JOURNAL OF DEFENSE RESOURCES MANAGEMENT

Vol. 6, Issue 2 (11) / 2015

BRASOV - ROMANIA

CONTENTS

CIVIL-MILITARY RELATIONS IN TUNISIA AND LIBYA THROUGH THE ARAB SPRING

Chris TOWNSEND

Middle East Foreign Area Officer, Unit 9400, Box 183 DPO, AE 09718-9998

This paper analyzes the role of civil-military relations in the disparate outcomes of two Arab-spring countries: Tunisia and Libya. Applying paradigms developed by Serra, Schedler, and Matei, the paper explores the state of civil-military relations before, during, and after the Arab spring and shows that civil-military relations were a key variable in the outcomes. The findings demonstrate the importance of international military education and training efforts in developing countries as a hedge against instability. The global community has an important role to play in helping to professionalize military forces around the world and improve civil-military relationships.

Key words: *civil-military relations, Libya, Tunisia, Arab Spring, international military education and training (IMET).*

1. INTRODUCTION

In 2011 a tidal wave of change swept across the Middle East and North Africa toppling authoritarian regimes that had stood for decades. In the aftermath, as countries picked through the detritus of their government institutions, fledgling democracies began to rise. Tunisia and Libya both witnessed the fall of dictators. In the three years since the Arab Spring, the outcomes of democratic transitions in Tunisia and Libya have diverged significantly. Tunisia appears to have made the transition to democracy with minimal upset, while in neighboring Libya chaos reigns. This paper follows the different trajectories in the civil-military relations in Libya and Tunisia, and how these differences influenced these disparate outcomes before, during, and after the fall of the countries' dictators and results in very different outcomes. The lessons of Libya and Tunisia highlight the critical importance of civil-military relations in transitions to democracy, particularly in transitions from military-supported authoritarian rule. Likewise, these lessons show the importance of foreign support for the professionalization and institutionalization of militaries in developing nations.

1.1. Civil-Military Relations Paradigm

To understand the role of civil-military relations in the disparate outcomes of the transitions to democracy of Libya and Tunisia, there is a wealth of scholarship to consider. Huntington argues for a professional military, isolated from politics as a cornerstone of established democracies [1]. Janowitz agrees with the necessity of professionalism but believes that militaries should be closer to society, accepting of the values of that society, and continuously subject to civilian assessment [2]. Finer outlines a scale of civil-military relations with regard to intrusiveness from constitutional cooperation to outright overthrow of civilian authority by the military [3]. Serra delineates seven steps that transitioning democracies go through with regard to military control [4]. Barany defines a trilogy of institutions that determine the nature of the civil-military relationship: the state, the society, and the military [5]. Finally, Matei provides three areas for evaluating civil-military relations:

democratic civilian control, military effectiveness, and efficiency with which resources are applied in accomplishing military missions [6]. The civil-military relations and their role in the transitions of Libya and Tunisia will be analyzed within these frameworks.

1.2. Transitions to Democracy. The Normative Picture

Narcis Serra notes that transitions to democracy from authoritarian rule require a transformation of the military from its old roles in supporting the regime to its new role as a servant of the civilian authorities. Serra defines three issues that shape transitions to democracy: military reform cannot be isolated from democratic reform, society operates as a third front in legitimate transition, and military assertion of autonomy. First, efforts must be made in both civil and military arenas simultaneously; a stoppage in one area cannot be corrected by pressing ahead in the other. Second, social legitimacy is a key concern in transitions, necessitating depoliticization and institutionalization of the military as a pillar of civil society. Finally, the level of autonomy in the military during and after a transition must be decided by civilian authorities, and not left to the whims of military leadership [7].

Schedler outlines a four-step scale of governance from authoritarian to advanced democracy [8]. Immediately following the Arab Spring transitions, Libya and Tunisia were faced with a rapid transition to an elected government and left to prevent democratic breakdown and a return to authoritarian rule. Schedler identifies *"eliminating, neutralizing, or converting disloyal players"* as the immediate mission of fledgling democracies [9]. Beyond outright breakdown, Schedler also cautions about the danger of democratic erosion even after transition.

Matei notes the insufficiency of the democratic civilian control framework in addressing the issues faced by leaders in transition and recommends an analysis based on control, effectiveness, and efficiency. Control is measured by Matei's paradigm as the presence of institutional control mechanisms, oversight, and professional norms. Effectiveness will be assessed according to the efficacy of plans, structures, and resources [10]. Efficiency will be evaluated according to Bruneau's requirement for regular government review of expenditures related to military operations [11].

1.3. Tunisian Civil-Military Relations Before and During the Arab Spring

Though authoritarian in nature, the Tunisian government had well-established, stable institutions as a result of decades of French rule [12]. The Tunisian Military consists of an Army, Navy, and Air Force. The Army is the largest of the branches with 27,000 soldiers; the Navy and Air Force each have less than 5000 members. The military has, since its inception, participated in foreign conflicts and peacekeeping operations [13]. The military was founded on the French model, under civilian control and wholly separate from the exercise of power.

The coup in 1987 saw the rise of General Ben Ali to the presidency, but he was an officer of the intelligence services and not the military. Distrustful of the military and their potential for usurpation, Ben Ali further isolated the military from any semblance of political power with a ban on military officers from holding office [14]. While defense spending was low in Tunisia—around 1.4% of the gross domestic product — the military was very professional, with training in American institutions, a responsibility to defend the nation, and a respected position within society. The result was a highly professional and cohesive officer corps with little connection to the ruling elites. A security force five times larger than the military was used to enforce the will of the dictator on the people, freeing the military from an antagonistic role within society [15]. An apolitical military with no role in suppressing the populace was ideal for the Tunisian people's dreams of democratic freedom.

When the Arab Spring began in earnest in 2011, the military, under orders

from General Ammar, refused to fire on protestors based on their professional ethics and pre-existing formal rules of engagement. The military, consistent with Janowitz, was a symbol of the nation and, as such would no more fire on the people than it would shoot itself, eliciting cries of *"the military and the people are one hand"* from the gathered masses [16].

As the government collapsed and its praetorian guard took to the rooftops sniping at protestors, the military stepped forward to defend the people and restore the security situation in the streets [17]. Ben Ali fled with his wife in tow and a new era dawned in Tunisia. As the military returned to its barracks, the stage was set for democratic rule. Time would tell the role of the military in the future of Tunisia.

1.4. Libyan Civil-Military Relations Before and During the Arab Spring

Libya became a state under very different conditions than its neighbor to the West. Instead of the stable state institutions, a British supported monarchy arose, stabilized by the subsequent discovery of oil in the region [18]. This stateless state was propped up by rents from oil revenue until the rise of Colonel Moammar Qaddafi in 1969 [19]. An early coup attempt left Qaddafi distrusting the military from which he had arisen and led to his efforts to ensure that unit commanders and high ranking officer were almost exclusively from his tribe and loyal to him [20]. This heavy-handed interference in officer promotions and placement resulted in a lack of cohesion in the officer corps and the potential for significant disconnect between the senior officers and their subordinates [21]. Rather than a single defense force, Qaddafi formed multiple militaries: The *Khamis* Brigade with 10,000 soldiers and heavy weapons that included air power, the People's Militia with 45,000 tribal warriors, the 50,000 soldier regular army, and the sporadically staffed Islamic Legion responsible for Qaddafi's African ambitions.

Libya's Arab Spring began as an uprising in the eastern city of Bengazi. Rather than a populist movement as in other Arab nations, Libya's spring manifested as a civil war, with portions of the military in the East declaring themselves free and independent of Qaddafi's reign [22]. Whereas other dictators folded under public pressure, Qaddafi launched a harsh retribution campaign against his detractors. As praetorian forces marshaled in the West and began their advance, NATO, led by the United States, took action to protect the Bengazi opposition from extermination at the hands of loyalists [23]. Operation Unified Protector represented an international effort to support a transition from authoritarian rule in Libya at a cost of several billion dollars. Success in the Kosovo air campaign is credited for successful transition there; the key difference in the interventions came in the aftermath of the strikes: no troops were deployed to secure Libya after the airstrikes toppled the regime [24].

The schism in Libyan forces left in the wake of the collapse left the country with no viable security apparatus and a total lack of a Weberian monopoly on violence [25]. The military in the East loosely coalesced around the civilian establishment, but Islamic militias arose in the west from the shattered remnants of Qaddafi's forces bent on asserting their version of a Libyan state. The splintering in Libyan forces and the resultant loss of control on violence would set the stage for an extremely difficult transition as key players descended into the tribal morass that existed prior to Italian rule following World War I.

The lack of centralized control on a cohesive armed force rendered hopeless any idea of the return to barracks necessitated in Finer's paradigm [26]. Qaddafi's total suppression of any political activity during his reign, preferring his idea of "peoplehood" over any true governance, had left paucity in political experience [27]. The airstrikes had blasted the country through the transition to democracy phases, with no attention for the now necessary consolidation. Over the next three years Libya would follow a very different path from its western neighbor, Tunisia.

2. AN ANALYSIS OF DEMOCRATIZATION & CMR AFTER THE ARAB SPRING

2.1. Tunisia After the Spring

The progress in Tunisia has been encouraging. A professional army was solidly institutionalized—and invested in—under the previous regime and its credibility, coupled with support for civilian governance has made for a relatively smooth transition. Images of the protestors hiding from police bullets behind Army tanks have burned an indelible image of unity between the people and their military [28]. Tunisia was quick to return to barracks, promising to uphold security as the fledgling government worked towards establishing a representative system and a constitution. Early elections saw the Islamists sweep to power, due to their existing coordination networks present in the mosques, but the recent election went to the secularists who have vowed to work with the Islamists to preserve their new democracy [29]. The transition in Tunisia has brought to the forefront the bureaucrats, judges, activists, labor unions, and political parties that toppled a dictator and launched the wave that swept through the Middle East [30]. The military in Tunisia has accepted the civilian leaders, providing security while the new leadership negotiated the constitution and the way forward for the country.

Tunisia fits the criteria of a deepening democracy according to Schedler's scale [31]. While a constitution is in place and a peaceful transition of power occurred between the parties after the recent election reversed the majority, the government still needs to demonstrate its capabilities in *"public administration, judicial systems, party systems, interest groups, civil society, political culture, and styles of decision making"*[32]. In Serra's model, Tunisia is at the far end, with fairly strong *"democratic civil control over the armed forces"* [33].

Matei's framework is well suited to analyze the state of civil-military relations in Tunisia [34]. Any analysis of efficiency would be premature; the presence of civil control in the Ministry of Defense, enshrined in the new constitutions provides mechanisms for financial oversight, though larger economic concerns like unemployment are likely to dominate the discussion for now [35].

Institutional control mechanisms and oversight measures are prescribed in the new constitution, which outlines the responsibilities of the Ministry of Defense. Policing and crime-fighting functions are allocated to the police forces under the Ministry of the Interior. Article 2 specifies the nation as a civic nation and Article 18 requires military neutrality in politics and submission to civil authorities [36]. Internal to the military, control mechanisms exist in detailed standard operating procedures, such as the rules of engagement, which prevent violent intervention against peaceful protests [37]. The professional norms of the military have been evident in their restraint during the transition, their willingness to return to barracks, their continued a-political stance and lack of interference in civilian wrangling between the Islamists and secularists.

Matei's description of effectiveness as the use of plans, institutions, resources, and interagency coordination/cooperation to accomplish military missions provides a tool with which to measure it in Tunisia [38]. The Tunisian military is a very formal institution, firmly established and respected by Tunisian society, with written plans that are reviewed regularly [39]. Supporting institutions like civilian ministries are present and functioning. An active and recently empowered judiciary stands capable of reviewing legal questions with regards to the application of military force. All three categories of resources—people, equipment, and financial—are sufficient for military effectiveness and provided through a mixture of taxation and foreign assistance, with the US providing the lion's share at $32 million [40]. Coordination between the Ministries of Defense and the Interior allow for strict divisions of force application, leaving internal security to the police and allowing the military to

focus on the problematic borders and the flow of jihadists to, and their likely return from, regional conflicts [41].

Tunisia's future seems bright. Civil-military relations are well established and poised to provide the security the nation needs to continue its democratic consolidation. Further measures to formalize control channels, ensure effectiveness, and evaluate efficiency will help to solidify the country as a secular, democratic model for other countries in the Middle East.

2.2. Libya's Arab Summer

Libya's transition has been characterized by a complete lack of a monopoly on violence and a subsequent lack of security in the country [42]. Rebel militias litter the countryside, and have been bold enough to kidnap the elected prime minister. This danger was not unanticipated; an international report warned efforts should be made to disarm or disband anti-Qaddafi militias if they could not be *"merged into a new, democratically accountable national security organization*" [43]. Without a peacekeeping force, or any international efforts to stabilize the security forces, the various armed militias, with an estimated strength between 125,000 and 150,000, became entrenched and began expanding their power. In some cities these militias supplanted the civilian authorities entirely. In others they seized infrastructure and economic assets like oil refineries [44].

There are two main problems that have plagued the transition as a result of the lack of security: leftover armaments and porous borders. Leftover armaments, estimated at close to a million weapons, continue to fuel violence and enable interference with civilian authorities [45]. The plethora of unsecured weapons could easily have been smuggled to groups in other countries because there is no control over the borders. The lack of border security has allowed for Al-Qaeda forces, expelled from Mali, to settle with relative ease in the southern barrens of Libya. Qaddafi's former border arrangement with local tribes to provide security is now null and void, with no effort made by the interim government to restore such arrangements [46].

Qaddafi, ever wary of coup attempts, abolished his Ministry of Defense years ago and constantly shuffled officers through billets [47]. The military forces were never able to solidify as an institution and that failure has remained glaringly obvious as civilian efforts to create these institutions on the spot continue to produce little benefit. When Qaddafi fell, different tribal and military leaders claimed positions as Minister of Defense, Minister of Interior, and Chief of Defense with no regard for central governance [48].

The military in Libya has stalled at step two of Serra's transition paradigm. The military, what is left of it, has largely held itself above civil control. Armed militia groups outright deny any central government that would limit the power and autonomy of the militias. While there have been some top-down efforts with international support, the military has not been able to transition to stage three where they are merely a constraint on civil governance and not an outright detractor.

According to Schedler's scale, Libyan civil control is in its infancy, still preoccupied with preventing a slide back into authoritarian rule by militias and Islamists eager to take power. These forces represent the *"unbound uncertainties"*, Schedler warns must be eliminated to *"avoid democratic breakdown"* [49]. Democracy must be solidified quite a bit more before protection against erosion is worth considering. The militias in Libya must be brought under control or eliminated before democratic government can flourish, but many of these armed groups are the only security their tribe and region have because of the lack of central security. It will take efforts to establish a central security force and military capable of defending the populace before armed groups would even consider laying down their arms [50]. The double-headed specter of Jihadism and Islamism continue to threaten secular central governance, preferring their brand of *Sharia* law to civilian government.

Matei provides a framework with which to analyze the state of Libya's civil-military relations [51]. Any consideration of the efficiency of civil-military relations at this stage is not possible simply because no mechanism exists that can perform the mission [52]. Consideration of control and effectiveness, however, is possible, if depressing. There is not currently a legal framework for the operations of military forces beyond a UN White paper that prescribes the basic roles and responsibilities of the military [53]. Efforts to draft a constitution have been entirely unproductive for the last three years. The Interim Transitional Counsel (ITC) that represented Eastern rebels was not elected and therefore lacked legitimacy [54]. Hastily arranged elections created a General National Congress (GNC), truly national elections were not possible due to the lack of security and the GNC lacks credibility. Rather than draft a constitution that would formalize civil-military relations, the two parties of the GNC are perceived as merely jockeying for position, power, and reelection with no serious effort towards the central legal framework needed in the country [55].

Democratic control and oversight are extremely weak, partially due to the lack of legal framework for such activities, but also due to the lack of control on violence in the country. Executive, legislative, and judicial control is impossible without a centralized force. While there have been some external efforts by the United Nations to provide oversight, the ever-shifting face of the military is difficult to identify much less control. The lack of a central military also results in a lack of professional norms. International efforts headed by the UN are underway to provide training and education, but without a credible central government there is little hope for normalizing recruitment and promotions into anything resembling a professional career path.

Matei describes effectiveness as the use of plans, institutions, resources, and interagency coordination/cooperation to accomplish military missions [56]. While basic institutions exist in the Ministries of Defense and the Interior, and financial resources are available, other resources like people and equipment are sore lacking, plans are non-existent, and the agencies are in a state of competition not cooperation [57].

Libya has a long, tough road ahead if it is to consolidate democracy and establish a central civilian-controlled military capable of securing the nation and maintaining a monopoly on violence. International peacekeepers may be necessary to provide the stability needed to accomplish this consolidation. International efforts must continue to assist with the training and formalization of the military and civilian institutions in order to prevent a slide back into the rule of the strongest, which could be devastating for security in the region. Libya has not transitioned well, and is stuck in a gray area between democracy and chaos. International efforts created this situation with seven months of bombing, and should be brought to bear to ease the transition and provide a future for Libya's people. Training and education for the military is necessary to restore security and protect the government as it coalesces.

3. CONCLUSION

This article demonstrated that civil-military relations before, during, and after the transitions from authoritarian rule in Tunisia and Libya played a significant role in the outcomes of those transitions. The results are summarized in **Table 1**. Tunisia, with its well institutionalized, legalistic, and politically neutral military, was able to throw off the chains of dictatorship, elect officials, draft a constitution, and set the stage for successful democratic rule. By contrast, in Libya the lack of institutionalization and professionalism in the military, coupled with government interference led to the fragmentation of the military into an impossible to control quagmire of unrestrained violence. Admittedly, foreign intervention will likely be required in Libya to secure the country until civilian leaders can develop a framework for governance.

Table 1. Country Analysis by Paradigm

Paradigm / Nation	Schedler	Serra	Matei	
			Control	Efficiency
Tunisia	Deepening	Democratic Control	High	Med-High
Libya	Preventing Backslide	Military above Civil Control	Very Low	Low

In this context, investments in civilian elites, as well as military officer training in civil-military relations are an important tool for professionalization. It provides the civilian and military counterparts with a mutual understanding of the other's role and place in a democratic environment. Towards this end, the United States has invested in both countries over the years, but the investment has not been equal. The United States spent 17 times more money on Tunisian military professionalization than Libyan in the three years prior to the Arab Spring and the outcomes speak for themselves [58]. In Libya, International Military Education and Training (IMET) funds have increased, but it has received half the funding of Tunisia since the Arab Spring [59]. This is an indicator that more needs to be done, not just by the United States, but any organization with a vested interest in democratization and the development of successful CMR. Future research should seek to evaluate specific methods of professionalism and institutionalization for effectiveness to better target these investments. The disparate outcomes of these transitions is a powerful indicator of the importance of foreign efforts to improve the professionalism and institutionalization of militaries in developing countries to ensure that when there are seismic shifts in the governance of these countries, the military is a tool for peaceful success and not chaos.

REFERENCES

[1] Samuel Huntington, *The Soldier and the State,* Cambridge, MA: Belknap Press of Harvard University, 1957, p. 2.

[2] Morris Janowitz, *The Professional Soldier: A Social and Political Portrait,* Glencoe, IL: Free Press, 1960,p. 225.

[3] Samuel Finer, *The Man on Horseback: The Role of the Military in Politics,* New Brunswick, NJ: Transaction Publishers, 2006, p. 86.

[4] Narcis Serra, *The Military Transition: Democratic Reform of the Armed Forces.* Translated by Peter Bush, Cambridge University, 2010, pp.43-49.

[5] Zoltan Barany, *The Soldier and the Changing State: Building Democratic Armies in Africa, Asia, Europe, and the Americas*, Princeton University, 2012, p. 25.

[6] Florina Cristiana Matei, "A New Conceptualization of Civil-Military Relations", in *The Routledge Handbook of Civil Military Relations,* ed. Thomas Bruneau and Florina Cristiana Matei, New York: Routledge, 2013,p. 26.

[7] Narcis Serra, *The Military Transition: Democratic Reform of the Armed Forces.* Translated by Peter Bush, Cambridge University, 2010, p. 43.

[8] Andreas Schedler, "What is Democratic Consolidation," in *The Global Divergence of Democracies* ed. Larry Diamond & Marc F. Plattner (Baltimore: John Hopkins University, 2001), p. 152.

[9] Ibid., 154.

[10] Florina Cristiana Matei, "A New Conceptualization of Civil-Military Relations", in *The Routledge Handbook of Civil Military Relations,* ed. Thomas Bruneau and Florina Cristiana Matei , New York: Routledge, 2013, p. 35.

[11] Thomas C. Bruneau, "Efficiency in the Use of Resources," in *The Routledge Handbook of Civil Military Relations,* ed. Thomas Bruneau and Florina Cristiana Matei, New York: Routledge, 2013,p. 45.

[12] Lisa Anderson, *The State and Social Transformation in Tunisia and Libya, 1830-1980*, Princeton University, 1986, p.231.

[13] Derek Lutterbeck, "Arab Uprisings, Armed Forces, and Civil-Military Relations", *Armed Forces & Society* 39, no. 1 (2012): 34, Proquest (10.1177/0095327X12442768)

[14] Derek Lutterbeck, "Arab Uprisings, Armed Forces, and Civil-Military Relations," *Armed Forces & Society* 39, no. 1 (2012): 35, Proquest (10.1177/0095327X12442768

[15] Ibid.

[16] Philippe Droz-Vincent, "Prospects for Democratic Control of the Armed Forces?: Comparative Insights and Lessons for the Arab World in Transition", *Armed Forces & Society* 2014 40: 696, p.701.

[17] Ibid., p. 702.

[18] Anderson, *State and Social Transformation, The State and Social Transformation in Tunisia and Libya, 1830-1980*, Princeton University, 1986, p. 252

[19] Ibid., 260.

[20] Droz-Vincent, "Prospects for Democratic Control of the Armed Forces?: Comparative Insights and Lessons for the Arab World in Transition", *Armed Forces & Society* 2014 40: 696, p.701.

[21] Ibid.

[22] Lisa Anderson, "Demystifying the Arab Spring: Parsing the Differences between Tunisia,

Egypt, and Libya", *Foreign Affairs* 90, no. 3 (2011): 6. http://search.proquest.com/docview/863517068?accountid=12702.

[23] Ivo H. Daadler & James G. Stavridis, "NATO's Victory in Libya". Foreign Affairs 91, no. 2 (2012): 53.

[24] Christopher S. Chivvis & Jeffrey Martini, *Libya After Qaddafi: Lessons and Implications for the Future* , RAND, 2014: 4.

[25] Droz-Vincent, "Prospects for Democratic Control of the Armed Forces?: Comparative Insights and Lessons for the Arab World in Transition", *Armed Forces & Society* 2014, 40: 696, p.701.

[26] Finer, *The Man on Horseback: The Role of the Military in Politics,* New Brunswick, NJ: Transaction Publishers, 2006, p.190.

[27] Droz-Vincent, "Prospects for Democratic Control of the Armed Forces?: Comparative Insights and Lessons for the Arab World in Transition", *Armed Forces & Society* 2014 40: 696, p. 703.

[28] Lutterbeck, "Arab Uprisings," 9.

[29] Anderson, "Demystifying the Arab Spring: Parsing the Differences between Tunisia, Egypt, and Libya", *Foreign Affairs* 90, no. 3 (2011): 5. http://search.proquest.com/docview/863517068?accountid=12702.

[30] Droz-Vincent, "Prospects for Democratic Control of the Armed Forces?: Comparative Insights and Lessons for the Arab World in Transition", *Armed Forces & Society* 2014 40: 696, p.705.

[31] Schedler, "What is Democratic Consolidation," in *The Global Divergence of Democracies* ed. Larry Diamond & Marc F. Plattner (Baltimore: John Hopkins University, 2001), p.158.

[32] Schedler, "Democratic Consolidation," p.158.

[33] Serra, *The Military Transition: Democratic Reform of the Armed Forces*. Translated by Peter Bush, Cambridge University , 2010, p. 43.

[34] Matei, "A New Conceptualization of Civil-Military Relations", in *The Routledge Handbook of Civil Military Relations,* ed. Thomas Bruneau and Florina Cristiana Matei, New York: Routledge, 2013,p. 35.

[35] Jane's Intelligence, "Adoption of New Constitution in Tunisia Will Increase Political Stability in the Next Six Months," Janes's Intelligence Weekly 6, no. 7 (2014), 2.

[36] Rainer Grote, "The New 2014 Tunisian Constitution," *Oxford Constitutions of the World* (2014) http://oxcon.ouplaw.com/page/228/the-new-2014-tunisian-constitution.

[37] Droz-Vincent, "Prospects for Democratic Control of the Armed Forces?: Comparative Insights and Lessons for the Arab World in Transition", *Armed Forces & Society* 2014 40: 696, p.702.

[38] Matei, "A New Conceptualization of Civil-Military Relations", in *The Routledge Handbook of Civil Military Relations,* ed. Thomas Bruneau and Florina Cristiana Matei, New York: Routledge, 2013, p. 35.

[39] Droz-Vincent, "Prospects for Democratic Control of the Armed Forces?: Comparative Insights and Lessons for the Arab World in Transition", *Armed Forces & Society* 2014 40: 696, p.702.

[40] Military Cooperation, "Fact Sheet on U.S. Military and Political Assistance for Tunisia," Embassy of the United States-Tunisia (2014), http://tunisia.usembassy.gov/fact-sheet-u.s.-military-and-political-assistance.html.

[41] Jane's, "Adoption," 3.

[42] Chivvis & Martini, *"Libya After Qaddafi,"* xi.

[43] International Stabilisation Response Team, Department for International Development (UK), "Libya: 20 May—30 June 2011", 2011.

[44] Droz-Vincent, "Prospects for Democratic Control of the Armed Forces?: Comparative Insights and Lessons for the Arab World in Transition", *Armed Forces & Society* 2014 40: 696, p.707.

[45] United Nations, "Transnational Crime in North Africa," (2013), 33.

[46] Chivvis & Martini, *"Libya After Qaddafi,"* 9.

[47] Ibid., 10.

[48] Ibid., 11.

[49] Schedler, "What is Democratic Consolidation," in *The Global Divergence of Democracies* ed. Larry Diamond & Marc F. Plattner (Baltimore: John Hopkins University, 2001), p. 153.

[50] Chivvis & Martini, *"Libya After Qaddafi,"* 16.

[51] Matei, "A New Conceptualization of Civil-Military Relations", in *The Routledge Handbook of Civil Military Relations,* ed. Thomas Bruneau and Florina Cristiana Matei, New York: Routledge, 2013, p. 35.

[52] Bruneau, "Efficiency in the Use of Resources", in *The Routledge Handbook of Civil Military Relations,* ed. Thomas Bruneau and Florina Cristiana Matei, New York: Routledge, 2013, p. 35.

[53] United Nations, "Transnational Crime in North Africa", 33.

[54] Chivvis & Martini, *"Libya After Qaddafi,"* 35.

[55] Ibid., 41.[56] Matei, "A New Conceptualization of Civil-Military Relations", in *The Routledge Handbook of Civil Military Relations,* ed. Thomas Bruneau and Florina Cristiana Matei, New York: Routledge, 2013, p. 31.

[56] Chivvis & Martini, *"Libya After Qaddafi,"* 35.

[57] International Military Education and Training Account Summary, U.S. Department of State, Accessed March 12, 2015 from http://www.state.gov/t/pm/ppa/sat/c14562.htm .

[58] Ibid.

ACKNOWLEDGEMENT

This paper benefitted from the expert instruction and advice of Florina Cristiana (Cris) Matei, Lecturer for the Center for Civil-Military Relations (CCMR) at the United States Naval Postgraduate School. The views expressed are the author's and do not necessarily represent the views of the United States Army, the Department of Defense, or the United States Government.

PEACEKEEPING OPERATIONS MANAGEMENT. AN ANALYSIS OF CHALLENGES, CHANGES IN COMMAND ACTION AND TRAINING NEEDS

Ünsal SIĞRI
Ufuk BAŞAR

Başkent University, Ankara, Turkey

The aim of this paper is to uncover emerging challenges of peacekeeping operations, determine the changes in command actions and its effects on the professional preparation of commanders by analyzing experiences of military officers. To that end the research data were collected by means of structured face-to-face interviews with voluntary participation of fourteen officers, who took charge in various peacekeeping operations. The collected data were analyzed based on the content analysis method. Findings indicate that peacekeeping operations pose specific challenges for peacekeepers, necessitate changes in command action in terms of flexibility and new precautions in terms of preparation of commanders.

Key words: *management, Peacekeeping operations, peacekeeper, command action.*

1. INTRODUCTION

The context of peacekeeping operations comprises impartial civilians, non governmental organizations, military organizations and warring factions, all of which together form a multi dimensional environment for military commanders as distinct from conventional warfare [1]. In a typical peacekeeping operation, missions are executed by diverse staff, usually who belong to different nationalities. Each mission comprises several tasks to be done in sometimes dangerous, usually challenging and generally unstable environments. Resources of the operations are usually scarce. Organizational procedures and regulations of different nations are frequently cumbersome. Usually it is difficult to synchronize the staff for a common goal, and that sometimes impedes the success. Therefore, any kind of emerging difficulties pertaining to peacekeeping operations force commanders to make changes in command actions and keep up with new challenges [2].

In this context the aim of this paper is to uncover emerging challenges of peacekeeping operations, determine the changes in command actions and its effects on the professional preparation of commanders by analyzing experiences of military officers, who took charge in various peacekeeping operations throughout the world. The importance of this research derives from its research topic, which was not studied before as far as we detected. While forming the theoretical framework, first of all the concept of peacekeeping operations was defined and its evolution process was explained. Following that, characteristics of peacekeeping operations management were described. Later on, collected data were analyzed based on the content analysis technique. Finally, findings are discussed and implications are emphasized.

2. PEACEKEEPING OPERATIONS

Peacekeeping operations are performed as a sort of peace support

operations. Peace support operations are to be executed in order to strengthen countries' diplomatic efforts toward providing peace in conflicting states. Therefore peace operations' objectives involve peace enforcement, peace making and peacekeeping. In this respect the spectrum of peace operations ranges from observation missions to peace building and peacekeeping operations [3]. To date, peacekeeping operations have evolved into three generations. The first generation of peacekeeping operations were performed just before the beginning of the Cold War. The first generation was dubbed as traditional peacekeeping. Peacekeepers were impartial, equipped with light arms and formed of international troops. Peacekeepers' objectives consisted of separation of belligerents and observation or monitoring of peace agreements or ceasefires. Consent of the warring parties, impartiality and use of force in case of a threat to self-security are prominent principles of traditional peacekeeping [4]. The United Nations Emergency Force (UNEF) in Sinai, the United Nations Peacekeeping Force (UNFCYP) in Cyprus, the United Nations Disengagement Observer Force (UNDOF) in Golan Heights are examples of traditional peacekeeping. In the course of time, following the end of the Cold War, upon the inability of traditional peacekeeping forces to hamper the conflicts and improve the deteriorating conditions such as in Srebrenica, along with the arguments and dissents on the effectiveness of traditional peacekeeping operations in provision of peace, the second generation of peacekeeping operations was put into practice [5]. The United Nations Assistance Group (UNTAG), the United Nations Operations in Mozambique (UNOMOZ) and the United Nations Transitional Authority in Cambodia (UNTAC) are some examples of second generation of peacekeeping operations. In the second generation peacekeeping operations peacekeepers strove to resolve the conflicts between belligerents until removing all of the reasons for their presence, in addition to their observation and monitoring missions as distinct from traditional peacekeeping operations [6]. The peacekeepers were equipped with heavy arms in order to deter belligerents and use force if necessary. Besides, force formations of troops were larger in size than previous generation. Peacekeepers began their missions while conflicts between warring parties were not ceased yet [7]. International organizations were involved into the conflicts directly as an actual actor upon the United Nations Security Council's decision and without the need of belligerents' approval. However, since 1994, the second generation has not been able to meet the expectations. Therefore a new generation of peacekeeping operations was defined, namely the third generation. The aim and scope of the third generation of peacekeeping operations were larger than previous ones. The aims of the third generation peacekeeping operations comprised stabilization of war prone conditions and rebuilding a fallen state. The composition of the troops and contingents changed significantly in comparison to previous generations. Police units, members of non-governmental organizations and humanitarian workers took part in missions along with military peacekeepers. Peacekeepers strove to end the conflicts, enforce ceasefires, sustain peace agreements and rebuild the war torn states by combining military and civilian capabilities synchronously. In addition to UN peacekeepers, international and regional organizations also conducted peace operations under the UN mandate as distinct from previous generations. Throughout this evolution process the objective of international peace operations transformed from peacekeeping to peace enforcement and peace building among belligerents [8]. The way of peacekeeping operations' management also evolved in correspondence with these developments. However as far as we realized there is a considerable lack of research on features of peacekeeping operations' management. Therefore we believe that the management of peacekeeping operations should be evaluated in order to accommodate permanent changes and overcome challenges.

3. PEACEKEEPING OPERATIONS MANAGEMENT

In general, the concept of management refers to a process in which resources of an organization are used effectively in order to achieve organization's objectives. Management comprises planning, organizing, executing, directing, monitoring and evaluating functions [9]. In peacekeeping operations military leaders direct the resources of a multinational coalition in order to achieve objectives given by UN or another superior international formation. Leaders execute every function of the managerial process in extreme conditions. Peacekeepers operate in multidimensional environments. Multidimensionality derives from operations' multinational and multi tasked character. New generation peacekeeping operations were performed by diverse personnel who are from different nationalities, professional background and cultures. Military peacekeepers always cooperate with the personnel of non-governmental organizations or governmental organizations, technical experts or even politicians. However, this diversity creates challenges for both military leaders and their followers since, in general, military personnel are not accustomed to a multidimensional peacekeeping environment, if they are not trained for peace operations specially. Thereby, military peacekeepers encounter adversities, which cause severe stress. Some of those adversities are physically remote locations, unclear missions, confusion on command structure due to the multinational character of missions, role and identity ambiguity, lack of knowledge in foreign cultures and languages, repetitive work, mines, snipers and exposure to death [10]. In addition to those adversities lack of harmony and cooperation in civil-military relationships also constitute another challenge for military leaders although both sides strive for provision of better conditions. Military personnel from diverse branches are trained for combat in pursuit of eliminating the reasons of their presence and providing peace. That is why military actions help political objectives directly. In contrast, civilian humanitarian organizations strive for relieving the suffering by accessing every population in the theatre. Therefore, civilian humanitarian organizations are mostly perceived as neutral by all parties. In this circumstance military leaders have to find a way to direct the efforts of civilian humanitarian organizations in cooperation with military actions [11]. Therefore, the management of peacekeeping operations requires flexible, fast and responsive processes, which can accommodate changing circumstances effectively. Because many times the peacekeeping environment involves a good many of risks, which affect decision-making processes at all levels. Thus, effective management of peacekeeping operations may help peacekeepers overcome those challenges and set the stage for success [12]. From this point of view, in this study the management of peacekeeping operations is evaluated in terms of challenges, changes in command action and training needs by making use of experienced peacekeepers' earlier practices.

4. METHOD

4.1. Participants

A total of 14 officers participated in our survey voluntarily. All of the participants have experience in the following missions: UNOMIG, ISAF, EUFOR Althea, KFOR, UNMIS, SFOR, TIPH, and UNIFIL. Participants' years of service in military vary from 8 years to 23 years with an average of 16 years (SD = 4.55), their ranks change from lieutenant to colonel, all of them are males, 2 of which are married and the rest are bachelors. The sample of the study is believed to fulfill the "maximum diversification" principle of qualitative research with viewpoints from various missions and regions.

4.2. Materials

In this study data were collected by means of structured interviews,

which comprise questions about participants' occupational information and demographic characteristics, such as years of service in military and marital status, mission specific training on the field and command experience, as well as personal experience. The interview form is presented in Appendix A.

4.3. Procedure

All of the participants, whose contact information was found in authors' directories, were reached through e-mails. In this way invitations covering information about aim and scope of this survey were sent to a total of 43 officers initially. However, only 14 officers agreed to participate in this survey. Each volunteer participant was interviewed face to face on a scheduled day by the first author of this paper. Responses of interviewees were recorded over a voice recorder upon consent of the interviewee and some notes were taken below each question by interviewer during the interview. After controlling all interview sheets, the data were analyzed based on the content analysis technique.

5. DATA ANALYSIS AND INTERPRETATION

The data were analyzed according to content analysis method [13] in three phases. These phases are: collating data, developing themes and deriving meaning from themes. While collating data and developing themes the participants' answers were evaluated under the following question groups: training, field experiences, unit commanded and personal experiences. The purpose of collating data is to arrange messy data and compare the answers of each participant for each question. Therefore each answer of the participants was read carefully and collated according to question groups, by designating numbers for each answer initially. In this way participants' answers were listed below each question group whereby answer sets were created. Following that each answer set was examined in terms of relatedness, repetition of same expressions and logical ties among them. As a result of this process threads of answer sets were generated, from which themes for each group of questions were developed. While deriving themes, answers to the following question were looked for: What are the main challenges in peacekeeping operations? How do these data explain changes in command action and how and how much these changes affect the professional preparation of commanders? The derived themes are presented in **Table 1**.

The findings indicate that the unusual nature of peacekeeping operations necessitate new precautions in terms of preparation of commanders because commanders are the head of the system, which operate for the accomplishment of the overall mission. Unless commanders are prepared sufficiently, it will not be a surprise to taste the failure in the theatre of peacekeeping operations. The major challenges that officers can experience in a typical peacekeeping operation can be summed up as deficiencies in language capabilities, communication and coordination skills, lack of cultural awareness, knowledge about history, religions and military equipment used by other militaries. Participant 5's statement addresses communication challenges clearly "*During my mission in Bosnia & Herzegovina sometimes I could not communicate with my colleagues who were from other nations due to my incompetency in military terminology and abbreviations.*" Likewise, participant 13 addresses cultural issues along with language drawbacks with his statement "*Our personnel generally hesitate to speak in public. The reason behind it may be officers' lack of English competency or cultural awareness.*" On the other hand, there are good examples among participants' answers, which indicate effectiveness of pre-mission trainings and being knowledgeable when misunderstandings happen in the theatre. Participant 11's statement summarizes an incident which took place between a presenter and an officer in Kosovo (KFOR) mission: "*During the Key Leaders' Training in*

Kosovo, presenter was giving historical information regarding the remnants of an old monastery, which was located almost 5km outside of Prizren town center. He told that monastery was destroyed by Ottomans, and with its stones a mosque was built in Prizren town center. Upon this disinformation I raised my hand and asked permission to speak about that remark. I told them there was a church, which was still sound and in use right 50 meters away of aforementioned mosque. Considering the logistics ability of that time it was not logical to destroy a far away church and use its stones for building a new mosque in city center while there was another church in city center. Moreover it was a known fact that the Ottomans were respectful to religious beliefs of people and never stooped for destruction of a church. Right after the visit, I filled a complaintment about the presenter and sent it to the commander of the sector. A couple of days later, I received an e-mail regarding my complaint, in which commander wrote that they omitted the controversial part from presentation." This is a good example for advantages of history knowledge. If this officer had not commented in time, everyone in the briefing room at that time and listeners of forthcoming meetings would have been misinformed, which later on might have caused severe disputes among officers of multinational force and thereby mission efficiency would have lessened.

