

Jarosław Jabłoński*
Andrzej Lis**

LESSONS LEARNED SYSTEM AS A TOOL OF MANAGING ORGANISATIONAL KNOWLEDGE: THE CASE OF MILITARY ORGANISATIONS

Abstract

The aim of this paper is to analyse the Lessons Learned systems applied by military organisations as the tools of organisational learning and managing organisational knowledge. Firstly, the concept of learning from experience has been discussed from the perspective of military organisations. Then, applying the NATO model, the elements of Lessons Learned capabilities have been enumerated and studied. The case study combines observations, lessons and best practices identified in NATO, the U.S. Army and the Polish Armed Forces. The contents of the paper are based on the outcomes of the critical analysis of military documents, the literature survey, the observation method and the unstructured interviews with experts.

Key words: Information and Knowledge Management, organisational learning, experiential learning, Lessons Learned capability, Lessons Learned process, NATO Joint Analysis and Lessons Learned Centre, U.S. Center for Army Lessons Learned, Polish Armed Forces Doctrine and Training Centre

1. Introduction

Knowledge Management and organisational learning are some of the “hottest” issues in the theory and practise of managing contemporary organisations. Traditionally, these concepts are associated with business organisations. In effect, the majority of scientific research is focused on the exploration of business entities. Nevertheless, the urgency to develop and to implement Knowledge Management solutions and organisational learning systems is also recognised beyond a for-profit sector. Military organisations

* Col., M.A., the Polish Armed Forces Doctrine and Training Centre, Bydgoszcz.

** Lt.Col., PhD, the Polish Armed Forces Doctrine and Training Centre, Bydgoszcz; the Department of General Management, the Faculty of Economics and Management, Nicolaus Copernicus University, Toruń.

belong to the leaders within this area. Learning from prior wars, campaigns and battles has always been the force driving the development of military strategy, operational art and tactics, and determining the technological advancement of armaments and military equipment. Therefore, the armed forces were natural predecessors of the development of organisational learning capabilities. For instance, as early as in the 1970s, some systematic Lessons Learned initiatives were launched in NATO (Permanent Analysis Team) and the U.S. Army (After Action Reviews/Reports). Since then, these capabilities have been strengthened and developed. The Polish Armed Forces established their first Lessons Learned capabilities in the 2000s as a response to the requirements of troops deployed abroad to operations in Afghanistan and Iraq. Contemporary, information and knowledge management based concepts are considered as core elements of NATO transformation processes. The Lessons Learned procedures and solutions applied in NATO, the U.S. Army and the Polish Armed Forces may be inspiring examples for other organisations, including for-profit companies. Nevertheless, military organisations are rarely explored by civilian research. Therefore, the aim of this paper is to fill this gap and to study the Lessons Learned systems applied by military organisations as the tools of organisational learning and managing organisational knowledge. In order to achieve the above stated aim, the following operational objectives have been set:

- to outline NATO's approach to the Knowledge Management concept;
- to identify the assumptions and major building blocks of the NATO's Lessons Learned capability;
- to analyse the elements of Lessons Learned capabilities in the NATO military structure, the U.S. Army and the Polish Armed Forces;
- to identify best Lessons Learned practices in military organisations which can be applied in other sectors.

The contents of the paper are based on the outcomes of a critical analysis of military documents, a literature survey, the observation method and unstructured interviews with experts. The analysis of military documents included: doctrines, directives, handbooks and manuals. Due to the limitations on public access to some military publications, in a few cases they have been cited or quoted with the assistance of secondary sources. The literature survey encompassed: books, articles and Internet publications, both of military and civilian origin. The results of the literature survey and documentation analysis have been compared and contrasted with observations noted by the authors during their service in the Polish Armed Forces Doctrine and Training Centre. Moreover, the opinions of Lessons Learned staff officers from the NATO Joint Analysis and Lessons Learned Centre (JALLC), the U.S. Center for Army Lessons Learned (CALL) and the Polish Armed Forces Doctrine and Training Centre (PAF DTC) have contributed to the study.

The article consists of two chapters. In the first chapter, attempts have been made to study the assumptions of the concept of learning from experience in military organisations. In order to provide the background for the following analysis, NATO's approach to Knowledge Management has been outlined. Subsequently the nature and major building blocks of NATO's Lessons Learned capability have been identified. In the second chapter, elements of Lessons Learned capabilities in NATO, the U.S. Army and the Polish Armed Forces structures are looked at. The analysis encompasses Lessons Learned structures, processes and tools. Finally and equally important, some best practices deemed to be applicable in other sectors are identified.

2. Learning from experience as a component of Knowledge Management

Information and Knowledge Management

Knowledge Management (KM) is one of the most widespread and popular contemporary management concepts. Deeply embedded within the resource based approach to managing organisations in a highly turbulent and multidimensional environment, the Knowledge Management concept perceives knowledge as the primary source of competitive advantage (cf. Koźmiński 2005, p. 96). According to Barney (1991, p. 112), an organisation's resources need to be valuable, rare, imperfectly imitable, and non-substitutable in order to become the foundation of a competitive advantage. Defined as „a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information” (Davenport and Prusak 1998, p. 5), knowledge is an intangible resource characterised by the uncertainty of applications and associated risks, effects, property rights and investments (cf. Koźmiński 2005, p. 97). Therefore, knowledge has a natural potential to become a strategically important resource and the basis of a sustainable competitive advantage. However, due to aforementioned features, managing knowledge is recognised as a challenge.

