knowledge for a longer period compared to those organizations that have a large employee turnover. A major justification for learning organizations like combatant commands/joint force to implement effective knowledge management is to overcome the rapid transition of people in the workforce. The military workforce makes up a large number of employees in a combatant command and typically departs the organization after 24 to 36 months. In combat operations, it is typical that members of a joint force depart after only 12 months in the organization. The problem increases

during deployments where entire organizations depart after 12 – 18 months. The transient nature of the combatant commands/joint forces work force requires the adaptation of knowledge management to maintain a competitive advantage over adversaries.

Knowledge Management Principles and Applicability to the Combatant Command

Establishing knowledge management principles is important to an organization because they can serve as the guidelines that establish the knowledge management culture in the organization and ultimately drive an organization to transform into a learning organization. Thomas J. Beckman, Knowledge Scientist and adjunct associate professorial lecturer at The George Washington University developed knowledge management principles that are relevant to the combatant commands. Some provide justification for why an organization should adopt knowledge management and some advocate how an organization should apply knowledge management. The first principle is the golden principle and the fundamental reason for why an organization adapts knowledge management strategies. This principle says that "sharing formal knowledge and expertise" is the one essential component that leads an organization to achieve success through agility and superior performance.[18] A bedrock foundation in the United States military is the sharing of knowledge and expertise through military training and education. An agile combatant command achieves success by better understanding the operational environment, reacting faster and making better decisions than its competitors. The primary mission of the military is to fight and win the nations wars but in full spectrum operations, a combatant commander's mission is more diverse than fighting a war. A combatant command must dominate in every full spectrum endeavor they engage in and there is no room for

coming in second place. The golden principle of knowledge management defines the reward for an organization by providing a framework for achieving domination.

The second principle applies to explicit and tacit knowledge.[19] This principle says that organizations must make knowledge explicit to have considerable value to an organization and an organization can only save and share explicit knowledge through electronic methods.[20] Combatant commands/joint forces use information systems to capture knowledge from within the organization. The use of Blue Force Tracker and Radio Frequency Tags are examples of how a combatant command tries to create explicit situational awareness knowledge using information systems. Additionally the combatant command uses the United States Joint Forces Command's Joint Center for Operational Analysis to capture lessons learned from joint operations.[21] These lessons learned serve as the means to document both tacit and explicit knowledge. Information dominance is a principle that is prevalent in today's military and while there are electronic systems that can automatically provide situational awareness knowledge, the knowledge of the operational environment is incomplete. The Army's goal is simply not situational awareness but situational understanding. Army Field Manual 3-0, *Operations*, defines situational understanding as "the product of applying analysis and judgment to relevant information to determine the relationships among the mission variables to facilitate decision making."[22] The Army has adapted the theme that "every soldier is a sensor." This is the application of this knowledge management principle and implies that every soldier in the operational environment has knowledge relevant to the organization. The Army has yet to save and electronically share the soldiers, staff officers and commanders tacit knowledge about the operational environment. As stated

previously, a prime reason why an organization needs explicit knowledge is personnel turnover.

Beckman's third principle says that synergy exists when possessing both experiential and methodological knowledge and that learning from theoretical knowledge is more efficient than practical knowledge.[23] An understanding of both the theoretical knowledge and the knowledge of the application of theory based upon experience provides a much richer knowledge base that having only one form of knowledge. Combatant commands/joint forces currently follow this principle through education and training. The Joint Professional Military Education system, Joint publications and Service specific education provides the theoretical knowledge. Training through exercise and field problems, as well as actual combat experience, provides the practical knowledge used to drive continued learning. Learning from the mistakes of others is a prime reason why the combatant command invests substantial resources in the lesson learned and after action review programs.

Creating a balance between collecting existing knowledge and learning from the creation of new knowledge is the fourth principle.[24] This principle has limited usefulness for the combatant command as the environment is changing so quickly that the environment creates new knowledge almost instantaneously. What is more relevant to a combatant command is the sharing of the knowledge vice the collection of that knowledge.