Naturally, the above-mentioned challenges cause changes in command actions of commanders. Otherwise, officers experience difficulties when commanding multi national units in a multi dimensional environment. For instance, according to findings, commanders need native consultants and interpreters in order to build healthy relationships and command accurately. Participant 6 clearly calls attention to the matter: "*During ISAF mission we seriously needed native interpreters in order to make contact with locals and Afghan soldiers, who were trained and commanded by us*". Besides, commanders have to comprehend fast changing conditions and go beyond usual ways of coordinating and organizing, be creative and bold to implement new techniques and be open to new ideas. Participant14's statement emphasizes the importance of creativity: "*When you experience ambiguity during mission and when SOPs don't work, you have to find a way to solve the problems and continue the mission. This is more than taking initiative. This is creativity."* Moreover, acting in order to create an organization culture among officers and subordinates may help formation of solidarity among colleagues, as well. Therefore, officers and commanders have to be ready for unexpected circumstances of peacekeeping operations.

Some of the effects on preparation of commanders deriving from participants' ideas on peacekeeping operations indicate that in order to succeed, officer specific training programs should be developed, by which officers should be given training about different languages, cultures, religions and values along with military habits of allies in addition to organization theories and coordination methods. Likewise participant 3's statement about training needs indicate the necessity of specific training programs for officers. "*I believe that it will be helpful, if officers have cultural awareness training, covering knowledge about military traditions, religions, national customs, daily habits, abbreviations or military jargons of each participating nation along with the host nation prior to putting boots on the ground.*" Besides, in order to deal with and lead units equipped with various kinds of armament, officers should possess certain hard and soft skills. Participant10 points out the matter smoothly: "*The equipment and armament of local Afghan military personnel were old and ragged, about most of which we had not much detailed knowledge. Many times we felt that they didn't understand what we thought. However they were expecting us to train them.*" To that end, officers' both soft and hard skills have to be improved through trainings and they have to be ready mentally for future operations. Soft skills simply refer to communication, interpersonal and

social skills, which comprise listening, presenting, teaching, speaking, being courteous, presenting in a polite manner, being nice, having sense of humor, being empathetic and having self-control [14]. Officers need soft skills while they manage throughout their career. On the other hand, hard skills refer to technical skills, which comprise working with equipment such as guns, vehicles and any training assisting materials, data, hardware and software [15]. In addition to soft skills officers have to possess necessary hard skills, as well. Otherwise, missions can fail. To that end, effective training methods must be applied while training officers for peacekeeping operations, whereby training transfer can be enhanced. Namely, the better officers are trained before missions, the less they will fail there. Participant 4 smoothly points out the necessity of using effective training techniques: "*Before deployment, in my opinion it would be better to have scenario based exercises along with visual demonstrations of mission area and mission specific operations, which can prepare us mentally for the forthcoming missions.*" Actually, this participant pays attention to the efficiency of transfer of training unintentionally. The transfer of training indicates the extent to which given training was applied in the theatre by trainees and the impact of training in terms of an increase in mission efficiency [16]. Therefore, it may not be unreasonable to think that mission success, to some extent, may depend on the level of training transfer, which will prepare officers and commanders for future peacekeeping operations. In this sense, effective success measurement tools, which can be used at the end of training programs, may also help increase the level of training effectiveness.

6. CONCLUSION

The aim of this paper is to analyze challenges that officers and commanders experience in peacekeeping operations, hence determine the changes in their command actions as distinct from conventional implementations and finally evaluate how these changes affect the preparation of officers and commanders for future asymmetric warfare operations. To that end, interviews were conducted with the voluntary participation of 14 officers, who had participated in peacekeeping operations previously. Findings indicate considerable challenges that officers and commanders come up against and changes in command actions meant to overcome those challenges. Starting from the belief that what does not change is change itself and as a result of this research, we uncovered that in order to succeed in peacekeeping operations that characterized by multi dimensionality, as it is the case of working among and together with civilians, officers have to change their conventional command actions and adapt to emerging conditions rapidly. Interactions between challenges, changes and effects on the preparation of officers occur in a continual process, which indicate the need for the projection of flexible and modular training programs for commanders. Despite limitations of our research such as the small number of participants, the application of structured interviews instead of unstructured ones and the absence of prior research on the same or related topics, we believe that our study fills an important gap in the field of management of peacekeeping operations by uncovering the challenges, commander reactions and training needs of officers. Thereby, our study may give inspiration to researchers for conducting new studies on the issue. For example, researches can develop new tools in order to measure changes in the command actions of commanders and in this way they can determine training needs and effects on officers' preparations for the future peacekeeping operations specifically. Moreover, depending on the findings of this research, the armed forces of countries involved in this type of operations, can develop new specific training programs for their officers in order to prepare their commanders for the ambiguous and multidimensional environment of peacekeeping operations.

Table 1. Research Findings

Question Groups	Challenges in Peacekeeping Operations	Changes in Command Action	Effects on Professional Preparation of Commanders
Training	Lack of competency in foreign languages and military terminology. Lack of cultural awareness.	Hiring native consultants to command multicultural units. Commanding locals and allies by means of native interpreters.	Three to four weeks for preparation on the culture of forces involved in operation, geography and military habits of allies. Learning local languages at least six months prior to setting foot in the theatre.
Field Experiences	Coordination deficiencies in supply chain management, operations management and planning. Controversies on historical facts between allies of asymmetric warfare operations.	Developing new ways of coordination apart from traditional hierarchical patterns, in which coordination happens at and between all levels of command structure in a more flexible manner. Understanding sensibilities of each participating allies on historical issues. Commanding by considering and respecting religious varieties among allies.	Preparation about different ways of organizing techniques and decision-making processes in unusual times. Understanding social network structures in organizations. Learning history of the region objectively. Having general knowledge about religious belief systems and values.
Unit Commanded	Existence of different training and commanding patterns as distinct from national or NATO SOPs. Variety in military equipment and armament.	Fast adaptation to various training techniques and military equipment, developing new common training patterns. Commanding various military means synchronously as it had never happened before.	Learning training patterns of allies prior to mission. Having knowledge about technical and tactical characteristics of military equipment used by both allied countries and the country where operation is being held.
Personal Experiences	Officers' lack of experience in asymmetric warfare operations. Lack of adaptation skill to distinct multidimensional environments. Lack of communication skill. Lack of stress management skill.	Motivating personnel to participate in asymmetric warfare environment by informing them about local and multicultural character of the mission. Direct command of small unit commanders and personnel. Comprehending rapidly changing theatre conditions and making decisions wisely even under stressful circumstances.	Preparing officers mentally for forthcoming asymmetric warfare operations with any means such as, videos, news, demonstrations, experiences of veterans, natives and publications. Training officers for stress management and communication skills. Providing opportunity for officers to contact with natives of operation area prior to mission.

REFERENCES

[1] Caforio, G., 'Officer and Commander in Asymmetric Warfare Operations', *Journal of Defense Resources Management,* Vol. 4, No. 1, 2013, pp. 9-26.

[2] International Peace Institute, *The Management Handbook For UN Field Missions*. New York: United Nations, 2012, p. 1.

[3] Dandeker, C., and J. Gow, 'The Future of Peace Support Operations: Strategic Peacekeeping and Success', *Armed Forces & Society*, Vol. 23, No. 3, pp. 327-348.

[4] Miller, L. L., 'Do Soldiers Hate Peacekeeping? The Case of Preventive Diplomacy Operations in Macedonia', *Armed Forces & Society,* Vol. 23, No. 3, 1997, pp. 415-450.

[5] Kühne, W., 'Peace Support Operations: How to Make Them Succeed', *Internationale Politik und Gesellschaft,* Vol. 4, 1999, pp. 358-367.

[6] Sığrı, Ü., and Ü. Başar. 'An Analysis of Assessment of Peacekeeping Operations', *The Korean Journal of Defense Analysis,* Vol. 26, No. 3, 2014, pp. 389-406.

[7] Dandeker, C., and J. Gow. 'The Future of Peace Support Operations: Strategic Peacekeeping and Success', *Armed Forces & Society*, Vol. 23, No. 3, 1997, pp. 327-348.

[8] Tranca, O., and R. Garon. 'Fight It or Freeze It: Which Generation of Peacekeeping Operations is More Apt to Solve Conflicts', *Conference Paper presented at 49th ISA Annual Convention*, San Francisco, CA., March 25–30, 2007, p. 7.

[9] Ülgen, H. and, S. K. Mirze. *İşletmelerde Stratejik Yönetim,* Istanbul: BETA Basım Yayım Dağıtım A.Ş., 2014, p.24.

[10] Bartone, P. T., Adler, A. B. and Vaitkus, M. A., 'Dimensions of Psychological Stress in Peacekeeping Operations', *Military Medicine,* Vol. 163, 1998, pp. 587-593.

[11] Gourlay, C., 'Partners Apart: Managing Civil-Military Co-operation in Humanitarian Interventions', *Peacekeeping: Evolution or Extinction,* 2000, pp. 33-44.

[12] International Peace Institute. *The Management Handbook For UN Field Missions*. New York: United Nations, 2012, p. 1.

[13] Vanderstoep, S. W. and Johnston, D. D., *Research Methods for Everyday Life*, San Francisco, CA: Jossey Bass. 2009, p. 225.

[14] Robles, M. M., 'Executive Perceptions of the Top 10 Soft Skills Needed in Today's Workplace', *Business Communication Quarterly*, Vol. 75, No. 4, 2014, p. 455.

[15] Laker, D. R. and Powel, J. L., 'The Differences Between Hard and Soft Skills and Their Relative Impact on Training Transfer', *Human Resource Development Quarterly,* Vol. 22, No. 1, 2011, p. 113.

[16] Johnson, S. K., Garrison, L. L., Broome, G. H., Fleenor, J. W., and Steed, J. L., 'Go for the Goals: Relationship with the Goal Setting and Transfer of Training Following Leadership Development', *Academy of Management Learning & Education,* Vol.11, No. 4, 2012, pp. 555-569.

Appendix A. Interview Sheet

1. Demographic Data

Gender:
male female
Rank:
Service and specialty:
Years of service:
Marital Status:
single married
Operational experiences:
Theatre:
Year:
Duration:
Role:

2.Training and specific training

a. Which languages can you speak?

b. During your mission have you ever encountered with any problems about language competency?

c. Did you join any training program about peace operations?

d. Do you have any proposals on specific training for Peace Operations?

e. What was the suitability of preparation that you received in order to acquire intercultural communication competency in the theater of the mission?

3. Field experiences

a. Have you ever encountered with any logistical problems in Peace Operations? If yes, describe them.

b. Have you ever applied the Rules of Engagements (ROEs-lawful commands to use force) in some occasions? If yes, what was their impression on you? Have you ever faced any problems in applying them?

c. How was the hierarchical relationships in Peace Operations that you took part?(degree of autonomy in the field)?

d. How were your relationships with other actors in the area? (other units of the coalition, the local armed forces, local communities, local civil authorities, international organizations, NGOs, mass media etc.)

e. Have you experienced any interoperability problems with the other military units?

f. Have you experienced of particular problematic situations in the field? If yes, what were the solutions and results?

4. Unit Commanded

a. What was the training level of the unit you served?

b. How was your unit's compliance with the materials, proposals?

c. How was your unit's morale: trends during mission, influencing factors, cases of defection, possible cases of PTSD (posttraumatic stress disorder).

5. Personal experience

a. Are you satisfied with (the) Mission/s;

b. What is your personal assessment of the results in peace operations?

c. Do you desire to be sent in asymmetric warfare missions again in future?

d. Do you have anything more to say?

LEARNING INSTITUTIONS' VULNERABILITY TO TERRORISM. AN OVERVIEW OF ISSUE COVERAGE IN NOWADAYS' MEDIA AND SPECIALISED LITERATURE & A CASE STUDY OF GARISSA UNIVERSITY COLLEGE, KENYA

Elijah Onyango Standslause ODHIAMBO*
Stella WASIKE**
Sussy Namaemba KIMOKOTI**

*Kenya Military Academy, Ministry of State for Defense, Kenya
**Department of Peace and Conflict Studies, Masinde Muliro University of Science Technology, Kenya

Terrorist groups like the Islamic State of Iraq and the Levant, (ISIL), Al-Shabaab and Al-Qaeda have the knowledge and the capability to strike anywhere in Kenya and with Kenya Defense Forces' (KDF) incursion into Somalia in mid-October 2011, the citizens in Mandera, Moyale, Garrisa, Nairobi and Mombasa have been attacked and lives lost. This confirms that Al-Shabaab and Al-Qaeda have been motivated by Kenya Defense Forces' (KDF), now under the African Union Mission for Somalia (AMISOM) incursion into Somalia and they will continue to attack Kenya as a way of retaliation. The importance of Learning Institutions makes it a soft target for ISIL, Al-Shabaab and Al-Qaeda terrorists. The fact that ISIL, Al-Shabaab and Al-Qaeda terrorists will strike at Learning Institutions is real and this can be confirmed by the Garissa University College, Kenya terror attack where 148 people were killed on 2 April, 2015. The risk of terrorists attack against this critical infrastructure can result in communal disruptions, disarray, and even overreaction on the part of governments and the public as a result of any attack, may be high. We argue that Learning Institutions are vulnerable to ISIL, Al-Shabaab and Al-Qaeda terrorist attacks. In summary, the article looks at the concepts of terrorism, the dangers of attack on Learning Institutions, Kenya's Learning Institutions preparedness and concludes with a set of recommendations.

Key words: *vulnerability, terrorism, learning institutions.*

1. INTRODUCTION

Terrorism is a subfield of peace and Conflict Studies that analyses the interactions between states and other actors in their engagement with each other over legitimacy [1]. It is one of the most disputed terms and has no comprehensive definition [2]. Terrorism refers to the deliberate killing of civilians, or to the doing of extensive damage to their property, with the intention of spreading fear through a population and communicating a political message to a third party, usually a government[3].

A terrorist is someone who opposes the established order either at national level or internationally. Even if engaged in a restrained military campaign against an un-democratic, racist or repressive regime, these individuals are still 'terrorists', and the government forces that oppose them 'counter-terrorists' [4].

The French Republic coined the term 'terror' as a measure to counter-revolutionaries against the weak

government in 1795 and as a policy to protect itself [5]. The Bolsheviks used it to legitimize their actions against enemies of the state [6]. Jenkins' statement according to which [7] 'One man's terrorist is another man's freedom fighter' is often used to highlight the problem of implying a moral judgment when classifying the term 'terrorism'. If one identifies with the victim of the attack, that is considered terrorism, but if one can identify with the perpetrator he or she is seen as a liberator. This elusiveness reflects the fact that the meaning of the term terrorism remains contested. It can be used in relation to violence by states against their subjects, sometimes referred to as *'enforcement terrorism'* or *'terrorism from above'*. [8] It can be used more broadly to describe violent actions in a civil war or other conflict. It can also describe isolated acts of violence separate from a situation of war, intended to cause terror rather than contribute to a broader conflict. By extension, this type of terrorism can refer to acts of violence carried out internationally, in a third country apart from the location of its political cause [9].

"Terrorism means premeditated, politically motivated violence perpetrated against non-combatant targets by sub-national groups or clandestine agents, usually intended to influence an audience." The definitions propose the motive of *"furtherance of political or social objectives"*. Such motives include religious, cultural, economic or psychological factors. Increasingly important, however, is the question of targets [10].

In traditional discussions about terrorism, targets are usually governments, political figures, objects of economic or social significance, or random civilians. But the motives and targets can include environmental and ecological resources such as water and built water systems. The social and cultural value and importance of oil pipeline systems also make them attractive targets. By calling attention to the inability of governments to protect vital symbols of civilization, terrorists can raise doubts about controlling authorities [11]. *"The relatively high efficiency of terrorism derives from its symbolic nature. If the terrorist comprehends that he is seeking a demonstration effect, he will attack targets with maximum symbolic value."* There are few soft targets with more symbolic power than learning institutions [12].

The United Nations General Assembly's Declaration on Measures to Eliminate International Terrorism, set out in its resolution 49/60 that terrorism includes *"criminal acts intended or calculated to provoke a state of terror in the general public, a group of persons or particular persons for political purposes"* and that such acts *"are in any circumstances unjustifiable, whatever the considerations of a political, philosophical, ideological, racial, ethnic, religious or other nature that may be invoked to justify them"*.[13]

2. METHODOLOGY

The Qualitative Research method was used in this study. Primary and secondary data were analyzed. The lead researcher being a soldier in Kenya Defense Forces (KDF) was able to collect primary data by interviewing and analyzing the narratives and the stories told by fellow soldiers, officers who had been involved in rescue operations and students who were rescued from Garissa University College. A total of 113 people were interviewed out of which 50 were military officers and 63 students. Secondary data on the subject drawn from books, journals, news papers, Conference proceedings, Government/corporate reports, theses and dissertations, Internet and magazines was critically analyzed. The findings and analyses are discussed below.

3. TERRORIST ATTACKS ON LEARNING INSTITUTIONS

3.1. Precedence

On Tuesday, December 16 the militant group Tehrik-i-Taliban Pakistan (TTP) carried out a suicide bombing and armed assault at the Army Public School in Peshawar, Pakistan. More than 140

people were killed in the attack, most of them children, and more than 100 others were injured. To provide context for the attack, this report describes historical patterns of terrorist attacks targeting educational institutions, based on data from the Global Terrorism Database. Between 1970 and 2013 more than 3,400 terrorist attacks targeting educational institutions took place in 110 countries. These attacks comprised 2.7 percent of all terrorist attacks worldwide during this time period [14].

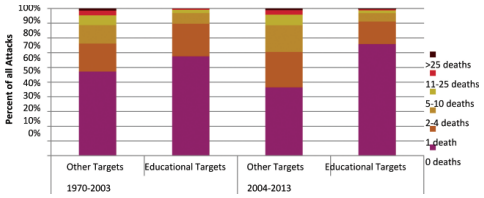
3.2. Lethality

Although attacks on educational targets have the capacity to be highly lethal, this is certainly atypical. In fact, the average lethality of attacks on educational targets was 0.8 deaths per attack, compared to 2.3 deaths per attack on average for all other types of targets combined. Many attacks against schools and universities, including many of those in Pakistan, took place when the buildings were unoccupied and targeted the facility rather than individuals [15].

This produced a considerably lower likelihood that the attack caused any casualties. More than 70 percent of all terrorist attacks on educational targets between 1970 and 2013 (2,365 attacks) caused no deaths, compared to approximately 50 percent of attacks on other types of targets. Between 2004 and 2013, the percentage of non-lethal attacks against education targets actually increased to 76 percent, while attacks against other types of targets were more likely to be lethal than they had been previously [16].

In contrast, a relatively small number of terrorist attacks on education targets worldwide were highly lethal. The percentage of attacks on educational targets that caused more than 25 deaths increased more than six-fold, from 0.07 percent (1 attack) between 1970 and 2003 to 0.54 percent (10 attacks) between 2004 and 2013. The most lethal terrorist attack on an educational target took place in 2004 in Russia when several dozen Chechen and Ingush militants affiliated with the Riyadus-Salikhin Reconnaissance and Sabotage Battalion of Chechen Martyrs attacked School Number One in Beslan. The assailants, armed with firearms and wearing explosives, held approximately 1.200 staff and students hostage for three days. Ultimately, 344 people were killed, including more than 100 children, and more than 700 others were wounded making this one of the deadliest terrorist attacks in modern history. In addition to the Beslan attack, highly lethal attacks on educational targets have taken place in Croatia (1 attack), Iraq (3 attacks), Kenya (1 attack), Nigeria (3 attacks), and Syria (2 attacks). However, none of these involved more than 75 fatalities [17].

Table 1. Lethality of Terrorist Attacks against Educational Institutions and Other Targets, 1970-2013
Source: *Global Terrorism Database*



3.3. Location and tactics

The country that experienced the most terrorist attacks on educational targets between 1970 and 2013 was Pakistan, where 753 attacks targeted educational institutions, 724 (96%) of which took place between 2004 and 2013. Between 2004 and 2013, far more attacks on educational targets took place in Pakistan than in the next three countries combined: Thailand (213), Afghanistan (205), and Iraq (184). [18] Although many attacks on educational targets took place in Pakistan, unlike the recent attack in Peshawar, most were not lethal. In fact, Russia, Iraq, and Nigeria experienced more deaths in attacks on educational targets compared to Pakistan. As a result of the Beslan attack described above, fatalities in attacks on educational institutions comprised nearly one-quarter of all deaths due to terrorist attacks in Russia between 2004 and 2013. In contrast, although several hundred people were killed in terrorist attacks on educational institutions in

Iraq during this same ten year period, Iraq suffered far more attacks on other types of targets and therefore attacks on educational targets comprised only 2% of all terrorist attacks and 1% of all deaths from terrorist attacks [19].

Table 2. Ten Countries with Most Terrorism against Educational Institutions, Attacks and Fatalities, 2004-2013

Country	Terrorist Attacks on Educational Institutions	Percent of all Terrorist Attacks	Country	Fatalities in Attacks on Educational Institutions	Percent of all Fatalities
Pakistan	724	10%	Russia	351	24%
Thailand	273	9%	Iraq	339	1%
Afghanistan	205	4%	Nigeria	289	6%
Iraq	154	3%	Pakistan	179	1%
India	143	3%	Syria	138	6%
Nigeria	92	6%	Afghanistan	126	1%
Philippines	56	3%	Thailand	113	7%
Nepal	35	5 %	Kenya	50	10%
Turkey	33	7 %	India	45	1%
Bangladesh	31	10 %	Sri Lanka	21	1%

The global prevalence of terrorist attacks against educational institutions was highest in 1970 and 1971 (10% and 9% of all attacks, respectively), when the overall volume of terrorism was relatively low. Between 1972 and 2003, 2 percent of all attacks each year, on average, targeted educational institutions. Globally, 69 percent of attacks on educational institutions between 1970 and 2013 targeted schools, universities, and educational buildings; 19 percent targeted teachers, professors, and instructors, and 11 percent targeted other educational personnel. However, the timing and tactics of attacks on educational targets differ depending on the location or context. To better understand the nature of these attacks, we compare patterns in several key countries that have recently experienced a growing trend in attacks on educational targets Pakistan, Thailand, Nigeria, and Afghanistan and one country that experienced a significant number of attacks on educations historically, the United States [20].

3.3.1. Pakistan

In Pakistan terrorist attacks on educational institutions took place between 1990 and 2013, and targeted schools, universities, and educational buildings at a much higher rate (88%) than worldwide (69%). The vast majority of the attacks on educational infrastructure in Pakistan (94%) were non-lethal, and they typically involved the use of explosives (90%) or arson or incendiary devices (7%) against primary, middle, or high schools that were unoccupied at the time of the attack. The primary goal of these attacks appears to be disruption of the educational process, particularly at girls' schools, rather than loss of life [21].

Although the perpetrators were unidentified in more than three-quarters of the attacks on educational institutions in Pakistan, Tehrik-i-Taliban Pakistan (TTP) was responsible for 136 such attacks, 77 percent of those with known perpetrators. Nearly all of the attacks attributed to TTP (131) were not lethal, however four attacks killed one or two individuals. One TTP attack, at Hussaini Madrassa in Peshawar in 2013, was carried out by a suicide bomber and two gunmen and killed 14 people and wounded 32 others [22].

3.3.2. Thailand

In Thailand, terrorist attacks against educational targets occurred between 1980 and 2013, but were much more common in the 2000s and involved different tactics than those in other locations. Attacks on education in Thailand were more than twice as likely to target teachers, professors, and instructors (43%, compared to 19% globally). Nearly all of these attacks were either armed assaults (66%) or bombings (30%) aimed at teachers and the police or military security forces that routinely escorted them on their commute [23]. Although Thailand also experienced numerous non-lethal attacks on vacant school buildings like those in Pakistan, these comprise approximately half of all attacks on educational targets. Overall, terrorist attacks against educational targets in Thailand were much more likely to be deadly more than 40 percent of attacks resulted in at least one fatality [24].

3.3.3. Nigeria

With the exception of one attack that took place in 1988, all terrorist attacks on educational targets in Nigeria occurred between 2008 and 2013, the most recent year for which data are available. The group commonly known as "Boko Haram" (a Hausa phrase that loosely translates as "Western education is a sin") was responsible for carrying out all such attacks for which a perpetrator was identified (69%). Preliminary data from the first half of 2014 indicate that this group's practice of targeting schools continued as they gained greater notoriety for kidnapping 276 students from a government-run secondary school for girls in Chibok, and also carried out approximately 10 other attacks targeting educational institutions [25].

Terrorists' tactics against educational targets in Nigeria were somewhat varied and primarily included armed assaults (22%), bombings (27%), facility/infrastructure attacks (35%), and kidnappings (12%). They were considerably more likely to target schools, universities, and educational buildings (76%) than teachers or other personnel (24%). Educational targets of terrorist attacks in Nigeria included primary and secondary schools as well as colleges, universities and religious institutions. Although 63 percent of attacks on educational targets in Nigeria were non-lethal, several devastating attacks against schools have taken place. In addition to the kidnapping in Chibok in 2014, Boko Haram carried out two assaults in 2013 that each killed more than 40 people at a secondary school and an agricultural college, respectively, in Yobe state [26].

A distinct pattern among attacks against educational targets in Nigeria involves the prevalence of multi-part, coordinated attacks. Among all terrorist attacks on educational institutions worldwide, approximately 15 percent were part of a coordinated attack. Among all terrorist attacks in Nigeria against any type of target, 28 percent were part of a coordinated attack. However, 46 percent of all attacks on educational institutions in Nigeria were part of a coordinated event in which multiple attacks either on other educational targets or other types of targets were linked together based on timing, location, and perpetrator. For example, in October 2012 Boko Haram burned eight different schools in one night, though no casualties were reported [27].

3.3.4. Afghanistan

Like attack patterns in Nigeria, the first attack on an educational target in Afghanistan was recorded in 1988, but no others occurred until the 2000s when their prevalence increased considerably. Also, like Nigeria, only one group in Afghanistan was responsible for all of the attacks on educational targets in which the Taliban was identified as a perpetrator (46%). As we see with most attacks on educational targets, many of those in Afghanistan were non-lethal (71%). However, a unique pattern emerges with respect to the injuries caused by these attacks [28]. While it appears that some of the attacks were intentionally non-lethal (e.g., they targeted vacant buildings), they were much more likely to cause non-fatal injuries. Notably, between 2009 and 2013, 20 attacks involving chemical weapons such as toxic gas or poisoned water supply were reported in Afghanistan. Although these attacks were non-lethal, symptoms were reported by scores of students and staff, including five incidents in which more than 100 people became ill. Authorities typically suspected that the Taliban was responsible for these attacks, though the group did not claim responsibility for these attacks and often denied involvement [29].

3.3.5. United States of America

The unusual high prevalence of attacks on educational institutions worldwide in 1970 and 1971 was almost entirely driven by patterns of terrorist activity in the United States. Of the 103 attacks on educational targets worldwide in 1970 and 1971, 91 (88%) took place in the United States. These attacks, which occurred in 23 different states,

occurred in the context of the anti- war movement and in the wake of the civil rights movement. Responsibility for the attacks was occasionally attributed to formal organizations like the Weather Underground (5%) or the Chicano Liberation Front (10%), but more often the only information available about the perpetrators of these attacks is that they were "student radicals", (50%; nearly all attacks were at colleges and universities) "white extremists" (13%; often located at recently desegregated schools), or "black nationalists" (8%). None of these attacks on schools caused any deaths; four resulted in injuries. As the United States' engagement in the Vietnam War declined, the relative frequency of attacks on educational targets decreased dramatically: there were only five in 1972 [30].

A second wave of terrorist attacks on educational institutions in the United States began in the late 1980s. Between 1987 and 2013, 80 percent (32 attacks) of all terrorist attacks on educational institutions in the United States were carried out by radical environmentalist groups, including the Animal Liberation Front (ALF), Earth Liberation Front (ELF), and groups calling themselves "The Justice Department" and "Revolutionary Cells-Animal Liberation Brigade." These attacks typically targeted university research laboratories or researchers personally, and caused extensive property damage but no deaths and only one injury. Although the specific value of the damage was often not reported, the eleven attacks for which values are known caused more than $5.6 million in damages [31].

4. GARISSA UNIVERSITY COLLEGE TERRORIST ATTACK

With its horrific attack on a Kenyan university, the Somali militant group Al-Shabaab has given up all pretense of governing and has joined the depths of global jihadi depravity. On April 2, 2015, our gunmen affiliated with Somalia's Al-Shabaab jihadist-terror group, entered Garissa University College in Garissa, Kenya, killing 148 and wounding dozens."The assault on Garissa a pastoral area that is home to many Somali refugees stands in stark contrast to the group's deadly 2013 attack on Nairobi's Westgate shopping center, which was frequented by expats and rich Kenyans…" This is part of a perceptible shift in modern terror tactics; increasingly, the world's terror organizations seem to be turning away from attacks on subway cars and airport terminals, to focus lethal attention on institutions of learning [32].

The violence in Garissa marks the bloodiest terrorist attack on Kenyan soil since the 1998 bombing of the U.S. Embassy in Nairobi and is Al-Shabaab's most high-profile violence in the country since the 2013 attack on the Westgate mall. It also represents a final point in al Shabab's long evolution from a populist resistance movement into a full-blown, international terrorist organization. The execution of students has special significance for Al-Shabaab: The high-profile bombing of a graduation ceremony for newly minted doctors in Mogadishu in 2009 was one of the group's most embarrassing political blunders, and it has largely refrained from direct attacks on students since then. Its willingness to claim this latest incident marks a visible shift in strategy [33].

Assuming that the evocation of Boko Haram is deliberate, the Garissa assault could signal an intention to realign al-Shabab, long linked to al Qaeda, with the Islamic State. (Boko Haram pledged allegiance to the Islamic State in March.) If so, Al-Shabaab should be expected to use ever more flamboyantly violent tactics in the future, as it seeks to compete with other Islamic State affiliates for notoriety and for relevance in the global jihad. [34]

One reason that "terrorist organizations might choose to target learning institutions is that learning institutions, children and students act as powerful symbolic targets". Learning institutions represent 'soft targets'. "A soft target is a relatively unguarded site where people congregate, normally in large numbers, thus offering the potential for mass casualties." But practicalities aside, there are also specific, political

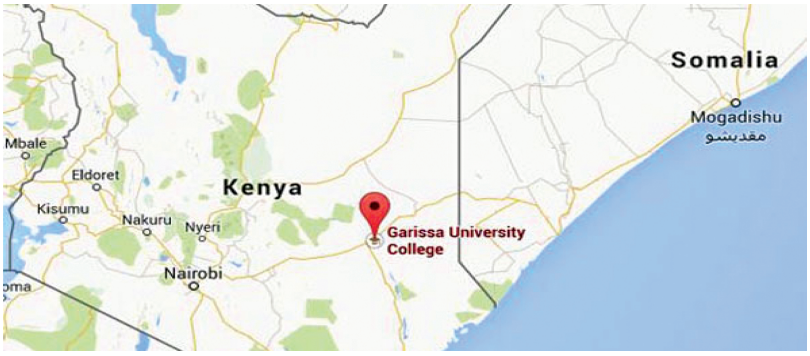


Fig. no. 1. A map showing Garissa University College in northeastern Kenya. Gunmen attacked the institution on April 2, 2015. PHOTO GOOGLE MAPS

and cultural reasons a terrorist cell might target learning institutions. And this is where such acts diverge from the usual modes of modern terror [35].

Though bombing public transport takes months, if not years of intensive planning, it is intended to make the act appear random any one could become a victim by passing through at the wrong time. The terrifying power of this particular terror tactic is, after all, its unpredictability. An ideological message is usually announced in the aftermath [36].

Attacking learning institutions, however, is predictable because the act is the message. Terrorists who attack learning institutions intend to deplete the number of institutions disseminating philosophies ostensibly contradictory to their worldview. For example, "Boko Haram," roughly translated from the Hausa language means "Western education is forbidden". "They're attacking what they see as the institutions of culture, and in particular the institutions of Western culture". "They see that the process of Westernization begins at learning institutions" [37].

It is not difficult to see why Garissa was targeted. Kenyan learning institutions consistently rank toward the best in the region, and the overall Kenyan population demonstrates one of the highest literacy rates on the continent. It is also a highly diverse place, with regards to religion and ethnicity, unlike many African countries occupying the borderlands between Muslim-dominated North Africa and the Christian-dominated south. Consequently, Kenyan learning institutions are well-positioned for the maximal exchange of cultures, politics, and ideas a concept that stands in direct opposition to the rigid ideologies of groups like Al-Shabaab [38].

Al-Shabaab has a history of interfering in local education. In areas of Somalia under the group's control, once public learning institutions have been gender segregated, with the majority of girls being intimidated against enrolling, if not forcibly removed from learning institutions all together. Whole classes of boys have been pulled out of learning institutions and conscripted into its ranks [39].

In an audio message released following the attack at Garissa, Ali Mohamoud Raghe, a spokesperson for Al-Shabaab, said: "the university had been targeted because it was educating many Christian students in 'a Muslim land under colony', according to The New York Times, 'a reference to the large ethnic Somali population in a part of Kenya that Somalia once tried to claim. He called the university part of Kenya's 'plan to spread their Christianity and infidelity'. That makes Al-Shabaab's objective crystal-clear, and all too familiar: to wipe out a generation of ideological non-adherents [40].

5. CONCLUSION

Most Kenyan residents admit that radicals, Al-Shabaab, are living among them. But the government through police campaign is backfiring some Muslims in places like Mombasa, because of police

moves like bursting into mosques during prayer without removing their boots is a major affront to the religion.

The government needs to rethink its strategies so that they can benefit from intelligence from the locals where Al-Shabaab recruiting the youths is most likely. Muslims in Mombasa are also angry at religious leaders and elders from umbrella organizations like the Supreme Council of Kenya Muslims. Locals accuse these groups of staying silent not only on police abuses, but extremism. None condemned the radical youth's takeover of the mosques, for example, nor the mass arrests and raids by the police. Therefore, the government should abandon the realist approach where it is only the state as the actor. Since track one has had little impact, they should use track one and a half.

6. RECOMMENDATIONS

A. The local security personnel should identify and make a list of prominent/ high profile learning institutions in their jurisdiction for the purpose of standard operating procedure (SOP). Each learning institution should have concrete boundary wall, with 3 to 4 gates and each gate should be manned by enough guards, on a 24- hour basis.

B. There should be proper illumination along the perimeter so that nobody can jump over the wall into the learning institutions in the night for any nefarious activity. Concertina wire may be fixed on the iron grills above the boundary wall to deter any one from jumping over the wall.

C. Installation of CCTV systems all along the boundary as well as some additional locations inside the premises, to monitor the movement of any suspicious person, with recording facilities for the last three days, at least. The system should also have requisite video analytics to detect any intrusion and raise an audio as well as visual alarm. CCTV system alarm may also be connected to the identified gates to close them automatically.

D. A visual anti-sabotage check of the entire learning institutions should be carried out by the security staff of the learning institutions before the students start arriving in the institution. They should also check the footpath in front of the learning institutions, all along the boundary wall including the parking area to detect any suspicious objects lying unattended there.

E. Learning Institutions staff, teachers and students should be regularly briefed not to touch any unattended object lying anywhere inside/ outside the school. In case any such object is found, the person who finds it should immediately bring it to the notice of the chief security officer of the learning institutions. In case it is seen by a student, he should immediately bring it to the notice of his first available teacher, who in turn will inform the nodal security officer/ principal of the school. All should also be briefed to keep away from such an object.

REFERENCES

[1] Onkware, K., Odhiambo, E.O.S., & Ntabo, O.M. (2010). "Counter- terrorism Strategies by Kenya against Somalia Terrorism", Egerton Journal of Humanities, Social Sciences and Education, Vol.IX, pp.99-109.

[2] Schmid, A. P. (2004). "Frameworks for Conceptualising Terrorism", Terrorism and Political Violence, Vol. 16, No. 2, pp. 197-221.

[3] Waltzer, M. (2002). "Five Questions about Terrorism", Dissent, vol. 49, no. 1.

[4] Gearty, C. (2003). "Terrorism and Morality", paper delivered at the London School of Economics, London, January.

[5] Sinclair, A. (2003). "An Anatomy of Terror – A History of Terrorism", (London: Macmillan).

[6] Halliday, F. (2001). "Two Hours That Shook The World": September 11, 2001, Causes and Consequences. London: Saqi.

[7] Jenkins, B. M. (2002). Countering al Qaeda: An Appreciation of the Situation and Suggestions for Strategy, RAND Corporation (MR-1620).

[8] Bloom, M. (2005). "Dying to Kill: The Global Phenomenon of Suicide Terror". New York: Columbia University Press, p. 98.

[9] Mwakio, P. (2011). "Instability in Somalia affecting regional tourism" - Balala. Retrieved October 11, from http://www.standardmedia.co.ke.