As any organisational resource, knowledge is subjected to management processes including planning and decision making, organising, leading and controlling aimed at “achieving organisational goals in an efficient and effective manner” (Griffin 2008, p. 4). In accordance with the process-oriented approach, Knowledge Management is defined as a set of activities encompassing: knowledge identification, acquisition, development, distribution, preservation and use undertaken by organisations in order to achieve knowledge goals (Probst 1998, p. 19). Traditionally, Knowledge Management is associated with business organisations. Nevertheless, the urgency to develop knowledge

management systems and solutions is widely recognised beyond a for-profit sector. For instance, NATO is a good example of the organisation drawing a lot of attention to managing knowledge. As Hutson (2011, p. 46) observes information superiority was acknowledged as one of the priorities by the NATO Summit at Riga in 2006. In effect, the most up-to date concepts and capabilities such as NATO Network Enabled Capabilities (NNEC), Knowledge Development (KD) and Comprehensive Approach (CA) are “data driven and information rich”. In order to establish the assumptions and rules of Information and Knowledge Management (IKM) and to strengthen common efforts within this area, in 2007, the NATO Information Management Policy (NIMP) was issued. The Primary Directive on Information Management (PDIM) followed one year later. Simultaneously, the Allied Command Operations (ACO) and Allied Command Transformation (ACT) developed their IKM Vision and Strategic Concept and endorsed the Bi-Strategic Command Information and Knowledge Management Directive.

The aforementioned IKM directive distinguishes between Knowledge Management and Information Management. Such an approach follows the commonly accepted distinction among knowledge, information and data (cf. Davenport and Prusak 1998, pp. 1-6; Firestone and McElroy 2003, pp. 17-20). According to the NATO understanding, Knowledge Management is defined as a “multidisciplinary approach to achieving organisational objectives by making the best use of information, expertise, insights, and Best Practices” (Bi-SC IKM Directive 2008, as cited in Hutson 2011, p. 47). Information Management denotes „the discipline that directs and supports the handling of information through its life-cycle ensuring it becomes the right information in the right form and of adequate quality to satisfy the demands of an organisation” (Bi-SC IKM Directive 2008, as cited in Hutson 2011, p. 47). The process-oriented approach to Information Management, resembling the Probst’s model of Knowledge Management, is observed in the NATO Glossary of Communication and Information Systems Terms and Definitions. The document defines Information Management as the „means through which an organisation maximizes the efficiency with which it plans, collects, organises, controls, disseminates, uses and disposes its information and through which it ensures that the actual value and the potential value of that information is identified and exploited to the fullest extent”(AAP-31A 1998, p. 2.17).

Effective and efficient Knowledge Management and organisational learning are the foundations of learning organisations. In his seminal work, Senge (1999, p. 3) describes learning organisation as an organisation “where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning

how to learn together”. The aim of transforming into a Knowledge Centric Organisation is declared in the NATO Bi-Strategic IKM Vision. As stated in the aforementioned document: “The NATO Military Structure will transform into a Knowledge Centric Organisation (KCO) that deliberately and systematically exploits NATO information and expertise, and proactively manages its information and KM processes. The NATO strategic commands will promote an organisational culture that fosters information and knowledge sharing and treat information, expertise, experience, and Best Practice as valuable assets, as a fundamental capability required to achieve decision superiority” (Bi-SC IKM Vision and Strategic Concept 2007, as cited in Hutson 2011, pp. 48-49).

Summarising, contemporary military organisations appreciate the significance of knowledge as an organisational resource. Information and Knowledge Management is recognised by NATO as one of its priorities what is mirrored in official policies, directive and strategic documents. NATO’s understanding of the IKM concept and its assumptions is convergent with the theoretical framework developed by business management studies. Military organisations highly value learning from experience. Learning from prior wars, campaigns and battles has always been the force driving the development of military strategy, operational art and tactics, and determining the technological advancement of armaments and military equipment. Therefore, the armed forces have developed Lessons Learned capabilities, which will be studied in details the following section.

Lessons Learned

Exploring the nature of knowledge, Firestone and McElroy (2003, pp. 3-5) point out the role of learning from experience. As they observed, according to modern pragmatism, “knowledge is understanding based on experience”. They quote Allee (1997, p. 27) who defines knowledge as “experience or information that can be communicated or shared” and Argyris (1993: 2-3) who claims that „knowledge is the capacity for effective action”. Learning from experience seems to be one of the prerequisites of the learning organisation understood as „a place where people are continually discovering how they create their reality. And how they can change it” (Senge 1999, p. 13). This point of view is shared by military servicemen. The commander of the NATO Joint Analysis and Lessons Learned Centre, Brig. Gen. Sonneby highlights in his foreword to NATO LL Handbook: “In a successful learning organisation, lessons are identified and turned into lessons learned effectively and efficiently; the organisation’s Lessons Learned capability enables the organisation to reach its full potential” (NATO LL Handbook 2011).

As already mentioned, learning from previous experience is highly valued in the armed forces. Vego (2007, p. XI-43) claims that “learning proper lessons is one of the key prerequisites for any military organisation to avoid repeating errors and mistakes next time in combat”. The remedial actions introduced in the U.S. Navy and Marine Corps in the Pacific as the result of Lessons Learned from the bloody amphibious assault of the Tarawa Atoll in November 1943 are a classical case of the value of learning from experience (Hallet et al. 2009, p. 39). Some other interesting historical examples are provided by Vego (2007, pp. XI.43-80) in a chapter devoted to operational Lessons Learned in his work on the theory and practice of joint operational warfare.

A NATO Lesson Learned is defined as “an improved capability or increased performance confirmed by validation when necessary resulting from an implementation of one or more remedial actions for a lesson identified” (Bi-SCD 80-6 2011, as quoted in NATO LL Handbook 2011, p. 13). Learning from experience and implementing continuous improvements are the key points of the NATO’s understanding of the Lessons Learned process. As officially declared, the aim of the Lessons Learned procedure is “to learn efficiently from experience and to provide validated justifications for amending the existing way of doing things, in order to improve performance, both during the course of an operation and for subsequent operations” (AJP-3(B) 2011, p. 4.19). Observations, insights and lessons may relate to both tangible and intangible elements of military capability. They may be identified and learned at all levels of military hierarchy from the rank and file to four-star generals. Vego (2007, p. XI-43) distinguishes between technological, tactical, operational and strategic Lessons Learned. According to his classification, “technological lessons are derived from the combat use of weapons, and their platforms and equipment. (...) Tactical lessons are deduced from the study of planning, preparing, and executing battles, engagements, strikes and other tactical actions. In contrast, operational lessons are deduced from a thorough study of all aspects of major operations and campaigns in peacetime exercises, war games, and combat. Strategic lessons are learned from the comprehensive study and analysis of a war as a whole and its political, diplomatic, military, economic, international, and other aspects”^[1].