Finally, the fifth principle simply restates the purpose of knowledge is to "make valid inferences, perform tasks, solve problems, make decisions and learn new knowledge."[25] The principle reaffirms what knowledge is and how an organization uses

knowledge. The theme for a combatant command is that knowledge is more important than information and data and that knowledge for the sake of knowledge is unimportant. Organizations use knowledge to solve problems and enhance organizational learning.

Knowledge Management in the Department of Defense

The Department of Defense has taken a limited approach to the field of Knowledge Management. Numerous joint publications discuss the importance of knowledge or the concept of capturing knowledge. However, a survey of the current joint publications including Joint Publication (JP) 1-02 *DoD Dictionary of Military and Associated Terms*, JP 3-0, *Joint Operations*, JP 5-0 *Joint Operations Planning*, and JP 6-0, *Joint Communications System*, shows that there is no existing Joint doctrine that recognizes the field of knowledge management. The Department of Defense, at the highest levels, has not embraced knowledge management and still looks at information sharing as a central challenge within the department. The Department of Defense Information Sharing Strategy is the closest thing to the acceptance of the knowledge management field. This document "provides the common vision, goals and approaches that guide the many information sharing initiatives and investments for the Department."[26] Additionally, the Chairman of the Joint Chiefs of Staff defined net-centric information sharing as a special area of emphasis for joint professional military education.[27] This provides further evidence that the Department of Defense believes that information sharing is needed vice a comprehensive approach to knowledge management. Despite the lack of guidance within the department, Combatant Commanders have recognized the need for formal knowledge management within the command and many have created Command Knowledge Management Officers.[28] In a research paper related to knowledge management at the combatant command level,

COL David Barlow addresses one knowledge management challenge for combatant commanders/joint forces and argues that Combatant Commanders can best conduct network centric operations to wage war using one common information technology solution.[29] With no formal policy guidance or acceptance from within the Department of Defense, it is easy to understand why a joint force may have challenges with the application of knowledge management strategies.

While the Department of Defense as an organization has little policy and guidance on the application of knowledge management at the combatant command level, the United States government has clearly documented the need for knowledge management. The Project on National Security Reform, which studied the national security interagency system, released a report in November 2008 and concluded that "enhancing knowledge management across all components of the national security system" was a necessary reform.[30] The study went on to highlight four knowledge management problem areas across the government. Those problems are:

> 1) Sharing information across organizational boundaries is difficult, 2) Organizational learning is thwarted, 3) the national security system lacks a true global situational awareness and 4) Current data systems do not provide or are not employed in a manner that promotes optimal knowledge sharing.[31]

The first step towards creating learning organizations that apply knowledge management principles and practices is the articulation of formal policy and guidance within the Department of Defense. Formal policy and guidance provide a means to ensure that the department applies knowledge management consistently. This is especially important to the joint force since many of the forces assigned to the joint force do not consistently work together when not executing their primary joint mission. The government interagency process problems addressed by the Project on National

Security Reform can also affect combatant commands/joint forces as the combatant commands/joint forces work so closely with interagency organizations. Next, the paper will illustrate how combatant commands apply KM differently.

Army Knowledge Management

The Army has taken a leading role in formulating and institutionalizing a coherent knowledge management policy and strategy. It has created a Knowledge Management staff section that operates at the brigade, division and corps levels.[32] Army Field Manual 6-01.1, *The Knowledge Management Section*, outlines formal doctrine, tactics, techniques, and procedures for knowledge management "to effectively integrate KM into the operations of brigades, divisions, and corps."[33] Army Regulation, 25-1, *Knowledge Management and Information Technology*, outlines how the Army applies knowledge management concepts and systems.[34] Finally, the Army has assigned functional area 57, Simulation Operations Battle Command Officers, as the proponent for knowledge management within Army staffs.