[10] Kroll, D. (2006). Securing the Water Supply. Protecting a Vulnerable Resource. Tulsa : PennWell Publishers.
[11] Gleick, P. H. (2006). Water and terrorism. In The World's Water 2006–2007. TheBiennial Report on Freshwater Resources. Gleick, P. H. (ed.). Covelo, CA: Island Press, (in press).
[12] Thornton, T. P. (1964). Terror as a weapon of political agitation. In Internal War: Problems and Approaches. Eckstein, H. (ed.). New York: Free Press of Glencoe.
[13] United Nations (1994). "General Assembly's Declaration on Measures to Eliminate International Terrorism", set out in its resolution 49/60.
[14] British Broadcasting Corporation (BBC), (2014). "As it happened: Pakistan school attack". BBC. Retrieved 17 December 2014. http://www.bbc.com/news/live/world-asia-30491113
[15] idem
[16] Thompson, Mark (26 December 2008). "The $1 Trillion Bill for Bush's War on Terror". TIME. Retrieved 26 March 2011. http://content.time.com/time/nation/article/0,8599,1868367,00.html
[17] Institute for Economics and Peace, (2014). Global Terrorism Index Report. http://www.visionofhumanity.org/sites/default/files/Global%20Terrorism%20Index%20Report%202014_0.pdf
[18] idem
[19] British Broadcasting Corporation (BBC), (2014). "As it happened: Pakistan school attack". BBC. Retrieved 17 December 2014. http://www.bbc.com/news/live/world-asia-30491113
[20] Institute for Economics and Peace, (2014). Global Terrorism Index Report. http://www.visionofhumanity.org/sites/default/files/Global%20Terrorism%20Index%20Report%202014_0.pdf
[21] British Broadcasting Corporation (BBC), (2014). "As it happened: Pakistan school attack". BBC. Retrieved 17 December 2014. http://www.bbc.com/news/live/world-asia-30491113
[22] Institute for Economics and Peace, (2014). Global Terrorism Index Report. http://www.visionofhumanity.org/sites/default/files/Global%20Terrorism%20Index%20Report%202014_0.pdf
[23] Brownstein, Ronald (6 March 2015). "The Long War". National Journal (Atlantic Media). Retrieved 10 March 2015.
[24] Institute for Economics and Peace, (2014). Global Terrorism Index Report. http://www.visionofhumanity.org/sites/default/files/Global%20Terrorism%20Index%20Report%202014_0.pdf
[25] ibidem
[26] Kessler, Glenn (2014). "Boko Haram: Inside the State Department debate over the 'terrorist' label". The Washington Post. Retrieved 3 August 2014. http://www.washingtonpost.com/blogs/fact-checker/wp/2014/05/19/boko-haram-inside-the-state-department-debate-over-the-terrorist-label/
[27] Moore, Jack (2015). "Nigerian Military Enter 'Final Stages' of Boko Haram Offensive. Newsweek. Retrieved May 2, 2015. http://europe.newsweek.com/nigerian-military-enter-final-stages-boko-haram-offensive-324384
[28] Institute for Economics and Peace, (2014). Global Terrorism Index Report. http://www.visionofhumanity.org/sites/default/files/Global%20Terrorism%20Index%20Report%202014_0.pdf
[29] Shinkman, Paul. D. (2013). "Obama: 'Global War on Terror' Is Over". U.S. News & World Report. Retrieved 24 June 2013. http://www.usnews.com/news/articles/2013/05/23/obama-global-war-on-terror-is-over
[30] Institute for Economics and Peace, (2014). Global Terrorism Index Report. http://www.visionofhumanity.org/sites/default/files/Global%20Terrorism%20Index%20Report%202014_0.pdf
[31] Thompson, Mark (26 December 2008). The $1 Trillion Bill for Bush's War on Terror". TIME. Retrieved 26 March 2011. http://content.time.com/time/nation/article/0,8599,1868367,00.html
[32] Honan, Edith (2015). "Al Shabaab storms Kenyan university, 14 killed". Reuters. Retrieved 2 April 2015. http://www.reuters.com/article/2015/04/03/us-kenya-security-college-idUSKBN0MT0CK20150403
[33]Mutambo,AggreyandHajir,Abdimalik, (2 April 2015). "147 killed as Garissa University College attacked by gunmen". The East African. Retrieved 3 April 2015. http://www.theeastafrican.co.ke/news/70-killed-as-Garissa-University-College-attacked-by-gunmen/-/2558/2674310/-/gcoefgz/-/index.html
[34] Tilde, Aliyu. U, (2014) "An in-house Survey into the Cultural Origins of Boko Haram Movement in Nigeria". Retrieved 24 July 2014. http://www.gamji.com/tilde/tilde99.htm.
[35] Zirulnick, Ariel (2015). "Kenya university attack puts security capabilities under fresh scrutiny". Christian Science Monitor. Retrieved 3 April 2015. http://www.csmonitor.com/World/Africa/2015/0402/Kenya-university-attack-puts-security-capabilities-under-fresh-scrutiny-video

[36] Mutambo, Aggrey and Hajir, Abdimalik, (2 April 2015). "147 killed as Garissa University College attacked by gunmen". The EastAfrican. Retrieved 3 April 2015. http://www.theeastafrican.co.ke/news/70-killed-as-Garissa-University-College-attacked-by-gunmen/-/2558/2674310/-/gcoefgz/-/index.html

[37] Odhiambo E. O. S; Prof.Kennedy Onkware and Maito T.Leshan (2015) "Domestic Radicalisation in Kenya" published by Global Institute for Research and Education in Global Journal of Interdisciplinary Social Sciences (GJISS) G.J.I.S.S.,Vol.4(3): 48-56(May-June, 2015), pp.48-56 ISSN: 2319-8834 www.gifre.org.

[38] Odula, Tom; Muhumuza, Rodney and Senosi, Khalil (2 April 2015). "Al-Shabab militants kill 147 at university in Kenya". Associated Press. Retrieved 2 April 2015. http://bigstory.ap.org/article/1f42fc2fd034658a3a22dff9d6d0612/police-gunmen-attack-university-eastern-kenya

[39] Agence France-Presse (AFP). 13 April 2015. "Deadly stampede at Kenya university after power cable explosion sparks fears of terror attack". AFP. 13 April 2015. Retrieved 14 April 2015. http://www.abc.net.au/news/2015-04-13/stampede-at-kenya-university-kills-one2c-injures-more-than-100/6387224

[40] Higgins, Abigail and Starkey, Jerome, (6 April 2015). Kenya bombs Somalia to avenge campus massacre. The Times, (may require a subscription), Retrieved 6 April 2015 http://www.thetimes.co.uk/tto/news/world/africa/article4403533.ece.

AN ANALYSIS OF THE LINGUISTIC DIVERSITY OF CYBERSPACE

Cezar VASILESCU

Professor dr. habil., eng.
Regional Department of Defense Resources Management Studies, Brasov, Romania

The article proposes an analysis regarding the relationship between Internet usage and language. Moreover, it highlights the impact the latter have on the human interactions depicted by future knowledge societies within the framework of the Information Age. This endeavor explores from a linguistic perspective how cyber users' native language affects their Internet usage patterns. Hence, its final goal is to determine whether the Internet is expected to remain overbalanced in English usage. In this respect, the relationship between web users' native language and the language content of the Internet websites they access is also examined based on statistic data.

Key words: *language analysis, websites, Internet users, statistics.*

1. INTRODUCTION

The focus of this article is to present the relationship between Internet usage and language and to highlight the impact it is creating on the human interactions among future knowledge societies, within the framework of the Information Age.

A perception generally accepted by most of the people is that during the last 20 years, English language becomes the *de facto* standard for Internet communication (both for business and academic purposes) and attained the status of a so called "global language". The Internet is for sure an effective instrument for circulating English all over the world and there is much more Internet content available in English than in any other language.

2. THE RELATIONSHIP BETWEEN WEB USERS' NATIVE LANGUAGE AND THE LANGUAGE CONTENT OF THE INTERNET WEBSITES

In this paragraph we will examine how native language of cyber users affects their Internet usage patterns from a linguistic perspective. The final goal is to determine whether the Internet is expected to remain overbalanced in English.

The English language advantage in terms of Internet content was determined by the fact that early web users were native English speakers. However, this advantage is very likely to diminish in the future, because of the faster growing usage of Internet resources among non-native English speakers.

A key determinant of whether the web content will remain significantly in English is if non-English speakers will continue to use English language websites [1]. In such a case, the existing web content providers would have a strong (economically driven) interest to provide their content in English, and almost no enthusiasm to create non-English versions of their sites.

The usage of language on the Internet can be viewed as a three step process:

- *In the short-term* - individuals decide which websites to visit (based on their interests, language skills and on the available relevant

offerings in other languages), which determines actual Internet usage;

- *In the medium term* – websites' owners decide which language to use for their site, and whether to offer it in multiple languages, based on the amount of traffic a site expects to attract in one language or another;
- *Over the long term* - individuals make decisions about which languages to learn, based partially on the interest to access specific content, as well as the desire to communicate directly with speakers of other languages.

Let us make a translation of the well known network economic effect (the value that consumers place on a particular product increases as the total number of consumers who use identical or compatible goods increases) to the topic of language used on the Internet. The principle stands correct and we can observe a clear network effects application here: the value of the network depends on the total number of subscribers who have access to the network. The more widely a language is used, learning it as a second language is more valuable.

The value of speaking English increases as the number and content (books, journals, movies) of English language websites increases. This will lead to an increase in the number of non-English speakers learning English in order to have access to English language websites, since individuals who speak English will have more websites to use.

Consequently this will lead to an increase in the number of English language websites [2]. It might be conceivably to experiment in the future the *snowball effect* [3]: once a system has gained an initial lead, there is *"a natural tendency towards de-facto standardization"*, which resembles the organizational behavior related concept of *groupthink* [4]. For this reason, it is possible that a large portion of Internet to remain in English (as a dominant language on the web), even if studies shown that there are more native Chinese and Spanish speakers than there are native English speakers.

The statistics done over the years are particularly interesting when it comes to estimate the number of Internet users by language. Because of the importance of the subject, and due to the lack of sources, in the paragraphs below we are presenting three statistical data sets from 2011, 2013 and 2015, which might help us finding trends about the hierarchy of the top ten languages on the Internet.

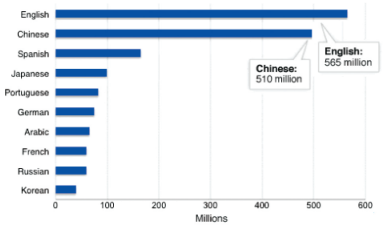


Fig. no. 1. Top ten languages on the Internet as of May 2011 [5].

This United Nations Broadband Commission's study suggests that Chinese could soon replace English as the most commonly spoken language on the Internet. The graph shows that English remained the world's most widely spoken language on the web, with 565 million people (27 %) of the global online population using it as their main language, while Chinese web users continue to grow rapidly, reaching 510 million people (24%) of the world's total. The study predicted that if current growth rates continue, Chinese users may outnumber English-speaking users by 2015, result invalidated by a more recent study [6].

The third study was also made by Internet World Stats, which presents its latest 2015 estimates for Internet Users by Language. The figure below publishes details for the top ten languages in the Internet.

Table 1. Estimates of the number of Internet users by language as of December 31, 2013 [7]

Rank	Language	Internet users	Percentage
1	English	800,625,314	28.6%
2	Chinese	649,375,491	23.2%
3	Spanish	222,406,379	7.9%
4	Arabic	135,610,819	4.8%
5	Portuguese	121,779,703	4.3%
6	Japanese	109,626,672	3.9%
7	Russian	100,700,000	3%
8	German	81,139,942	2.9%
9	French	78,891,813	2.8%
10	Malay	75,459,025	2%
11 –36	Others	440,087,029	15.7%
Total		2.81 Billion	100%

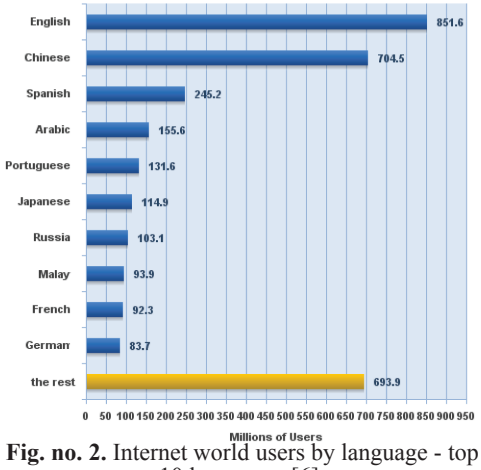


Fig. no. 2. Internet world users by language - top 10 languages [6].

The large number of English language websites might determine non English speakers to learn English so that they can access them.

Another conventional wisdom suggests that English as a second language will be a working language that will enable collaboration without threatening the survival of native tongues. The idea is that the non-native children, who learn English, will work and think in their own language, but English will allow them to communicate and interact, being a bridge language of economic opportunity.

To analyze the future of language in a connected world we have to discover precisely enough what percent of the Internet's content is written in English.

Early studies [8] estimate that 80 percent of the World Wide Web's content in 1997 was in English, while another study from 2003 was estimating that only 72 percent of online content was in English. Both percentages mislead researchers to suggest that English had a head start other languages would find difficult to overcome. The reason is that fact it is incredibly difficult to generate a believable estimate of language diversity online, because it is hard to choose a credible and representative test sample of websites.

A study regarding the usage of content languages for websites was made by w3techs.com [9]. It includes only the top 10 million websites (top 1 million before June 2013) based on the website popularity rankings provided by Alexa (an Amazon.com company) using a 3 months average ranking. In this case, Alexa rankings serve the purpose of providing a representative sample of very well established sites.

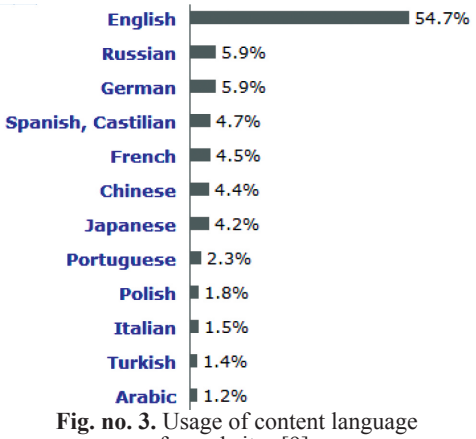


Fig. no. 3. Usage of content language for websites [9].

The study also revealed that the Russian Internet domain .ru became the most popular country-code top level domain in September 2011 and has been growing ever since. However, on top 1000 sites, Russian language is less used (it is only language no. 6 behind English, Chinese, French, German and Japanese).

The trend in the last few years showed that it seems very likely that Russian will stay at rank no. 2 for the moment, while Chinese would be the logical next candidate for the position.

Estimating the number of speakers of the world's languages is an increasingly complex task, particularly with the increased trend present in many countries to teach English in public schools. In the entire world many people are bilingual or multilingual, and it is estimated to exist a total of 750 million speakers of English (first or native language, plus second language) [10], while India and China combined have over 500 million users of English [11].

Some researchers warn that that search engines may no longer offer a representative sample of content online, because social networks (such as Facebook and Twitter) are difficult to be fully indexed. Also search engines now index less than 30 percent of the visible web, and the indexed subset skews toward English language sites, often because those sites are the most profitable places to sell advertising [7].

Statistics about Internet usage show much faster growth in countries where English is not the dominant language. In 1996, more than 80 % of Internet users were native English speakers, but in 2010 that percentage dropped to 27.3 %.

While the number of English-speaking Internet users has almost triples since 2000, twelve times as many people in China use the Internet now comparing with 1996, regularly using Renren (a social media platform equivalent to Facebook) or Sina Weibo (a site similar with Twitter). Growth is even more impressive in the Arabic speaking world, where twenty-five times as many people are online in comparison with 1996.

In 2015, the difference in growth is even more evident (the statistics covered the time interval from 2000 to 2015) [6]. The biggest percentage belongs to Arabic (6091.9 %), followed by Russian (3227.3 %), Chinese (2080.9 %) and Portuguese (1637.3 %) mainly due to South America's countries. English obtains a decent growth rate of 505.0 %.

Also the number of non-English pages is rapidly expanding (statistics covered from 2001 to 2011): the use of English online increased by around 281%, a lower rate of growth than that of Spanish (743%), Chinese (1,277%), Russian (1,826%) or Arabic (2,501%) over the same period [12].

3. HOW LITTLE OF THE WORLD WE SEE THROUGH OUR BROWSERS

"While it's easier than ever to share information and perspectives from different parts of the world, we may now often encounter a narrower picture of the world than in less connected days". [13]

The existence of cyberspace offers the premises for a better connected world and better outcomes for people across the globe, which elevates the importance of living dual lives, as citizens of nations and citizens of the world. The Internet Age we are living is a time of connection. The ubiquitous technology embedded in our lives often leads to the following assumption: while the number of people online grows, it will inevitably leads to a smaller, more connected world, in which we will think, understand, communicate and share more with people from other cultures.

The reality contradicts this assumption, because the technological ability to communicate with someone does not automatically guarantee better human interaction or an increased exchange of information. While it is easier than ever to access information from all over the world, the lenses through which we view the social environment have become narrower. People are less open to cross-cultural experiences that may stimulate new learning and understanding.

The world is complex and interconnected, and the evolution of our communications system, from a broadcast model to a networked one, has added a new dimension to the mix [13]. We search for information or find new things through people we know, and since these people tend to resemble ourselves, a lot of things within the global flow of information that happen in the world that did not catch our attention.

There is a difference between what networked technology *could do* (in principle), and what it *actually does*. *"You can't always get what you need"* [14], but you usually get what you want - and it's not necessarily good a good thing for you.

To ensure that electronic connection bring people closer and increase the human connection, everybody need to experiment in all digital life's areas: online language, personal connection, and discovery [15]. Regarding the sphere of online language, it worth mentioned the ongoing development of automated translation, which could allow us to smoothly follow conversations unfolding in languages unknown for us.

4. CONCLUSIONS

We can expect that the English language status of usage in the Internet to remain unchanged during the forthcoming period of social and economic global change. English is widely scrutinized as becoming the "global language", due to the fact that the world in which it is used is in continuous social, economic and demographic transition, which implies connection and smoother communication.

There is a growing belief that the future will be a bilingual one, in which an increasing proportion of the world's population will be fluent speakers of more than one language (probably English, as a second, additional or foreign language) [10].

Taking in consideration those three kinds of English speakers (as a first, as a second or additional language and as a foreign language), the future of linguistic communication on the Internet will be not determined by native ones, but by the latest categories of people.

It will be interesting to observe in the next 25 years if they will embrace English or they will simply use it as a vehicular language and complementary what role the language will play in their lives. To conclude, even if English is unlikely to be displaced as the world's most important language, the future is less certain and even more complex than we could possibly imagine.

REFERENCES

[1] GANDAL, N. - Native Language and Internet Usage, December 2003.

[2] CHURCH and GANDAL - Network Effects, Software Provision and Standardization, Journal of Industrial Economics, XL: 85-104, 1992.

[3] KATZ, M., and SHAPIRO, C. - Systems Competition and Network Effects, Journal of Economic Perspectives, 8: 93-115, 1994.

[4] ZLATE, M. – Tratat de psihologie organizațional-managerială, vol II, editura Polirom, 2007.

[5] The State of Broadband 2012: Achieving Digital Inclusion for All. A report by the Broadband Commission, September 2012.

[6] Internet World Users by Language - Top 10 Languages, Internet World Stats, Miniwatts Marketing Group, 30 June 2015, retrieved from ttp://www.internetworldstats.com/stats7.htm.

[7] Number of Internet Users by Language, Internet World Stats, Miniwatts Marketing Group, 31 May 2011

[8] NUNBERG, G. - Languages in the Wired World. In The Politics of Language and the Building of Modern Nations, Institut d'Etudes Politiques, Paris, 1998, http://www.parc.xerox.com/istl/members/nunberg/WebPaper.html

[9] http://w3techs.com/technologies/overview/content_language/all.

[10] GRADDOL, D. - The future of English – A guide to forecasting the popularity of the English language in the 21th century, The British Council, 2000

[11] KACHRU, Braj B. - Asian Englishes: Beyond the Canon, Hong Kong University Press, 2005

[12] ROTARU, A. - The foreign language Internet is good for business,http://www.scottmclay.co.uk/foreign-language-internet-good-business, archived by the Wyback Machine website.

[13] ZUCKERMAN, E. - Rewire: Digital Cosmopolitans in the Age of Connection, W. W. Norton & Company; 1 edition (June 17, 2013).

[14] You can't always get what you want, song by the Rolling Stones, album Let It Bleed, 1969

[15] TAYLOR, A. - A Small World After All, Bookforum, June/July/Aug 2013, retrieved from http://www.bookforum.com/inprint/020_02/11685.

ASPECTS OF POLICIES AND STRATEGIES FOR CYBER SECURITY IN THE EUROPEAN UNION

Ilina ARMENCHEVA

"G. S. Rakovski" National Defense College, Bulgaria

Freedom and prosperity of mankind greatly depend on an innovative, safe and reliable Internet that, of course, will keep evolving. Cyber space must be protected from incidents, misuse and abuse. Handling the increasing number of threats to cyber security is a challenge that national security and the trend in the international environment face. This makes taking fast and adequate measures at national, European and international level a must. Changing national security strategies and adopting new cyber security strategies are a part of these measures.

Key words: *national security, cyber security, national security strategy, cyber security strategy.*

1. CYBER SPACE. A MEANS OF (UN)CERTAINTY

The open Internet space lays the base of globalization, political and social inclusion worldwide and gives opportunities for interaction and sharing of information and ideas. It is a forum for free speech and exercising basic human rights.

Internet, as well as ICT, is turning into a crucial resource for states and national infrastructures. They are a key factor for security, social and economic growth and stability (see **Table 1**).

Table 1. Before, nowadays and in the future [1]

	2010	*Nowadays*	*2020*
Expected population	6.8 bln	7.3 bln	~8 bln
Expected number of Internet users	360 mln (5 % of the world population)	2.5 bln (35 % of the world population are users)	~5 bln (60 % of the world population are users)
Number of devices	-	12.5 bln devices and technologies using Internet (~6 devices per capita)	50 bln devices and technologies using Internet (~10 devices per capita)
ICT contribution to economy	-	~4 % of GDP for G-20 states	~10 % of world GDP

Critical infrastructure, all state government and economy management structures are entirely dependent on networking IT systems. Vulnerability in cyber space is real, considerable and quickly increasing because of this global networking. The key to adequate neutralizing of all threats to cyber security is their prioritization.

2. FROM THEORY TO PRACTICE IN DEFINING NATIONAL CYBER SECURITY STRATEGIES

To guarantee human rights and freedom in the virtual world, regulations must be developed and a consistent policy should be applied. One of the ways to achieve this is each state to adopt a national cyber security strategy (NCSS).

A lot of issues should be considered in order to reach a definition for a cyber security strategy. First, it is to be clarified what meaning is implied in the basic concepts – cyber space, cyber security, cyber attacks, cyber threats, etc. However, a universal, agreed definition of "national cyber security" (NCS) does not exist. Some that are a symbiosis of "cyber security", "national security", etc. can be found in the strategic state documents. That means each country defines these concepts depending on their own vision.

It must be made clear that the national cyber security is not an end itself. It is a tool

to reaching the desired wellbeing of the individual, group of people, organizations, nations and world population. Most of the countries find defining a NCSS as a goal that will provide a secure virtual environment which guarantees economic growth, stable development and protection of people from various risks. Such a general strategy should render an account of a number of indicators like:

- Strategy goal;
- Definition of basic concepts in the sphere of cyber security
- The target group;
- Interested parties;
- Division of the cyber domain;
- Setting strategic goals.

Three conceptual tools are applied in the process of defining a strategy. They are called "the three dimensions", "the five mandates" and "the five dilemmas" of the NCS (**Table 2**). Even though this set of instruments provides an option for prioritizing specific components, depending on the particular environment in each country, it has not been applied uniformly in the existing NCSSs.

Table 2. NCS – basic theoretical approaches [1]

National cyber security Definition	Concentrated application of specific governmental instrumentality and the principles for providing information for public, private and relevant international ICT systems, as well as their shared content, where these systems relate directly to the national security.
The 5 mandates [2]	✓ Military cyber space ✓ Giving account of the cyber crime ✓ Intelligence and counterintelligence ✓ Defense of critical infrastructure and crisis management ✓ "Cyber diplomacy" and managing the Internet
The 3 dimensions/interested parties in NCS	✓ Governmental – "coordination" ✓ International – "Collaboration" ✓ National – "cooperation"
The 5 dilemmas Balance of expenses and NCS benefits	✓ Stimulating economy vs. developing national security ✓ Modernizing infrastructure vs. Protection of critical infrastructure ✓ Private sector vs. Public sector ✓ Protecting data vs. Sharing information ✓ Freedom of speech vs. Political stability

3. STRATEGIC GOALS AND INTERESTED PARTIES

NCSS should take into account the different categories of interested parties and their specific roles in the two basic activities: defense and attack. These stakeholders are spread in the government, private sector and international organizations. Thus, for the purpose of the NCSS, governments are to coordinate their actions, cooperate among themselves and the interested parties.

Actually, the ability of the government to react to cyber space threats is limited and likely to be doomed to failure if not cooperating with the rest of the involved in the process.

The continuous dialogue, based on coordination, cooperation and collaboration among stakeholders is a key factor for the success of the NCSS.

4. PROTECTION IN THE CYBER SPACE

It is widely known that it is by far easier to attack than to protect. Weak management allows some countries to become a permanent source of attacks [3].

In response to the attacks, defense actions usually fall into four basic types:

- **Protection** – "applying basic rights" (modern antivirus software for the simplest threats, appropriate configuration of firewalls, etc.);
- **Detection** – proofs for a cyber attack are sought, for something irregular happening in the system (typically, proofs for unauthorized access and data export from the system);
- **Response or reaction** – can be done in numerous and various ways (e.g. deleting a file or activating a firewall, closing a network, changing hardware, etc.). Potential situations related to nationwide cyber attacks which, in theory, could require even a complete Internet cutout;
- **Recovery** – starts right after the cyber attack is mitigated. All systems need a set of backup copies or emergency recovery systems which are to substitute the corrupted or lost data (reserve data centers, information storages, etc.).

From the perspective of NCS, cyber defense is a "collective effort". The concept of "collective cyber defense" can be interpreted as *"operative cooperation of various (international) participants to defend from specific cyber attacks against one or more of the participants"*. Cyber defense uses the methods of physical obstruction or manipulation of the Internet traffic to limit the cyber attacks; sharing and combining intelligence capabilities, human resources and, even, communication infrastructure. In fact, collective defense can not only deal with "detecting" and "responding to", but it can also undertake active defense operations. Collective cyber defense is predominantly based on the trust at individual and organizational levels. This trust can even substitute the traditional union structures.

Emergency measures – this broad category includes all ICT which facilitate the activities of the incident response services, except those in the sphere of law enforcement. It may vary from better communication and analysis instruments to national crisis management and continuous protection of critical infrastructure and information flow related to them. As a whole, these systems provide a significantly high security level for specific risks.

From all of the above, we could conclude that there are differences between the developed nations with a high level of ambition for integrating cyber security in their general foreign affairs policy and those dealing with NCS as a task included in the scope of the internal security.

5. POSSIBLE CONTRADICTIONS

Basically, NCS has two axes – military/civilians and intelligence/ law enforcement bodies.

Military/civilians: Contradictions arise when roles and responsibilities are assigned in crisis management and critical infrastructure protection.

Law enforcement bodies/ intelligence: interests in the sphere of intelligence are often in direct contradiction with those of the law enforcement bodies. Intelligence/ counterintelligence and cyber crime counter actions are clearly separate activities, but in case of cyber attacks counter actions differ completely in the following: *transparency, motivation, offensive and sharing.*

6. COMMONALITIES AND DIFFERENCES IN THE NATIONAL STRATEGIES FOR CYBER SECURITY

NCSSs aim to guarantee that states are able to face the cyber security challenges and are aware of the consequences, as well as capable of undertaking adequate measures against violations and crime committed in information systems. Many EU and NATO-member states have issued, are developing or updating their NCSSs. Some of them, as it is the case of the Czech Republic, Estonia, The Netherlands and the UK have already updated their initial strategies.

Table 3. NCSS of EU and NATO-member states

State	Title	Issued
The Slovak Republic	Slovak National Strategy for Information Security [4]	2008
Canada	Canada's Cyber Security Strategy: For a Stronger and More Prosperous Canada [5]	2009
The Czech Republic	Cyber Security Strategy of the Czech Republic for the Period 2011-2015 [6]	2009
Estonia	Cyber Security Strategy [7]	2014
France	Information systems defense and security. France's Strategy [8]	2011
Germany	Cyber Security Strategy for Germany [9]	2011
Lithuania	Programme for the Development of Electronic Information Society (Cyber-Security) for 2011-2019 [10]	2011
Luxemburg	Not available on-line	2011
The Netherlands	The National Cyber Security Strategy (NCSS). Strength through Cooperation [11]	2011
Romania	Cyber Security Strategy	2011
Spain	Part of Spanish Security Strategy: Everyone's responsibility [12]	2011
Switzerland	National Strategy for Protection of Switzerland against Cyber Risks [13]	2012
UK	The UK Cyber Security Strategy. Protecting and promoting the UK in a digital world [14]	2012
USA	The National Strategy to Secure Cyberspace [15] (also CNCI, HSPD-7, 60 day Review)	2003

The European Commission supports the concept that there are still flaws within the whole EU, especially regarding the national capabilities, coordination in cases of incidents abroad, as well as in private sector involvement [16]. The European agency for network and information security is to cooperate and support member-states in their attempts to improve the level of resistance of their national cyber security and provide actual directions for assessing the national strategies, published in the good practices and formulations implementation guide [17] (**Figure1**).

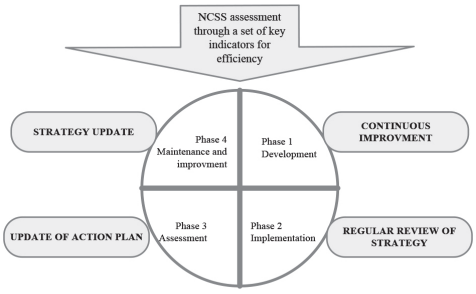


Fig.no.1. Life cycle of NCSS

Because of the lack of a consensus in their understanding, there is not a common definition and universal use of "cyber"-concepts. Reviewing the existing cyber security strategies, it becomes noticeable that a definition of "cyber security" is given in less than the half of them. In some of them the term is looked at descriptively, and in others it is discussed without a particular definition (**Table 3**).

7. GENERAL TRENDS IN FORMULATING A NCSS

Four predominant trends can be observed in analyzing the currently applied national strategies.

- getting closer to a common understanding of key threats and vulnerabilities in cyber space (**Table 4**);
- identifying "new" threats and challenges (climate change, power sources, health risk and cyber security) due to the broader understanding of "security" [18];
- greater awareness of the connection between national and international security;
- admitting the necessity for a full integration of the traditional security policies, economic means and cooperation and development policies.

Table 4. Cyber security in some European strategies [19]

State	Cyber Security
Austria	Cyber security describes the protection of a key legal asset through constitutional means against actor-related, technical, organizational and natural dangers posing a risk to the security of cyber space (including infrastructure and data security) as well as the security of the users in cyber space. Cyber security helps to identify, assess and follow up on threats as well as to strengthen the ability to cope with interferences in or from cyber space, to minimize the effects as well as to restore the capacity to act and functional capabilities of the respective stakeholders, infrastructures and services. [20]
The Czech Republic	Cyber security comprises a sum of organizational, political, legal, technical, and educational measures and tools aiming to provide a secure, protected, and resilient cyberspace [21]
Finland	Desired end state in which the cyber domain is reliable and in which its functioning is ensured... Note 1 ... the cyber domain will not jeopardize, harm or disturb the operation of functions dependent on electronic information (data) processing. Note 2 Reliance on the cyber domain depends on its actors implementing appropriate and sufficient information security procedures ..... Note 3 Cyber security encompasses the measures on the functions vital to society and the critical infrastructure which aim to achieve the capability of predictive management ... [22]
France	The desired state of an information system in which it can resist events from cyberspace likely to compromise the availability, integrity or confidentiality of the data stored, processed or transmitted and of the related services that these systems offer or make accessible. [23]
Germany	"Cyber security" and "civilian and military cyber security" (Global) cyber security is the desired objective of the IT security situation, in which the risks of global cyberspace have been reduced to an acceptable minimum. [24]
Hungary	Continuous and planned taking of political, legal, economic, educational, awareness-raising and technical measures to manage risks in cyberspace that transforms the cyberspace into a reliable environment for the smooth functioning and operation of societal and economic processes by ensuring an acceptable level of risks in cyberspace. [25]
The Netherlands	Cyber security refers to efforts to prevent damage caused by disruptions to, breakdowns in or misuse of ICT and to repair damage if and when it has occurred. [26]
Turkey	Protection of information systems that make up the cyber space from attacks, ensuring the confidentiality, integrity and accessibility of the information being processed in this space, detection of attacks and cyber security incidents, putting into force the countermeasures against these incidents and then putting these systems back to their states previous to the cyber security incident. [27]

Table 5. Threats, vulnerabilities and challenges in national strategic documents

State	Document	Year	Key threats/vulnerabilities
France	White book	2008	„Weapons of mass destruction" (WMD); terrorism;proliferation of ballistic missiles; *cyber attacks*; espionage; criminal networks; health risks; citizens in vulnerable regions abroad.
Germany	White book	2006	International terrorism; proliferation and military buildup; illegal trafficking of weapons; weak state system; transport routes; energy security; uncontrolled migration; epidemics and pandemics.
Hungary	Security strategy	2012	Terrorism; proliferation of WMD; unstable regions/unsuccessful membership; illegal migration; economic instability; challenges to information society; global natural, manmade and medical sources of dangers; regional and internal challenges.
The Netherlands	Security strategy	2007	Violations of international peace and security; CBRN weapons; terrorism; international organized crime; social vulnerability; lack of digital and economic stability; climate changes and natural disasters; infectious and animal diseases.
Poland	Security strategy	2007	Organized international terrorism and crime; power security; illegal migration; weakened transatlantic connections; frozen and regional conflicts; low levels of integration of economic life and financial markets; environmental threats; internal challenges.
Spain	Security strategy	2011	Armed conflicts; terrorism; organized crime; financial and economic instability; power vulnerability; proliferation of WMD; cyber threats; uncontrolled migration flows; disasters and emergencies; critical infrastructure; supplies and services.
UK	Security strategy	2010	International terrorism; hostile attacks in the cyber space; natural disasters and incidents; territorial attacks; risks of high instability; organized crime; disturbances in satellite communications; cutting off basic resources or oil/gas supplies.

8. BASIC TRENDS IN NCSS

A number of basic trends can be observed when analyzing the existing NCSS:

- sustainability of a safe, stable and reliable electronic and operational environment;
- fostering economic and social wellbeing, trust and economic growth;
- overcoming the risk to ICT;
- strengthening infrastructure stability.

In regard with the vision for cyber security, each state has one of their own. They apply different approaches in developing the strategy, reflecting the particular understanding for cyber space and cyber threats. Still, despite the differences, common trends can be observed as follows:

- globalization;
- critical infrastructure;
- economic prosperity;
- national security;
- social wellbeing;
- public trust in ICT.

To apply appropriate protective mechanisms, in the process of research and categorization of the new threats, the threat vector and its characteristics (starter, direction and size) are to be described. It is necessary to clarify what the sources and aims are, as well as what the scope/comprehensiveness is. Accordingly, in regard with these parameters, the following categories can be determined:

- broad scope attacks;
- terrorist attacks;
- foreign threats;
- corporative espionage;
- organized crime;
- political activism against ICT-based services.

In the NCSS developed so far, these categories are partially or fully adopted and, in accordance with the particular security environment, each country supplements the list with others.

Are there common goals? Each NCSS goals are set in a short and long term plan and are implemented through consecutive targeted actions and processes which protect the country from cyber threats and provide for its vital functions. Success indicators are determined for the major part of the goals. They are followed by planned monitoring activities. Some of the goals are shared, as others (e.g. reaching balance between human rights and cyber security in the legislation) are specific for the particular country. Goals are often distributed in topical areas like:

- measures at legislative level and cooperation with stakeholders;
- critical Information Infrastructure Protection (CIIP);
- risk assessment of critical infrastructure;

- security of services in cyber space.

As a whole, activities undertaken in EU-member states are similar. Some of them are typical, and others, like enforcing security standards and good practices, are definitely rarer. The activities are the basic interventions through which the final outcome and goals of the project are achieved (building up capacity, legislative initiatives, risk and threats assessment, increasing awareness). They are usually described through plans for implementing the strategies at a national or institutional level, depending on how much centralized the system is.

9. A SYSTEM VIEW OF NCSS

"INPUT DATA" FOR NCSS

"Input data" state the resources granted for the implementation of a NCSS which, at strategic and program levels, originate from the particular goals in the NCSS. They include financial, human, legislative, institutional, educational, legal, etc. types of goals.

"OUTPUT DATA" FOR NCSS

"Output data" are the actual results of program activities. They generally relate to the key indicators and are able to guarantee good financial management and implementation. Thus, "output data" are the outline for the program implementation reports.

OUTCOME AND EFFECTS

The outcome reflects short- and mid-term implementation of the program, as the effects provide results in a longer term period (10+ years). The short- and mid-term outcome relates to the stability and cooperation and directly derives from the activities stated in the strategy. In turn, the effects are long term goals focused on the cyber space security and are set in the program in their short- and mid- term plans.

INTERESTED PARTIES

Bearing in mind the nature of cyber space, *by default*, *all users are interested parties.* This makes crucial each interested party to be aware of their responsibilities. The role of every interested party varies due to their capabilities and resources.

10. INITIATIVES IN THE SPHERE OF CYBER SECURITY IN BULGARIA

Currently, in Bulgaria, the documents related to cyber security policy and strategy are being developed. Some initiatives and results can be reported.

- In meeting EU and NATO requirements, Computer Emergency Response Team (CERT) Bulgaria is open in November 2008. It is a structure subordinated to the Ministry of transportation. Its mission is to support the users of the services meant to reduce the risks in case of information security incidents and to assist the counteractions when such happen.
- Another initiative is the round table on the topic of *"Cyber space security in Bulgaria - current status and challenges"* held in September 2010.
- In 2010, in accordance with a decision of the State Commission on Information security, a point of contact for Bulgaria is nominated to the EU project "Incident Network Security Management".
- On May 25, 2011, the government approves a Memorandum of understanding for a future cooperation in the sphere of cyber security between NATO cyber security management body and the national cyber security structures.
- In November 2011 a Memorandum is signed, dealing with the information systems of the administrative bodies and classified information networks. It regulates issues of the goals and scope, current legislation, financial conditions on its application, regulations for using shared information, the ways of resolving disputes, means for its amendment or termination.
- In September 2011, an Interagency working group on the issues of cyber security is created. It is tasked to develop a proposal for the composition, powers, mission, functions and tasks of a national authority on cyber security in Bulgaria and prepare a draft Decision of the Ministerial Council for its establishing in the structure of the security system. In the January 2012 report of the group the current cyber security status is analyzed and the following findings are noted:

- Legal-normative regulation of the issues of critical communication and information infrastructure cyber security, as well as a national policy and strategy for cyber security do not exist;
- There is no legal provision establishing a unified coordination of information protection.