Lessons Learned are expected to increase the effectiveness of commanders, headquarters and forces. In order to effectively manage organisational learning in a joint, combined and highly turbulent operational environment, the development of a Lessons Learned capability seems to be indispensable.

¹ It should be emphasized that the military hierarchy of command levels is different from the civilian classification of management levels. In military organisations, the tactical level is located at the bottom of the hierarchy while the operational level is an intermediate echelon between tactics and strategy. In business organisations, the hierarchy is reversed. Compare and contrast: AJP-3B (2011, p. 1.2) and Griffin (2008, pp. 172-175).

According to the guiding directive established at the level of the NATO strategic commands, “a Lessons Learned capability provides a commander with the structure, process and tools necessary to capture, analyse and take remedial action on any issue and to communicate and share results to achieve improvement” (Bi-SCD 80-6 2011, as quoted in NATO LL Handbook 2011, p. 9). The graphical representation of the NATO approach to a Lessons Learned capability is presented in Figure 1.

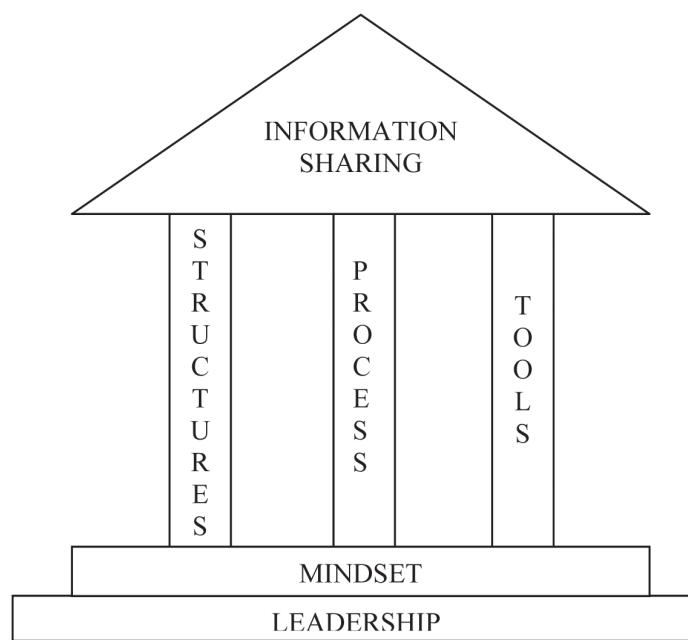


Figure 1. The Lessons Learned capability [Source: *Bi-SC Directive 80-6 Lessons Learned*, 06 July 2011 as cited in: *The NATO Lessons Learned Handbook*, Joint Analysis and Lessons Learned Centre, Second edition, September 2011, p. 9.]

The aforementioned model encompasses core elements of NATO Lessons Learned capability, its foundations and key success factors (KSFs) necessary for its implementation. The key components represented in Figure 1 as the pillars of the “Lessons Learned house” include: structures, processes and tools. Leadership and mindset make up the foundation while information sharing constitutes the capstone. The engagement of leaders, positive mindset, willingness to share information and stakeholder involvement combined all together are considered to be the key (critical) success factors for a Lessons Learned capability (Bi-SCD 80-6 2011, as cited in NATO LL Handbook 2011, pp. 9-10).

Summing up, the literature survey and analysis of the approach by military organisations to learning from experience prove that Lessons Learned constitute one of the key building blocks of managing organisational knowledge. In accordance with NATO's understanding, learning from experience and implementing continuous improvements are the core components of the Lessons Learned concept. Lessons identified and learned at all levels of a military hierarchy may encompass both tangible and intangible elements of a military capability. Simultaneously, a Lessons Learned capability needs to be developed in order to effectively manage organisational learning. Positive attitudes and behaviours of commanders and all servicemen seem to be the key success factors for a Lessons Learned capability. In the following chapter, Lessons Learned structures, processes and tools applied in NATO's military structure, the U.S. Army and the Polish Armed Forces will be analysed and discussed thoroughly.

3. Elements of a Lessons Learned capability

Structures

The Lessons Learned structure is defined as the "skilled and dedicated LL personnel allocated to adequate posts within an organisation" (Bi-SCD 80-6 2011, as quoted in NATO LL Handbook 2011, p. 10). The analysis of the Lessons Learned structures will be conducted from two perspectives. First of all, the bodies responsible for the NATO Lessons Learned capability will be identified. Secondly, the organisation of the Polish Armed Forces Lessons Learned system will be studied.

Recognising the paramount importance Knowledge Management plays in a multidimensional and turbulent operational environment, NATO has established a Lessons Learned capability. Hallet et al. (2009, pp. 39-41) identify the key Lessons Learned actors within the NATO structure. The Alliance Lessons Learned policy is set up by NATO Headquarters including the North Atlantic Council (NAC), the International Staff (IS), the Military Committee (MC) and the International Military Staff (IMS). Then, the policy is implemented by two strategic commands. Allied Command Operations (ACO) is responsible for planning, preparing and conducting combined, joint and effect-based military operations^[2]. Therefore, ACO, its subordinated Joint Forces Commands (Brunssum, Lisbon and Naples) and deployed forces are on one hand the key providers of observations and reports (cf. AJP-3(B) 2011, pp 4.19-20) while on the other one the major

² <http://www.aco.nato.int/visionmission.aspx> (date of access: 04 June 2012).

beneficiaries of Lessons Learned. The second of strategic commands, Allied Command Transformation (ACT) is recognised as the “NATO’s leading agent for changing, driving, facilitating, and advocating continuous improvement of Alliance capabilities to maintain and enhance the military relevance and effectiveness of the Alliance”^[3]. Through its subordinated NATO’s triple Js (JWC, JFTC and JALLC), ACT provides training support to operational forces and leads the transformation of military capabilities. In regards to Lessons Learned, the Joint Warfare Centre (JWC) and the Joint Force Training Centre (JFTC) incorporate lessons identified during operations into the pre-deployment training, whereas the Joint Analysis and Lessons Learned Centre (JALLC) assists the Alliance as a learning organisation. The JALLC is the key player in the NATO Lessons Learned system.