The goal of the Army is to develop an enterprise approach to knowledge management based upon three tenants (Figure 1) and twelve principles (Figure 2).[35] Each of the twelve principles supports one of the three tenants. The Army's knowledge management goal is to:

> create a culture of collaboration and knowledge sharing in the Army where key information and knowledge is "pushed and pulled" within the global enterprise to meet mission objectives -- an Army where good ideas are valued regardless of the source, knowledge sharing is recognized and rewarded and the knowledge base is accessible without technological or structural barriers.[36]

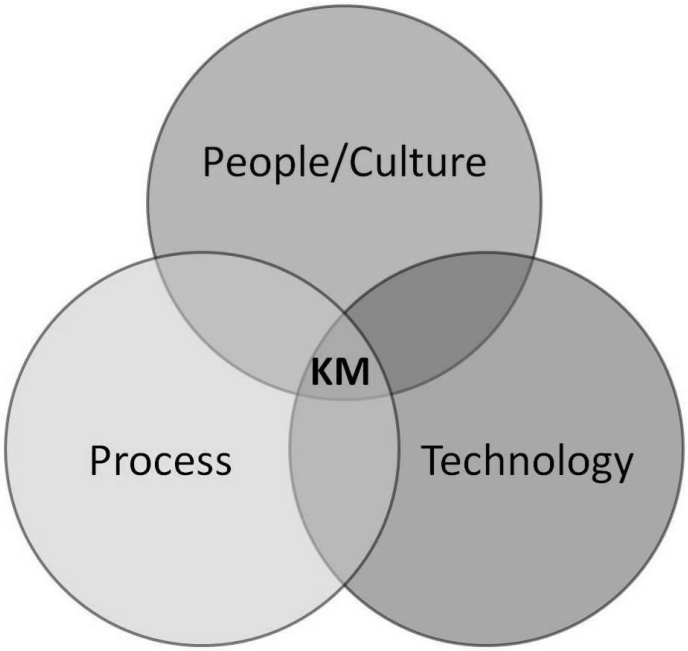

Figure 1. Tenants of Army Knowledge Management

Army Knowledge Management Principles

People/Culture

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

Process

6. Protect and secure information and knowledge assets.
7. Embed knowledge assets in standard business processes and provides access to those who need to know.
8. Use legal and standard business rules and processes across the enterprise.

Technology

9. Use standardized collaborative tool sets.
10. Use Open Architectures to permit access and searching across boundaries.
11. Use a robust search capability to access contextual knowledge and store content for discovery.
12. Use portals that permit single sign-on and authentication across the global enterprise including partners.

Figure 2. Army Knowledge Management Principles

This goal is consistent with the overall objective of a learning organization and the fundamental principles and theory of knowledge management. The Army even clarifies the purpose of the goal is to "help preserve tacit and explicit knowledge and accelerate learning as units and personnel rotate in and out of theaters or organizations."[37] Finally, the change that the Army is attempting to implement requires a champion, and a formal vision and strategy.[38] The Army demonstrated the champion for change in the July 2008 memorandum on the Army's 12 Knowledge Management Principles issued jointly by the Chief of Staff and Secretary of the Army.[39] The Army considers knowledge management a "professional discipline" and has developed a knowledge management competency model (Figure 3).[40] The competency model provides the strategy and goals for the change that the Army is attempting to implement with knowledge management. The Army based the competency model on their philosophy that the majority of the work done by the work force is knowledge work and that the knowledge management competencies are the core competencies embraced by learning organizations.[41]