- In May 2013, the Prime Minister issues an order that establishes an Interdepartmental Working Group, tasked to prepare a draft Cyber Security Strategy for the Republic of Bulgaria. The Minister for Development of e-government is assigned as a Chairman, and the Minister of Defense is to execute control over the implementation of the order.
- In September 2014, the Minister of Defense appoints a national coordinator for cyber defense and cyber security, with the task of quickly finalizing the strategy for cyber security. The coordinator is equidistant from the various agencies, works in collaboration with industry and academia, and represents the country in the EU, NATO, UN and other bodies concerned with this problem.

Even a quick review of the status of activities in cyberspace in Bulgaria shows that, so far in public life, there is no comprehensive vision on cyber security. There are more sporadic than consistent successive actions in response to specific procedures in the EU or NATO, aimed at achieving an explicit goal. At the same time, as a full EU and NATO-member, Bulgaria has its commitments to the common security and defense policy, which include elements of the joint action in the field of cyber security.

11. CONCLUSION

All governments face the constantly rising level of cyber threats, which requires recognizing these problems, formulating goals and developing a strategy to solve them. The establishment of a national cyber security strategy is a challenge and coordination is needed between the various governmental and non-governmental parties, the public and private sectors.

Since each country has its own priorities and problems, no general framework for national cyber security exists. Each government provides a special individual set of circumstances and the developed strategy meets the particular requirements. It describes the specific governmental instrumentality and the principles of ensuring the security of information in public, private and international ICT systems that directly relate to national security. It is a tool that is beneficial to the government and all stakeholders.

NOTES & REFERENCES

[1] Klimbura, Alexander (Ed), National cyber security Framework manual, NATO Cooperation Cyber Defense Center of Excellence (CCDCOE), Tallinn, Estonia, 2013, p. 234

[2] Ibidem.

[3] Klumburg, Al. and Mirth, Ph."Cyberspace and governance-A primex" (working paper 65), Vienna, 2012.

[4] Edward Snowdon, former NSA contractor, who in 2013 revealed information about American surveillance and tracking telecommunication programs and was granted a 3-year asylum in Russia.

[5] http://www.webcastlive.es/4enise/archivos/T14/T14_Daniel_Olejar_CominiusUniversity.pdf.

[6] Canadian Department for Public Safety, Canada's Cyber Security Strategy. For a Stronger and More Prosperous Canada.

[7] Czech Ministry of Interior, Czech Cyber Security Strategy for the Period 2011–2015 (Prague: ENISA, 2011).

[8] Estonian Ministry of Defence, Cyber Security Strategy (Tallinn: Estonian Ministry of Defence, 2008).

[9] French Secretariat-General for National Defence and Security, Information systems defence and security. France's strategy.

[10] German Federal Ministry of the Interior, Cyber Security Strategy for Germany.

[11] Lithuanian Government, Resolution NO 796 on the Approval of the Programme for the Development of Electronic Information Security (Cyber-Security) for 2011-2019 (Vilnius: Information Technology and Communications Department, 2011).

[12] Dutch Ministry of Security and Justice, 'The National Cyber Security Strategy (NCSS). Strength through Cooperation'.

[13] Spanish Government, Spanish Security Strategy. Everyone's responsibility.

[14]http://www.enisa.europa.eu/activities/Resilience-and-CIIP/national-cyber-security-strategies-ncsss/National_strategy_for_the_protection_of_Switzerland_against_cyber_risksEN.pdf.

[15] UK Cabinet Office, The UK Cyber Security Strategy: Protecting and promoting the UK in a digital world.

[16] White House, The National Strategy to Secure Cyberspace

[17] ENISA. (2012a). "National Cyber Security Strategies: Practical Guide on Development and Execution". December 2012. p. 7. http://www.enisa.europa.eu/activities/Resilience-and-CIIP/national-cyber-security-strategies-ncsss/national-cyber-security-strategies-animplementation-guide 6 ENISA. (2012a).

[18]http://www.enisa.europa.eu/activities/Resilience-and-CIIP/national-cyber-security-strategies-ncsss/national-cyber-security-strategiesan-implementation-guide

[19] Barry Buzan, Ole Wæver, and Jaap de Wilde, Security. A New Framework For Analysis (London: Lynne Rienner Publishers, Inc., 1998)

[20] Cyber Definition, CCDCOE, https://ccdcoe.org/cyber-definitions.html

[21] Austrian Cyber Security Strategy (2013): https://www.bka.gv.at/DocView.axd?CobId=50999.

[22] Czech Republic Draft Act on Cyber Security (2014).

[23] Finland's Cyber Security Strategy Government Resolution (Jan 2013).

[24] nformation Systems and Defence – France's Strategy (2011).

[25] Cyber Security Strategy for Germany (2011).

[26] National Cyber Security Strategy of Hungary (2013).

[27] National Cyber Security Strategy 2 - From Awareness to Capability (2013).

[28] National Cyber Security Strategy and 2013-2014 Action Plan.

INTER–ORGANIZATIONAL COLLABORATIVE CAPACITY OF PUBLIC SECTOR INSTITUTIONS'CONTROL ENTITIES IN EMERGENCY SITUATIONS

Nikola T. STOYANOV

"G. S. Rakovski" National Defense College, Bulgaria

Environmental challenges and natural disasters demand new tools to support the performance of public institutions in emergency situations. This paper contributes to one of the fundamental objectives – inter–organizational collaboration, namely to the objective to share experience from the implementation of methods and tools and latest research results in support of management in the new security environment. In addition, it focuses on the cognitive and human aspects of collaboration. The goal of the paper is to investigate the impact of different factors and tools for understanding, explaining, and measuring collaborative capacity of public sector institutions' control organism in emergency situations. The paper will present intermediate results from the research on "Inter–organizational collaborative capacity of public sector institutions' control entities in emergency situations". Based on a theoretical model, a draft instrument was developed (i.e., a questionnaire) for data collection that can be used to 1) investigate the impact of different factors, 2) localize inefficiencies in public sector institutions' control organs, and 3) determine measures to achieve better organizational effectiveness of public sector institutions' control entities in emergency situations.

Key words: *collaboration, collaborative capacity, means, Surface Measurement Overall Performance.*

1. INTRODUCTION

Emergency management is one of the main tasks of the Bulgarian government aimed at protecting the population from the impact of natural disasters and accidents and liquidation of their consequences. This activity involves the structures of central and local government as well as non–governmental organizations, such as the Red Cross and others. Historically, the management of emergency situations has always required consolidation of efforts of all relevant actors in order to achieve the desired effect in protecting the population.

This paper studies the control entities of the three Bulgarian organizations that have roles and responsibilities to protect the population in emergency situations, namely the Ministry of Defence with its structures at strategic and operational level, the Ministry of Interior primarily through the General Directorate Fire Safety and protection of the population (GDFSPP), and the central leadership of the Bulgarian Red Cross (BRC). The methodology used aims to assess the organizational factors for inter–organizational collaborative capacity of control entities dealing with emergency management in these three departments and their dependence on operational objectives and environmental factors.

A questionnaire was used to conduct empirical research. Measurement was done on a 6–degree Likert scale. The scales used for measuring the variables are in a pattern that covers hypothetically the main factors influencing the process of cooperation.

The reliability of the scales was checked after calculating Cronbach's alpha. In search of empirical confirmation of the reliability of the method and proof of its validity a factor analysis was conducted. To determine the relationships between the input variables and the level of cooperation between organizations, a regression analysis, analysis of variance (ANOVA), post hoc Tukytest and correlation analysis were used.

2. INTER-ORGANIZATIONAL COLLABORATIVE CAPACITY

Interorganizational collaborative capacity depends on 13 factors that are associated with the five organizational domains, described in the model of Galbraith [1] for effective organization and adapted by Hosevar, Thomas and Jensen [2]. Each of these domains is associated with a different number of factors influencing the collaboration, represented as follows:

- Purpose and Strategy – Felt Need to Collaborate, Strategic actions for collaboration and Resource Investment in Collaboration;
- Processes – Collaborative Learning, Collaborative Tools and Technologies, Social capital and Information sharing;
- Incentive &Rewards System – Rewards and Incentives;
- Structure – Structural flexibility, Support for individual collaboration efforts, Metrics for collaboration and Collaboration Structures;
- People – Individual Collaborative Capacities.

The values of factors derived from empirical study are shown in Tables 1,2 and 3 and they refer respectively to the Ministry of Defence, the Ministry of Interior and the Bulgarian Red Cross (BRC).

Table 1. Results– Ministry of Defence control organs

Scale	Mean	Standard deviation	t–value	# questions	Cronbach's Alpha
Felt Need to Collaborate	4.76	1.16	–0.050	5	0.88
Strategic actions	3.91	1.29	–0.109	5	0.86
Resource Investment in Collaboration	3.78	1.46	–0.777	3	0.80
Structural flexibility	4.08	1.33	–1.238	4	0.88
Rewards and Incentives	2.87	1.37	–0.319	4	0.94
Metrics for collaboration	4.05	1.38	–1.108	3	0.87
Information sharing	3.87	1.35	–1.463	3	0.88
Collaborative Learning	3.13	1.34	–0.770	5	0.84
Social capital	4.04	1.50	–0.535	3	0.84
Individual Collaborative Capacities	4.28	1.20	–0.299	7	0.88
Support for individual collaboration efforts	4.03	1.41	–0.572	4	0.87
Collaboration Structures	3.84	1.41	–1.213	3	0.85
Collaborative Tools and Technologies	3.49	1.41	–1.604	3	0.84

Table 2. Results– Ministry of Interior control organs

Scale	Mean	Standard deviation	t–value	# questions	Cronbach's Alpha
Felt Need to Collaborate	4.92	1.39	1.849	5	0.86
Strategic actions	4.22	1.58	0.244	5	0.82
Resource Investment in Collaboration	3.79	1.55	1.511	3	0.61
Structural flexibility	3.79	1.65	–0.442	4	0.83
Rewards and Incentives	2.87	1.65	0.822	4	0.81
Metrics for collaboration	3.71	1.67	2.587	3	0.86
Information sharing	4.15	1.35	1.757	3	0.65
Collaborative Learning	3.35	1.47	0.122	5	0.93
Social capital	3.96	1.49	–0.821	3	0.77
Individual Collaborative Capacities	4.55	1.36	0.868	7	0.87
Support for individual collaboration efforts	3.48	1.60	0.767	4	0.88
Collaboration Structures	4.18	1.48	–0.208	3	0.80

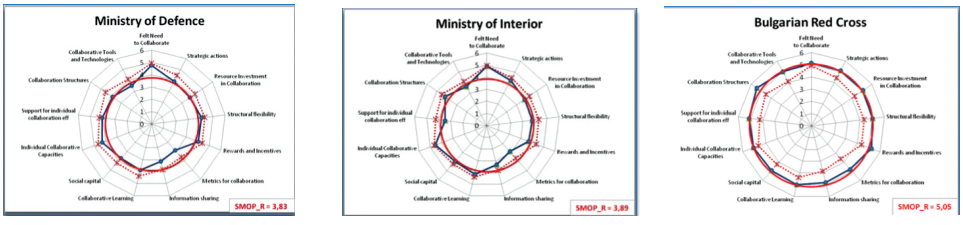
Table 3. Results– Bulgarian Red Cross control entities

Scale	mean	Standard deviation	t–value	# questions	Cronbach's Alpha
Felt Need to Collaborate	5.14	0.80	–0.196	5	0.72
Strategic actions	5.10	0,77	–0.444	5	0.62
Resource Investment in Collaboration	5.10	0.87	0.077	3	0.85
Structural flexibility	5.03	0.72	–0.510	4	0.67
Rewards and Incentives	4.77	0.95	0.234	4	0.88
Metrics for collaboration	5.23	0.81	0.278	3	0.77
Information sharing	4.99	0.62	0.829	3	0.51
Collaborative Learning	4.81	0.81	–0.067	5	0.79
Social capital	4.90	0.70	–0.794	3	0.77
Individual Collaborative Capacities	5.06	0.80	–1.381	7	0.82
Support for individual collaboration efforts	5.12	0.67	–0.118	4	0.54
Collaboration Structures	5.42	0.70	–0.735	3	0.75
Collaborative Tools and Technologies	5.01	0.75	0.711	3	0.02

The series of block diagrams depict the values of the thirteen factors for both institutions — the Ministry of Defence and the Ministry of Interior — and the NGO the Bulgarian Red Cross and graphically illustrate the profile of the ability to cooperate with the surveyed control entities– the blue polygon. In block diagram no. 1 the arithmetic average is shown – the dotted polygon, and the circumradius of the Surface Measurement Overall Performance – (SMOP_R – radius of the circumcircle).

The mean is the average of the three organizations and the circle refers to the disputed organization. It crosses the axis at the points where the indicators would be situated if they were equal (but not necessarily equal to the mean of the organizations or mechanical mean of the scale – 3.5).

Analyzed indicators –Block–graphic no.1



The assessment methodology which Hosevar, Thomas and Jensen [2, 3] have used takes for a boundary the middle of the measurement scale that is the mechanical mean, which in this case is 3.5. The mechanical mean of the scale (3.5) is not indicative. Moreover, this is not a natural mean. In addition, if respondents evaluate other organizations or know that someone else is going to assess their organizations, they have a natural tendency to overestimate their organization "to make it a leader".

Psychologically, a comparison with the mechanical average is not justified also because of the natural tendency to get oriented according to the mean and to give assessment mainly on one side of the scale. It would be different if things were measured independently from the attitude of the evaluator.

It can be assumed that a comparison with the average for the system of the Republic of Bulgaria (including all organizations) is more indicative for several reasons:

1. It eliminates the effect of overestimation (underestimation) of organizations. The comparison between organizations could be done since all are equally undervalued (overvalued). Overestimation (underestimation) may be due to the "psychology" (we are all Bulgarians), also due to misinformation and misunderstanding of the aims and objectives – "qualities" that are also (perhaps) equally distributed.

2. If we compare to the value of 3.5, it may seem that all are "above average" and there is nothing to improve, but this is hardly the case and hardly anyone would benefit from such a delusion. It would be more indicative to make a comparison to the average of all organizations instead to the mechanical medium.

3. It is also significant that a formula may be offered to what extent an organization must improve its assessment of

the respective indicator to reach the average (not the average at the moment, but a new average in the future). Here, we take into account that improving the value of a specific organization, we raise the average level.

Let us assume that f_i, $i=1, 2,...n$ are values of the factor f for each of n organisations, and $\bar{f}$ is the mean at the current moment. Supposedly, $f_k < \bar{f}$, i.e. the k–th organisation is lagging behind compared with the mean.

The goal is to define Δf_k — the required increase in the value of the factor of the k–th organisation so that f_k' — the new value of the factor k is equal to the new mean ($f_k' = f_{new}$). It is obvious that

$$\Delta_\kappa = \frac{n}{n-1}\left(\bar{f} - f_\kappa\right) \quad (1)$$

It is obvious that

$$\bar{f}_{new} = \frac{f_k' + \Sigma_{i=1}^{n} f_i}{n} = \frac{f_{new} + \Sigma_{i=1}^{n} f_i}{n} \quad (2)$$

It follows that

$$\bar{f}_{new} = \frac{\Sigma_{i=1}^{n} f_i}{n-1} = f_k' \quad (3)$$

and finally

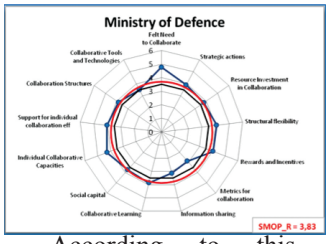
$$\Delta f_1 = \bar{f}_{new} - f_k = \frac{\Sigma_{i=1}^{n} f_i}{n-1} - f_k \quad (4)$$

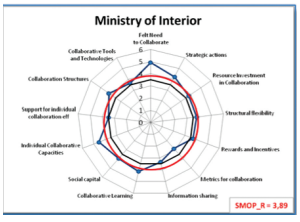
Here is another argument in favor of a comparison with the average for all organizations, not the mechanical average 3.5 – in order to reach the national average (the average for all organizations, including the researched) the arithmetic average of other organizations should be reached.

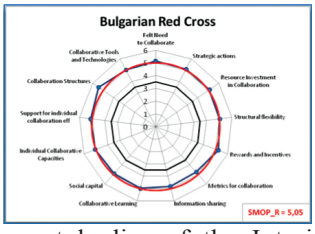
Despite the above mentioned, graphics and **Block no. 2** will be presented with mechanical average of scale – 3.5 –a thick black polygon; SMOP_R (radius of the circumcircle) – a red circle. This was done to compare with block graphics no.1, where the arithmetic average of the three organizations is shownwhich clarifies how the number of factors–barriers for collaboration was changed as a result of the method used for measurement. For the purpose of this survey an average mechanical 3.5 will be used as a criterion, as for the first time similar studies are conducted in Bulgaria and not enough number of organizations have yet been tested to have a reliable medium for the system of the Republic of Bulgaria to be used for a criterion.

The profile of collaboration capabilities –the blue polygon, depicted in the diagram, shows us which factors are barriers. Where the values of the factors are under the criterion of mechanical average marked with black polygon drawn of level 3.5, we have an indication of barriers to collaboration. Because their values are lower than the benchmark, we assume that these are the factors which would most impede collaboration. Specifically for authorities of MoD these are *rewards and incentives, collaborative learning, collaborative tools and technologies*. The graph shows the factors that are above the level of 3.5, but are very close to that limit, which is an indication to other not well developed capabilities for collaboration, such as *social capital and resource investment in collaboration.*

Analyzed indicators – Block–graphic no.2







According to this methodology, factors–barriers for control entities of the Ministry of Interior are also *rewards and incentives*, *collaborative learning*, and unlike the authorities of MoD *support of individual collaboration efforts*. The management bodies of the Interior Ministry have a number of factors beyond the criterion of 3.5, but are very close to it – the *collaborative tools and technology, resource investment in collaboration*, *structural flexibility and metrics for*

collaboration. These factors also could hinder cooperation.

3. INTER-ORGANIZATIONAL COLLABORATION RESEARCH RESULTS

The results of the five areas examined are shown in **Table 4** and in Figures 1, 2 and 3. All values with the exception of the system for remuneration are over 3.5, indicating agreement with the statements that characterize the ability for cooperation. The highest capacity for cooperation through the individual abilities of their employees have the management bodies of the MoD and MoI, forming domain **People**, while the employees of BRC have the highest scores in domain **Structure** and the value in the domain **People is** higher than in the other two bodies. This is understandable in the light of the high results obtained by BRC as a whole. The lowest score of the governing bodies of the Red Cross – 4.77 is much higher than the highest scores of the MoD and MoI.

Table 4. Inter–organizational collaboration research results

Domain	MoD		MoI		BRC	
	mean	Standard deviation	mean	Standard deviation	mean	Standard deviation
Purpose and Strategy	4.15	1.30	4.31	1.50	5.11	0.81
Processes	3.56	1.40	3.78	1.45	4.93	0.72
Incentive & Rewards System	2.87	1.37	2.87	1.65	4.77	0.95
Structure	4.00	1.38	3.79	1.60	5.20	0.72
People	4.28	1.20	4.55	1.36	5.06	0.80

The overall values of the variables that characterize the areas of cooperation in the Defence and Interior Ministries are very close. The charts given as an illustration of statistical calculations with very few exceptions follow the same profile which indicates the existence of similar factors contributing to the development of cooperation and those hindering it (see **Figures 1 and 2**).

To answer the question of the size of cooperation capacity, an overall composite indicator must be designed combining the values of individual domains in one value. The most widespread method to achieve this is the linear summation of indicators for all organizational areas. However, this method brings with it some undesirable characteristics of additive aggregation.

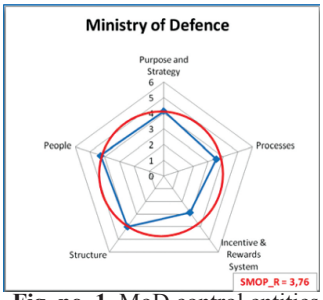


Fig. no. 1. MoD control entities

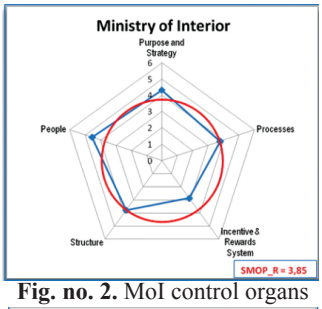


Fig. no. 2. MoI control organs

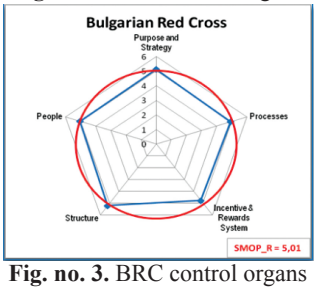


Fig. no. 3. BRC control organs

For example, the extremely low values of some parameters can be compensated by high enough values of other indicators. A possible solution to this problem could be geometric aggregation because it does not allow such a large compensation. As an alternative solution to this problem, however, another method will be applied which is suitable for the purposes of this study – the so–called Surface Measurement Overall Performance (SMOP), developed by Mihailov [1]. The method allows weighing of all constructs, however here will be used equal weights. This means that all dimensions of cooperation capacity are of equal importance.

The idea of calculating the overall composite indicator as surface measurement is suggested by radar charts. The values of individual group indicators are applied on a beam radar chart and the value of the composite indicator is equal to the surface closed by the chart. The method of Surface Measurement

Overall Performance (SMOP) is convenient and simple to build composite indicators but has some drawbacks. It should be noted that the method is useful when the values are positive and are measured according to the same scale, while at the same time they are not weighed because the use of different scales and weights lead to a different scale for the various rays of the diagram.

Another problem is the lack of invariance in respect to the sequence of the rays. In this case, all the values of the private indicators are positive, which makes the method applicable to this feature. With regard to the second flaw, it is the reason for the results from the surface representation to depend not only on the values of group performance but on their sequence along the axes of the chart as well. The problem with the lack of invariance in terms of the arrangement of the axes has a simple solution–it is sufficient to calculate the average area of all polygons, namely of polygons that are formed at all the possible permutations of the axes. Mihailov suggests the following formula for calculating the average size:

$$S_{cp} = \frac{1}{n-1}\sin\frac{2\pi}{n}\sum_{\{i;j\}\in C} w_i I_i w_j I_j \qquad (5)$$

where n is the number of group indicators (number of axes), I_i and I_j, $i \neq j$ are the values of the group indicators, and w_i and w_j are their weights. The summation is of the set C of all unordered pairs of indicators $\{i;j\}$. (The set C includes all k–combinations of n elements, $k=2$). Obviously, the lack of invariance deprives SMOP method of graphical presentation of results on a radar chart, which can be considered as a disadvantage. It would be better if the calculated composite indicator was standardized and Z–transformation is a good solution. Changing the ratios between the values, which is another significant disadvantage of the method SMOP, is not possible to be overcome by standardization. The connection is quadratic – twofold amendment of group performance leads to a fourfold change the values of the area (composite indicator). It shifts the values of the middle part of the scale and accumulates them to the ends of the range.The best solution to the problem of non–linearity of the indicator calculated by the method SMOP is to replace the calculated area with the radius R of the circle of a regular simple polygon with the same area (i.e. equal magnitude of the indicators) [1]. The following formula is used to calculate the radius R:

$$R = \sqrt{\frac{2S_{ср}}{n\sin\left(\frac{2\pi}{n}\right)}} \qquad (6)$$

where $S_{ср}$ is the average surface, calculated by the aforementioned formula, n – the number of the group indicators (the number of axes in the diagram). Table 5 shows the results of the composite indicator of inter–organizational collaborative capacity calculated by four methods. None of the methods shows a big difference in the results. This is due to the fact that the measuring scale of individual factors is small (1 to 6) and the values obtained from the respondents are within only a few units. In a larger scale with a range from 1 to 10, for example, and large differences in the values of some of the indicators the lack of invariance would lead to different range of values in different methods where the effect of SMOP method would be visible.

Table 5. Results of the composite indicator of inter–organizational collaborative capacity

	MoD	MoI	BRC
Arithmetic mean	3.77	3.86	5.01
Geometric mean	3.73	3.81	5.01
SMOP — average surface	33.67	35.23	59.76
SMOP_R — radius	3.76	3.85	5.01

Although the results of the four methods are very close, the composite index measured with radius R depicted about the equate–surface polygon shall be considered the most reliable measure. Besides calculating the composite indicator of public institutions' control entities collaborative capacity in emergency situations, the Surface measurement overall performance method can have wide application in many fields of social sciences and management. It would be very appropriate for the evaluation of course of action in operational planning.

REFERENCES

[1] Михайлов И., Методи и процедури за конструиране на комплексен индикатор за измерване на „обществеото благосъстояние" на областите в Република България, София, 2008.

[2] Hocevar, S. P., Thomas, G. F., & Jansen, E. (2006). Building collaborative capacity: An innovative strategy for homeland security preparedness. In Beyerlein, Beyerlein & Kennedy (Eds.) Advances in Interdisciplinary Studies of WorkTeams: Innovations through Collaboration, 12, pp. 263–283. Elsevier JAI Press.

[3] https://www.chds.us/?file&mode=dl&f=resources/uapi/summit10/Track2/Hocevar–Interorganizational–Collaborative–Capacity–02–031510–01.pdf (accessed August 21, 2011).

STRATEGIC KNOWLEDGE MANAGEMENT IN THE ARMED FORCES ACADEMY OF GENERAL M. R. ŠTEFÁNIK IN LIPTOVSKÝ MIKULÁŠ, THE SLOVAK REPUBLIC

Mária PETRUFOVÁ

Department of Management, The Armed Forces Academy of General M. R. Štefánik, Liptovský Mikuláš, the Slovak Republic

The article stresses the importance of strategic knowledge management in the era of global competition. Strategic knowledge management raises the demand for permanent learning stressing the visions and personal aspirations of everyone within the modern efficient organisation. Within the AFA of General M.R. Štefánik and, inherently, in the Armed Forces of the Slovak Republic, strategic knowledge management employs and implements knowledge as the ultimate step in the knowledge pyramid.

Key words: *strategic knowledge management, learning organisations, paradoxes of knowledge management, science, knowledge - oriented teaching at state military university.*

1. INTRODUCTION

The world of continuous change is similar to a living organism that should be examined systematically. Without changes in management it is not possible to change the system of education and self-education. The way towards establishing learning organisations affects every individual. Organisations which do not want to lag behind are constantly adapting to changing conditions and implementing new ways of thinking and acting. The substance of changes is based on personal mastery. It is a pity that public, as well state universities do not take a special interest in this mater. This is all the more true when it comes to defense establishments. Therefore, the implementation of knowledge management in the Slovak military collage (The Armed Forces Academy in Liptovský Mikuláš), as well as in the Armed Forces of the Slovak Republic is part of modern trends.

The reasons underlying the aforementioned fact are already known. In these turbulent times current management practices are full of revolutionary and apparently rapid changes. By the time of their adoption, new changes emerge as if from a future galaxy. Within the scope of their competencies managers, leaders and company employees as well as military institutions staff have to pay particular attention to these areas and different situations in the current economic environment. Human resources management specialists often claim that the world of labor in the 21st century reincarnates and personifies itself. Hence, under such circumstances, human resources are the asset of nowadays' successful organisations and the "human capital", in particular, represents the basis for top knowledge creation and timely quality information. This process is secured with the considerable assistance of new electronic information, cyber technologies and professionals able to communicate rapidly anywhere on the planet [1]. Thus, the struggle to survive takes place in a large arena of competitiveness.

The same tendency exists within the Armed Forces of the SR although there are specific conditions laid down for state organisations and the powerful departments of state. Even in this environment management, as a corpus of theory and established practices, faces, instability, flexibility and speed of decision-making (sometimes there are more political decisions than military ones). If professional soldiers

want certainty in uncertain times they give their fate to the hands of managers who can help them achieve future objectives during these turbulent times. Nowadays there is more and more talk about organisation behaviour, learning organisations and their higher level – knowledge organisation, knowledge, and knowledge management. These notions and phenomena have been considered to be assets expressing new values. ***The part of those efforts is also understanding knowledge management matters as strategies for the future.***

Thus, concerning the Armed Forces of the SR, knowledge management has been only partially implemented in military practice. It is partially replaced by Lessons Learned during training of units for missions. There is a lack of correct information in different processes, for different people at different levels (e.g. academics' access to various approved documents has been limited). If a knowledge management system existed within the Armed Forces of the SR, the necessary knowledge would be available. It would facilitate the work of managers as well as the performance of all organisation employees. It is the most important reason underlying the attention to be paid to this matter by professionals, as well as by the management team of every organisation (including the defence sector).

2. FUNDAMENTALS OF KNOWLEDGE MANAGEMENT

The main goal of this chapter is to explain one of the basic notions used all along the article, namely "knowledge management" (hereinafter referred to as "KM"). "Knowledge" can be translated into the Slovak language as '*vedomost'', 'znalost'' poznatok – poznanie, (cognition, know-how),* etc. There is no consensus in Slovakia at present which term is the best suitable for this kind of management (in practice it is often translated as: vedomostný manažment, znalostný manažment, poznatkový manažment, manažment poznatkov, etc.).

Collins and Parcell claim that **knowledge management (KM)** *is a hybrid discipline which is not about science or certain ability. Knowledge management rather focuses on linking areas of learning with organisation development, human resources management and information systems.* I. Burger asserts that a knowledge company builds its existence on its employees' knowledge forwardness, on a deep knowledge analysis of its activities and processes, on knowledge – based management, and targeted management of knowledge discovery, improvement and its usage. Knowledge can be depicted as a **knowledge pyramid** including seven categories of which are interconnected and form a hierarchy.

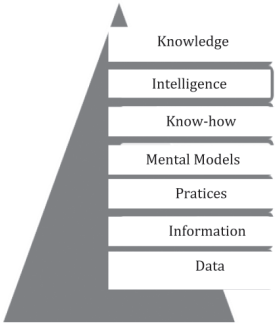


Fig.no. 1. Knowledge pyramid
Source: Burger, 2011.

According to scientific literature, the management of intellectual capital is defined as a complex sum of activities and processes orientated towards the creation, development and use of intellectual capital within a company. The management of intellectual capital is a file of activities and processes implemented particularly in the following areas: information management and knowledge management, customer and supplier relationship management, process management, output (performance) management, production management, controlling and protection of intangible assets. In simplistic terms, there are two forms of knowledge. Knowledge can be explicit or implicit. **Explicit knowledge** can be expressed by both formal and systematic languages. It can be written, drawn, or displayed. This type of knowledge is saved as data and information in documents, manuals, procedures, etc. and can be transferred, saved, stored, and archived. Knowledge can be expressed and shared as data and as such can be used in practice. ***Implicit (tacit)*** knowledge is a result from the interaction of explicit knowledge and experience, ideas, skills, abilities, intuition, personal ideas, and mental models of an individual, etc. This kind of knowledge is difficult or impossible

to explicitly transfer to another person, write it down or verbalize and share it, as it exists only in "people's minds".

Most tacit knowledge is hidden in the subconscious of people, but it is extremely important for an organisation. The current management experience points to the fact that the wealth of organisation knowledge is in the minds of its employees, in a tacit form. However, it depends on the individual features of an employee or work groups. It is not easy to gain or use this potential, because tacit knowledge is not visible, it is silent and managers tend to underestimate or ignore it. The consequences are usually unpleasant. Organisations orientated towards explicit, codified and directive management and the consequent strategy usually have difficulties in using tacit knowledge.

2.1 Conversion process and new knowledge creation – SECI model

Knowledge is created through the integration of its tacit and explicit forms, as well as through memory dimensions. The relationship between explicit and implicit (tacit) knowledge is dynamic and continuous. The change from one form to another is called ***"conversion"***. Creation and advancement of knowledge in organisations is secured by a four-level conversion process (SECI) which consists of individual phases – socializing – experience, externalization – articulation, combination – connection and internalization-acquisition. In the current modern world of management organisations should be able not only to work with their employees' knowledge, but also direct its transfer. Knowledge flow management is a new task from the point of view of management development. Efficient knowledge management shall focus on all operations aimed at making knowledge accessible for all organisation activities. It is necessary to create a methodology that connects specific knowledge with organisation specific needs. The theory of this article is based on an assumption that organisations shall focus on the use of such knowledge that contributes to the development of key processes and activities. Neither knowledge nor employees can be owned by the organisation. An employee is not a knowledge source of an organisation but its investor who invests this source under certain circumstances.

The ***efficiency of knowledge management*** shall be measured by its results, activities, expenditures and income. The use of stories proved to be an effective tool for breaking down barriers related to knowledge implementation. Nowadays, knowledge can be shared by two people or within a group of people, or a nation. Mankind has always used three tools to share tacit knowledge: storytelling, *master -apprentice relationship, and communities*.

The creation of a suitable environment inevitably creates preconditions for efficient KM. An excellent precondition for KM implementation is the creation of a friendly, open and non competitive environment and that depends on the type of organisation and its environment. The character of the environment in which knowledge is used can be influenced by different preconditions, factors and inhibitors that are all labeled as 'environment friendliness'.

The basic assumptions of an efficient environment include: suitable organisation chart, free knowledge flow, knowledge as a basic assumption of competitiveness, information and knowledge systems integration, direct relationship with a customer, involvement of managers and employees, cultural differences. Efficient strategic KM requires the creation of a suitable organisation environment and culture. In order to create a suitable environment it is necessary to:

- ***Eliminate technological barriers*** – in order to avoid incompatibility among knowledge-sharing systems;

- ***Eliminate barriers in processes - the*** processes are often established in a way that there is no space to record knowledge after actions and hence the creation of special processes for KM is necessary;

- ***Eliminate barriers of human behaviour-*** request for help is not a weakness. Even an individual overloaded with work can help. One such barrier may be a person's fear to provide information in order to avoid losing advantage.

- ***Application of a community approach*** – interpreted as we either sink to the bottom together or we manage it, as learning from others, creating common values, doubting conventions, being an example for others by means of openness and information-sharing.

The **Chief Knowledge Officer** (CKO) is a position filled by a person with specific knowledge that is extremely important for the organisation. Skilled employees are a significant part of an organisation's intellectual capital because they possess human capital – knowledge, motivation and competencies. Consequently, a Chief Knowledge Officer shall be appointed in order to establish a knowledge centre. The Chief Knowledge Officer and the centre employees have several responsibilities: an analytical responsibility to map sources of knowledge, a business responsibility to interpret and codify knowledge meaningfully, a technical responsibility to keep knowledge in databases, a responsibility for archiving to provide assistance to database users and search in databases, a managerial responsibility to undertake knowledge initiatives. It follows from the above that a special attention shall be paid to the Chief Knowledge Officer, in particular to his education and professional growth.

2.2. Objectives, advantages and benefits of KM for modern organisations

It follows from the above that KM *focuses on* unveiling existing or creating new knowledge, its formalization, storage, transfer, sharing, selection, processing, use and evaluation of its efficiency by means of feedback, as depicted by **Figure 2**. The support of mutual communication, cooperation, and the creation of a friendly non competitive environment for knowledge transfer is part of knowledge management. We can state that knowledge management coincides with all managerial activities. *The objective of KM is to have proper knowledge available at the right time.*

As for the **benefits of strategic KM for modern efficient organisations**, in order to successfully implement KM in organisations it is necessary to use various managerial procedures, methods and techniques (inductive, as well as deductive), time management techniques and methods at the border of management and psychology that consistently support knowledge management implementation in organisation. From the point of view of management, the benefits of successful KM implementation can be divided in two groups and these are as follows.

The first group contains benefits related to KM: knowledge processes realization, the use of technologies, improvement of knowledge – sharing and cooperation among organisation employees, expansion of best practices within the organisation, enhancement of learning and new employees' integration, improvement of project and innovation quality, improvement of relations with external environment (customers, competition, etc.), preparedness to respond to unexpected events and the ability to manage urgent and critical situations.

The second group comprises benefits related to the fundamental objectives of the organisation since the ultimate goal of KM is enhancement of the organisation functionality and achievement of higher quality performance such as increase in profits and revenue maximization, costs reduction, implementation of new working methods, creation of labour market opportunities, etc.

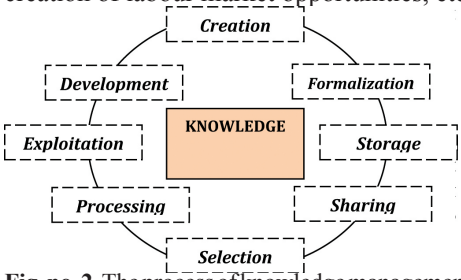


Fig. no. 2. The process of knowledge management.
Source: elaborated by the author

3. KNOWLEDGE MANAGEMENT WITHIN THE AFA AND THE ARMED FORCES OF THE SLOVAK REPUBLIC. THE LESSONS LEARNED CASE

One of the most important factors contributing to achievement of objectives and tasks that should be fulfilled by the Armed Forces is the willingness of professional soldiers to learn and improve their knowledge continuously.

The data as well as opinions obtained from the surveys (survey in The Armed Forces of the Slovak republic conditions and also in Academy of Armed Forces in Liptovský Mikuláš) prove that professional soldiers are active with regard to their self-education and improvement of skills acquired. The Armed Forces Academy of General M. R Štefánik in Liptovský Mikuláš plays a crucial role in this process. Thus,

the academic staff of this educational establishment draws the attention of all the students taking bachelor and master degree studies, and in particular of those within the study program "Management of the military organisation" that all of the above are part of future managers'/commanders' education. In this respect, this approach is formalized within the aforementioned study program by the inclusion of compulsory optional subject matters, especially into the subsequent master program. Within the Armed Forces of the Slovak Republic the academic staff has good experience with the application of new age management practices such as Lessons Learned. Despite increased efforts and several measures it still remains difficult to fully implement Lessons Learned in the environment of the Armed Forces of the SR and it will take time until it is completely applied. With regard to *Lessons learned* the use of *Lessons Learned* as a source of learning from real situations **is to be improved**. Further, *Lessons Learned* can be used to communicate the existence of a new situation, the change of an initial situation, to recommend behaviour change or to communicate a personal observation. It follows from the above that "*Lessons Learned*" should not be misinterpreted or misused it as a control means, as an instrument for the assessment of subordinates, as a form of negative event notification, nor as a method to express claims or to abuse people, units, etc.