According to its mission the JALLC is “NATO’s centre for performing joint analysis of operations, training, exercises and Concept Development and Experimentation collective experiments, including establishing and maintaining an interactive managed Lessons Learned Database (LLDB)”^[4]. The JALLC is the successor of the Permanent Maritime Analysis Team (PAT) established in 1978 in Northwood, the United Kingdom. PAT personnel formed the core of the analysis teams of NATO operations IFOR and SFOR in the Balkans in the 1990s. The need to establish a standing analysis capability within NATO was one of the lessons identified in those operations. In 1997, the NATO Military Committee (MC) officially approved the operational requirement for the JALLC. On the decision of the North Atlantic Council (NAC), the organisation was officially established in 2002 and it declared its full operational capability (FOC) four years later^[5].

Joint analysis are the JALLC’s centre of gravity. As stated in its vision, the JALLC effort is focused on becoming recognised as the “NATO’s leading agent for a joint analysis with [...] efforts and products respected, thereby enabling [...] contribution to improve the capabilities of the Alliance.”^[6] Nevertheless, it should be emphasized that in the JALLC the analyses are perceived in a wider context as one of the stages of the lessons learned process. According to the NATO military command structure approved at the Prague Summit in 2002, the JALLC is subordinated to Allied Command Transformation (ACT). The JALLC peace establishment numbers 50 posts departmentalised functionally in seven branches (cf. Figure 2). As the

3 <http://www.act.nato.int/index.php/organization/hq-sact/mission> (date of access: 04 June 2012).

4 <http://www.jallc.nato.int/aboutjallc/missionandvision.asp> (date of access: 29 May 2012).

5 <http://www.jallc.nato.int/aboutjallc/aboutjallc.asp> (date of access: 29 May 2012).

6 <http://www.jallc.nato.int/aboutjallc/missionandvision.asp> (date of access: 29 May 2012).

organisation emphasizes, it seeks a “balance between scientific expertise and operational experience provided by a mix of military (credibility), civilian (continuity) and contractor (flexibility) analysts [which] is essential to ensuring high-quality, insightful JALLC products”.^[7]

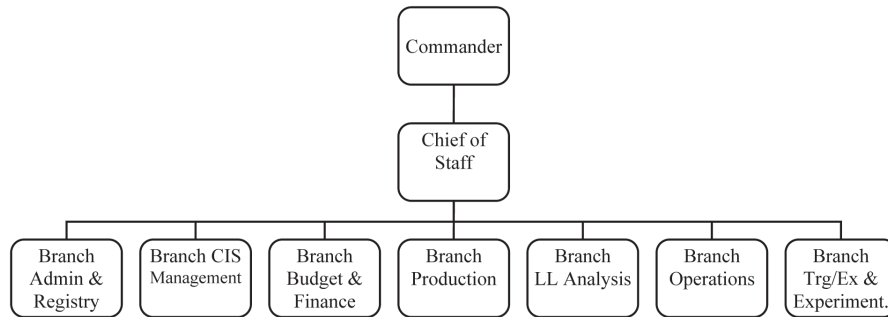


Figure 2. The JALLC internal organisation [Source: <http://www.jallc.nato.int/aboutjallc/organization.asp> (date of access: 02 June 2012)].

The JALLC structure covers both primary activities (the Lessons Learned Branch, the Operations Branch, the Exercise/Training and Experimentation Branch, the Production Branch) and support activities (Admin and Registry, CIS Management, Budget and Finance). The Lessons Learned Branch grouping 40% of manpower is the core element in the organisation. In total, 70% of the personnel is allocated in primary activities branches. As already mentioned, the JALLC internal organisation design is based on the functional approach to departmentalisation. Nevertheless, the organisation officially declares operating “a matrix management system whereby the Operations Branch and the Exercise/Training and Experimentation Branch manage the analysis projects within their respective functional areas, and the Lessons Learned Analyst Branch provides the majority of manpower resources for projects including the analysis project managers where necessary. The role of the Production Branch is to provide scientific operational analysis support to analysis projects, to manage the NATO Lessons Learned Database (LLDb), and to provide editorial support to JALLC activities”^[8].

The Polish Armed Forces introduced the Lessons Learned system in 2007. Initially, the focus of the system was given exclusively to Lessons Learned from military operations abroad. Gradually, its scope has expanded

7 <http://www.jallc.nato.int/aboutjallc/organization.asp> (date of access: 02 June 2012).

8 <http://www.jallc.nato.int/aboutjallc/organization.asp> (date of access: 02 June 2012).

and covered other areas including peacetime functions, troops training and military exercises. Nevertheless, in its early days there were no full time structures within the system. In recognition of the increasing importance of organisational learning, the concept of the development of the Polish Armed Forces Lessons Learned system was launched in 2009. Standing Lessons Learned capabilities were built. In 2010 the Polish Armed Forces Doctrine and Training Centre (PAF DTC) was established. One year later the Centre achieved its full operational capability. Full time Lessons Learned branches were set up at headquarters at the operational level including: Operational Command, Land Forces Command, Air Forces Command, Navy Command, Special Forces Command, Inspectorate for the Armed Forces (joint logistics) and Inspectorate of Medical Support. At the tactical level (divisions/flotillas/air wings and below), Lessons Learned are collected and managed by commanders and double-hatted staff officers (specialists) who are tasked to perform LL responsibilities as additional duties. In effect, the revised, comprehensive and multi-level system inaugurated on January, 1st 2012. The early days and transformation processes of the Lessons Learned system are analysed, from the Land Forces perspective, by Fiederek (2012, pp. 39-42). The Doctrine and Training Centre is an organisation responsible for promoting and coordinating Knowledge Management initiatives in the Polish Armed Forces. Therefore, it is the key player within the national Lessons Learned system. Beside maintaining and strengthening Lessons Learned capabilities, the Centre covers two other domains: Operational Standardisation and Concept Development and Experimentation (CD&E). PAF DTC is set up at the strategic level and is subordinated directly to the Chief of the PAF General Staff (Chief of Defence – ChOD). The internal organisation of PAF DTC includes two departments (staff divisions) responsible for primary activities and two supporting elements (cf. Figure 3).