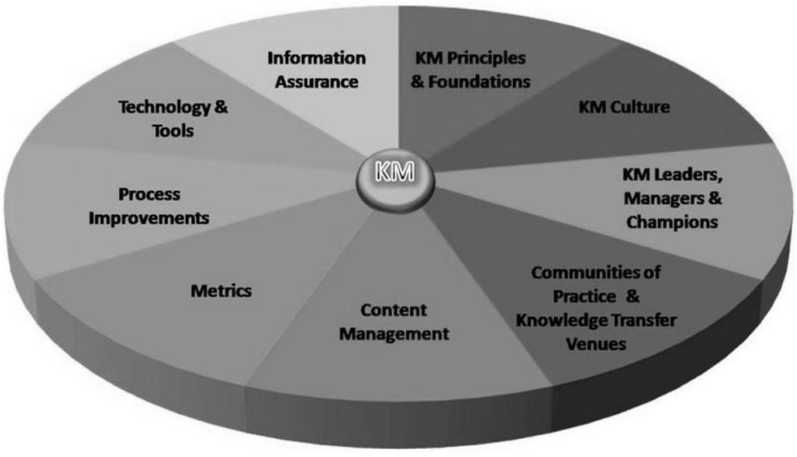

Figure 3. Army KM Competencies

A Combatant Command Knowledge Management Model

The combatant command knowledge management model consists of a vision, organizational change required to achieve the vision, knowledge management tenants, knowledge management principles and an organizational structure. The Army approach to knowledge management provides a good blueprint for the combatant command model. The Army based its approach upon proven knowledge management concepts, theories, methodologies, and best practices. For that reason the Army's tenants and principles still apply to the combatant command knowledge management model. As noted previously, there is little guidance and policy on knowledge management at the Department of Defense level and joint doctrine fails to acknowledge knowledge management. It is outside the scope of this research to recommend a knowledge management strategy for the Department of Defense however many of the ideas and concepts in the combatant command knowledge management model can be applied at the Department of Defense level. The vision that drives the combatant command knowledge management model is to develop a knowledge-centric organization that values the creation, codification and sharing of knowledge to enable organization learning, decision superiority and knowledge dominance. This vision provides context to knowledge management that goes beyond the theory of knowledge management and organizational learning by adding the key outcomes of decision superiority and knowledge dominance.

The combatant command will need to make some key organizational changes to implement the combatant command model.[42] The first organizational change is a shift from a need to know to a need to share mentality. The tenant of people/culture relates

to this change. The second change, which the vision highlighted, is to create a knowledge-centric organization vice a technology-centric organization. A knowledge-centric organization is focuses on leveraging technology for collaboration, knowledge creation and sharing of organizational knowledge than storage of information and documents via repositories. Finally, the last organizational change that the combatant command must make is to transform from a training based organization to a learning based organization.

The centerpiece of the combatant command knowledge management model is an integrated knowledge management section that is responsible for implementing the change that is required to achieve the knowledge management vision.[43] The Chief Knowledge Management Officer (KMO) is overall responsible for knowledge management within the combatant command and reports directly the combatant command chief of staff. The Chief KMO's main goal is to align the processes, people/culture and technology in the organization. The Chief KMO develops policy and leads the organization's knowledge management integrates team. Reporting directly to the Chief KMO is the Chief Process Manager, Chief Learning Manager and Chief Technology Officer. Subordinating the three chiefs under the knowledge manager ensures the integration and focus on a common purpose of the technology, processes and people/culture. It also demonstrates the emphasis that the command places on knowledge management and organizational learning. Table 1 provides a matrix that crosswalks the staff office responsibility with the knowledge management principles.

Chief Learning Manager
Train and educate KM leaders, managers, and champions.
Reward knowledge sharing and make knowledge management career rewarding
Establish a doctrine of collaboration.
Use every interaction whether face-to-face to virtual as an opportunity to acquire and share knowledge.
Prevent knowledge loss.
Chief Process Manager
Protect and secure information and knowledge assets
Embed knowledge assets in standard business processes and provides access to those who need to know
Use legal and standard business rules and processes across the enterprise
Chief Technology Manager
Use standardized collaborative tool sets
Use Open Architectures to permit access and searching across boundaries
Use a robust search capability to access contextual knowledge and store content for discovery
Use portals that permit single sign-on and authentication across the global enterprise including partners

Table 1. Integrated Knowledge Management Team Responsibilities

The combatant command knowledge management model now has all the necessary components that allow the combatant command to develop and execute a sound knowledge management strategy that meets the vision.