In conclusion, *Lessons Learned* are used in practice within the Armed Forces of the SR. However, there is no complex system for finding the right direction and the establishment of clear rules for the work of professional soldiers and employees. The comprehensive knowledge database consists of regulations, directives, ordinances which are stored in every organisation or unit. Specialized course literature and textbooks are kept in military schools. However, they are not always easily accessible. Within the SK AFA, knowledge is transferred by means of contact between younger and older generations of professional soldiers and employees. However, t***his process is not systematically controlled and the transmission of knowledge is mostly based on intuition.***

Consequently, it is necessary to build the system of knowledge management starting with a knowledge database available for all levels of professional soldiers and employees. That requires a number of system measures in order to create an ideal environment enabling exchange, transmission and preservation of knowledge which should reach its target population, namely the people who need this knowledge in order to solve difficult situations arising in their life or at their workplace as soon as possible

Undoubtedly, the creation of a system in the form of knowledge management implementation is a crucial form of support of its implementation at all levels of organisation management *(as the case should also when it comes to the AFA and the Armed Forces of the SR).* On the basis of our finding and opinions of people who have been working in the environment of the Armed Forces for some time we can conclude that it is necessary ***to create not only the system of knowledge management but also a related knowledge database.*** By analyzing various methods suitable for knowledge management implementation in practice, we conclude that KM-Beat-methodology is appropriate for this purpose. As for the process of knowledge management implementation in practice the *following steps and procedures must be respected:*

- to appoint a Chief Knowledge Officer (CKO),
- to involve the senior management of the AFA, as well as other top managers of the Armed Forces of the SR,
- to integrate knowledge management in the key processes within the Armed Forces of the SR,
- to create an environment of confidence and learning within the organisation,
- to support knowledge creation and speed up innovations by means of information technologies,
- to take appropriate measures for practical implementation of knowledge management at all levels of management and command,
- to implement the issue of knowledge management in the sector rules,
- to use the intellectual potential of teachers and employees of the Armed Forces Academy to support a comprehensive system of knowledge management under the circumstances of the Armed Forces of the SR,
- the AFA as a higher education institution shall become a representative knowledge

disseminator through the main guarantor of the system creation under the circumstances of the Armed Forces of the SR – namely a learning modern organisation,

- the implementation of knowledge management will require a high level of security to prevent the disclosure and loss of information and knowledge,
- to propose the knowledge database structure in full accordance with the features of the Armed Forces of the SR and with the effective use of information technologies,
- accession of the Armed Forces of the SR to NATO significantly extended the spectrum of use of our military units,
- a special training unit has been established in order to prepare and deploy the soldiers on foreign military missions. The officers of the unit have applied that knowledge in practice.
- lecturers have knowledge from working in various missions. In addition to preparation and training they are also responsible for direct cooperation and assistance in military contingents rotation abroad. They transfer their own experience to their followers. This leads to valuable knowledge-sharing and supports the building of a learning organisation (Lesson Learning); the application of knowledge management issue within the AFA and realization of trainings through short term courses focused on *Knowledge management* in full accordance with the features *of the Armed Forces of the SR."*

4. CONCLUSION

Military knowledge plays a crucial role in a dynamically developing world. This will be the basis for further steps in the education process – education, training and professional training courses in full accordance with the features the Armed Forces of the SR. On the basis of proper analysis of the current state in the field of knowledge management we can claim that the process underpinning this new kind of management can be more efficient as well as faster also in the case of the Armed Forces of the SR. Knowledge management is a predestined tool contributing to increasing any organisation value. Its successful implementation is challenging but not impossible. In terms of the Armed Forces of the SR professionalization the objective to implement knowledge management in the military environment is a necessity in today´s world. It is already clear that it is not an easy way. Our knowledge, experience and the recent management development prove that this way will inevitably lead to a higher quality and competiveness of the defence sector. It is equally important to learn how to become gradually competent and able to use this knowledge, acquire and share it. The constant improvement and systematic, innovative and prognostic thinking are required. ***We have to be aware that knowledge regarding certain phenomena, processes and systems improves and more and more knowledge occurs.*** It depends on us show quickly, reliably and precisely we can understand these arguments and reasons and use them in practice. Yet, it is our mission to put and implement new knowledge as part of knowledge management. This knowledge arises from developments in scientific and technical knowledge and from continuous life changes, changes in work efficiency in the lives of managers, commanders, professional soldiers, employees as well as administrative professionals. We shall encourage all students (through higher education at three levels), other participants in various forms of lifelong learning and participants in military career learning to become aware of this fact.

REFERENCES

[1] STÝBLO, J.: Management současný a budoucí. Praha : Professional publishing, 2008. ISBN 978-80-86946-67-2. s. 10.

[2] COLLINS, CH. –PARCELL, G.: Knowledge management, Brno, 2005, Computer Press. ISBN 80-251-0760-4

[3] BURGER, I.: Manažér : časopis pre rozvoj riadiacich pracovníkov. Roč. 15, zoš. 58 (3/2010), s.12-20. - Bratislava, 2010. ISSN 1335-1729.

[4] KOKAVCOVÁ, D.: Nová paradigma znalostného manažmentu. Banská Bystrica : Edícia ekonómia, 2011. s. 20. ISBN 978-80-8077-395-2.

[5] BUREŠ, V.: Znalostní management a proces jeho zavádění. Praha : Grada, 2007. 212 s. ISBN 978-80-247-1978-8.

[6] MLADKOVÁ, L.: Moderní přistupy k manažmentu. Tacitní znalostí a jak ich řidit. Praha : C. H. Beck, 2005. s.194. ISBN 80-7179-310-8.

[7] BUREŠ, V.: Znalostní management a proces jeho zavádění. Praha : Grada, 2007. 212 s. ISBN 978-80-247-1978-8.

[8] Online: http://web.gs.mil.sk/sbo/ovcad/oad/lider.

[9] MAJCHÚT, I.: Nerobme rovnaké staré chyby. Zborník z medzinárodnej vedecko-odbornej konferencie: Manažment, teória a prax 2010. Liptovský Mikuláš: Akadémia ozbrojených síl, 2010. s. 189-194. ISBN 978-80-8040-404-8.

PERSONNEL PLANNING. A COMPARATIVE OUTLOOK

Catalin Constantin SAMOILA

Ministry of National Defence
Human Resource Management Directorate
Personnel Management Development Policies Office, Bucharest, Romania

From a very wide perspective, planning has raised lots of issues over time. Management and business theory struggle to teach what planning is, and why it is so dramatically important, in a manner which seemingly quotes Antoine de Saint-Exupery - "A goal without a plan is just a wish", or sets up awareness through Benjamin Franklin's famous words - "By failing to prepare, you are preparing to fail" [1]. However, some voices are circumspect or balance between the usefulness of plans and planning: "... plans are useless, but planning is indispensable" [2], while others, sporadically but decisively, criticize the entire organizational planning process, presenting it as a total failure [3]. Sometimes the 'cons' are right, meaning that real life might bring more surprise than ever expected. Even so, organizations benefit from planning by trying at least to 'see' one step forward, and to avoid total uncertainty or critical situations, if not to improve. The military ones are not exempt. Military planning has become the organic environment for such organizations since Napoleonic wars, or even longer ago. This present attempt does not intend to deeply analyze the antagonist advocacies over planning, but to bring under comparison, in a brief manner, the business-shaped theoretical approach of planning, against the real concerns of the Romanian military system in terms of manpower planning.

Key words: *human resources, management, personnel, manpower, workforce, military, planning.*

1. INTRODUCTION

There is only little differentiation in the ability of using concepts underlying lots of business-featured approaches to personnel planning need, importance and process. However, expanding such perspective on organizations with non-economic goals might not only be difficult, but also inappropriate. It could be the result of barely measurable outcomes and hence ofthe (un)usable conceptof'competitiveadvantage'within government organizations supposed to provide security, or more precisely, defense. The performance of the military organization is far more difficult to express in terms of productivity, profit, or whatever indicators may be used within an economic environment.

Military efficiency and effectiveness are related to mission accomplishment during either peace or war time, which is obviously a different kind of competitiveness than the one among players in the goods and services markets. But the main difference between military and non-military environments in terms of human resource management (HRM) seems to be the way the two environments acquire their needed human resources: whilst civilian enterprises have the possibility to "buy manpower", the military organization has the only option of "making manpower" (with some exceptions), since no military education and training are provided other than within the military.

There is no need to debate whether or not strategic planning, and subsequent personnel planning are useful or not, keeping in mind that even the military reason of existence has been very much linked with "fighting for resources" for millennia. Planning is also one side of this struggle, and it has brought better result within any kind of field, if not becoming itself a "fight in fight" for

expert methods and hi-tech instruments, whose results could have otherwise been easily missed or misunderstood. Instead, there is a feeling of the need to question whether the business-type manpower/ personnel planning process applies to non-business environments, especially to the military one, "in integrum".

This doubt does not necessarily generate a hypothesis which has to be demonstrated, meaning that if the results of any analysis revealed feasibility of business-shaped personnel planning processes within military organizations, then they would be available for adoption The opinion underlying this article states that these methods are not to be taken for granted, and consequently they have to be carefully inquired and comprehended. Thus, the aim of the studyis based on an analytical comparison of personnel planning requirements, methodology, and results used in business and non-profit organizations..

Given this overall framework, the thesis of the current paper is basically meant to target the possibilities of improving military HRM processes (especially planning) through analyzing business HRM models, theory and practice.

Another objective is to identify the current legal and organizational context within which the Romanian military HR planning process may or may not benefit from the experience and expertise that other military systems and civilian business organizations have achieved.

With no unreasonable sense of criticism, the proposed comparative outlook is also aimed at identifying lessons to be learned, and trying to find theoretical solutionsfor taking further steps in experiencing them practically, if possible.

2. HR PLANNING. A THEORETICAL APPROACH

2.1. Terminological delineations

The human resources management (HRM) theory and practice use a variety of terms. They sometimes are based on the same content, but other times there are differences in meaning.

The concept of HRM is as large as the perception of *everything related to people* within any kind of organization, no matter what its main goal is. Being "more prospective than analytical" [4], the personnel management literature briefly describes HRM as "the management of work and people towards desired ends" [5]. The Romanian theory on the topic does the same, treating HRM as a whole *system of activities* (processes and procedures) rather than a *system of systems*. There are many works which could be taken as examples [6], not going into detail as the practice-based approach could do.

On the other hand, world-wide human resources literature has long ago started treating each of the HRM system "throughputs" as systems of their own, based on the specificity of each process and on the tendency to deeply research the newest methods and techniques, as a need for development. But even within this framework, the switch from theory to practice is loaded with overlaps in using terms such as personnel, manpower, and workforce.

The Romanian perspective sees every one of these as human resources, which may not be confusing, as long as human resources basically stand for people as an asset (the most valuable) of an organization. It must be mentioned that this approach is not an exclusive characteristic for Romanian HRM theory and practice, and at some points it is valid worldwide, since there is no interference with other (governmental) operating systems.

From some other perspectives, there are separated ways of understanding manpower, personnel, and resources. A RAND Corporation study [7] analyses the alignment of three systems – manpower, resources, and personnel systems – as a necessary condition for providing "the personnel inventory needed to meet readiness and operational requirements". This study is particularly important from the US military perspective on the PPBE (Planning, Programming, Budgeting, and Execution) System, which is more or less adopted by the Romanian Ministry of Defense (MoND). The PPBE system requires actually this kind

of segregation of HRM sub-systems, and according to the study, there is a different understanding of each of the above mentioned systems [8]:

- the *manpower* system "determines the needs of various organizations for military persons who have different characteristics", which may be taken as the pure personnel planning process (a "wish-list") with no financial constraints,
- the *resources* system "determines how many of those individuals will be paid for and pays for them", and
- the *personnel* system "enters, manages, develops, and exits personnel", which in general terms encompasses the main HRM processes, except for planning.

For a better understanding it should be stated that the three systems are interconnected (they actually have to be aligned), so the outputs of manpower and resources systems will become inputs for the personnel system.

A NATO report [9] sets up equality between HR and manpower, probably as a result of a multinational perspective, defining HRM as a system which "includes all processes that enable, guide, execute and control the matching of personnel supply to the jobs required, i.e. '*spaces vs. faces*' ". Although valuable by revealing the limitations of NATO HRM methods, practices, and instruments, it may be assessed that the study has its own limits from a terminological perspective, focusing the entire HRM area on "matching faces to spaces", while in theory HRM also deals with issues such as encouraging employment opportunities, promoting rights for workers, and enhancing decent social protection.

Heading back to worldwide HRM theory, Canadian [10], US [11], and Australian [12] researchers use the term "workforce" when it comes to planning. This could somehow be confusing for a reader attached to another culture, since it has more than one meaning by definition, as shown in *APPENDIX A*. Since there is more than one meaning for every single concept, and at some points different terms have been understood in the same way (see highlighted definitions), it seems that there is no reason to worry about terminology. Yet it should be stated that, depending on context, phrases such as "human resource" and "human resources" *must* be used accordingly.

Moreover, not quite any of the above-mentioned terms may be used whenever talking about planning. Having concluded that HRM deals with personnel needs and supply, the bottom-line condition of a correct understanding of what those terms are referring to is to define them, from an organizational perspective, as **manpower** (*spaces*), and **personnel** (*faces*). Once that point is reached, it is easily understandable why human resource planning is very well known under the concept of *4R: right person, in the right place, at the right time, with the right skills*.

Not really within the same context, but related to it is the fact that any national military system (including Romanian) which has adopted the PPBES needs to combine the so-called HRM planning system with the PPBE system, and to align them. Otherwise, planning remains just a process with no valuable results in terms of mission accomplishment.

2.2. An integrative outlook on HR planning: basic requirements

This section will focus on both theoretical and practical aspects of what planning actually means in terms of human resources. It is designed as a comparative outlook over business and government practice, with a highlighted military perspective. Because human resource planning deals by nature with the manpower needs of an organization, and also for simplicity reasons, this approach will use from now on phrases such as "HR planning" whenever both sides (spaces and faces) are referred to, "manpower planning", and "personnel planning", when it comes to only one of them, even if "manpower planning" may be obsolete, according to some approaches [15] which state that the term was used in the past, and it has been substituted by "workforce planning".

HR planning is mainly referred through its general purpose, which is to match human resources to organizational needs in shorter and longer terms requirements. Matching organizational resources and needs, according to the 4R principle, is seen as the result of planning, which is also described as a process of processes, encompassing not only estimates and plans, but also recruitment, selection, hiring, induction, training and development. Therefore, *planning* is just a piece of the puzzle, fitting into the wider scheme of an organization, as Reilly's theoretical model shows [16].

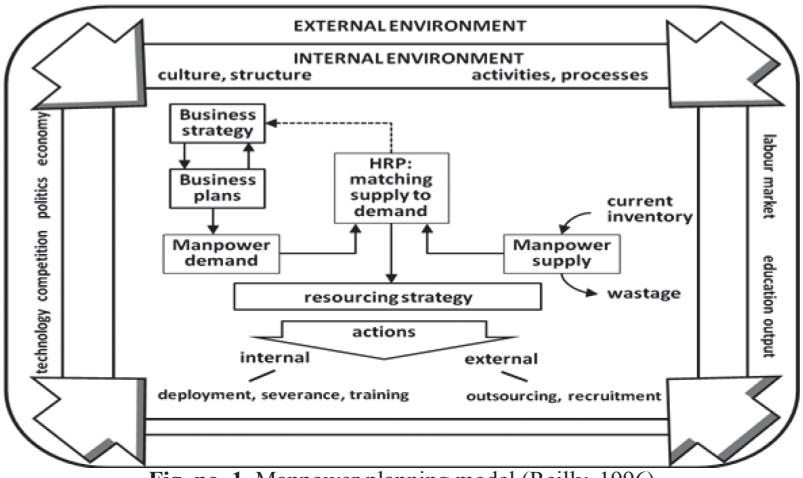


Fig. no. 1. Manpower planning model (Reilly, 1996)

HR planning followers and experts [17] have identified many reasons why it is so important to enable management to achieve such objectives as:

- reducing personnel costs, without impacting productivity;
- identifying and preparing future leaders for structural changes;
- guaranteeing a constant supply of qualified personnel in key roles;
- keeping a flexible workforce structure;
- having internal flexibility to match people expertise with job requirements;
- investing in the education of selected talented employees;
- recruiting people with the right mix of skills;
- increasing productivity.

Studies [18] have also shown the appropriate steps of HR planning. In this respect, the S-7 model is the most known , and consists of the following:

Step 1: Define the organization's strategic direction;

Step 2: Scan the internal and external environments;

Step 3: Model the current manpower;

Step 4: Assess future manpower needs and project future manpower supply;

Step 5: Identify gaps and develop gap-closing strategies;

Step 6: Implement gap-closing strategies;

Step 7: Evaluate the effectiveness of gap-closing strategies and revise strategies as needed.

The model is among the most recognized and used in practice, both within business and government environments. Under the circumstances of the above mentioned PPBES, a theoretical model of HR planning is proposed by Naval Postgraduate School, Monterey, California, breaking down the Human Resource Development Process (HRDP) System into "four major quadrants: Requirements; Programming; Planning; Execution" [19].

The study proposes a comparative outlook on HRDP System specific to US Marine Corps, and the US Navy system equivalent – Manpower, Personnel and Training System, based on the same processes, as shown below:

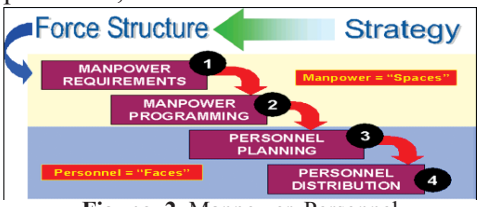


Fig. no. 2. Manpower, Personnel and Training System

There are different ways to establish the right manpower requirements, depending on how the workloads are standardized, based on working time or productivity. **Estimating workload** is considered to be "the heart of demand forecasts" [20].

Workload projections can be based on quantitative models, qualitative models, or on both of them. The key outputs of workload projection are the estimate of the type and volume of tasks to be performed, how many people and with what qualifications will be needed to perform the tasks.

Workload calculations are easier to be done whenever the equipment allows it, meaning that there is a fixed number of people with established qualifications operating the equipment. However, no one can work endlessly to operate a part of that equipment. This is why planners need to calculate the entire "amount" of work and to split it into appropriate time shifts, which in most cases means 8 work-hours per day. Accordingly, the necessary manpower to operate the equipment 24/7 is at least 3 qualified persons, not taking into consideration the "reserve", which means at least one extra-person ready for unpredictable substitution.

Standardization tends to be an important role-player within the manpower planning process, not only for workload assessment, but also to help planners to directly refer to certain skills encompassed by a qualification. Such standards are internationally available under International Labor Organization (ISCO – International Standard Classification of Occupations). According to Romanian law, an occupational catalogue [21] is used by HRM within both business and government environments. Every inventoried occupation is supported by an occupational standard, describing educational levels, and skill requirements. Unfortunately, the Romanian military does not use such an instrument related to military manpower. Although the catalogue does exist, listing all military occupational specialties, the educational and skill requirements are not inventoried under a unique document, and they are spread out in many manuals or other guidance documents, which affects manpower planning.

Even if planners do their job properly, there are not many cases in practice when it happens according to plan, because manpower is expensive. It is more expensive when technology requires highly qualified people to operate the equipment, but not only that: there is a balance between quantity and quality, through the fact that a small number of highly qualified people are as costly as a greater number of medium or less qualified performers.

Along with workload determination, manpower planning is also based on another key requirement, which is **estimating future manpower needs**: the critical point is to find the correct answer to the question "how many and what kind of people will we need?".

Answering that question needs a large amount of different variables to be taken into account, and manpower planners often have to rely on information that could only be obtained from top and middle managers. Some of the most important variables have been identified by business model studies, but they can apply for a government (military included) environment:

- the state of the economy;
- demographics;
- attrition or turnover;
- new skill requirements due to production and/or technological changes;
- obsolescence of current skills and its effects;

- equipment availability and costs;
- social changes effects on labor market;
- labor costs.

Organizations have different options to estimate future manpower demands. Mathematical models are the most accurate, but other techniques are still frequently used, such as regression methods, trend analysis, individual estimates, and Delphi method [22].

Whatever tools are used, cross-function analysis requires the management of a large quantity of information, which could not be possible without the valuable help (but often too expensive) of IT systems.

There are numerous available methods and instruments which help organizations to conduct HR planning, as it involves an analysis of the present manpower competencies, the identification of the competencies needed in the future, a comparison of the present workforce to future needs to identify competency gaps and surpluses.

Many organizations have developed their own techniques, and complex software-packages based on even more complicated statistics that are available on the market. However, they might be so expensive that most organizations could not afford them, and they may not be 100% reliable if not tailored taking into account the specific requirements and environment of the organization that uses them.

3. DEFENSE & HR PLANNING

3.1. US Navy manpower planning

Following the main goal of providing a brief comparative outlook on HR planning, this section will delay the business-shaped model for further comments, and will try to summarize some of the most important features of US Navy Manpower, Personnel and Training (MPT) System mentioned above, based on the information provided by the quoted study.

It should be mentioned that, as a similarity between business and military, both environments must have HR plans, derived from strategy (goals – objectives – processes– activities) and guided by the integration principle. The difference comes from the target that each environment focuses on, so that business-tailored planning follows the competitive advantage, while military plans are capability-based, according to the PPBES requirements.

The US Navy MPT System reflects the overall process of translating strategic objectives into people demands, and according to sources [23], it has the following designations:

- to help build platforms to accomplish missions assigned to the Department of the Navy as a part of the National Military Strategy (NMS) in support of the greater National Security Strategy;
- to provide guidance for planners to justify the Military Personnel Navy (MPN) appropriation to Congress;
- to fund the correct number of sailors with the right qualifications and experience to specific assignments in preparation for war and support of peacetime personnel readiness levels.

As shown in **Figure 2**, the system is based on four quadrants, and each quadrant reflects a process, being treated through sub-processes, specific players, documents, and information systems. For simplicity reasons, the present thesis only refers to sub-processes, with only short comments on other features which may lead to better understanding.

The first process – ***manpower requirements*** – is designed to determine the human resource needs, and for that reason it is known as the quantitative and qualitative determination and validation of workload. It basically measures workload through industrial standards, which convert workload into hours of productive work by skill and pay grade. The resulting hours of workload are converted into the number of requirements for a specific platform class. These requirements are ultimately used for accessions, training, promotion plans, and personnel appropriation justifications to Congress. Each platform type is assessed approximately every two years or when deemed necessary, one of the purposes being to ensure future Navy war fighters have the right jobs identified

by studying human-machine interfaces.

Sub-processes are *determination* and *validation*: new systems and platforms are determined using a zero-based methodology, while validation is generally used to measure workload on previously existing systems and platforms. Hourly workload is captured based on readiness levels in a (financially) unconstrained manpower environment.

A short but important comment is worth adding: there is a point where military and civilian manpower planning could meet on the ground of occupational standards, as long as the same type of equipment is used by both environments. It is a fortunate case with the shipping industry and naval military forces, and it may apply also for other services such as air (pilots, air controllers) or land forces (drivers, engineers, etc.).However, this kind of matching is barely usual. In any case, the workload estimate process within the military could rely on civilian manpower experience and practice, at least from a methodological perspective.

As presented by the study [24], once the workload is assessed and requirements have been determined, the results are maintained in manpower requirement documents, which are the inputs for the next process.

The MPT System also plays the role of integrating manpower planning into the PPBE System through its ***manpower programming*** process, which has as a general objective to fit 'unconstrained' war fighter requirements into a fiscally constrained environment. Manpower programming identifies necessary current appropriations and projects future requirements across the Future Year Defense Plan (FYDP).

It is based on the following sub-processes:

- *authorization*: a manpower requirement supported by approved funding and corresponding end strength; once a requirement is authorized, it is referred to as a *billet*, which is the basis for programming officer and enlisted end strength;
- *end strength*: "the number of officer and enlisted requirements which can be authorized (funded) based on approved budgets" [25], or "the number of uniformed personnel set by congress allowed on the last day of each fiscal year" [26];
- *PPBES*: is the cyclical process of *planning*, *programming*, *budgeting* and *execution* of the budget which connects mission to capabilities, forces and resources, and is designed to provide the best mix of forces, equipment and support within fiscal constrained environment.

Although further iterations of the US military PPBES go beyond the goal of this approach, one comment needs to be added. This authorization – end-strength – PPBES well-ordered mixture of processes allows military players to advocate, negotiate and even to influence the political will in order to attract the appropriate funding for mission accomplishment. The Navy uses the whole process to determine what capabilities they require, how much of the capability they can afford to fund and what adjustments must be made to attain those capabilities, based on strategic demands and deep risk analyses which weigh goals and limitations (capabilities and funding), and costs (personnel, operational time, missions).

The third process – ***personnel planning*** – makes the transition from the 'spaces' to the 'faces' side of planning. It is time for using 'workforce' after 'manpower' requirements have been determined and authorized. The process consists of ensuring that the human resource requirements of the future are being properly sourced, grown, retained, and released. Personnel planners are responsible for developing strength, accession, school, and advancement and promotion plans.

Sub-processes are *strength planning* and *community management*.

Strength planning consists of predicting, planning and managing the Navy's total gains and losses for a given fiscal year with the goal of reaching the congressionally mandated end strength with the given budget.

Strength planners use the following formula to manage end strength:

BS – L + G = ES

[*Beginning Strength (1 OCT) – Losses + Gains = End Strength (30 SEP)*]

Forecasting losses is done by looking at attrition, retention and retirement, while predicting gains is done in order to obtain end strength at the end of the fiscal year. Gains include accessions into the Navy (boot camp and officer training), lateral transfers from other services, and the Naval Reserve. Both losses and gains are predicted on a monthly base by pay grade, which means that the personnel planning is actually a continuous work, watching the balance between *personnel* and *resources* systems as defined earlier.

Through *community management* future community inventory from accession to retirement is predicted based on current inventory, in order to shape the workforce.

According to the study, officers and enlisted community managers usually develop compensation policies, accessions, advancement and promotion plans, and school training plans, as shown in *Table 1* below.

Table 1: Community manager's role

TASK	DESCRIPTION
Compensation policy	Incentives, SRBs (Selective Reenlistment Bonus Model)
Accession planning	Recruiting quotas (Skipper: model of predicting recruiting goals and future inventory requirements)
Advancement planning	Promotions by community & pay-grade
A and C school plans (early evaluated, and monthly tracked by pay grade and rating, gender, school capacity and length, instructor to student ratio, and attrition rates, minimize the difference between authorizations and projected inventory)	Quota planning

"Personnel distribution is the cycle-closing process, which actually deals with the 4R concept, having personnel managers directing the movement of individuals to fill command vacancies. The process begins by identifying sailors who are nine months from their Projected Rotation Date (PRD). This projection separates non-distributable inventory from distributable inventory (transients, in training, patients and prisoners or nondistributable inventory). Personnel meeting the assignment criteria are known as the distributable inventory. Sub-processes are allocation, placement and assignment."

Allocation consists of distributing sailors and officers among the US Navy maritime commands, through a prioritized list of projected available billets and distributable inventory of sailors. The result of the allocation process is the input to placement and assignment sub-process.

Placement is an intensive process in which command advocates search for the right sailor, with the right skills, for the right command and at the right time. This is also known as looking out for the command's requirements (interests).

Assignment considers the sailor's preference, and puts a 'face' in a 'space'. The act of assigning sailors to billets is done by assignment officers (detailers).

As a short conclusion of this section, the US Navy MPT System is complex, and it may look inefficient with lots of players, documents, information systems, and tasks. It works as an extremely wide and complicated "military manpower management enterprise" [28], with the general goal of providing security by deterring and winning wars. Its pillar principles are the following:

- cross-control, both civilian (by budget) and between agencies (HR planning actors);
- advocacy (justifying manpower requirements);
- negotiation (influencing political will through risk analysis);
- coordination: manpower-equipment.

3.2. Lessons to be learned and challenges

This section is about lessons to be learned (not yet learned, since measures are not in place), and challenges to be faced in order to improve the national defense planning system through a proper manpower planning process.

The brief overview of a theoretical approach based on business experience, and the crossing through one of the

most world experienced and powerful military manpower planning systems revealed a series of good practices to be thought of, not to borrow them as they are, but maybe to understand the rate of their practicality within the Romanian military.

- *Personnel planning is just a piece of the larger HR planning process*

This assumption is based on the fact that there is no historical evidence of a comprehensive HR planning system in place within Romanian armed forces. It is only known from sayings that there used to be a personnel planning method, based on a yearly process, with a so-called "*annual plan for providing with human resources*" as a result.

It is not known whether this instrument was covering both the manpower (spaces) and the personnel (faces) sides of the coin, but since there is no registered document at hand, this has to be a matter of further research.

Other than that, there is no evidence that the greater process of defense planning uses the right techniques of assessing manpower requirements, as long as there is a lack of military occupational standards. On one hand, according to Romanian legislation [29] on defense planning, the HR planning is deeply integrated into a top-to-down defense planning process, based on PPBE System, and a series of subsequent documents which provide directions: National Defense Strategy (NDS), Government Program (GP), Defense White Book (DWB), Military Strategy (MS), and Defense Planning Guidance (DPG).

On the other hand, according to personal experience, specific regulation for manpower planning is missing, so that the process is mainly based on shaping force structure in accordance with capability requirements, under a previously given number of budgeted 'spaces'. Therefore, the manpower requirements are determined through matching manpower to equipment, and by a 'traditional' military organizational framework, under the policy of maximum affordable quantity. There is also a negotiation process, within which the major programmers' representatives justify their needs, and adjust their "portions" of approved requirements. This phase takes place under the authority of Integrated Defense Planning Directorate (IDPD) – a sub-structure of the MoND Defense Policy and Planning Department (DPPD). The result are the Major Programs (MP), and Force Employment Operational Plans (FEOP).

The conclusion is that manpower requirements ought to be based on scientific workloads calculation. A timorous step has been done in this respect, but from a psychological perspective. According to regulations [30], the Socio-behavioral Investigation Center (SbIC), a sub-structure of the Human Resources Management Directorate (HRMD), performs personnel psychological evaluations using professional characteristic charts. It is not something that measures workloads, but it may be helpful for further on-site studies, and job analyses, with the goal of correctly setting up 'how many and what kind of people we need' (skills, pay-grade, quantity).

But before evaluating, the reference system has to be operational, which means that occupational standards need to be previously developed. It would not be the main SbIC objective, but the HRMD's one, and other specialized bodies'. SbIC could only help performing this laborious task. Such standards inventory would back-up military specialties inventory, and therefore would help workloads analysts, and manpower planners to accurately estimate manpower requirements.

Should these instruments be operating, organizational adjustments related to jobs (spaces) and their requirements will be needed, and this also could be done at once or on a long term basis, depending on the urgency of this particular change, which is mostly determined by every organization's level of involvement in building a capability.

- *Implementing succession plans*

Studies see succession planning as an HR activity which "acknowledges that staff will not be with an organization indefinitely and it provides a plan and process for addressing the changes that

need to be improved and updated. And also the infrastructure needs additional accomplishments.

Whether a Human Resources Information Systems (HRIS) will be available or not, analyses are key factors of HR planning. If supported by statistics, mathematical methods and HRIS, these will result in good HR plans, which would be able to sustain military (manpower requirements) justifications faced with political will (this may be another lesson to be learned by Romanian military leadership from the US perspective). It will also save money, through appropriate gap closing strategies. If not, there will be not much to do other than planning by personal experience.

4. HR PLANNING: FROM PROMISE TO PRACTICE

4.1. The need for an integrated perspective

As depicted in previous chapters, HRM has developed as a system of systems. Whichever perspective (business, government, or military) is applied, the HRM system creates multiple links between the organization which it supports and the wider social system, which makes it even more complex.

Understanding the very detailed HRM mechanisms of "dealing with people and organizations" requires not only deepened research, but also an accurate bird's-eye view of processes, sub-processes, connections and correlations.

At the very first level of HRM process of processes stands the HR planning, as planning is the first function of general management by theory. The HR cycle goes on with cross-connected processes as recruiting, selecting, developing (education, training, assigning, and career development), performance management (assessment, appraisal, and rewards), compensation, and it formally ends with retirement or/and outplacement. This entire cycle comes under organizational external and internal influencing factors, and "manages" people while supporting tasks. At the same time it is supported by and interacts with structures, technology, Staff), education and training capabilities, and attrition rate based on resignation records, and legal framework (retirement regulation). The results of this process were (and they still last) the *initial education and training plans*, along with *recruitment plans*, which are yearly delivered. This issue has been raised both officially and unofficially [35], and from 2014 a new HR Planning Office has been established. Its main current task is to develop a new HR planning methodology, which hopefully will provide an integrated perspective over both manpower and personnel planning.

Returning to specialists, it is a notorious fact that Romanian military has few real HRM specialists. Some of them are academics, and their education is mainly based on civilian, business-shaped approach. Their knowledge is extremely valuable, and it could be arguably useful to improve military HRM practice. They only have little experience with the military environment.

On the other hand, military personnel working in this field area are experienced as military, but only few have studied HRM theory. Their skills are exclusively based on experience. This is also to be taken into consideration by HR planning policies, in terms of education and training, but also in practice, in terms of information changing, common studies, and other means to increase level of skills.

- *External and internal factors analysis (demographics, economy, attraction, retention, attrition)*

Determining manpower requirements should be an issue of concern Not only for the Romanian military HRM system (also HRMD should be more involved). Deeper analyses have to be performed, in order to investigate both internal and external environment, which would by accuracy help HR planning improvement.

This also requires investment in time, talent, and resources. Resources might be the most targeted sinceaccurate information necessitate high performance information systems.

Unfortunately, former attempts of acquiring valuable IT solutions for HRM have failed, due to both lack of knowledge and money. Nowadays some "home-made" products are in place, but they still

will occur when they leave" [31]. It enables an organization to fill leadership vacancies within a reasonable time frame, focusing *on developing a pool of people to consider for promotion*, and it should not be confused with emergency-related replacement planning, or with talent management, which deals with "attracting, developing, deploying, and retaining the best people" [32].

Even if not as widely used as it should be, business theory and practice recognize its importance. Similar concerns could have been identified within the US Navy *placement* phase of the *personnel distribution* process.

The Romanian military HRM system has adopted a more "equal opportunity" orientated policy, translated into staffing-related regulation [33]. According to it, everyone has the right to apply for a vacancy, which is an overall valuable way. Selection boards are to decide (fitting) who is the right person among those who meets the job requirements.

Yet there is a need for pooling future leaders. It does not mean avoiding regulation. A selection process should still be in place, but before this is to be taken, having many choices at hand could not only ensure the best staffing solutions, but also improve leadership among the entire organization.

From the perspective of the architecture of organization processes, some balancing structural constraints may apply, meaning that key positions filling must be based on additional requirements. As an example, the actual regulations (Ministerial Order no. M.30/2012) sets-up that only company commanders may become battalion commanders. It is not very clearly established which are the key position subjected to succession planning, and this may lead to fuzziness, but at least types of required positions for further career development are alternatively proposed by policies and provisions. This may be a better approach, instead of strictly enumerating key positions, because the system should avoid exaggerated path narrowing measures.

Bearing with the truth that this is easier said than done, building succession plans requires "investment in time, talent, and resources" [34]. Beside the fact that senior leaders need to recognize the role of succession planning, and to be willingly involved to pass the leadership baton at a certain time, some other instruments could be used.

The most important factor seems to be education (even within second field area), but some others may play a role whenever possible, such as mentoring, and creating opportunity for junior leaders to switch positions. This is a mobility requirement ("rotations"), and sometimes it could raise issues of social concern, but they need to be mitigated by appropriate motivational means.

Of course, this should be done by regulations; otherwise only by a fortunate chance pieces of succession plans could be locally in place – wherever very skilled senior leaders think for the future and are able to find out "leadership talents".

- *Involving more specialists*

As the first lesson explanation showed, it seems that not enough specialists are involved within the manpower planning process.

This is not only to say that some other specialists, as operational commanders, academics, IT specialists, maybe psychologists and even defense industry actors could be successfully taking part into manpower planning. Taking a look back at the US Navy process, which is known as centralized, there is a large amount of actors "running the business". Some of them are partially involved, and some others are totally on the ground, but every one of them has specific tasks to accomplish, and the ability to negotiate and to bring their own arguments.

This lesson also allows a critical view on HRMD involvement. According to available knowledge, it has kept over times a low profile, playing the minimal role of "watching the personnel ceiling" within that process, which is to be assumed as not very helpful.

It was an understandable situation of not having the appropriate "tools" for years (between 2009 and 2014 there was not a single manpower planning specialist working with HRMD), due to personnel reduction based on budgetary constraints. During that time period, HRMD was only planning personnel, matching services requirement proposals (through General

financial and informational resources.

Everything mentioned above is working together for a strategic mission accomplishment, and has as results organizational culture and products, which one way or another influence the external organizational environment through implications and consequences, and the internal one, through feed-back. In this respect, a fully comprehensive *Organizational System's Framework Model* has been designed by Prof. Nancy Roberts (Naval Postgraduate School), and reproduced to illustrate the "PPBE System from a manpower perspective" [36].

As for the HRM cycle as part of of an integrative outlook on the organizational systemunderstanding the way manpower and personnel planning smoothly slide into the PPBE System is not quite easy; therefore, an integrated perspective is as valuable as it is needed.

There are also two practical reasons for the present thesis purpose.

Firstly, there is a call for eliminating disuse of manpower planning, and misuse of personnel planning (the latter frequently covering both manpower and personnel), and for treating the two in an appropriate theoretical and practical manner.