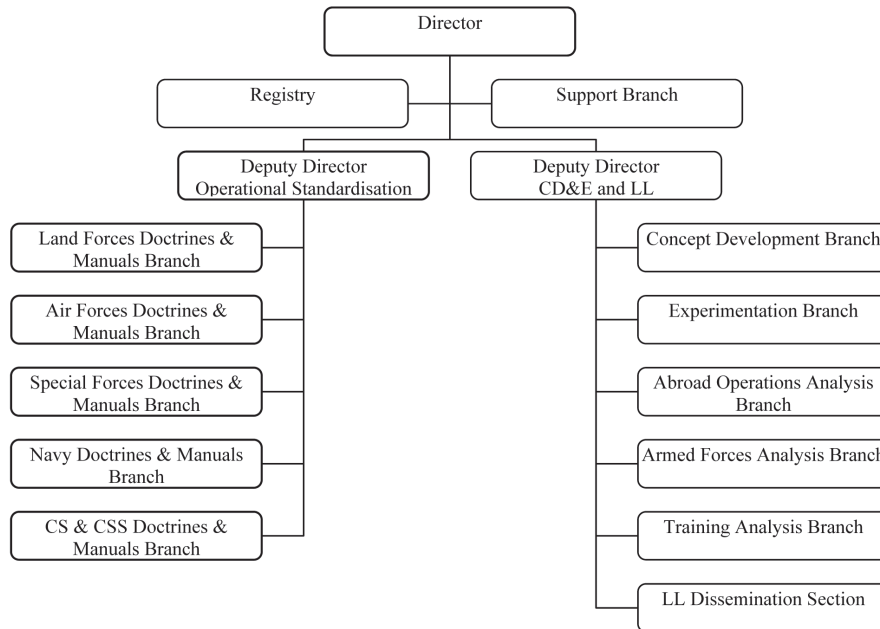


Figure 3. The PAF DTC internal organisation [Source: <http://www.cdis.wp.mil/pl/en/48.html> (date of access: 02 June 2012)].

Within the PAF DTC organisational design, the Lessons Learned capability is combined and placed under one umbrella with Concept Development and Experimentation. Due to the fact that these two capabilities share some common points, such a solution enables us to achieve the effect of synergy between them. The core Lessons Learned personnel is grouped within three Analysis Branches responsible for identifying observations, conducting analysis and managing the LL process, and the LL Dissemination Section. Due to the fact that the analysis conducted by PAF DTC require multidisciplinary expertise, the peace establishment responsible for Lessons Learned is manned by personnel of various services (Land Forces, Air Forces, Navy). Similarly to JALLC, project teams are often formed in order to increase flexibility in the functional organisation of the Centre.

Summing up, both organisations under study have implemented standing Lessons Learned structures. They combine centralised analytic efforts and decentralised capabilities to make observations. JALLC and the PAF DTC are the key players within Lessons Learned systems in their respective organisations. In regards to organisational design, JALLC and PAF DTC are structured functionally. Nevertheless, their common practice is to establish multidisciplinary project teams. In effect, matrix structures enable them

to increase flexibility and include necessary expertise from various fields. However, JALLC is focused exclusively on analysis and Lessons Learned, while PAF DTC under one umbrella combines Lessons Learned capability, Concept Development and Experimentation (CD&E) and operational standardisation.

Process

The aim of the Lessons Learned process is “to develop a lesson, to include sharing and to utilise it appropriately” (Bi-SCD 80-6 2011, as quoted in NATO LL Handbook 2011, p. 10). Applying the classical model of the organisational knowledge creation developed by Nonaka and Takeuchi (2000, pp. 84-95), learning lessons from organisational experience may be classified as the externalisation of knowledge. Through the Lessons Learned process observations noted by any member of the military organisation (tacit knowledge) are transformed into lessons identified and reports (explicit knowledge). The externalised knowledge becomes the input for remedial actions and the development of military doctrines and manuals (knowledge combination). When organisational behaviours and the rules of actions are changed, the loop of the organisational learning is completed. Vego (2007, pp. XI.43-44) claims that deriving lessons learned is a “complicated and time consuming” activity. He highlights the complexity of the process which should encompass both external determinants and internal tangible and intangible elements of military capability. He stresses the urgency to maintain objectivity, to establish the right scope of study and to analyse all the necessary details. The aim of this section is to compare and contrast two models of the Lessons Learned process (the U.S. Center for Army Lesson Learned approach and the NATO approach). Due to the fact that the Lessons Learned process adopted in the Polish Armed Forces mirrors the NATO model, it will not be discussed separately.

The U.S. model of the Lessons Learned process applied by the Center for Army Lesson Learned (CALL) contains six functions: collecting observations, analysing them, sharing and archiving lessons and best practices, resolving identified problems and assessing the effectiveness of the Lessons Learned programme. The structure of the CALL’s model of the Lessons Learned process is presented in Figure 4.