Combatant Command Knowledge Management Challenges

Capturing combatant command challenges from actual operations provides evidence to validate the combatant command knowledge management model using test

cases. The paper will focus the validation of the model using three challenge areas: intelligence and information sharing, situational awareness, and knowledge codification and coordination.

The ability to collaborate, share information, intelligence and knowledge is an absolute imperative in the combatant command knowledge management model. The model values a need to share philosophy vice a need to know philosophy. "Battlefield intelligence requires knowledge management that is accurate and timely."[44] It is in the fourth phase of the intelligence cycle, the dissemination phase, where intelligence analysts make intelligence available to consumers.[45] A recent example of how collaboration, knowledge sharing and knowledge management process has a positive effect on military operations occurred in the early stages of Operation Enduring Freedom (OEF). Paul Saffo, Director of Institute for the Future, highlighted the success of Special Forces teams leveraging networked global strike aircraft.[46] Mr. Saffo asserts that knowledge management processes and systems enable "rapid planning and decentralized execution planning on a global scale."[47] Using Operation Anaconda in the Tora Bora region of Afghanistan, he went on to highlight how quickly success can turn into failures when senior leaders revert to legacy military tactics and fail to collaborate and share knowledge.[48]

The United Stated Joint Forces Command's (USJFCOM) Joint Center for Operational Analysis (JCOA) hosted a Lessons Learned Conference in 2009 whose purpose was to "capture lessons from recent complex/joint combined operations … and to support near- and long-term improvement of joint capabilities."[49] Conference participants included 169 representatives from eight different countries. JCOA executed

the conference by splitting the participants into four distinct working groups – Joint Warfighting Working Group, Joint Adaptation to Irregular Warfare Working Group, Theater Security Cooperation Working Group and Homeland Defense Working Group. There were several critical themes and conclusions from the conference that were consistent with the combatant command knowledge management model. The most important, which embraces what knowledge management and the combatant command knowledge management is attempting to achieve – leaders and organizations that learn, are innovative, adaptable and agile.[50] The Joint Warfighting Working Group "addressed lessons learned related to the challenges in planning, synchronization, integration, and direction of military and interagency operations."[51] The work group specifically noted information sharing as a concern and provided the following recommendations:

- Create "rapid innovation teams" to share or train most current lessons into all levels of the joint force.
- Use common information systems to collaborate and share information between JIM (Joint Interagency Multinational) partners.
- Leverage USJFCOM's KnIFE (Knowledge and Information Fusion Exchange) example of information fusion for other topic areas.
- Through policy and guidance, adopt a "need to share" vice a "need to know" stance.
- Develop a robust in-theater lessons learned clearinghouse to rapidly consolidate and distribute JIM lessons learned (similar to intelligence fusion cells).
- Develop a lessons learned portal for access and sharing by all JIM partners.[52]

The Joint Adaptation to Irregular Warfare Working Group similarly noted challenges in information sharing and recommended the following:

- Develop a more focused lessons learned/knowledge management system.

- Develop systems that facilitate sharing in the JIIM environment.[53]

Lastly, the Homeland Defense Working Group noted a challenge with "information sharing and knowledge management" and recommended the development of a comprehensive approach to information sharing, using a common lexicon.[54]

There are other examples of how information sharing within the combatant command either hindered or facilitated mission accomplishment. A report from The Technical Cooperation Program looking into friendly fire incidents stated that a common friendly fire terminology between the United States and United Kingdom would facilitate information exchange.[55] A United States Joint Forces Command report on the formation of Joint Task Force Haiti in response to the earthquake in Haiti in January 2010 outlined the success that United States Southern Command had with information sharing. The report noted that the leadership in the command knew that information sharing would be a key to mission accomplishment and developed an information-sharing network that facilitated coordination and collaboration across the Joint Task Force.[56]