Secondly, an integrative approach to HR processes has not been on the HRMD agenda since the beginning of 2000; most projects have been implemented on a sequential basis; so that, starting with last year (2014), a series of projects related to HR sub-processes have begun to be outlined. Concerning that, it is worth outlining that the difference between manpower and personnel planning will most probably position HRMD towards its better inclusion into the PPBES' manpower planning, through workload analysis assistance.

4.2. A prospective approach to armed forces planning in developing countries (a blueprint for action)

Some of NATO member states have adopted the PPBE System as a defense planning framework, under the credible argument of budgeting systems alignment. It is of evidence that PPBES has been designed for the large and complex US military system, therefore it is complicated as a process. In this respect, it may not be appropriate for smaller organizations. This is actually why it has raised criticism so far.

Romania has also adopted PPBES, on the same ground of integration and interoperability. But still proper adjustments have to be done. One of the reasons may be the unaligned national fiscal and budgeting laws.

From the present perspective, an issue of concern is how to integrate manpower planning into PPBES. As it has been already mentioned, there is a process in place, but there is no evidence of performing the most appropriate manpower planning method, since there is no cross-control between all involved actors. Manpower planning normally follows the capability requirements, being a part of capability-based defense planning process. Codes of capabilities have been developed, and periodically issued at NATO level. They have inventoried *force structures* and *personnel structures*, among other capability composing elements. Romanian military planners strictly refer to these so-called "Blue Books" when they define capability targets, and build-up Major Programs.

There is no doubt that those Blue Books have been issued based on analysis, taking into consideration national particularities regarding doctrine, organization, personnel, training, logistics, materials, leadership, facilities, interoperability, etc. But the reviewing cycle for the Blue Book might be too long at some point, and some adjustments might be necessary between previous and next edition.

On the other hand, blindly following prescriptions in doing this business might be to everyone disadvantage, which does not mean disobeying orders, but having the opportunity to justify manpower requirements. This "food for thoughts" approach may also encounter critics, but from the military system point of view it does not seem that unfair when it comes to justify capability requirements to "higher" (political). There is no doubt and no argument regarding constitutional

principles (civilian control over military); otherwise history may undesirably repeat itself. But PPBES should set up the opportunity to undertake requirements statements, and risk analysis reports, and it should enable senior leadership to assess alternative ways to achieve the established objectives. This is thoroughly valid, not only for manpower requirements.

In terms of the relation between the manpower planning topic and the PPBES, the missing bridges seem to be *occupational standards* and *workload estimates*, alongside with other supporting processes, structures, and subsystems (workload analysis center/ specialists, HRIS).

However, the process exists, and it is ongoing. The present section tries to figure out where, and how missing elements could be placed within this process, which is illustrated bellow.

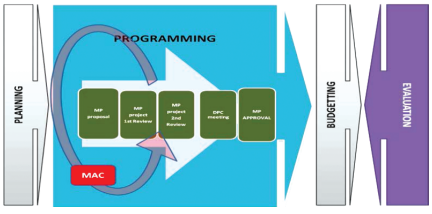


Fig. no. 3. Manpower analysis

As the first two PPBES phases are developed top-to-down, only HR general directions are given through the planning process. Manpower planning is addressed by the programming phase; after that, personnel planning goes together and/or parallel (but still linked) to budgeting and evaluating phases.

Despite the fact that planning needs to be periodically reviewed, and flexible, in order to achieve better results of manpower planning, the programming phase needs to embrace another loop-process which passes raw manpower requirements identified by services through the deepened analysis of a (desired) Manpower Analysis Center (MAC), fully equipped to perform this task (either with accurate military occupational standards, and IT analysis and workload estimating tools). The result will need to be reviewed by major programs directors, General Staff (as strategic command) if deemed, IDPD, HRMD, and other entities. Should the results be re-negotiated, it will have to be done before the Defense Planning Council meeting. It could be assessed that the right time of the "double-check" analysis to be done is between the first Defense Planning Guidance (DPG) proposal review, and the second DPG project review, when MP's representatives have already started to balance their proposed manpower requirements against capabilities and resources.

After that, and until the next programming session (next year), occupational standards have to be reviewed (by MAC) following a planned schedule so that every occupational standard is reviewed on a 4-5 year basis.

The outline shown in **Figure 3** is an imaginary scenario, so that it may not be taken by granted, but it still could provide ideas of a "blueprint for action".

4.3. Steps to be taken in implementing the change to a manpower planning system

As stated from the very beginning, this theoretical attempt does not pretend to find out the best solutions for implementing a "state of the art" manpower planning system. However, a few ideas of how to take action in this respect could be highlighted in the present section.

Implementing a new model of action needs a change. Setting-up the new manpower requirements analysis process depicted within the previous section is a matter of senior leaders' decision. Then there would be a free way to practice – no sooner said than done, because the bureaucratic military system sometimes accepts it this way.

Unfortunately, real life requires some more attention to be paid. Even if such step could be taken in a short run, there would be a lot more to be done. It needs a small scale reengineering process a, which means to start from understanding the "as is" status against the "to be" end-state (setting-up vision and objectives), passing through phases such as identifying the process to be

redesigned, implementing and evaluating new processes, and not ending but continuing with ongoing improvement.

If such process were to be implemented within the Romanian military defense planning system, it would have to follow the DOTMLP model [37] (doctrine, organization, training, materiel, leadership, and people):

- *doctrine* requires appropriate provisions to be developed and implemented – a ministerial order would be necessary for broad opposability;
- *organization* refers to projecting the Manpower Analysis Center (MAC): mission, objectives, organizational chart, and manpower; personnel, relationship and communication ways (within and outside/vertical and horizontal), inputs-outputs, responsibilities, methods, techniques, SOPs, etc.
- *training* needs to be structured on short term (adapting new people to new requirements), and long term (preparing the "tomorrow shift");
- *materiel* – all necessary means to accomplish the mission, especially infrastructure and tools (IT equipment – appropriate hardware & software);
- *leadership* is one of the most important component of a new system – it has to understand and to lead the change, to evaluate processes, and to implement corrections;
- *people* – the most important – need to be able to understand collective and individual roles, and to perform accordingly; people may not be available on the spot, therefore the whole HR cycle-process (planning comes first) may be helpful.

Because the process itself needs "investment in time, talent, and resources", its implementation would not be easy if resistance is neglected. Based on this assumption, there is a suggested need to deal with the "people side of change" [38], which basically could be undertaken through Kotter's change phase's model [39]:

1. Establish a sense of urgency (need for accuracy of manpower planning);
2. Create a coalition of change champions (people who understand the need for change and are willing to promote it);
3. Develop a clear vision (realistic, credible, and attractive);
4. Share the vision (communicate);
5. Empower people to clear obstacles (allowing to break roadblocks);
6. Secure short term wins (achieving short term results);
7. Consolidate and keep moving (avoid declaring victory too soon);
8. Anchor the change (inserting it into the organizational culture).

From a more practical perspective, such a project could be fashioned within the Romanian military manpower planning system starting with the reassessment of the military occupational specialities inventory. This process would be extremely time-consuming, because according to the law, the inventory applies to all Romanian military organizations, and subsequently it has to be approved by all their leaders.

Next would be the occupational standards development, which would fill the military occupations within the above mentioned ROC (Romanian Classification of Occupations).

After that, the MAC could be projected, and time would still be needed to operate it. The results of its work (workloads estimate during manpower planning phases, occupational standards periodic review, manpower/personnel data analysis) need to be evaluated, and corrective measures will have to be taken.

Overall, this project management would require the MoND decisions, and the HRMD and GS (General Staff)/J1 involvement (both as decision-makers, and owners of process), because the MAC would need to be placed at such level so that it would be able to support and assist the whole defence planning process from the manpower perspective.

Regarding the HRMD, there is an actual opportunity to improve the ongoing HR planning process, by breaking it down into two sub-processes: manpower planning, and personnel planning, both of them supported by the same new HR Planning Office.

In this respect, the new mentioned methodology needs to be a two-fold shaped one.

On a long term framework, implementing such change needs to start by adequately planning it. Having in mind the reality of HR specialist's shortage and the need for change management implementation through the above mentioned phases, the present opinion indicates that the right first step consists of educating and training a pool of HR specialists, in order to ensure the proper mission accomplishment within a reasonable timeline. Then the training should be a continuous process.

It must be highlighted that this long-term perspective also requires "investment in time, talent, and resources", and a great will of HRMD involvement: first, it has to be understood that the HR planning means both manpower and personnel planning; second, policies and appropriate requirements for the educational bodies are to be outlined, with the purpose of creating the right "initial development framework" for military HR specialists, and the path(s) for their development (career included).

It also needs to be stated that the HRMD involvement is a necessity, not a simple whish, even for the simple reason of shifting from the personnel management to HRM, which implies a multifunctional approach, a lot more than a view "based on rules and procedures and seen as a separate function from general management", in accordance with the the 27 points of Storey's HRM model [40]. It would be interesting to identify the HRMD roles among those depicted by Storey, using interactive methods like Delphi. It could bring some new ideas related to HRMD strategic functions in the limelight , far beyond the actual mission framing set up by law.But this would be another issue of interest for further research. Anyways, no matter what conclusion should be drawn, it could be effective if only translated into regulatory provisions.

5. CONCLUSIONS

Although the present theoretical attempt has been initially thought-out to describe the Romanian military personnel planning process through its objectives, means and (not yet very well defined) methods, which are being developed at the HRMD level, it turned into a "comparative outlook" over the understanding of the manpower planning, seen from different perspectives: worldwide business, US military, and Romanian military organizations. Therefore, an alternative personnel planning procedure, which uses analytical and statistic tools and formulas, alongside with historical data exploration is to be the object of further inquiry.

This is the result of deepening the documentation phase focusing on what actually manpower planning stands for, which has revealed the first and most important conclusion that could be drawn: HR planning has to look at both the "spaces" and "faces" sides of the process, meaning that it is more than estimating gaps and searching for the appropriate ways to fill them. This approach indicates that there is still room for better practice development of the process within the Romanian military organization, and it requires a deepened involvement of specialized entities in order to improve the manpower/personnel planning process, so that it smoothly integrates into the PPBE System.

Another important conclusion, which has already been highlighted, is that the above mentioned improvement needs *investment in talent, time and resources*. Without an appropriate vision of doctrine, organization, training, materiel (IT systems strictly required), leadership, people, and facilities, the accuracy of HR planning remains just a wish.

Achieving the main goal of improving the HRM processes within the manpower/personnel planning is not to be attempted without any effort. It requires changes to be made. This is why it furthermore needs a strategy, which has to be part of and aligned with the organizational strategy. That is, any organizational strategy should include mission, vision, goals and objectives related to the HRM field, and a very important point is that all those need to be communicated, and very well understood. The information flow must go all the way through decision and

execution levels. It would pretty much help implementing change, and dealing with its "people side".

This necessity has been identified mainly through the reading of the study quoted in the first section of the third chapter ("*US Navy manpower planning*"), but it has also been revealed by some business researches reflecting the same idea. Based on this observation, it must be concluded that despite differences between business and military environments, both of them find common grounds related to HR issues. In other words, business-shaped HRM models show practicality within military organizations.

This is why it could be stated that improving national defense planning system through an appropriate HR planning process development may rely on both business and other government (military included) systems' expertise, and experience. Therefore, analytical and deepened research could be recommended as "musts".

REFERENCES

[1] http://www.goodreads.com/quotes/tag/planning, 2015.27.05.

[2] Dwight D. Eisenhower, see reference [1].

[3] Mintzberg, Henry, The rise and fall of strategic planning (Romanian translation by Nistor, Smaranda), Publica House, Bucharest, 2008, p. 37.

[4] Boxall, Peter F., Strategic human resource management: beginnings of a new theoretical sophistication?, Human Resource Management Journal, Volume 2, Issue 3, March 1992, p. 60

[5] CODREANU, Aura, DRESMARA Associate professor, PhD, Human resource management fundamentals, Defense Resources Management Course for Senior Officials, 2015.

[6] Titles of the following textbooks refer to HRM as a whole: Manolescu, Aurel, Managementul resurselor umane (ediția a patra), Ed. Economică, 2003; Pânișoară, Georgeta; Pânișoară Ion Ovidiu, Managementul resurselor umane, Ed.Polirom, 2007; Lefter, Viorel; Deaconu, Alecsandrina; Marinaş Cristian; Puia Ramona, Managementul resurselor umane. Teorie şi practică, Ed. Economică, 2008; Lefter, Viorel; Deaconu, Alecsandrina; Manolescu, Aurel, (coord.), Managementul resurselor umane, Pro Universitaria, 2012.

[7] Harry J. Thie, Roland J. Yardley, Margaret C. Harrell, Kevin Brancato, Alignment of Department of Defense Manpower, Resources, and Personnel Systems, RAND Corporation, 2007.

[8] ibid., Summary/Background and methodology, p. vii .

[9] NATO human resources (manpower) management, RTO-TR-SAS-059, issued after May 2003 SAS Panel Business Meeting in Madrid.

[10] The Corporate L.I.F.E Centre International Inc. (CLCI), Strategic workforce planning for high performance organizations, 2008, http://www.theclci.com, 2015.28.05.

[11] Cotton, Ann, Seven steps of effective workforce planning, IBM Center for The Business of Government, 2007, http://www.businessofgovernment.org, 2015.28.05

[12] Australian National Audit Office, Planning for the Workforce of the Future, a better practice guide for managers, http://www.anao.gov.au.

[13] http://www.merriam-webster.com, 2015.02.06.

[14]http://www.businessdictionary.com, 2015.02.06.

[15] The Institute for Employment Studies, Workforce planning the wider context.

A literature review, 2003, p. 5, http://www.employment-studies.co.uk, 2015.03.06.

[16] Reilly, Peter, Human resource planning: an introduction, The Institute for Employment Studies, Report 312, 1996, p. 43, http://files.eric.ed.gov, 2015.03.06.

[17] Armenia, Stefano, Military Workforce Dynamics and Planning in the Italian AirForce, 2012, p.6, http://www.systemdynamics.org, 2015.03.06.

[18] id. [11], p. 13

[19] Gillikin, Paul L.; Barry, John C., Comparative analysis of Navy and Marine corps planning, programming, budgeting and execution systems from a manpower perspective, Naval Postgraduate School, 2005, p. 8, 43

[20] id. [11], p.16
[21] Romanian Classification of Occupations (COR), http://www.mmuncii.ro, 2015.08.06.
[22] Lefter, Viorel; Deaconu, Alecsandrina; Manolescu, Aurel, (coord.), Managementul resurselor umane, Pro Universitaria, 2012, p.33.
[23] id. [19].
[24] ibid., p. 47.
[25] ibid., p .49.
[26] Hatch, Bill CDR (ret.), Naval Postgraduate School, Defense human resource management seminar, 2015, p.77.
[27] id. [19], p. 55.
[28] id. [26], p. 2.
[29] Law no. 473 of 4 November 2004 on defense planning.
[30] Ministry of National Defense Order no. M.105/2014.
[31] ttp://hrcouncil.ca/hr-toolkit/planning-succession.cfm, 2015.09.06
[32] Rothwell, William J., Replacement planning: a starting point for succession planning and talent management, International Journal of Training and Development, Volume15, Issue 1, March 2011, p. 87, http://onlinelibrary.wiley.com, 2015.09.06.
[33] Ministry of National Defense Order no. M.22/2010 .
[34] MCPHAUL, John H. Jr., LTC, Developing military human resources managers for senior level positions, U.S. Army War College, 2008, p. 11.
[35] IORDACHE, Sanda (coord.), Managementul resurselor umane in Armata Romaniei, Editura Academiei Fortelor Terestre "Nicolae Balcescu", Sibiu, 2014, p. 73.
[36] id. 19, p. 4.
[37] Constantinescu, Maria, DRESMARA Associate professor, PhD, An introduction to capabilities based planning, Defense Resources Management Course for Senior Officials, 2015
[38] Clynes, Milla, PwC Consulting, The People Side of Change (Presentation to ICS BA Conference, 27th February 2015), http://businessanalyst.ie, 2015.14.06
[39] http://www.12manage.com/methods_kotter_change, 2015.14.06
[40] The role of human resource management, http://www.highered.mheducation.com, 2015.15.06.

APPENDIX A
TERMINOLOGICAL DELINEATIONS

DEFINED TERMS	DEFINITION/SOURCE	
	Merriam-Webster Dictionary [13]	**Business Dictionary [14]**
WORKFORCE	1. the group of people who work for a particular organization or business 2. the number of people in a country or area who are available for work	1. total number of a country's population employed in the armed forces and civilian jobs, plus those unemployed people who are actually seeking paying work 2. total number of employee (usually excluding the management) on an employer's payroll
MANPOWER	1. power available from or supplied by the physical effort of human beings 2. the total supply of persons available and fitted for service	1. (general) total supply of personnel available or engaged for a specific job or task 2. (economics) total labor force of a nation, including both men and women. If there are more people than available jobs, it is called manpower surplus; if available people are fewer than jobs, it is called manpower deficit
PERSONNEL	1. the people who work for a particular company or organization 2. a department within a company or organization that deals with the people who work for it	1. employees of an organization 2. human resources division of an organization

HUMAN RESOURCE		The resource that resides in the knowledge, skills, and motivation of people. Human resource is the least mobile of the four factors of production, and (under right conditions) it improves with age and experience, which no other resource can do. It is therefore regarded as the scarcest and most crucial productive resource that creates the largest and longest lasting advantage for an organization

HUMAN RESOURCES* * Merriam-Webster Dictionary does not provide a definition of "human resource"; it only treats "human resources", but the second definition shown better matches the concept of "human resource". Business Dictionary clearly defines both concepts.	1. a department within an organization that deals with the people who work for that organization 2. a group of people who are able to do work	The division of a company that is focused on activities relating to employees. These activities normally include recruiting and hiring of new employees, orientation and training of current employees, employee benefits, and retention. *Formerly called personnel*

GENERAL MILITARY HUMAN RESOURCE MANAGEMENT AND SPECIAL FORCES HUMAN RESOURCE MANAGEMENT. A COMPARATIVE OUTLOOK

Marius Emil PATRICHI

Special Operations Forces Battalion, Romania

The switch from conscript's army to an all volunteer force military brought new challenges for the military organization. This is more obvious in the human resource domain than in any other area. In the competition to recruit and retain quality personnel, the military organizations should strategically align the human resource management to the overall strategy. The challenges are greater for the Special Forces because the need for a rigorous selection process to recruit from within the military. The rift already in place between the conventional military and the Special Forces need to be overcome to transform the strain relationship into a positive sum game.

Key words: *human resource management, special operation force, all volunteer force, human capital, manpower, recruitment.*

1. INTRODUCTION

Most of the countries define Special Operations Forces (SOF) (1) as being military and/or paramilitary forces that are specially selected, trained and equipped to conduct missions that other conventional forces cannot perform. The combination of highly skilled people, advanced technology and weapon systems, and innovative operational approach is the cornerstone in creating a force that although small is achieving disproportionate impact [1]

Throughout their existence, the Special Operations Forces developed a list of so called "SOF Truths": (1) humans are more important than hardware, (2) quality is better than quantity, (3) SOF cannot be mass produced, (4) competent SOF cannot be created after emergencies occur, and (5) most Special Operations require non-SOF support. As one can see, the SOF Truths are mostly human centric. Thus, there ought to be a strong emphasis on screening, selection and training of the individuals that will become Special Forces operators [2].

Human resource management (HRM) is a system of systems – manpower system, resource system and personnel system – that performs specific functions. Although there are a lot of similarities between the corporate and the military human resources management, there are also some important differences. The strategic importance of the HRM concept cannot be separated from the understanding of HRM evolution as a concept.

The shift from a conscript army to an all volunteer forces for military organizations generated a great deal of challenges from the human capital perspective. Having to compete for quality personnel in an external environment, the military organization needs to define and implement a coherent and comprehensive strategy to achieve its goals.

One significant difference between military HRM and corporate HRM is that military organizations recruit only at the entry level and then there is an upward

mobility from within the ranks. One the other hand, SOF selection is, in the most cases, based on internal selection from within the bigger military organization. The high standards required for selection in the SOF and the propensity for top quality military personnel to ascend in the elitist SOF community create the premises for a bumpy relationship between conventional units and SOF.

The evolutions in both advanced military weapon systems and in novel military concepts seem to gradually smooth the strained relationship between conventional army and SOF. This positive trend can be further developed to make the relationship looks like a positive sum game, especially in the area of competition for better military personnel.

2. HUMAN RESOURCE MANAGEMENT. SOME THEORETICAL UNDERPINNINGS

This chapter is not intended to details all the human resource management (HRM) theory, but rather to provide a framework for better understanding the differences between corporate HRM and military HRM. Furthermore, it will try to answer the question if there should be a difference between conventional force HRM and SOF HRM.

2.1. Defining human resource management

Historically, HRM as we know it today, evolved from the nineteenth century in stages. Those stages were a response to changes in external and internal factors that impact differently on the organizations. The evolution in both the external and the internal environment, and the response to those changes led to the development of the human resource management of today.

Throughout the history, different theories shaped the way HRM evolved. Initially, it was a paternalist approach by some employers, who took a father-like figure for their employees and established some kind of early welfare programs. Early 1900s was the time when the scientific management was developed in United States. This scientific management was further refined in the concept of assembly line. Both the scientific management and the assembly line development presented a mechanistic view of the people that rewarded the right work output with a "differential pay rate", and implemented management control [3].

The period between the beginning of First World War and the end of Second World War witnessed a combination from the manufacturing peak, government trying to regulate the employment and the implementation of welfare in personnel management to improve employees' performance.

The HRM as it is known today was developed in the late 1970s. The central tenet was the transition from the personnel management to the strategic role of HRM in reaching the broader organisational goals.

The HRM can be viewed from two perspectives, the so called soft HRM and, respectively hard HRM. Both are employee centric, but while the hard HRM has a marketing view of the people as a resource to achieve organisational goals, the soft HRM put a premium on employee commitment and has a constructivist approach [4].

Whatever approach one is taking, the HRM has to perform a number of different functions to find the equilibrium between the external factors and the one's internal to the organisations. Those functions can be generally described as: (1) planning, resourcing and retention; (2) recruitment and selection; (3) learning, training and development; (4) remuneration and rewards; (5) and employee relations [5].

2.2. Military human resource management

Understanding the specificity of military HRM becomeS important from the perspective of a military organization that is based on AN all volunteer force (AFV). This is especially related to the problems of recruiting and retention. The problems are quasi universal for the countries that switched from conscription to an AFV. In most cases, these problems are related to a declining motivation among young people to join the military because the changing in social values, the competition from the private market, higher level of education and usually low unemployment [6].

HRM includes all processes that facilitate the matching spaces with faces, or in other words the meeting of the demand with the supply. Although there are many similarities between non-military and military organizations, there are also some significant differences related to the way the HRM functions are performed.

One of the most important differences is the clearer, more stable job definition in the military than in the so called corporate HRM. The positive side of this clarity is also coming with a lack of flexibility.

Another difference is the long term impact of the recruitment in the military organization when compared with the non-military organisations. This is mostly because the military is recruiting only for entry level, and cannot do it for any level.

After the recruitment, the military promote from within, and only rank by rank. The promotions are related to the years in service, previous assignments, and experience. The previous particularities generated a strong requirement for the development of an elaborate and well structured in house training [7].

The corporate HRM and the military HRM should not be perceived as totally opposite, but rather as a continuum. As the military organization look more and more like a corporation in the case of an all volunteer force, the implementation of the alternatives borrowed from corporate world will most probably led to the improvements in terms of rewards, flexibility and organizational culture. In the same time, there are some downsizing aspects, mostly related to the weakening of the command relations and social values specific to the military's culture.

2.3. Special forces human resource management

At a first glance, it seems that Special Forces have the smallest problem in recruiting personnel. This assumption relies on the misperception that because of the inherent prestige of SOF, the problem is not to find enough capable people to recruit and retain them, but rather the high standards for selection, assessment and qualification.[8]

One aspect worth more attention is that in the vast majority of cases, SOF is recruiting from within the military organization. As such, if the military is facing problems with recruitment and retention, those problems are generally emphasized in the SOF case because of the high standards. In other words, if the selection pool is shrinking and the quality of personnel is decreasing, the SOF will be more affected than the whole military organization because of the high standards.

Another factor to consider in the SOF case is the time required for a person to become a high skilled operator. In the most cases, it is not only longer than for other branches, but also with the highest attrition rate. Therefore, if the military organization is facing problems in terms of the long time requirement for training the personnel, high attrition, high turnover, and low retention, those problems are in the most cases higher

with an order of magnitude in the SOF's case.

One aspect that is often overlooked is the marketing side of the recruitment for SOF. Inherently, there is a certain degree of secrecy related to the SOF operations. This propensity for secretiveness is hindering the way SOF marketing themselves in recruitment campaigns within the military organization. The image of SOF is usually centred on the kinetic aspects. While this may be good for receiving political and resource support, is also shrinking the pool of prospective candidates by perhaps, attracting mostly the "thrill seekers."

3. SPECIAL FORCES MANPOWER

Military manpower can be broadly defined as the systems and related processes to provide the right person, with the right qualifications, in the right position at the right time, or in other worlds to meet "spaces" (the demand side) with the "faces" (the supply side)

3.1. Military manpower in an era of an all volunteer force

Whatever advanced weapon systems a military organization has, what really makes the difference is the adequate number of quality personnel it can recruit, train and retain. The evolution related to both external and internal environment will likely pose a number of challenges to the military organization to meet the manpower requirement.

The problems related to the changes and dynamics in the social values, the labour competition, and education are just the tip of the iceberg. Some other challenges may not be so obvious. They are related to the evolutions in military technology, the emergence of innovative operational ideas, the rigidity of traditional military personnel management systems, and the growing costs most notably in the area of indirect benefits for military personnel [9].

Advanced military technologies and new operational concepts will require a different category of personnel. The military should recruit and train people able to reach not only a high level of technical expertise and able to integrate different platform in an innovative and comprehensive way, but also capable to innovate and assume calculated risks.

The main goal of military HRM is to support the organization to reach its goals. It should be linked with the organizational strategy, and also with people behaviour and characteristics. Based on the strategy and behaviour specific HRM processes should be developed and implemented. From this perspective, a strategically aligned HRM system has three inter-related processes: personnel management, compensation, and organizational structure [10].

The external environment differences between various countries and their different approaches to the transition from conscription based force to an AFV make the task to create a pattern that can be replicated very difficult. However, there are some trends that can be identified. First, the transition from conscripts to volunteers was followed by a reduced numbers of military personnel. Second, the reducing number of personnel required to man the AFV and the pool available from the personnel who had to leave the military establishment during the transition phase compensate the problem of recruiting quality personnel in the aftermath of the creation of AFV. And third, although the AVF is generally more cost-effective, there are significant increased costs in the transition phase from conscripts to AVF [11].

3.2. Special forces manpower challenges in an all volunteer force – competition for human capital

The development in the contemporary operational environment -

the latest ones being the rise of the so called hybrid warfare and the increasing terrorism activities - led to an increasing demand for development and employment of special operations to counter those threats. As such, there is an increased demand in SOF manpower. At the same time, in the countries that developed an AFV there are problems related not only to the recruitment of quality personnel, but also to the budgetary constraints that required a trade-off between the investments in the advanced military weapon systems and investment in the manpower area.

What differentiate SOF from the conventional forces are both the missions and the personnel conducted them. Whatever the perspective, the personnel is at the core: the types of missions required specially selected, trained and equipped personnel, or the specially selected personnel determined what type of mission will be carry out. Therefore, the nature of recruiting and selection process, and the specific personnel attributes of almost equal importance. Additionally, the costs associated with the Special Forces are higher than in the case of conventional forces. The sensitivity and high political risks inherent in the SOF missions make the cost of failure way higher than the cost of selection and training [12].

From the beginning of the relatively new of what we know today as Special Forces, there was always a tendency on behalf of the conventional military to reject them, or more exactly to regard them as mavericks. The causes lie in the SOF's different organizational culture, perceived lack of discipline, the independent status, and the competition for resources.

Probably the most important friction point is the competition for human resources. Most, if not all, of the military organizations relying on AVF have to compete for recruiting, selection and training for quality personnel in the context of external competition and a scarcity of defence resources. In the vast majority, SOF personnel are recruited from within the rank. The high standards imposed by the selection process and the prestige associated with the SOF membership led invariably to the best personnel from conventional units being attracted to volunteer for SOF units. What is aggravating these perceived "poaching," is the need for both conventional units and SOF units to select and retain the personnel with similar intellectual qualities required by the advent of new technologies and the evolutions in military concepts.

4. MANAGING SOF MANPOWER

The differences in SOF organizational culture and war philosophy tend to attract a different type of individuals into SOF units. Those individuals are usually capable of using concepts and methods alien to conventional army. Because these qualities are highly sought after by Special Forces, the entire process of recruiting, selection and retention is designed to select and retain people who pose them.

As a result of military organizations drawdown when switching from the conscripts to volunteers, the pool of potential candidates for SOF has decreased. If combined with the average rate of completing the selection and assessment phases for ascending in the SOF, and the decreasing retention rate, the aggregate net result is that Special Forces are losing more people than is able to produce.

The manpower requirements can't be met unless sufficient resources are provided for recruitment and retention. Studies has shown that by using a combination of three theories – expectancy theory, social justice theory, and transaction cost economic theory- can be used to provide performance incentives, increase the professional development, and control the retention incentives. [13] As such, a combination

of increasing the resources devoted to recruitment marketing, targeted bonuses, and benefits to enhance professional development could be employed to increase the recruiting and retention among Special Forces personnel.

4.1. A more flexible personnel management system

Faithful to the SOF truth of quality is more important than quantity, the Special Forces need to continue the efforts to ensure the right quantity of people are selected, trained and retain in the system, while maintaining the high quality of the personnel.

On the average, the SOF personnel account for no more than 5% of the military forces. However, the strength of Special Forces is the quality of those small numbers of people that are carefully selected, trained and provided with advanced equipment. To maintain a pool of potential candidates, there must be a continuous effort to target the best military personnel for recruiting purpose. One of the first steps is to create a database of the candidates by matching the profile of a typical SOF operator with the existing data bases for personnel record keeping.

The recruiting effort should be done in an aggressive manner by everyone belonging to, or who was part of, the SOF community, and does not only rely on formal recruiting means. This referral system should be formalized, and also incentivized if possible, thus making it one of the important tools for a ready available pool of quality candidates.

The high standards for accession into SOF community are well known. One of the least known aspects is that nowadays, the Special Forces are a tiered system, based on the mission's type and the risk of political fallout related to the failure in accomplishing them. Therefore, even within the SOF there is an ongoing tough process to recruit and select people from tier 3 units up to tier 1. This upward "meritocratic" mobility required a somehow counterintuitive recruitment strategy for initial accession, by which the standards should become higher, and not lower, for entry in the Special Forces [14].

The schism between Special Forces and conventional military is well known. However, there are positive signs showing a better understanding and cooperative and integrated work between the two. Capitalizing on this positive trend and consolidating this footbridge, Special Forces should influence, securing the political support if needed, some changes in organizational design of regular units. Those changes should try to create a tier 4 type of units within the regular units, their primary missions being to address the lower spectrum of conflict, like counterinsurgency. The creation of these units will create a pool of potential candidates for accession in the SOF that are already pre-screened and have an initial SOF type training. One additional benefit will be the reducing of the rift between conventional forces and regular units by slowly overcomes the "us versus them" perception.

5. CONCLUSION

Finding a balance between external and internal factor require for the military organization, and even more for special force, to employ strategically the human resource management system. Understanding the subsystems and the functions performed by those subsystems and the differences between corporate HRM and military HRM is a must if military organizations want to successfully recruit and retain quality personnel in the open labour market.

The competition for quality personnel will require not only a better understanding of the practices employed in the corporate HRM, but also the implementation of tailored alternative

borrowed from it in the military. As the military organization looks more like a corporation in the case of an all volunteer force, the improvements related to rewards, flexibility and organizational culture will come with the price, especially in term of weakening of the command relationship and the alterations in social values specific to the military.

Transforming a strain relationship between conventional military and SOF will require a different mindset for the leaders of both. Transforming a zero sum game into a positive sum gain, especially in the competition for human resources, is the way ahead. The positive signs already shown in the operational area need to be extended in the resource area. For the future, the benefit of this understanding should go beyond operational and resources areas, and move towards a shift in organizational culture to overcome the existing biases and misconceptions.

NOTES AND REFERENCES

(1) The terms Special Operations Forces and Special Forces are considered interchangeable in this paper.

(2) *Expectancy theory* offers a model of how rewards for performance affect behavior.

(3) *Social justice theory* predicts that employees' perceptions of the fairness of a reward system are related to their motivation to perform.

(4) *Transaction cost economics theory* predicts that the optimal terms of employment relationships (which range from external, spot-market structures to internal labor markets and relational teaming between employers and employees) are context-specific.

[1] Victorino Matus, "The GROM Factor," http://www.weeklystandard.com/content/public/articles/000/000/002/653hsdpu.asp, last retrieved May 2015.

[2]http://www.diplomaticourier.com/news/topics/security/1803-the-quiet-professionals-the-future-of-u-s-special-forces.

[3] Beginning Management of Human Resources (v.1.0), Chapter 1: The Role of Human Resources, p. 7, available at:http://2012books.lardbucket.org/books/beginning-management-of-human-resources/s05-the-role-of-human-resources.html,last retrieved May 2015.

[4] Beginning Management of Human Resources (v.1.0), Chapter 1: The Role of Human Resources, p. 14, available at: http://2012books.lardbucket.org/books/beginning-management-of-human-resources/s05-the-role-of-human-resources.html,last retrieved May 2015.

[5] Beginning Management of Human Resources (v.1.0), Chapter 1: The Role of Human Resources, p. 28-33, available at: http://2012books.lardbucket.org/books/beginning-management-of-human-resources/s05-the-role-of-human-resources.html,last retrieved May 2015.

[6] Szvircsev Tresch, Tibor. "*Challenges in the recruitment of professional soldiers in Europe*." *Impact Strategic* 3 (2008): 76-86., p 76.

[7] RESEARCH AND TECHNOLOGY ORGANISATION - NATO Human Resources (Manpower) Management, February 2012, p 3, available at:http://www.dtic.mil/get-tr-doc/pdf?AD=ADA560294, last retrieved May 2015.

[8] Szvircsev Tresch, Tibor. "*Challenges in the recruitment of professional soldiers in Europe.*" *Impact Strategic* 3 (2008): 76-86, p. 79.

[9] Military manpower for the long haul, pp, vi-viii, available at: https://www.google.ro/search?q=Military+manpower+for+the+long+haul&oq=Military+manpower+for+the+long+haul&aqs=chrome..69i57.272j0j9&sourceid=chrome&es_sm=122&ie=UTF-8, last retrieved May 2015.

[10] Albert A. Robbert, Brent R. Keltner, Kenneth J. Reynolds, Mark D. Spranca, Beth A. Benjamin (1997) *Differentiation in Military Human Resource Management*, RAND, p xi, available at: https://www.rand.org/content/dam/rand/pubs/monograph_reports/2007/MR838.pdf, last retrieved May 2015.

[11] Williams C. (2012) *From conscripts to volunteers: NATO's transition to all volunteer force*, pp. 1-7, Bibliogov.

[12] http://airforceapp.forces.gc.ca/CFAWC/eLibrary/Journal/Vol2-2009/Iss4-Fall/Sections/04-A_Selection_Process_for_Special_Operations_Forces_Aviation_in_Canada_e.pdf, last retrieved May 2015.

[13] Albert A. Robbert, Brent R. Keltner, Kenneth J. Reynolds, Mark D. Spranca,

Beth A. Benjamin (1997) *Differentiation in Military Human Resource Management*, RAND, p xi, available at:https://www.rand.org/content/dam/rand/pubs/monograph_reports/2007/MR838.pdf, p xiv, last retrieved May 2015.

[14] Steven M. Swierkowski, Robert M. Burrell, *Tactics, methods and techniques to improve special forces in-service enlisted recruiting*, p 56-76.

[15] Codreanu A. (2014) Gestionarea si dezvoltarea resursei umane (Personnel Management and Human Resource Development), "Carol I" Publishing House, Bucharest.

THE THERAPEUTIC FAIRYTALE. A STRATEGIC CHOICE FOR A PSYCHOLOGICAL COUNSELOR

Dorina Maria PASCA

Associate Professor, PhD, psychologist
The University of Medicine and Pharmacy, Targu Mures, Romania

The strategies employed by psychological counselors are meant to allow the latter professional group to establish rapport with the people in difficulty, as well as to solve problematic situations. Therefore, the current article focuses on the role of the therapeutic fairytale in enabling the target of the counseling process to learn, accept, appreciate, and understand oneself. Its accessibility and credibility scores from the unofficial list of psychotherapeutic methods and techniques applied by a counselor make the therapeutic fairytale a proper instrument not only for working with children, but also with adults. In this respect, given the "moral profit" yielded by this technique, the author of this article views and recommends the choice of the therapeutic fairytale as a strategic one.

Key words: psychological counseling, therapeutic fairytale, counselling strategies.

1. INTRODUCTION

The therapeutic fairytale is based on a narrative that contributes to highlighting a **problematic situation, a specific experience, some specific circumstances** and thus to finding **solutions**. Its incisive manner of conveying information on its characters to its readers contributes to a maximum openness towards it and, regardless of age, it allows them to understand how pain, sickness and even hope can metaphorically balance and yield acceptance.

Words are magical [1] and can cure if uttered by the appropriate person, in the right place and in the right manner. Therefore, they play a major therapeutic role.

The therapeutic fairytale must be told and not read. It must be the link between body and soul, thinking and acting, living and expressing. It cannot be told just by anyone, anywhere or anyhow. Starting from a real or fantastic case, the therapeutic story is a mediator of pain and suffering. Thus, by liaising the verbs "to will", "to be able to", "to wish" and conjugating in the Present Tense, it brings the person in difficulty closer to a world in which the laws that govern can release vital resources to defeat fear, anxiety, inability, uncertainty and to discover hope. Its usefulness is proven when the one in pain begins to perceive the world through a different cognitive understanding rendered by the story.

The therapeutic fairytale is a precious instrument that unveils emotions and feelings such as anxiety, fear, obsessions, guilt, envy, or questions that have never had/ received an answer and that tend to remain covert. Thus, fairytales along with metaphors can help the "listener" to balance one's own urges with the requirements of the external world and the rules of society.