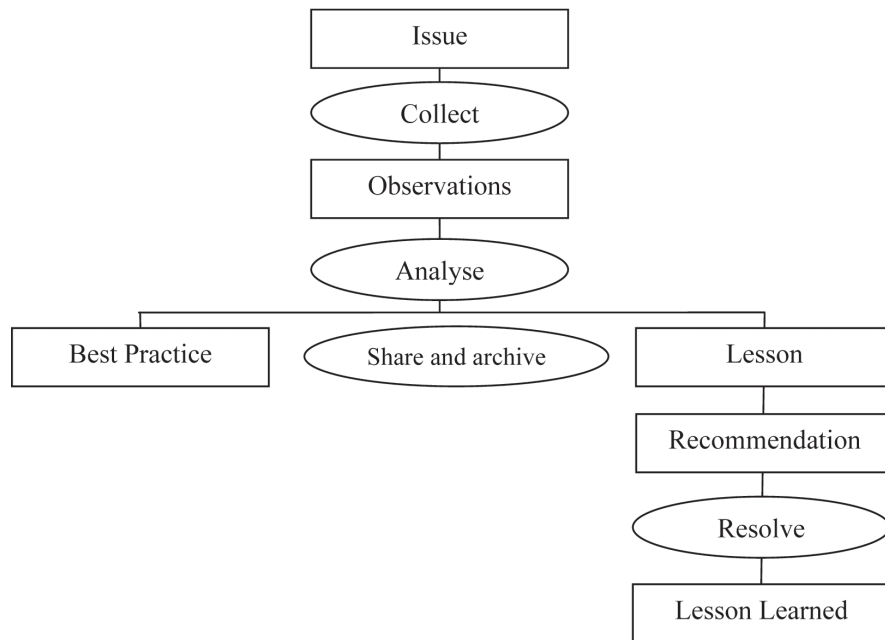


Figure 4. The US Army Lessons Learned process [Source: Establishing a Lessons Learned Program: Observations, Insights and Lessons, Center for Army Lessons Learned, Fort Leavenworth 2011, p. 37].

The NATO Lessons Learned process is structured into the analysis phase and the remedial action phase, and it encompasses the six following steps: gathering observations, analysis, the endorsement of remedial actions and tasking, the implementation and monitoring of remedial actions, the validation of achieved results and the dissemination of lessons learned. The structure of the process is presented in Figure 5.

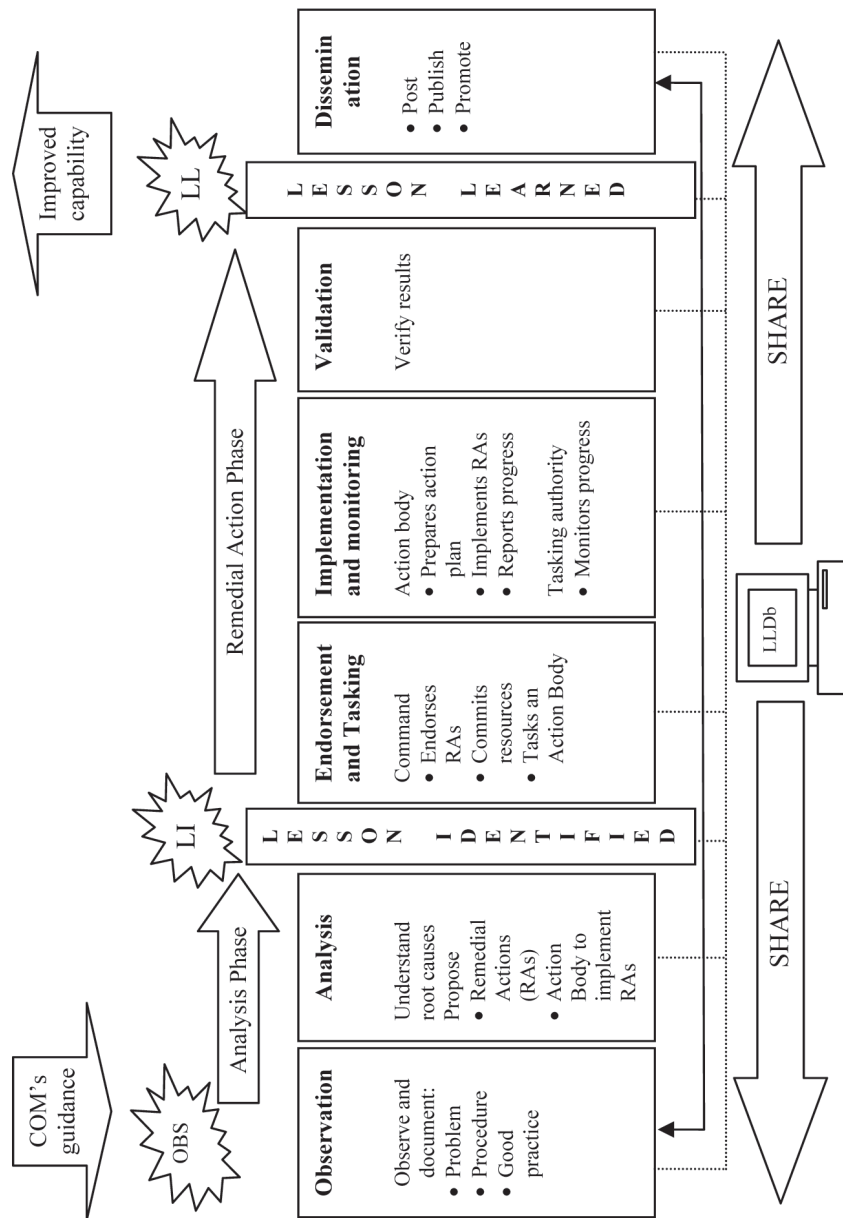


Figure 5. The NATO Lessons Learned process [Source: Bi-SC Directive 80-6 Lessons Learned, 06 July 2011 as cited in: The NATO Lessons Learned Handbook, Joint Analysis and Lessons Learned Centre, Second edition, September 2011, p. 11].