Key pieces of knowledge for the military are situational awareness. Situational awareness is the term used to describe information the environment, the adversary and about one's self. The joint force has various information systems that provide knowledge about the location and status of friendly forces. Situational awareness is one of the most basic pieces of knowledge a combatant/joint force commander must have to make timely and accurate decisions. It is the foundation enabling an organization to develop situational understanding, or a deeper understanding of relevant information and relationships based upon analysis and judgment. A common operational picture (COP) is the term used to describe the mechanism for providing

situational awareness. The COP as defined by Joint Publication 1-02 is “a single identical display of relevant information shared by more than one command. A COP facilitates collaborative planning and assists all echelons to achieve situational awareness.”[57] One challenge that commanders at all levels have today is the vast amount of information available to them at any given time. Information overload can cause “paralysis by analysis” and a knowledge conversation process can help reduce potential information overload.[58]

Maintaining situational awareness is so critical that every member of the combatant command must be proficient in operating those information systems that provide situational awareness and assist in staff collaboration. Joseph C. Geraci, in his article, *Expert Knowledge in a Joint Task Force Headquarters* believes that new junior officers (O3/O4) to a JTF staff do not require additional formal expert knowledge but must understand and know how to operate information systems that provides situational awareness, and enables collaboration and planning.[59] He explains how information systems enabled JTF Liberia to maintain situational awareness and knowledge management processes to execute its mission. “JTF Liberia possessed a suite of compatible information management tools that enabled it to maintain situation awareness, conduct parallel planning, and widely disseminate information.”[60]

A Department of State/USJFCOM/US Agency for International Development in their 2005 assessment titled Provincial Reconstruction Teams (PRT) in Afghanistan – An Interagency Assessment also highlighted situational awareness and continuity of information as critical knowledge.[61] The assessment stated, “continuity of situational awareness within the PRT area of operations is also critical.”[62] The assessment went

on to describe the importance of maintaining situational awareness and sharing of information especially when PRTs rotate.[63]

There are also other examples from several Joint force lesson learned documents that emphasize the importance of situational awareness. A key theme from the USJFCOM JCOA Lessons Learned Conference was that "maintaining continuous situational awareness is key to making the best decisions."[64] A US Northern Command May 2007 report from the Joint Lessons Learned Information System (JLLIS) documented that JTF-Alaska has a requirement to maintain a maritime COP but does not have the resources to do so and that this could negatively affect their ability to respond to a homeland defense mission.[65] The USJFCOM report on JTF Haiti discussed how a lack of situational awareness provided decision-making challenges especially in the areas of JTF organization, logistics and follow-on flow of forces.[66] The combatant command knowledge management model mandates that the joint force is a knowledge-centric organization focused on collaboration, knowledge creation and sharing of organizational knowledge. Maintaining situational awareness is a cornerstone of the knowledge-centric organization.

The third and final combatant command challenges used to validate the combatant command model is knowledge codification and coordination. As you recall, a fundamental principle of knowledge management is that knowledge must be explicit to have considerable value to an organization and an organization can only save and share explicit knowledge. There are multiple operational examples that stress the importance of codification of knowledge. Today, the majority of combatant command operations revolve around COIN. Army FM 3-24, *Counterinsurgency*, describes the

importance of understanding the population and the cultural aspects that make up a COIN environment.[67] Over the past 9 years, the joint force has worked hard on knowledge codification as it relates to COIN in Iraq and Afghanistan. Fred Renzi, in his article titled *Networks: Terra Incognita and the Case for Ethnographic Intelligence* make a case for an ethnographic knowledge codification or "information about indigenous forms of association, local means of organization and traditional methods of mobilization."[68] He asserts that this knowledge is so important that the United States would have had an advantage if it had an ethnographic understanding of Iraq.[69] In response to the need to codify knowledge about civilian populations the United States Army's Training and Doctrine Command (TRADOC) is creating the Human Terrain System.[70] The purpose of the system is to codify cultural knowledge of human terrain at the operational and tactical levels, specifically the social, ethnographic, cultural, economic, and political elements. This capability provides brigade commanders with a five soldier Human Terrain Team that can them to help understand and better deal the local population.[71]