2. KEY INGREDIENTS FOR THERAPEUTIC FAIRYTALES

The content of the allegories depicted by the fairytale does not necessarily need to be an aesthetic one. However, if they are also likable, acceptable and accepted, they bring a much greater contribution to the therapeutic endeavor. Thus, the subject of the therapy is more likely to perceive in a covert and successful manner to link between the narrative of the fairytale and his/her own problems. Most certainly, the subject will gain an "insight" into the message of the story much later and that will be the moment when the curing process starts.

The therapeutic fairytale is useful for any age and education group. Moreover, the story needs to be narrated in the right tone, with the right pitch, mimic and gestures. Thus, the psychotherapist becomes and actor performing several roles.

There are some key ingredients for assuming these roles and for detecting and conveying the message of the story. First, **empathy** is required. Second, the story must not be explained. If the algorithm underlying the story is missed or unknown to the therapist and the latter is trapped into answering the queries of the listener and into translating the story to the latter, the effects of the fairytale on the unconscious of the listener can dramatically flop. Moreover, the story can generate voluntary resistance and objections and the ultimate effect envisaged initially can no longer be achieved**.** Therefore**,** any allegory chosen by a psychotherapist must be anchored into a specific value (i.e. moral, social, etc.). last but not the least, it must be reminded that there is no rule that can measure the effectiveness of the allegory. The only certainty is that the effect/ change is to occur in time given the uniqueness of individuals.

The subjects of therapeutic endeavors are sometimes the ones requesting the choice of therapeutic fairytales [1] since they identify more with these. In this context, the basic elements that need to support the use of therapeutic fairytales with adults are:

- optimism;
- positive thinking;
- healing will;
- self curing;
- problem solving.

The therapeutic story involves a certain degree of **flexibility** and that allows it to unveil a plethora of feelings and emotions that highlight life time experiences and attitude and behavior changes in adults.

Its lack of a given pattern by which to unfold renders its positive effects on the subject of therapy. The therapeutic message is the same, but its narrative can vary since a therapeutic fairytale must:

1. be enjoyed and raise interest
2. directly involve the listener into the plot;
3. short, concise, clear and comprehensive so as not to dilute the message.

With a view to all of the above, the therapeutic fairytale could only include:

1. an identification of the situation/ emotion: joy, hope, understanding , acceptance, problem solving situations, behavioral patterns, fear of not making mistakes, etc.
2. identity elements:

a. therapeutic goals (e.g. difficulties in complying with group rules);

b. expected effects (such as development of solidarity, team work encouragement, discipline encouragement, commitment to taking responsibility for tasks in group work).

A therapeutic fairytale can also be told by a clinically healthy adult that underwent a traumatic experience such as imprisonment, sickness, etc. and thus uses the story as a boundary situation and a therapeutic means to overcome the given context.

3. ADVANTAGES AND FUNCTIONS

According to Filipoi S. [2], there are a number of advantages of using the therapeutic fairytale in a conscious and purposeful manner in psychological therapy. First, this is an instrument fir for conveying moral values and behavioral models, while indirectly and jocularly suggesting a change of attitude. Second, the solutions it proposes are completely unexpected, contradict logic and habits, but focus on a positive emotional effort. Third, it can be used together with a communication instrument and thus it allows the targets of the psychological counseling session to feel protected and learn how to understand and positively appreciate themselves, as well as to unveil their inner power to "cure" by themselves.

Therapeutic fairytales fulfill a number of functions: **mirror, model and mediator** [2].

As a **mirror**, a therapeutic fairytale projects the emotional needs, thus triggering a plethora of images. Similarly to an image reflected in the mirror, it allows the counseled subject to separate and distance oneself from conflict situations and one's own life experience, and thus to succeed in no longer being a victim.

As a **model**, this psychological counseling strategic choice reveals possible solutions and encourages active learning of one's own models. Therefore, the application of the facntastic solutions is an experimental model that is completely unusual for the subject.

The therapeutic fairytale also acts a **mediator** between the subjects' resistance to therapy and the confrontation of their misconceptions and self defense mechanisms. It thus underlines that the hero of the narrative is the subject and not the patient and in this respect, the counseling psychologist needs to show creativeness in altering the fairytale narrative on a case by case basis.

To yield the expected result, the use of the fairytale in psychological counseling requires **right timing and an adjusted narrative.**

4. CONCLUSIONS

The subject of psychological counseling needs to learn how to be a survivor and the therapeutic fairytale can be the first step towards the healing of the soul.

"What matters is people's opinion of themselves. They need to find during their lifetime the role that fits them and then they need to stop acting. People's profession is that of 'being', as Quentin Crips reminds in his 'Naked Civil Servant' play." [1]

Individuals can only act naturally when they discover spirituality, which is the capacity to find peace and happiness in an evolving world along with the awareness that their own personalities are flawed but acceptable. This acceptance gives rise to creativity and selfless love, and along with faith, forgiveness, peace and love are descriptors for spirituality and for those who manage to get cured inwardly and outwardly. The motto of the latter could be expressed as follows: *"I believe in sun even when it does not shine; I believe in love even when it is covert; I believe in God even when He does not speak."*

Once acceptance achieved, the effect of the therapeutic fairytale begins to work since the individual feels that it **helps**, **wills** to heal, identifies with its message and needs to express one's own identity.

ACKNOWLEDGEMENT

The current article presents excerpts from Chapter 5 of the book Consilierea psihologica in mediul universitar (Psychological counseling within the academic environment) by Maria Dorina PASCA published online with the support

of the Mures County Library: http://www.bjmures.ro/bdPublicatii/CarteStudenti/P/Pasca-Consilierea_psihologica.pdf.

REFERENCES

[1] Pasca M. D. (2004) Povestea Terapeutica, Editura Ardealul.
[2] Filipoi S. (1998) Basme terapeutice pentru copii si parinti, Fundatia Culturala Forum, Cluj-Napoca.
[3] Rogers, C. (1966) Developpement de la personne, Paris, Dunod.
[4] Ellis, A.; Grieger, R. (1977) Handbook of Rationaletherapy, SpringerCoup, New York.
[5] Stanton, N. (1995) Comunicarea (Romanian for Communication), - Societatea Știință și Tehnică, Bucureşti.
[6] Ivey, A. E. (1994) Intentional Interviewing and Counseling. Facilitating Client Development în Multicultural Societes Pacifi c Grove, C. A.: Brooks/Cole Publishing Company.
[7] Ionescu, G. (1990) Psihoterapie, Ed. Ştiințifică - Bucureşti.
[8] Băban, A. (2001) Consilierea educațională, Cluj-Napoca.
[9] Proctor, R. W. (1995) Skill Acquisition and Human Performance, Thousend Ouks, CA: Sage Publication.
[10] Bedell, J. R.; Lennox,S,S (1997) - Handbook for Communication and Problem – Solving Skills Training - A Cognitiv - Behavioral Approach, New York, John Wiley by Sons, Inc.

REQUIREMENTS FOR SYSTEMS DEVELOPMENT LIFE CYCLE MODELS FOR LARGE-SCALE DEFENSE SYSTEMS

Kadir Alpaslan DEMIR

PhD, Assistant Program Manager, Turkish Naval Research Center Command, Istanbul, Turkey

Large-scale defense system projects are strategic for maintaining and increasing the national defense capability. Therefore, governments spend billions of dollars in the acquisition and development of large-scale defense systems. The scale of defense systems is always increasing and the costs to build them are skyrocketing. Today, defense systems are software intensive and they are either a system of systems or a part of it. Historically, the project performances observed in the development of these systems have been significantly poor when compared to other types of projects. It is obvious that the currently used systems development life cycle models are insufficient to address today's challenges of building these systems. Using a systems development life cycle model that is specifically designed for large-scale defense system developments and is effective in dealing with today's and near-future challenges will help to improve project performances. The first step in the development a large-scale defense systems development life cycle model is the identification of requirements for such a model. This paper contributes to the body of literature in the field by providing a set of requirements for system development life cycle models for large-scale defense systems. Furthermore, a research agenda is proposed.

Key words: defense systems, large-scale defense systems, characteristics of defense systems, system development models, software development models, requirements.

1. INTRODUCTION

Countries spend billions of dollars on defense spending [1]. A significant portion of this spending goes into the acquisition and development of large-scale defense systems (LSDSs). Considering the amount of resources used in the acquisition and development of these systems, surprisingly, the scientific literature on the topic is quite limited. Most of the current literature consists of books and magazine articles written by defense practitioners and reports from government agencies. The models, processes, tools, and techniques used in the development of defense systems have not improved much. For example, the Waterfall system life cycle development model [2] and the V model of system development are among the most commonly used models in defense industry. Both of them were developed decades ago based on the needs of their time. Naturally, defense systems are evolving over time. For example, defense systems were not software intensive in the past. Today, they are. See **Table 1** for the evolution of military aircrafts in terms of software intensity.

Table 1. System functionality performed in software
Source: [3] [4]

Defense System – Military Aircrafts	Year	% Functions Performed in Software
F-4	1960	8
A-7	1964	10
F-111	1970	20
F-15	1975	35
F-16	1982	45
B-2	1990	65
F-22	2000	80
F-35 Lightning II	2012	90

As evidenced with many reports presenting the poor performance in defense projects [7], the currently used models are ineffective in dealing with today's challenges in LSDS development. While the defense industry has failed in advancing the systems development processes and models, the civilian software industry was successful in responding to evolving challenges of software development. Many variants of agile methods for software development were developed [5]. The reports indicate that agile methods have contributed to productivity in civilian software industry [5]. In this respect, Jones [6] reports that the productivity in defense software development is noticeably low. Furthermore, as the software scale increases, the rates of project cancellation increases, too, while the productivity in military software industry decreases [6]. Last but not the least, the defense community is conservative in adapting best practices from civilian industry [6].

Naturally, there have been attempts at improving the defense project performances through a series of initiatives [7]. The US Department of Defense (DoD) sponsored the Software Engineering Institute (SEI) for finding various solutions including the famous Capability Maturity Model (CMM) series. CMMs are series of models used to assess the maturity of system and software developing organizations. In addition, government defense ministries and agencies supported the development of various enterprise architecture frameworks (EAF). US DoD's Department of Defense Architecture Framework (DODAF), the British Ministry of Defence Architecture Framework (MODAF), and NATO Architecture Framework (NAF) are among such efforts. Object Management Group's Unified Profile for DODAF/MODAF (UPDM) is an attempt to combine these architecture frameworks. The purpose of these EAFs is to guide the development of defense system of systems projects.

Recently, Boehm and his colleagues developed the incremental commitment model (ICM) for software development [8]. The model is developed based on the critical success factor principles and the strengths of various other development models such as V model, spiral model, agile methods, etc. It is claimed that the model is effective in various system developments including defense system developments [9]. Furthermore, it is emphasized that the ICM milestones is compatible with US DoD acquisition milestones [9]. However, the ICM model has not been widely tested in defense industry. Therefore, the model performance is unknown.

As the expectations from systems is increasing, new system development life cycles are developed. Various agile models [5] and ICM [8] are among the examples. Various reports and studies also identify the current advantages of models and challenges observed in the implementations of these models. However, to our knowledge, the requirements for systems development life cycles models for LSDSs have not been researched in detail. This study aims to contribute to this area of the literature.

The rest of the article is as follows. In the second section, we list the main characteristics of LSDSs. Next we identify the characteristics of LSDS projects. In the fourth section, challenges related to the development of LSDSs are discussed. The following section lists the requirements for systems development cycle models for LSDSs. These requirements are derived from LSDS characteristics and LSDS project characteristics and challenges.

2. MAIN CHARACTERISTICS OF LARGE-SCALE DEFENSE SYSTEMS

In this section, the main characteristics of LSDSs are identified and briefly discussed. While some of these characteristics are shared with civilian systems of the same size, some of the characteristics are observed in only few civilian systems. While only a portion of civilian systems are safety and mission critical, almost all defense systems are mission-critical

and most defense systems are safety-critical. Development of LSDSs are costly and challenging due to following characteristics:

1. LSDSs are large-scale.
2. LSDSs are software intensive.
3. LSDSs are safety-critical.
4. LSDSs are mission-critical.
5. LSDSs are system of systems.
6. LSDSs should be high quality.
7. LSDSs are complex.
8. LSDSs have long life cycles.

David Lorge Parnas wrote a paper [10] in 1985 before resigning from the Panel on Computing in Support of Battle Management, convened by the Strategic Defense initiative Organization (later renamed as Ballistic Missile Defense Organization). It became a controversial paper in the defense community. It outlines the "software aspects of strategic defense systems." The paper stimulated discussions among defense community whether building trustworthy large-scale defense systems is feasible or not.

LSDSs are large-scale. The scale in LSDSs is increasing [11] as the defense needs and expectations are increasing. Development of large-scale systems has always been challenging. Historically, on average, defense systems are larger than civilian systems [6]. Thus, the defense community have experience in developing large-scale systems compared to civilian industry [6]. However, we have yet to see an upward project performance trend in LSDS developments. Jones reports that as the scale increases in military software, productivity significantly lowers [6].

LSDSs are software intensive. Today, software is the major component in any defense system [12-14]. The success of a weapon system is dependent on the success of the system software [12,13,16,17]. In 1974, the F-16A included 135 thousands of source lines of code (SLOC). In 2012, F-35 includes 24 million SLOC [13]. Software development by itself is difficult due to some inherent properties (essential difficulties) [15]. The defense context increases the challenge to a higher level. Therefore, software related problems are dominating the majority of defense project problems. For example, as one of the major defense projects, F-35 fighter aircraft development is reported to be plagued with software related problems [16]. Many major weapon systems deliveries are delayed due to a magnitude of software and quality problems.

LSDSs are safety-critical. A safety-critical system may be defined as "a system whose failure may cause injury or death to human beings" [18]. A significant portion of defense systems are weapon systems and naturally safety-critical systems. Development of safety critical systems is hard [18, 19] and requires a safety perspective from the start supported by a rigorous system safety program. Ensuring system safety requires rigorous design, analysis, and testing, all of which contributes to high costs. A defense system cannot be used unless system safety is ensured. The warfighters should be able to use these systems without the fear of harming friendly forces or themselves.

LSDSs are mission-critical. A mission-critical system is a type of system in which the failure may result in not achieving a critical goal, significant loss in terms of money, or trust in the system [18]. In the defense context, the failure of a mission-critical system may cause a failure in a mission or a limitation in the defense capability temporarily or permanently. Development of mission-critical systems is challenging in many aspects [18].

LSDSs are a system of systems (SoS). The definition of SoS in the Defense Acquisition Guide [20] is "A system of systems (SoS) is defined as a set or arrangement of systems that results from independent systems integrated into a larger system that delivers unique capabilities". The technological advancements in computing systems and especially networks led to the development of a system of systems [23]. "Network centric warfare" is one of the military concepts introduced to increase defense capability utilizing the system of systems approach [21]. Using SoS, the armed forces expect new capabilities that individual systems comprising the SoS cannot offer alone.

While the benefits of SoS are appealing, the development of SoS has many challenges.

LSDSs should be high quality. A defense system should be trustworthy and have high quality [22]. Ensuring complete trustworthiness especially in large-scale systems is considered unlikely to be achievable by some researchers, while others believe that it is possible [10]. In addition to trustworthiness (that includes attributes such as dependability, reliability, etc.), usability, supportability (through open architectures), maintainability, security, safety, testability, evolvability, fault tolerance, interoperability, survivability, high performance, efficiency, and effectiveness are among other qualities to be expected from LSDSs.

LSDSs are complex. National defense needs are increasing. The expectations of warfighters from defense systems is also increasing as the warfighters see the recent technological advancements in civilian applications. Satisfying the ever-increasing defense needs, expectations, and a significant amount of functionality with high quality SoS defense systems leads to complexity in defense systems. The development of complex systems poses many challenges [19].

LSDSs have long life cycles. The costs are so high and schedules are so long that replacing LSDSs in short periods is economically unsustainable. Defense systems such as ships, military aircrafts, tanks, missiles etc. are expected to be in service for at least 30-40 years. Currently, the F-35 is planned to have a 50-years long life cycle [13]. Naturally, there are upgrade programs over the years to prolong the service life in addition to overhauls and maintenance. Supportability, maintainability, and evolvability are among the quality concerns for systems having long life cycles. An important challenge results from the difference in the rate of evolution between hardware and software. Hardware is evolving much faster than software. Acquiring legacy hardware is expensive if possible. Vendors quickly adapt new manufacturing technologies to stay competitive.

3. MAIN CHARACTERISTICS OF LARGE-SCALE DEFENSE SYSTEM PROJECTS

The development of LSDSs is challenging due to the following characteristics:

1. LSDS projects are long.
2. LSDS projects are costly.
3. LSDS projects are risky.
4. LSDS projects are developed based on government regulations.
5. LSDS projects are verification and validation (V&V) oriented.

LSDS projects are long. A defense system is usually delivered in 5 to 10 years [24]. The time to develop a LSDS may take a decade or more [25]. In general, the development of defense systems is a long and expensive effort [26]. Large-scale, complexity, government acquisition procedures, the amount of required functionality, high quality expectations, slow development, the need for extensive testing, and proof of compliance with many standards are among the factors contributing to long development cycle.

LSDS projects are costly. When the systems are large-scale, complex, expected to have high quality, and the development cycle is long, the high costs are inevitable. Unless these characteristics change and affordable and effective solutions are found to these challenges, the development of LSDSs will be costly. Currently, the cost of defense systems is increasing [7] and this trend is not expected to change in near-future.

LSDS projects are risky. LSDS projects are among the type of projects that have the highest cancellation rates [6]. Based on the statistics provided by Jones, in military as the project scale goes up, the rate of success falls dramatically [6, 27]. While, only 10% of defense software with a size of 1,000 function points is facing cancellation, the rate is 33% when the size of the military software reaches 100,000 function points [6]. Function point is a measure of provided functionality. There are also many projects that are delivered with less functionality than planned and

with quality problems. According to a 2015 GAO report [28] on high risk list, "Many DOD programs are still falling short of cost, schedule, and performance expectations." The US GAO started reporting the high risk areas in 1990. Since 1990, major weapons acquisitions are in the US GAO's high list risk updated every two years [29]. What is more, the software and IT projects are challenged in scope management [36]. When the scope is not clear in the beginning, then many risks are introduced to the project.

LSDS projects are developed based on government regulations. The acquisition of defense systems has to go through the government defense acquisition process. The management of defense acquisitions is burdensome, inefficient and bureaucratic [30,31]. Defense projects have some noticeable differences compared with civilian norms [6]: The procurement process, the litigation problems, the adversarial relationship between DoD and contractors. More than half of the military contracts are challenged by disgruntled competitors, leading to litigation [6]. Resolving the litigations and starting the project may cause a delay of 6 to 18 months [6]. Therefore, the military projects are late even before project start. The amount of specifications and documentation produced in a defense system project is three times larger than civilian projects [32]. The production and review of documentation is a major cost element in a defense project. A significant portion of the documentation consists of reports for government project monitoring and control. In LSDS development, the contractors are required to develop the system based on many standards [18]. While compliance with these standards contributes to achieving high quality systems, they also increase the cost and time to build the system [18]. In addition, LSDS projects have a high number of stakeholders [18]. The stakeholders include armed forces, department of defenses, military personnel, government acquisition agencies, etc. Satisfying this number of stakeholders with different motivations and expectations, sometimes conflicting, requires hard work with political and social skills.

LSDS projects are verification and validation (V&V) oriented. The LSDS projects are strategic due to their contribution to defense capability. Also, the development of LSDS is costly; LSDSs are mission and safety-critical; LSDS are expected to be high quality; the number of stakeholder involved is high. These and other factors result in the necessity of a verification and validation oriented acquisition and development process. At project milestones and various phases of the project, the contractors have to show that the system under development is valid and verified. This is achieved by the reviews [33] such as conceptual design reviews, preliminary design reviews, critical design reviews. Unless these reviews are satisfactory in these milestones, the development cannot progress.

4. REQUIREMENTS FOR LARGE-SCALE DEFENSE SYSTEMS DEVELOPMENT LIFE CYCLE MODELS

Based on the analysis of LSDS and project characteristics, we identify a set of high-level requirements. These requirements are listed in Table 2. Note that these are high-level and further development of low-level requirements are also essential. For example, the requirements such as "The SDLCM shall support good project management practices." should be refined. Project management success is important for projects success [34]. The authoritative reference document in project management is the Project Management Body of Knowledge [35] (PMBOK) developed by Project Management Institute (PMI). Latest PMBOK includes 10 knowledge areas (KA):

1. Project Integration Management
2. Project Scope Management
3. Project Time Management
4. Project Cost Management
5. Project Quality Management
6. Project Human Resource Management

7. Project Communications Management
8. Project Risk Management
9. Project Procurement Management
10. Project Stakeholders Management

How to support these 10 KAs in the life-cycle development model needs further research. Another requirement "The SDLCM shall be compatible with government acquisition policies." should also be detailed. The government acquisition policies are different for different countries. However, most countries adapt the policies and practices of the US government since, US is the leading and major producer and consumer of defense systems and software [6]. Naturally, other countries try to benefit from these experiences. Furthermore, it may be possible to develop a defense acquisition framework compatible with many national government acquisitions. Such a framework may help multi-national defense acquisitions. Development of this framework may be a good research topic.

One of the most challenging requirements may be "The SDLCM shall be simple and easy to implement." Considering the multi-aspect nature of LSDSs development, development of a simple and easy to implement models will not be easy. However, it is important to note that not all requirements may be implemented in a systems development life cycle model. These requirements should be seen as a direction for the optimal design. The models able to support most of these requirements will be more successful in satisfying the challenging needs in LSDSs.

Table 2. Requirements for a systems development life cycle model for large-scale defense systems developments

Requirement No.	Requirement	Waterfall Model Support
Requirement 1	The SDLCM shall be scalable.	Partially Supported
Requirement 2	The SDLCM shall support the development of system of systems.	Not Supported
Requirement 3	The SDLCM shall be compatible with government acquisition policies.	Supported
Requirement 4	The SDLCM shall support the development of complex systems.	Supported
Requirement 5	The SDLCM shall be software oriented.	Partially Supported
Requirement 6	The SDLCM shall be quality oriented.	Partially Supported
Requirement 7	The SDLCM shall have a verification and validation perspective.	Supported
Requirement 8	The SDLCM shall include safety and security perspective.	Not Supported
Requirement 9	The SDLCM shall support total continuous risk management.	Not Supported
Requirement 10	The SDLCM shall support concurrent engineering.	Not Supported
Requirement 11	The SDLCM shall support project management areas.	Partially Supported
Requirement 12	The SDLCM shall support defense enterprise architectures.	Not Supported
Requirement 13	The SDLCM shall support stakeholder involvement.	Partially Supported
Requirement 14	The SDLCM shall support architecture oriented development.	Not Supported
Requirement 15	The SDLCM shall emphasize supportability through open architectures.	Not Supported
Requirement 16	The SDLCM shall emphasize trustworthiness, maintainability, and evolvability.	Not Supported
Requirement 17	The SDLCM shall support automated documentation.	Not Supported
Requirement 18	The SDLCM shall support practices for high productivity.	Not Supported
Requirement 19	The SDLCM shall support test optimization and ease of testing.	Not Supported
Requirement 20	The SDLCM shall support tailoring/customization based on needs.	Not Supported
Requirement 21	The SDLCM shall be able to handle requirements change.	Not Supported
Requirement 22	The SDLCM shall support evolutionary development.	Not Supported
Requirement 23	The SDLCM shall be simple in nature and easy to implement.	Supported

To examine the applicability of the requirements, one of the most commonly known models is applied. The first formal description of the Waterfall model is described by Royce in 1970 [2]. In 1985, the US DoD adapted this model in a military standard (DOD-STD-2167A) for software development. Therefore, it has found use in defense projects. Its sequential approach is compatible with the milestones in the defense acquisition framework. This model is a document intensive model, therefore, it also aligns with the defense acquisition with heavy documentation. The Waterfall model follows a sequential process of a series of design activities. These activities are requirements identification, system design, system implementation, and verification in its simplest form. The model is presented in **Figure 1**. The readers are referred to an abundant literature on the strengths, weaknesses, and applicability of this model. In **Table 2**, the last column indicates whether the Waterfall model supports the requirement or not.

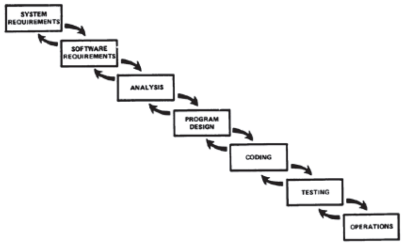


Fig. no. 1. The waterfall model of systems development life cycle [Taken from [2]]

5. CONCLUSIONS AND FUTURE WORK

Today, the project performances observed in the development of LSDSs cry out for immediate and effective solutions to a magnitude of problems encountered during development. It is obvious that we need better systems development life-cycle models that can address the specific challenges of LSDS developments. While having better systems development life-cycle models may not solve all the problems such as government acquisition problems, the ever-increasing defense systems scale and complexity, it may solve some of the problems and lessens the adverse effects of some other problems. Noticing this clear need, we conducted research on the first step of development of a systems development life cycle models for LSDSs. The first step is the identification of a set of requirements for systems development life cycle models for LSDS developments. As a result, this study is one of the first steps in a research agenda. The goal of this research is the development of a system development model for large-scale defense systems.

The research agenda consists of the following steps:

1. Identification of requirements for a LSDS development model.
2. Identification and categorization of current LSDS characteristics.
3. Identification and categorization of current LSDS project development characteristics.
4. Identification and categorization of LSDS development challenges of today.
5. Investigation of best practices in LSDS developments
6. Identification of processes consisting of best practices that can effectively address and overcome the challenges.
7. Coherent formation of processes to be used in the LSDS development model.
8. Development of the LSDS development model capable of addressing today's and near-future's needs.
9. Conducting pilot studies and industrial experiments.

Note the difference in the model development strategy between ICM and the development steps proposed here. While ICM mainly builds upon the strengths of previous models and best practices, the strategy employed in this research agenda starts with the identification of the characteristics, needs and challenges of current LSDS developments. The strategy employed in the development of ICM is valid and effective. However, the strategy in this research agenda is ideal, which is starting with the requirements specific to LSDS life cycle development models.

While this list of requirements is comprehensive, it may not be complete. Note that the determination of completeness in this area is not easy. Therefore, this list should be considered a starting point in this research area.

ACKNOWLEDGMENTS AND DISCLAIMERS

The authors take full responsibility for the contents and scientific correctness of the paper. The views and conclusions contained herein are those of the authors and should not be interpreted as necessarily representing the official policies or endorsements, either expressed or implied, of any affiliated organization or government.

REFERENCES

[1] Stockholm International Peace Research Institute. Military Expenditure Database, 2015.

[2] Royce, W. W. (1970) Managing the development of large software systems: Concepts and techniques. In Proceedings of IEEE WESTCON. (Los Angeles, CA), 1–9.

[3] Nielsen, P. D. (2015) Software Engineering and the Persistent Pursuit of Software Quality. *The Journal of Defense Software Engineering*. May-June, 4-9.

[4] USAF (1992) "Bold Strike" Executive Software Course.

[5] Dybå, T., & Dingsøyr, T. (2008). Empirical studies of agile software development: A systematic review. *Information and Software Technology*, 50(9), 833-859.

[6] Jones, C. (2000). *Software assessments, benchmarks, and best practices*. Addison-Wesley Longman Publishing Co., Inc., 2000.

[7] U.S. Government Accountability Office (2015). *Defense Acquisitions - Assessments of Selected Weapon Programs*, Rep. No: GAO-15-342SP. March 2015.

[8] Boehm, B., Lane, J. A., Koolmanojwong, S., & Turner, R. (2014). *The incremental commitment spiral model: Principles and practices for successful systems and software*. Addison-Wesley Professional.

[9] Boehm, B. & Lane, J. A. (2007) Using the incremental commitment model to integrate system acquisition, systems engineering, and software engineering. *The Journal of Defense Software Engineering*, 2007, 19(10), 4-9.

[10] Parnas, D. L. (1985) Software aspects of strategic defense systems. *Communications of the ACM*, 28(12), 1326-1335.

[11] Northrop, L. (2013) Does scale really matter? Ultra-large-scale systems seven years after the study. In Proc. of 2013 35th Int. Conf. on Software Eng. (ICSE), 18-26 May 2013, San Francisco, CA, USA, pp. 857-857.

[12] Hagen, C.; Sorenson, J.; Hurt, S. & Wall, D. (2012) Software: The Brains behind U.S. Defense Systems, A.T. Kearney Inc.

[13] Hagen, C. & Sorensen, J. (2013) Delivering Military Systems Affordably, Defense AT&L, March-April.

[14] Nelson, M., Clark, J. & Spurlock, M. A. (1999) Curing the software requirements and cost estimating blues, *PM Magazine*, November-December, pp. 54-60.

[15] Brooks, F.P. (1995). *The mythical man-month*.

[16] Shalal-Esa, A. (2012) Pentagon focused on resolving F-35 software issues. Online News from Reuters, 30 March 2012.

[17] Demir, K. A. (2005). Analysis of TLcharts for weapon systems software development, Master's Thesis, Naval Postgraduate School, Monterey, CA, USA. December 2005.

[18] Demir, K. A. (2009). Challenges of weapon systems software development. *Journal of Naval Science and Engineering*, 5(3).

[19] Drusinsky, D., Shing, M. T., & Demir, K. (2005). Test-time, Run-time, and Simulation-time Temporal Assertions in RSP. In Rapid System Prototyping, 2005. (RSP 2005). The 16th IEEE International Workshop on (pp. 105-110).

[20] Defense Acquisition Guidebook (2013).

[21] Alberts, D. S.; Garstka, J. J. & Stein, F. P. (2000) *Network Centric Warfare: Developing and Leveraging Information Superiority*. (C3I/Command Control Research Program) Washington DC. 2000.

[22] Demir, K. A. (2006). Meeting Nonfunctional Requirements through Software Architecture: A Weapon System Example. In Proceedings of the First Turkish Software Architecture Design Conference, TSAD 2006, Istanbul, Turkey, pp. 148-157, 20-21 November 2006.

[23] Cebrowski, A. K., & Garstka, J. J. (1998). Network-centric warfare: Its origin and future. In US Naval Institute Proceedings 124(1). pp. 28-35.

[24] Goldin, L.; Matalon-Beck, M. & Lapid-Maoz, J. (2010) Reuse of requirements reduces time to market. In Proc. of 2010 IEEE International Conference on Software Science, Technology and Engineering, pp. 55-60. Herzlia, Israel.

[25] Garrett, R. K.; Anderson, S.; Baron, N. T. & Moreland, J. D. (2011) Managing the interstitials, a system of systems framework suited for the ballistic missile defense system. *Systems Engineering*, 14(1), 87-109.

[26] Demir, K. A. (2015). Multi-View Software Architecture Design: Case Study of a Mission-Critical Defense System. *Computer and Information Science*, 8(4).

[27] Humphrey, W. S. (2005) Why big software projects fail: The 12 key questions. *The Journal of Defense Software Engineering*, March. 25-29.

[28] U.S. Government Accountability Office, High Risk Series, Report No: GAO-15-290, Feb. 2015.

[29] U.S. Government Accountability Office, High Risk Series, Report No: GAO-09-271, Jan. 2009.

[30] U.S. Government Accountability Office, Major Management Challenges and Program Risks - DoD, GAO/OCG-99-4, Jan. 1999.

[31] U.S. Government Accountability Office, Acquisition Reform - DOD Should Streamline Its Decision-Making Process for Weapon Systems to Reduce Inefficiencies, Feb. 2015, Report No: GAO-15-192.

[32] Jones, C. (2002) Defense Software Development in Evolution, *The Journal of Defense Software Engineering*, November. 26-29.

[33] Blanchard, B. J. & Fabrycky, W. J. (1998) *Systems Engineering and Analysis*, 3rd Edition, Prentice Hall International Series in Industrial & Systems Engineering. ISBN: 0131350471.

[34] Demir, K. A. (2008). Measurement of software project management effectiveness. Doctoral Dissertation, Naval Postgraduate School, Monterey, CA, USA. December 2008.

[35] Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK Guide), Fifth Edition, 2013.

[36] Demir, K. A. (2009). A Survey on Challenges of Software Project Management. In Software Engineering Research and Practice (pp. 579-585).

A STUDY ON DEFENSE ACQUISITION MODELS WITH AN EMERGING MARKET PERSPECTIVE. THE CASE OF TURKEY

Mustafa Kemal Topcu, Ph.D.*
Murat Mala, Ph.D.**
Selim Müslüm, M.Sc.***

*Ankara Chamber of Industry, Ankara, Turkey
**Turkish Army, Ankara, Turkey
***Turkish General Staff, Ankara, Turkey

With the end of the Cold War, the static environment, characteristic of the bipolar world, has changed quickly into a dynamic and complicated environment with new actors. These changes have also affected the countries' armed forces and new approaches to procurement/acquisition come into progress. After the Cold War, countries have focused on responding to changing threats with their decreasing defense budgets. In this study, acquisition models and their effects on Turkey's technology acquisition and defense industry are evaluated. The evaluation is performed based on criteria such as contribution to national economy, customization, acquisition cost, time and risk, life cycle cost, and technology acquisition. Major acquisition models in this study are determined as direct procurement, production under license, joint venture, indigenous development, production via international consortium. Finally, it is observed that the best model is indigenous development while the others will serve as technology acquisition for indigenous development.

Key words: *acquisition models, technology acquisition, defense systems, defense acquisition, Turkey.*

1. INTRODUCTION

With the end of Cold War, the environment in which countries are in conflict for their interest has undergone a fundamental change. The static environment based on the confrontation created in all areas by the bipolar world is rapidly replaced by a dynamic and complex one. Because of a small and highly effective troop-based concept imposed by changing threats and priorities, world arms market has experienced major changes, too. The major arms-producing countries have especially been faced with budget shortages and a decrease in the domestic market [1]. In response, companies have increased their international sales of high performance defense products and have presented the opportunity to supply those high-performance products at low prices [2]. In this regard, underdeveloped and developing countries that have high defense expenditures and supply their defense products through external purchase, have started to transfer more

sources to the leading defense companies.

Additionally, since the mid 90s, the total number of companies in the world defense sector has importantly decreased because of the mergers and acquisitions. For example, new clusters have been created in USA by this condensation [3]. From this perspective, because of downsizing of their own armed forces, companies of the countries that have a competitive edge in the defense industry were forced to immediately find new markets in order to maintain production in scale economies. In upcoming years, it would not be wrong to advocate that armed forces are likely to create a commercial-based secondary defense market. Indeed, this is already the case in some countries such as France and Israel [4].

It is obvious that developed countries supply their defense products from domestic sources. On the contrary, developing/underdeveloped countries which are willing to increase their military abilities or are planning to modernize their armed forces, procure directly through foreign sources.

A review of the literature on acquisition models reveals a lack of consensus concerning theoretical concepts, taxonomies and empirical studies. Despite more than years of interest for developing and understanding acquisition strategies for Turkey, rigorous research on defense acquisition models remains a nascent area. To this end, there are three things that motivate researchers to develop and introduce acquisition models for developing countries. First, a common understanding on acquisition terminology is considered. Next, more concrete acquisition models are needed to have been identified. Third, a comprehensive and coherent acquisition model framework would encourage both practitioners and researchers to better apply lessons-learned from relevant academic research.

In this study, acquisition models employed in the defense industry projects of Turkish Armed Forces are classified and then advantages and disadvantages of the models are discussed. With the study, it is aimed to develop a common understanding in acquisition models used in defense projects, and thus a contribution is made to the limited pool of current literature. Within this framework, the models employed for defense acquisition programs in Turkey are discussed in terms of contribution to the national economy, customization, supply cost, supply time, supply risk, life cycle costs, and technology acquisition. The rest of the paper is organized as follows. The second chapter discusses acquisition models currently employed in Turkey. The following chapter provides a general evaluation of the models. In the conclusion area the desired end-state is indicated and limitations of the study, as well as recommendations for future research are stated.

2. ACQUISITION MODELS EMPLOYED IN TURKEY

The main goal of the acquisition may be defined as development/production of the most advanced defense systems allocated to Armed Forces using limited resources in the required time. This can generally be described as a process directed to a single ultimate goal including development of the technology on one hand and possession of the equipment on the other.

The institutions in charge of defense systems acquisition in Turkey employ several different models. For instance, Kurç [5] underlies duplication of projects and states that Turkish General Staff mostly favors direct procurement while Undersecretariat for Defense Acquisition seeks opportunities for joint projects to improve national defense industry. In this context, five main acquisition models mainly used by defense systems acquisition authorities are listed below:

1) Direct Procurement,
2) Production under the License,
3) Joint Production,
4) International Consortium,
5) Indigenous Development.

2.1. Direct Procurement

Direct Procurement is a model in which the development and qualification processes are already completed and the

products are licensed. In other words, it is a model used for buying already existing products on the shelf, i.e. COTS. It is possible to purchase domestic or foreign products. Products may be sold in substantial quantities and offered to the buyer without any modification [6].

Figure 1 depicts a comparison for the criteria employed in the study. In the case of direct foreign procurement, it is not possible to provide business share to the domestic companies but offset advantages.

Besides, change of the product, which is planned to be supplied, according to the special needs that were defined as a result of requirement analysis is not preferred; hence it leads to a new qualification process. From this view, it is almost impossible to meet all of the requirements.

In addition, because the supplied product is in use, it is highly reliable, its supply time is very short and its supply risk is very low. Because development costs, as well as fixed costs are being undertaken by the manufacturer, it is not uncommon to see competitive prices in the market.

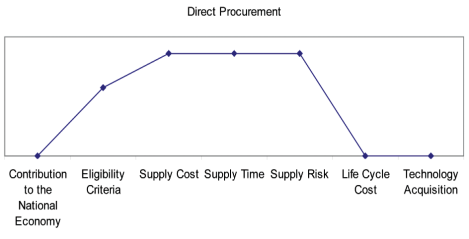


Fig. no. 1. Direct Procurement

However, the unit costs of the systems supplied using the direct procurement method and the life cycle costs are high because of the dependence on the manufacturer in terms of logistics. To this end, if the cost and supply time are the main factors in the decision, this model is possibly preferred. Another common scenario for direct procurement is meeting urgent requirements such as the ones for defense against terrorism.