The Lessons Learned process starts with gathering observations. The aim of this stage is to identify: the areas of needed improvement and the gap between the current status and expected outcomes, and best practices recommended to be shared among the members of the NATO community. Observations considered to be basic building blocks of the Lessons Learned process initiate the analysis processes. The NATO model of a LL process is designed in particular for the strategic and operational levels of command. Therefore, it emphasises the role of formal and comprehensive analyses. The JALLC has developed its own procedure of conducting military analyses (the JALLC Project Approach – JPA) which is based on the assumptions of PRINCE-2 methodology (PROjects IN a CONTROLLED Environment). In accordance with JPA, a comprehensive military analysis includes six stages: initiating project, data collection, data analysis, producing a coordinating draft and then a final draft of a analysis report⁹. A lesson identified is a final product of an analysis phase and an input for remedial actions. The key role within the two initial stages of the process is played by Lessons Learned personnel responsible for making observations and conducting analysis. Within the second stage of the process, the emphasis is shifted to understanding the root causes of an identified problem or a good practice. Moreover, the remedial actions to resolve problems and the action bodies to implement changes are considered. The remedial action phase covers three stages: the endorsement of remedial actions and tasking, the implementation and monitoring of remedial actions, and the validation of achieved results. Within this phase, the initiative is taken by the commander and the action body responsible for managing changes. The commander endorses remedial actions, allocates necessary resources and tasks an action body. Then, the nominated action body develops the plan of remedial actions, implements them and reports progress while the commander monitors implementation. When remedial actions are implemented, their results need to be validated by additional analyses, exercises or experiments. The successful validation means that a lesson identified becomes a lessons learned. In 2011, the NATO Lessons Learned process was revised and updated. Due to the increasing attention given to information sharing, the dissemination stage was added to the pre-existing model (cf. NATO LL Handbook 2010, p. 6). Although dissemination is considered and the final stage of the Lessons Learned process, the NATO approach stresses the urgency to share information through the duration of the whole process (Bi-SCD 80-6 2011, as cited in NATO LL Handbook 2011, pp. 11-13; 18-45).

9 <http://www.jallc.nato.int/activities/jpa.asp> (date of access: 09 June 2012).

A comparative analysis of the two models of the Lessons Learned process presented above highlights the similarity between their structures and building blocks. Both of them include four main elements: the identification of observations, analysis, the implementation of improvements and the dissemination of Lessons Learned. In the authors' subjective opinion, the higher level of formality typical of the JALLC approach, observed in particular in the analysis stage, is the key difference between studied models. Therefore, the JALLC approach seems to be more suitable for Lessons Learned capabilities at the strategic and operational level, while CALL's model should be recommended for the operational and tactical level rather.

Tools

Lessons Learned tools include “technology to support collection, storage, staffing and sharing LL information” (Bi-SCD 80-6 2011, as quoted in NATO LL Handbook 2011, p. 10). The Lessons Learned systems applied in military organisations encompass personnel and units at all levels of command and in all kinds of branches and services. In effect, the needs and capabilities of various Lessons Learned stakeholders may be significantly different. Therefore, the armed forces apply the wide range of techniques and tools supporting Lessons Learned procedures combining both standard and their own customised solutions. The Lessons Learned techniques and tools identified in JALLC, CALL and PAF DTC may be classified into four categories: those used to capture observations, to analyse them, to support the implementation and monitoring of remedial actions and to share Lessons Learned. The toolbox applied by the three organisations under the study is presented in Table 1.

Table 1. Lessons Learned techniques and tools

Techniques / Tools	Observation	Analysis	Remedial actions	Dissemination
Observation templates	X			
NATO Observation Collection Program (OCP)	X			
After Action Reports / Post Event Reports	X	X	X	
After Action Reviews	X	X	X	
Post-Operational and Post Exercise Interviews	X	X	X	
Questionnaires	X	X	X	

Techniques / Tools	Observation	Analysis	Remedial actions	Dissemination
Visualisation techniques (i.e. fishbone diagram, affinity diagram, flowcharts, influence diagram)		X		
Analysis techniques (i.e. six Ws, five reasons why, brainstorming, categorisation, statistical analysis).		X	X	
Locally developed spreadsheets and databases			X	
Letters, memos and tasker-tracker system			X	
Communities of interest				X
Publications				X
Request for information service				X
In-processing training				X
Standard IT applications	X	X	X	X
Website knowledge repositories (i.e. wikis, e libraries)				X
LL databases	X	X	X	X

Source: Own study based on the: *The NATO Lessons Learned Handbook*, Joint Analysis and Lessons Learned Centre, Second edition, September 2011, pp. 22-24, 29-32; 36-37; 43-45; *Establishing a Lessons Learned Program: Observations, Insights and Lessons*, Center for Army Lessons Learned, Fort Leavenworth 2011, pp. 17-20, 25-28, 30-31, 63-73.

As already mentioned, the techniques and tools used by JALLC, CALL and PAF DTC to support the Lessons Learned processes include both standard and customised solutions. Nevertheless, in accordance with the objectives of this paper, further analysis will focus exclusively on items typical of military organisations.

The studied organisations highly appreciate the role of the observation identification stage in the Lessons Learned process. In order to involve all the servicemen and make this activity systematic, they have developed or adapted tools supporting the identification of problems and best practices. Some of them such as: observation templates, Post-Operational and Post-Exercise Interviews and After Action Reviews/Reports (AARs) will be discussed in the following paragraphs.

Observation report templates standardise the format of observations in order to enable their further processing and sharing. Moreover, providing a clear structure for documents they facilitate the verbalisation of observations. The template of the NATO observation report consists of five fields: Title, Observation, Discussion, Conclusion, Recommendation (cf. NATO LL Handbook 2011: B1-C5). It is fully compatible with the NATO Lessons Learned Database format. The examples of various observation formats applied across military organisations are provided by the CALL Handbook (2011, pp. 17-19).

Apart from Action Reviews/Reports (AARs) there are other techniques commonly used in the U.S. Army and other military organisations to collect observations, insights and lessons (OILs). Similarly, post-event reporting is highly recognised in the JALLC approach (NATO LL Handbook 2011, p. 19). An After Action Review is “a verbal, professional discussion of a unit’s actions that typically occurs immediately after a training event, combat operation, or another mission that determines what should have happened, what actually happened, what worked, what did not work and why, and the key procedures a unit wants to sustain and improve”. When a more formal approach is required, a written After Action Review is produced. The aim of such a report is to document “a unit’s actions for historical purposes but [it] also provides key observations and LL” (CALL Handbook 2011, p. 63). Action Review techniques are discussed in seminal works on knowledge management and organisational learning (cf. Davenport and Prusak 1998, pp. 8-9; Garvin 2000, pp. 106-116). It seems that the widespread format of After Action Reviews/Reports (CALL Handbook 2011, pp. 64-73) in the U.S. Army may be easily adjusted to the needs of non-military organisations.