Another example of a joint force codifying knowledge occurred when the Multi-National Division North (MND-N) deployed an economic team to Iraq from November 2008 to November 2009.[72] The team first attempted to gain their knowledge from the organization that they were to replace. Unfortunately, this knowledge was incomplete and the team conducted additional research to fill in the gaps. Eventually, the team was able to gather knowledge through various sources including professors at the local university, interagency partners, RAND, the World Bank and various organizations within Iraq. The result of the team's hard work was a solid codification of economic

knowledge of Iraq. All the information was available but not codified in a central location. The team's recommendation for obtaining knowledge was to conduct literature reviews, make contact with academia, interface with the private sector, understand national direction, become familiar with the environment and finally train to increase understanding of knowledge application.[73] There was one key recommendation that was not included, and is a basic principle of knowledge management. That recommendation is to capture the explicit knowledge the team developed so that they could share it with current and future joint forces deploying to Iraq.

Recommendation

The analysis presented explores knowledge management as a critical combatant command enabler. The current and future joint operating environment is volatile, uncertain, complex and ambiguous (VUCA)[74] and requires large, highly complex organizations such as joint forces and combatant commands to share and exploit the knowledge contained within the organization if it expects to innovate, act faster and make better decisions that its adversaries. The combatant command knowledge management model applies formal knowledge management (KM) principles serves as the foundation for creating an organizational culture that encourages collaboration and knowledge sharing with formal. Therefore, the recommendation is to implement the combatant command knowledge management model.

There are several advantages to implementing the combatant command knowledge management model. The foundation for the analysis is that knowledge management and organizational learning are interdependent. Without effective knowledge management there is less organizational learning and without organizational learning there is no effective knowledge management. The analysis presented in the

paper articulate the purpose and advantages for implementing the model, namely that creating a learning organizations gives that organization a competitive advantage and when it comes to warfighting winning is the only acceptable result.

There are at least four disadvantages to implementing the model. One disadvantage is that the model is ahead of the Department of Defense policy and guidance and at some future point may require modification to be compliant. The second disadvantage is that implementation of the model requires a change in the culture. There is always resistance to change that requires a great deal of effort, especially at the senior levels, to overcome. People are naturally hesitant to accepting changes without a full understanding of the benefits of the change. The natural resistance and overcoming that resistance is a disadvantage. The third disadvantage is that new staff structure will require additional personnel that may not be readily available to the combatant command. Implementing the model will require the commander to accept risk in some other mission area. Finally, the last disadvantage is that implementing the model will require additional funding to stand up the necessary technologies required to ensure knowledge codification, knowledge sharing and collaboration across the command/joint force.

Conclusion

Knowledge management is a key enabler for the combatant command. The disastrous results of 9-11 shows what can happen when the government does not share knowledge or follow knowledge management principles.[75] The knowledge management problems the United States government faces are daunting and primarily centered on lack of knowledge sharing and situational awareness. While individual Services such as the Army has embraced the potential that knowledge management offers the

Department of Defense has been slow to recognize and respond to the potential that knowledge management offers. There is a need for the Department to develop a comprehensive knowledge management strategy to ensure there is synchronization across the department and the department can dominate in the "knowledge age."

The vision of the combatant command knowledge management model is to create a knowledge-centric organization that values the creation, codification and sharing of knowledge to enable organization learning, decision superiority and knowledge dominance. There are numerous current joint operational lessons learned in the areas of information sharing, situational awareness and knowledge codification that validate the need for the implementation of the combatant command knowledge management model. Following the knowledge management tenants, the Army's knowledge management principles, implementing proposed organizational philosophy changes and the knowledge management organizational structure will allow the combatant command to become a learning organization that is innovative, adaptable and agile. The future success of the Department of Defense and the joint force mandates the need for a formal knowledge management strategy.

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