Post-Operational and Post-Exercise Interviews conducted by Lessons Learned officers are active techniques of tacit knowledge elicitation. Their aim is to externalise fresh observations and experience gained by Subject Matter Experts (SMEs). For instance, the U.S. Center for Army Lessons Learned conducts the so called “Umbrella Weeks” to interview troops redeployed from operations before they are dispersed (NATO LL Handbook 2011, p. 19). Similarly, the analysis teams of PAF DTC interview the training audience of major exercises in order to establish observations crucial from the perspective of PAF capabilities.

As regards to the techniques and tools for analysing observations and monitoring remedial actions, the majority of them is applied not only by the armed forces but it is commonly used by non-military organisations. However, the NATO DOTMLPF I Capability Categorisation is an interesting example of a technique developed by military organisations. DOTMLPF-I is the acronym denoting the elements of the NATO capability: Doctrine and

Policy, Organisation, Training, Material, Leadership, Personnel, Facilities and Interoperability. It may be used for the comprehensive analysis of an identified problem or for the monitoring of the remedial actions implementation. The analysis of the Lessons Learned capability conducted by Hallet et al. (2009, pp. 41-44) provides the exemplification of the DOTMLPF I categorisation in use.

Information Technology (IT) is widely applied to support the Lessons Learned process. Although not customised to support organisational learning, standard Microsoft Office Software applications (MS Word, MS Excel, MS Access) may be used to collect, store, filter, sort and share information. Their availability for members of the organisation is its main advantage. Moreover, Web-based content manager systems (i.e. MS SharePoint) may be employed to support the Lessons Learned process. For instance, the NATO Lessons Learned Portal is based on the MS SharePoint technology. Nevertheless, these applications lack some specific functions required to support formalised Lessons Learned systems. Therefore, military organisations under study have developed their own solutions customised to particular needs of Lessons Learned communities. There are two examples of such tools worth mentioning. The first of them, the NATO Observation Collection Program (OCP), available to be downloaded from the JALLC website, is “an analysis tool which allows observers to work on a project, as individuals or in teams, noting observations in a systematic and easily-recoverable manner. Additionally, the software allows the observer to input data directly into the NATO Lessons Learned Database without the need to re-format fields or text”^[10]. The NATO Lessons Learned Database is a customer-tailored IT tool providing comprehensive support to the LL process. Hallet et al. (2009, p. 43) cite the opinion of the JALLC’s commanding officer who highlights two functions of the LL Database: storing and sharing observations and lessons (an archive or a knowledge repository) and supporting the Lessons Learned process as a staffing tool (a tasker tracker enabling the coordination of efforts of all stakeholders involved in learning).

4. Conclusions

The main of the paper has been to study Lessons Learned systems applied by military organisations as the tools of organisational learning and managing organisational knowledge. In order to achieve the above-stated aim some operational objectives had to be attained. First of all, NATO’s approach to Knowledge Management has been outlined. Then the major building blocks

¹⁰ <http://www.jallc.nato.int/newsmedia/ocp.asp> (date of access: 06 June 2012).

and the key success factors of the NATO's Lessons Learned capability have been identified. Finally, the elements of Lessons Learned capabilities in the NATO military structure, the U.S. Army and the Polish Armed Forces have been thoroughly studied. The analysis has encompassed Lessons Learned structures, processes and tools. In effect, the following conclusions can arrived at:

- Information and Knowledge Management is recognised by NATO as one of its priorities, which is mirrored in official policies, directives and strategic documents;
- military organisations highly value learning from experience. Lessons Learned constitute one of the building blocks of their knowledge management capabilities;
- in accordance with NATO's understanding, learning from experience and implementing continuous improvements are the core elements of the Lessons Learned concept;
- positive attitudes and behaviour of commanders and servicemen seem to be key success factors for a Lessons Learned capability;
- the Lessons Learned capabilities in studied organisations consist of the following components: structures, processes and tools;
- all the organisations under study have implemented standing Lessons Learned structures which combine centralised analytic efforts and decentralised capabilities to capture observations;
- four main stages may be distinguished within Lessons Learned processes in studied organisations: the identification of observations, analyses, the implementation of improvements and the dissemination of Lessons Learned;
- the studied military organisations apply a wide range of Lessons Learned techniques, combining both standard tools and their own customised solutions, in order to meet various requirements of stakeholders at all levels of the military structure and in all kinds of branches and services.

The final objective of the paper is to identify in organisations under study the best practices which can applied beyond a military sector. First of all, the universality of implemented solutions should be mentioned. Observations, insights and lessons identified through the Lessons Learned processes relate to both tangible and intangible elements of organisational capabilities. All the studied organisations make efforts to buy-in all their members for learning from experience and implementing improvements. Total Lessons Learned Management aimed at becoming learning organisations seems to be their long-run aim. Nowadays, the involvement of all ranks from the bottom to the top of the organisational hierarchy is particularly important in the context of

the Positive Organisational Scholarship assumptions. Secondly, the studied cases try to combine leadership and the involvement of their rank and file with some formalised solutions to run the Lessons Learned business smoothly. What is important to emphasize is that the level of formalisation is adjusted to the level in the organisational hierarchy. Similarly, Lessons Learned solutions in the studied military organisations are customised to varied needs and requirements at all the levels of command and in all kinds of branches and services in a national and multinational military environment. This approach should be practised by large corporations, while smaller business entities may benchmark best practices which best fit their situation and expectations. Finally, the Lessons Learned toolboxes used in NATO, the U.S. Army and the Polish Armed Forces include some interesting examples of customised techniques and tools (i.e. AARs, OCP), which can be easily applied in any kind of organisation.

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