2.2. Production under the License

This model can broadly be defined as the domestic production of a finished product, which has passed the product development and qualification processes and has been brought into use to end users, and whose domestic production line has been built up by means of technical support by a foreign firm holding industrial rights. Production is based on commercial arrangements generally including a series of provisions regulating the rights of the recipient with regard to transfer of technology and know-how [6, 7].

Figure 2 depicts a comparison for criteria employed in the study. This acquisition model involves supplying foreign sub-system(s) and domestic integration under a strict license to a product that has domestic participation in its particular sub-system. In other words, the main factors determining the level of the contribution to the national economy are the level of domestic capabilities and the attitude of the company with which the licensing agreement is signed.

Similar to the direct procurement model, its reliability is quite high. In addition, supply time is relatively shorter compared to indigenous development, but longer compared to direct procurement because of the required additional time for establishment of the domestic production line, and in-house and on-the-job training.

The risk for acquisition non-fulfillment is higher than in the case of the direct procurement model because of the extra time required for qualification of the product. Because the copyright holder firm holds the right for use of the product and industrial rights, all marketing activities to third parties can only be performed after an agreement is signed. In addition, any changes to the products can be done on a limited scale, like in direct procurement model, but it is not preferred in practice because of an increase in supply time and additional costs. From this perspective, it seems quite impossible to meet all requirements.

If this model is managed appropriately, technology acquisition can be provided at sub-system level. The model becomes prominent among the models given its highest life cycle costs. It is obvious that reducing these costs is possible by increasing the level of domestic contribution to sub-systems.

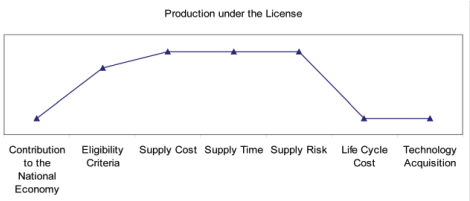


Fig. no. 2. Production under the License

2.3. Joint Production

This model can be defined as the production of a main system with joint ventures, which are capable of manufacturing different sub-systems. Another form may be the development of a licensed system by a domestic company with the technical support provided by the license holder firm in order to meet the requirements identified by the analysis teams. The more complicated a defense equipment is, the higher the share of technical support is [8]. The main issue here is to foster cooperation in research and development, production, and logistics of defense equipment to meet the requirements of one or more allied or friendly nations [6].

Figure 3 depicts a comparison of the criteria employed in the study. The model can be applied with the partnership of two or more domestic companies or with domestic and foreign company partnership. The main characteristic that separates it from the Production under the License is the authenticity of the product. Because foreign partners have mature technology and high-tech abilities, new products may be designed and produced.

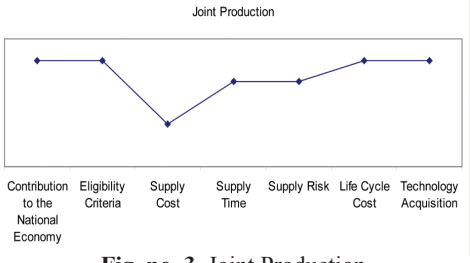


Fig. no. 3. Joint Production

The rate of the contribution to the national economy is directly proportional to the domestic contribution to systems. On the other hand, unlike previously discussed models, the need for the development of technological capabilities within the framework of a new product is expected to be perfectly fulfilled.

In parallel with the level of experience and competence of the parties participating in joint production, supply costs, supply time and supply risk may differ. The cost, supply time and supply risk of the product are inversely proportional to the similarity of the qualified product on the market. As the similarity increases, those decrease. Similarly, technology acquisition is possible in the model. A decrease in life cycle costs may be expected in the long-term.

2.4. International Consortium

International consortium is an acquisition model in which the costs are shared by the partners and the technological capabilities of two or more international parties are directed towards the development of a shared system. The model is often being preferred by international actors because of recent shrinking defense budgets. Also, the model provides an opportunity to harmonize requirements, sustain competition, and utilize capabilities. In addition, interoperability and military transformation are other arguments to lead to international consortium, especially motivated by NATO [5]. Significant contributions by all partners in the consortia are made to research and development, design, building, production, marketing, maintenance as well as funding and risk sharing [8].

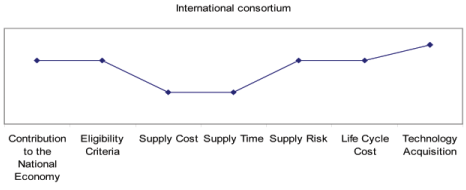


Fig. no. 4. International Consortium

Figure 4 depicts a comparison for the criteria employed in the study. Technological ability or the owner of economic power, which may be considered dominant in the model, is a handicap in terms of common interests. Meanwhile, domestic defense industry,

which has the will to manufacture a product qualified by the international authorities, is likely to have a higher market share in the long term. From this point of view, the model is one of the acquisition models that contribute much to the national economy.

The decisive factor in this model is the attitude of the international actors in terms of the eligibility requirements. Yet, it is almost impossible to fully meet the needs of many countries by a shared system. That is to say, the weakest aspect of the model is that diversification in the needs has a negative impact on the cost of the product.

In general, since each party does not want to include other partners in its strong fields, it is almost impossible to gain additional technological capabilities in the international consortium model. Supply cost, supply risk and supply time are directly related to the complexity of the project, abilities of the parties and the will to use this ability.

2.5. Indigenous Development

Indigenous development is the process of development of an authentic product using the maximum rate of domestic capabilities (by means of technical assistance mainly based on research and development). Development includes design, building, modification, or improvement of the prototype of a vehicle, engine, instrument, or the like as determined by the basic idea or concept [6].

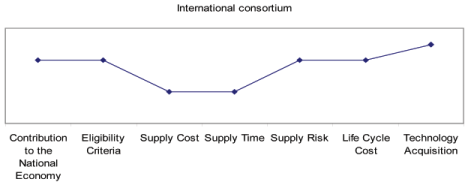


Fig. no. 5. Indigenous Development

Figure 5 depicts a comparison for the criteria employed in the study. The indigenous development model has the highest contribution rate to the national economy.

If the model is implemented by means of R&D activities, its maximum contribution might be doubled. At the same time, identified needs are met at the highest rate as technical support is provided so that R&D activities are performed in niche areas.

After a well-planned and well-managed process, this model allows the acquisition of basic skills and core competences in certain areas. The main issue to be considered here is that foreign technical support is devoted to the acquisition of a competence. The ability acquired at sub-system level leads to joint production model while probably resulting in no recognition of benefits with the indigenous development model.

The main features that separate this model from the discussed ones are its relatively high supply costs, long supply time and high supply risks. However, with the national capability acquisition, the model may form a transition through domestic direct procurement, may lower life cycle costs and may reduce overseas dependency. Thus, cost increases may be ignored because of the untrivial long term outcomes and benefits.

The performance of the indigenous development model based on well-managed R&D activities can be seen as a long-term guarantee for high level of prosperity,anation'sscientificdevelopment, employment, and technological progress and export opportunities.

3. FINDINGS

In this section, a risk-benefit analysis has been employed by the researchers and the matrix is displayed below in **Table 1**. The scale ranges from -3 to +3. Positive rates are shown by (+), while negatives are indicated by (-). The rationale behind completing the table is to compare models with respect to the criteria determined by the researchers based on their experience and literature review. At first, researchers rate all acquisition models individually. This approach does not require a comparison among models. "0" means that researcher is neutral about the model. If rating is negative, then the model is considered risky. Similarly, if rating is positive, then the model is referred to as beneficial. Aftermath all researchers rate acquisition models, average of each criterion is computed and put in the cells. Thus, the table displays

the means of each criterion. Having this methodology in mind, one can read first line as direct procurement is the riskiest model concerning contribution to the National economy, life cycle cost, and technology acquisition while it is the most beneficial model regarding supply cost, supply time, and supply risk. On the other side, it is a bit beneficial model on behalf of eligibility criteria.

Table 1. Comparison of the Acquisition Models Employed in Turkey.

	Contribution to the National Economy	Eligibility Criteria (Requirements)	Supply Cost	Supply Time	Supply Risk	Life Cycle Cost	Technology Acquisition
Direct Procurement	- - -	+	+ + +	+ + +	+ + +	- - -	- - -
Production Under the License	- -	+	+ +	+ +	+ +	- -	- -
Joint Production Model	+ +	+ +	-	+	+	+ +	+ +
International Consortium	+	+	-	-	+	+	+
Indigenous Development	+ + +	+ + +	- -	- -	-	+ + +	+ + +

The defense sector has an important role in the national economy because it is a sector that allows secondary technology entry into other areas and accommodates high value-added products. The state of the nation's economy, development of national defense industry, competent manpower and scientific competence can be said to be the main determinants of defense acquisition models. In this context, underdeveloped countries, in terms of the above-mentioned factors, are forced to supply the goods using direct foreign procurement and production under the license model while the countries with sufficient infrastructure tend to supply the goods using joint production and indigenous development models.

While direct procurement and production under license models have been intensely used in defense procurement due to the lack of the aforementioned factors before 1990s, the indigenous development model has recently begun to be preferred following the development of the national defense industry.

To this end, the products that meet 100% of the needs of the Turkish Armed Forces are supplied, thus contributing to the development of the national defense industry. The next step consists in providing the opportunities to the national defense industry for marketing products to foreign markets and that has already been taken.

Table 1 shows a 6-level rating, of the models investigated in this paper, in terms of their contribution to the national economy, eligibility requirements, supply cost, supply time, supply risk, life cycle costs, and technology acquisition.

For the first four top to down procurement models presented in Table 1, the contribution to the national economy, compliance requirements, and technology acquisition increase in customers' favor while supply cost, supply time, supply risk and life cycle cost increase to customers' detriment.

As seen, even though the international consortium model has some negative aspects, it can be used when joint ventures of the leading

international actors are desired with a long-term cooperation and opportunity of technology transfer.

4. RESULTS

A review of the literature on acquisition models reveals a lack of consensus concerning theoretical concepts, taxonomies and empirical studies. Despite years of interest for developing and understanding acquisition strategies for Turkey, rigorous research on defense acquisition models remains a nascent area. This study, therefore, is the first one to compare the defense acquisition models employed by the Turkish Armed Forces in terms of certain criteria. When the limited pool of current literature examined, it is concluded that there is no consensus on the classification of the models. The underlying reasons here are differences in the countries' requirements and policies. From this perspective, to our best knowledge, this is the first study aimed at classifying and comparing defense system acquisition models.

Overall, the objective of the study is to shed some critical light on the acquisition management. Therefore, a common understanding of acquisition terminology is investigated. Next, acquisition models are identified. Moreover, a comprehensive and coherent acquisition model framework is displayed to encourage both practitioners and researchers to better apply lessons-learned from relevant academic research.

A matrix is formed by the researchers, displaying five acquisition models on the lines and criteria on the columns. The models identified by the researchers are direct procurement, production under the license, joint production, international consortium, and indigenous development. On the other hand some criteria are also determined in order to compare the models. They are evaluated according to contribution to the national economy, eligibility criteria, supply cost, supply time, supply risk, life cycle cost, and technology acquisition.

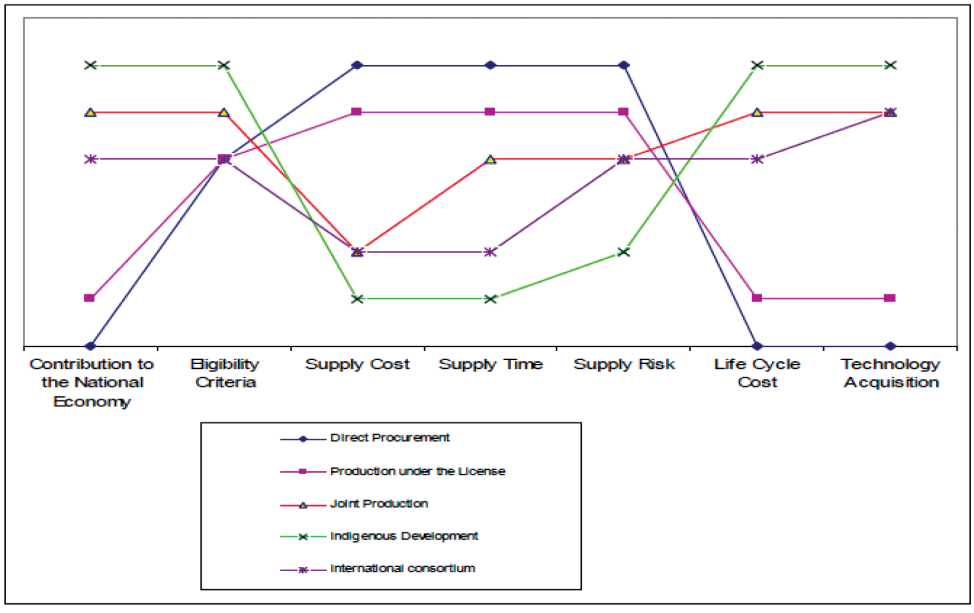


Fig. no. 6. Comparison of the Defense Acquistion Models

Meeting the defense needs by means of indigenous development is in fact a desired end-state in defense acquisition. This is also approved to be an indicator of technological level. This finding is consistent with Korkmazyurek and

Basım [9] that highlight new armaments strategy of Turkey based on a policy of eliminating foreign dependencies in the critical defense capabilities area.

The creation of a new system based on indigenous technology and capability acquisition in defense industry is the main incentive. But, in order to achieve this goal, human resource, investments and capital should be sufficient and ready to use. From this perspective, it is possible to see the other models as the model leading to the main purpose.

It would not be wrong to say that dual-use materials and use of by-products of R&D results in the investments made in defense industry have a multiplier effect on the country's technological competence.

As a result, indigenous development-oriented defense investments made on the basis of R&D activities increase scientific power and the level of technological development while providing effective use of national resources. This tendency requires the right technology policies. Yet, wrong technology policies could result in a waste of resources.

Towards this end, indigenous development is particularly required to be the essential model for emerging markets that contribute the most to national economy, as well as national sovereignty. But, this just can be used after an evaluation under the criteria such as the technological level of preparedness of other models, the urgency of need, and available resources at hand.

There are also some limitations regarding the study. First, the evaluation is based on the experience of the authors. Hence, it is strongly recommended that the study needs to be extended by a qualitative and quantitative research, which gets professionals from government, acquisition authorities and the industry involved. Next, the evaluation undertaken in this study is from the perspective of an emerging market. Therefore, one should be careful to generalize the results for developed or underdeveloped countries.

This study also opened pathways for future research on acquisition models. Three areas are identified here for future defense acquisition research. First, criteria would be determined by means of a Delphi survey or a questionnaire whose participants might be from government, industry and academy. Second, criteria would be normalized or weighted by using Analytical Hierarchical Process or Analytical Network Process. Third, the study may be repeated in different countries to generalize the results.

REFERENCES

[1] Jan C.G., Defense Technology in Society: Lessons from Large Arms Importers, Technology in Society, Volume 27, pages 181-197, 2005.

[2] Jan T.S., Jan C.G. Development of Weapon Systems in Developing Countries:A Case Study of Long Range Startegies in Taiwan, Jounal of Operational Research Society, Volume 51, pages 1041-1050, 2000.

[3] Kirkpatrick D., Trends in the Costs of Weapon Systems and the Consequences, Defense and Peace Economics, June 2004, page 271

[4] Stockholm International Peace Research Institute, SIPRI Yearbook 2002: Armaments, Disarmament and International Security, Oxford University Press, Cambridge, 2002.

[5] Kurç Ç., Critical Approach to Turkey's Defense Procurement Behavior: 1923-2013, Unpublished Dissertation, The Graduate School of Social Sciences of Middle East Technical University, Ankara, 2013.

[6] Hagan G., Glossary of Defense Acquisition Acronyms & Terms, 13th Edition, Defense Acquisition University Press, Virginia, 2009.

[7] White E., Channels and Modalities for the Transfer of Technology to Public Enterprises in Developing Countries, ICPE Series, Volume 12, 1983.

[8] Kurtoglu H., Agdemir A.M., An Assessment of Turkish Defense Industry and Turkey's Efforts to Transfer Military Technology: Strategies for Arming the Future, Unpublished Master's Thesis, Naval Postgraduate School, Monterey, California.

[9] Korkmazyürek H., Basım, N. "The Changing Face of the Turkish Defense Industry and Turkey's New Armaments Strategy", 3. International Conference on Business, Management and Economics (13-17 June), 333-356, İzmir, 2007.

IMPLEMENTATION OF RISK MANAGEMENT IN THE ARMED FORCES OF THE SLOVAK REPUBLIC

Lubomír BELAN

Department of Management, Armed Forces Academy of General M. R. Štefánik
Liptovský Mikuláš, Slovakia

The risk management process represents the systematic application of management policies, procedures and experience focused on the activities of communication, consultation on how to create the appropriate context and on the identification, analysis, evaluation, handling, monitoring, and review of risks. Its content is represented by general principles, communication and counselling, creating links, risk assessment, monitoring and review of risks, handling and record of the process of risk management. In terms of The Armed Forces of the SR (OS SR), this issue is an important part of management in terms of proper functionality of the components, services, and facilities (qualifications). It is certainly the difficulty and danger incurred by the processes carried out in these organisational structures (e.g. shooting, weapon handling and training, etc.) that provides a clear answer on what is necessary to do for a successful implementation of risk management issues.

Key words: *risk, uncertainty, effects, the structure of the risk management, sources of the risk, the risk management process.*

1. INTRODUCTION

Risk management has to create and protect the value ensuing from the achievement of objectives and the improvement of performance, thereby contributing to the organization. It has to be an integral part of all business processes in the organization, and also part of the responsibility inherent of management positions. It requires to be a part of the decision-making process that helps to better distinguish the alternative course of action, explicitly deal with uncertainty, be systematic, structured, and timely, be based on available information, take into account human and cultural factors, be transparent and abstract, dynamic and responsive to the evolving security changes [1]. The process of risk management could consist of the following:

- the definition of *intention* and *objectives* of risk management,
- the definition of *responsibilities* underlying the risk management process, design and conduct,
- the definition of the *scope, depth and width of the risk management activities* that will be carried out, including specific implications and exceptions,
- the definition of *activities, processes, functions, project, product, service or benefit in terms of time and location,*
- the definition of the *relationship* between a specific project, process, or a specific activity and other projects, activities or processes within the organisation,
- the definition of *methods needed for risk assessment*,
- the definition of the method of *evaluation* of efficiency and effectiveness in the management of risk,
- identification and specification of the *decisions* to be taken,
- identification, research on the *contiguity and necessary structures*, their scope and objectives, as well as the *sources* required for such examination [2].

2. IMPLEMENTATION OF RISK MANAGEMENT

In connection with the issue, it is important to realize that *the structure of risk management* is not intended to

specify the management system but rather to *support the organization when integrating risk management into its overall management system*. A possible structure of risk management after its implementation into the OS SR may consist of: mandate and commitment, the draft of the risk management structure, the introduction of risk management as a process, monitoring and review the structure and the latter's continuous improvement (**Figure 1**). The international standard for risk management offers a different perspective on the implementation and the following terms are used (**Figure 2**):

- *risk management,* which relates to architecture (principles, structures and processes),
- *risk management,* which relates to the use of this type of architecture for a particular risk.

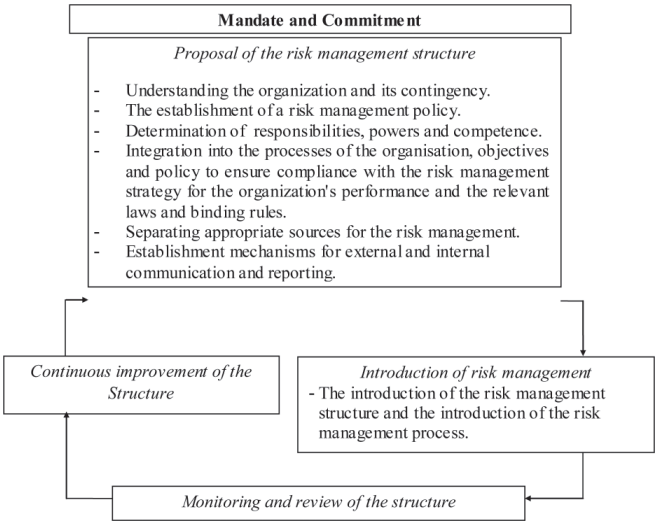


Fig. no. 1. The proposed structure of risk management in OS SR

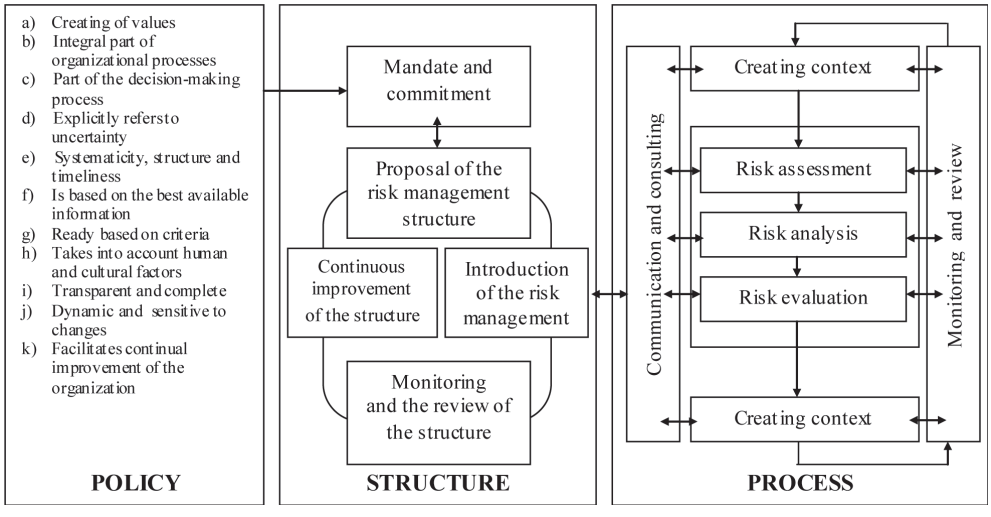


Fig. no. 2. STN ISO 31 000 – Risk management [3]

A source of risk is an element, which by itself or in combination, hasthe potential to cause the risk (a thing or activity able to cause consequence). There is a large number of sources of risks that must be taken into account before a decision be made. Sources of risk may include:

- the potential for positive consequences (opportunities),
- the danger of potential threats with negative consequences,
- potential threat (risk), as well as the potential for positive consequences (opportunities) [4]. All conducted activities (training, education, but also the everyday job) affect the level of uncertainty. The latter may also be considered in relation to probability provided that there is *sufficient information on uncertainty*.

Probability is based on the occurrence of the event and must therefore have an impact on the outcome of such an event. The effect of the event may be determined on the basis of *the cause* and *the description of the event*. An example of the causes, description and impact of probability may run as follows "*crossing the street without looking around*" mostly results in "*injuries"*.

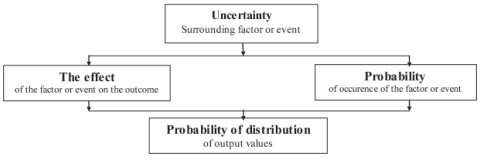


Fig. no. 3. The concept of risk [4]

Determining the *probability of the cause and effect of an event* contributes to calculating the *probability distribution*. With regard to the range of options, this probability distribution can determine *the occurrence of a given risk* and *reduce the uncertainty associated with this event*. The prediction is usually based on data or past experience and thus provides a basis for the potential risk.

It is necessary to point out that in specialized literature there is no unified perspective on defining the concepts of risk and uncertainty. There are indeed authors who consider these terms to be synonymous, and the authors who define them as two separate categories. In the English language, there are two terms: risk and uncertainty. The relationship between them is usually characterized as follows:

1. uncertainty (as a broader term): this is the uncertainty, the randomness of the conditions or the results of any phenomena or processes,
2. the risk (as a narrower term): this is such a kind of uncertainty, when it is possible to quantify the probability of the formation of differing alternatives.

Table 1. The coherence of risk – uncertainty (*source Rafferty 1994*)

RISK	UNCERTAINTY
measurable	*non-measurable*
statistic assessment	*subjective probability*
hard data	*qualified opinion*

The term of *uncertainty* is used to describe situations where it is not possible to connect probability to the randomness of events, and a discrepancy between a good decision and a good result emerges. The distinguishing factor between risk and uncertainty is that the risk is taken as a measurable trait and has a place in the calculation of probabilities, while the uncertainty does not have such a quality [5].

The responsibility for risk management means responsibility, authority and adequate competence in managing the risk, implementing, and maintaining the risk management process, the adequacy, effectiveness and efficiency of any controls. These procedures can be mitigated by:

- identification of *risk owners* (a person or an authority with responsibility and the power to manage the risk),
- identification of *persons responsible* for the development, implementation and the maintenance of the risk management structure,
- identification of *the other people* at all levels within the organization responsible for the risk management process,

- creation of *the risk management performance measurement processes*, administration of external or internal reports and improvable processes,
- ensuring appropriate levels of recognition.

The implementation of risk management represents a step aimed at *implementing the proposed structure into the practice and the resurgence of risk management in the organization.* Successful implementation of risk management must guarantee that:

- the owner (a person or an entity with the responsibility and authority to the risk control) understands the process of the risk management,
- activities in connection with the risk management will be actually carried out,
- the decision – making process will feasibly take the risk into account [6].

A *Risk Management Plan* must exist with the organization that implements risk management. This document specifies the approach to risk management, its components and the resources that are to be used. The management components usually include processes, experience, and the allocation of responsibilities, the sequence and timing of activities. The risk management plan may include:

- Access to risk management (implementation of risk management into the organization, determination of responsibility for the management of the risks and risk management policy);
- Components of the risk-management - procedures, experience, the allocation of responsibilities, the sequence and timing of activities;
- *the documentation on found risks* - the risk-list (index, catalogue), the choice of the initial risk response;
- *outputs of the risk analysis* – the most important risks, the resulting values of the risks, the risk priority;
- *selected choices in response to the identified risks* - risk allocation among the parties involved in order to ensure the provision of the right risk related measures and the inherent risk related contractual arrangements a contingency plan, insurance and other risk transfer arrangements,
- *monitoring and controlling* – the comparison of actual results with the expected risks,
- *maintenance of a risk management system* as a means of updating and improvement,
- *the evaluation* – record information about the risk,
- the sources that are to be used in the risk management process.

Prior to the introduction of the risk management structure within the OS SR, it is necessary:

- to define a convenient *schedule* and an appropriate *strategy* for implementing structures,
- *to apply the risk management policy* and related processes,
- to be in accordance with the requirements of *the laws and regulations*,
- to ensure that *decisions to be taken, including the development and determination of the objectives, have been in accordance with the outcomes of the risk management processes,*
- *to provide information and training opportunities*,
- *to communicate and consult* with concerned parties in order to ensure that its risk management structure is still appropriate.

3. THE RISK MANAGEMENT PROCESS

Risk management and its underlying processes will be introduced within the OS SR based upon a risk management plan as an intrinsic part of organization practices and processes *at all relevant levels and in all functional locations.*

The risk management process represents the systematic application of management policies, procedures and experience resulting from communication and consultation. Its goal is to create the context for the identification, analysis, evaluation, treatment, monitoring, and review of risks. Hence, the process of risk management is to be an integral part of management practices and as such integrated into the organization culture and practices, and adapted to the

latter's processes. The implementation of the risk management process should include:

a. Communication and consultancy.

b. Creating context: (creating external context, internal context, creating the risk management process context and defining risk criteria).

c. Risk assessment: (identification of risks, risk analysis and risk assessment).

d. Risk treatment: (methods of treatment, the choice of handling options and the introduction of plans to deal with risks [7].

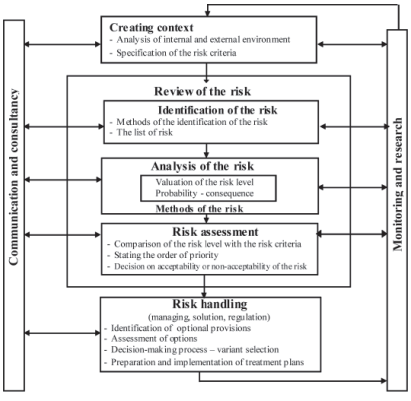


Fig. no. 4. The risk management process [7, 8]

The aim of creating context is *to set parameters and the boundaries defining a unique approach of the organization towards risks and risk management activities*. By creating context, the organisation:

- expresses its *risk assessment objectives,*
- defines *internal and external parameters* that need to be taken into account in risk management;
- establishes *the risk assessment programme*,
- determines *the scope and risk criteria* for risk evaluation.

Many of these parameters are similar to the parameters specified in the design of the risk management architecture. When determining the relationships triggered by the risk management process, more details must be taken into account and these need to be analysed in terms of how they relate with the overall aim of the risk management process. Creating context in this process incurs:

- creating external context,
- creating internal context,
- creating the risk management
- process context,
- defining the risk criteria.

While creating the context of the risk management process, the organisation *strategy, objectives, scope and parameters* are determined. Next, associated risk management *accountability and competence*, required *resources and records* are applied. The context of the risk management process will vary depending on the needs of the organization. They may include:

- definition of *the intent and objectives* of the risk management,
- definition of *responsibilities* within the process and the process of risk management,
- definition of *the scope, depth and width of the risk management activities* that will be carried out, including the specific activities to be included in the process and those that are to be excluded from the process,
- definition of *activities, processes, functions, project, product, service or benefit in terms of time and location,*
- definition of *the relationship* among specific projects, processes, or activities within the organisation,
- definition of *risk assessment methods*,
- definition of *risk criteria,*
- definition of the method to be employed in the *evaluation of the performance and effectiveness* of the risk management process,
- identification and specification of the *decisions and interventions* to be taken,
- identification, exploring the *context and the necessary structures*, their scope and objectives, as well as the sources required for such examination.

Prior to risk assessment, the risk criteria for assessing risk severity are to be defined. By defining criteria, the

organization determines its acceptable level (severity) of risk. The risk criteria are to reflect the values of the organization, its objectives and resources. Some criteria may be derived from the requirements of laws and regulations, and, other criteria organizations abide to. The risk criteria must:

- be *in accordance with the risk management policy of the Organization,*
- be defined *at the beginning of the risk management process*,
- be *constantly reviewed and re-evaluated*.

The risk assessment criteria must be determined at the beginning of the risk management process and, subsequently, are to be continuously controlled. The risk criteria should be consistent with the risk management policy of the organization, should be defined at the beginning of the risk management process and must be constantly reviewed and re-evaluated.

When defining the risk criteria it is necessary to define factors shall include:

- the nature and types of *causes and consequences* that may occur and ways to measure them,
- *time frame (time frames)* of the definition of probability or the aftermath (consequences),
- how to define the *probability of occurrence,*
- how to determine *the level of risk*,
- *opinions of concerned participants,*
- the level at which the risk shall be *acceptable or tolerable*,
- considering whether *the multiple combinations of risks* to take into account and if so, how and which combinations need to be considered.

When assessing risks, it is necessary to answer the following questions:

- What can happen and why?
- What are the consequences?
- What is the probability of their next occurrence?
- Are there any factors that mitigate the consequences of the risk or that reduce the probability of the risk?
- Is the level of risk tolerable or acceptable and does it require further handling?

4. CONCLUSIONS

The implementation of the entire risk management system into OS SR requires adequate preparation in terms of learning on the basis of available knowledge, experience and information. Correct implementation of this issue will help to eliminate or remove a range of risks that may occur in the processes of the organization in the future. The risk assessment itself means the overall process of risk identification, risk analysis and risk assessment. Risks can be assessed at the level of organizations, departments, projects, individual activities or as specific risks. Risk assessment is a part of risk management that provides a structured process by which we can determine how the objectives of the organization may be influenced. This is to be done by analysing the risks in terms of consequences and their probabilities, before deciding whether other risk handling is necessary.

REFERENCES

[1] STN 31000 Manažérstvo rizika;
[2] HOFREITER, L. [2004]: *Bezpečnosť, bezpečnostné rizika a ohrozenia.* Žilina: EDIS, ŽU Žilina. ISBN 80-8070-181-4;
[3] MERNA, T., SMITH, N. J. [1996]: *Projects Procured by Privately Financed Concession Contracts.* Časť 1,2. Asia Law. Practice, Hong Kong. *1996*;
[4] ISO 31000:2009 (2011) - *Principles and Guidelines on Implementation* (Zásady a návod pre implementáciu) ;
[5] ŠIMÁK, Ľ. *Krízový manažment vo verejnej správe*. Žilina: ŽU, 2001, 243 s. ISBN 80-88829-13-5;
[6] BELAN, Ľ., BELAN, Ľ.. *Bezpečnostné riziká*. Zborník z 19. medzinárodnej vedeckej konferencie „Riešenie krízových situácií v špecifickom prostredí“ Fakulta špeciálneho inžinierstva ŽU, Žilina, 20. - 21. máj 2014. ISBN 978-80-554-0875-0;
[7] ISO/IEC 31000:2010 - *Risk management - Risk assessment techniques*
[8] ISO Guide 73:2009 - *Risk management* – Vocabulary.

EVALUATION OF MILITARY ACTIVITY IMPACT ON HUMANS THROUGH A PROBABILISTIC ECOLOGICAL RISK ASSESSMENT. EXAMPLE OF A FORMER MISSILE BASE

Sergiy OREL
Oleksiy IVASCHENKO

Hetman Petro Sagaydachniy Academy of the Land Forces, Lviv, Ukraine

The current article provides a methodology focused on the assessment of environmental factors after termination of military activity and uses a former missile base as an example. The assessment of environmental conditions is performed through an evaluation of the risks posed by the hazardous chemicals contained by underground and surface water sources and soil to human health . Moreover, by conducting deterministic and probabilistic risk assessments, the article determines that the probabilistic assessment provides more accurate and qualitative information for decision-making on the use of environmental protection measures, which often saves financial and material resources needed for their implementation.

Key words: *military activity, human impact, ecological risk, probabilistic risk assessment.*

1. INTRODUCTION

Military activity is conducted in 'military areas' [1]. that are of significant value to environmentalists despite the widespread outcry about being badly polluted. Such areas often occupy hundreds of thousands of hectares of land. After the 'cold war' and the inherent reduction of armies and weapons, these areas can be used as reserves, or used for agricultural or recreational purposes. It is clear that, as case may be, in order to decide their further use it is necessary to evaluate the degree of land contamination and the possible impact of pollutants on environmental objects to be used in the conduct of activities in such areas.

To make the right decision it is desirable to have particular criteria - certain indicators of environmental condition that characterize both the danger to humans and for biota. The environmental risk – „probable damage to human life or health, environment, life or health of animals and plants considering the severity of the damage" [2] is a convenient criterion in this regard.

The method of ecological risk assessment of chemical pollutants' impact on humans and the biota is given by this article using an active military range as an example [3]. Deterministic assessment criteria, namely fixed parameters (e.g. assumed human body weight of 70 kg, the concentrations of chemicals in the soil - the average of several etc.) are employed to evaluate risks.

The following cases are used depending on the importance of the problem, when deterministic data use:

- risk assessment based on the use of average reference values;
- risk assessment based on the largest values of reference variables that should be expected at a given location, usually 90^{th} or 95^{th} percentiles of value distribution.

Obviously, the latter case is used for conservative estimation when it is important to avoid underestimating the danger. In this case, if the level of acceptable risk is exceeded it is

neccessary to apply measures to reduce it, and excessive conservatism may cause serious unjustified expenses. At the same time, using only averaged values of reference values while estimating the risk can lead to its underestimation for certain vulnerable categories of population or ecosystem components.

Probabilistic risk assessment uses probability distributions instead of point values of reference variables to calculate the risk, ultimately getting to a probabilistic distribution of risk values. In this case it is possible to derive the value of the probability of exceeding the risk level that is of interest, namely to quantify the uncertainty value, which is not possible while using determined values. Thus, probabilistic risk assessment provides unique and important additional information that is used for optimal risk management.

The aim of this paper is to show the importance and usefulness of applying the probabilistic risk assessment method for people living in a polluted environment by using a specific example.

2. RESEARCH SCOPE AND RESULTS

The scope of this article is supported by research [4] dealing with the condition of environment after termination missile base related activities.

The geographic area of concern for the article is the Zhytomyr Region (Ukraine) that housed the missiles complexes of the former Soviet Union (medium-range missiles 8K63, SS-4 «Sandal», by NATO classification) between 1958 and 1989.

After the termination of the base its area was not exploited, and the locals living near the base had free access to its former area. The analysis of soil and water from open sources near the base, as well as the composition of water from underground springs, that local population use as drinking water, was conducted to determine the degree of contamination of the territory. The content of chemicals in objects under the study is given in **Table 1**.

Table 1. Qualitative characteristics of soil and water from surface and underground water sources of former missile base (2007-2009)

Name of the examined object	The content of element, mg / kg					
	Cu	Ni	Pb	Zn	Mn	Fe
Soil	56.7±14.1	4.75±1.18	26.45± 6.6	280.3±69.3	12.8±3.2	21.34±5.3
Water from surface sources	0.0032 ±0.0008	0.25±0.06	0.034 ±0.008	0.026 ±0.007	0.13±0.03	4.75±1.20
Water from underground sources	0.0042 ±0.001	0.093 ±0.02	0.00	0.024 ±0.001	0.089 ±0.22	5.20±1.3

2.1. Deterministic risk assessment

The evaluation of chemical compounds effect on human health and biota was initially conducted via deterministic risk assessment. The risk of chemical effects is determined by comparing the values of cancer risk *CR* and noncancer hazard index *HI* of acceptable values (Table 2).

The impact of pollutants on humans occurs with the use of contaminated water from underground sources and consumption of plants growing on contaminated soil as small surface water sources are used neither for agricultural, nor for recreational purposes. For the puposes of the analysis, let us consider the risk of carcinogenic and noncarcinogenic compounds on human health.

Carcinogenic risk is determined based on equation (1)

$$CR = \sum ICR_i, \qquad (1)$$

where *CR* represents thevalue of full individual cancer risk caused by the action of carcinogens N_R ;

ICR - the value of individual cancer risk caused by the action of the i^{th}-carcinogen;

N_R - total number of carcinogens.

$$ICR = ADD \cdot SF, \quad (2)$$

where *ADD* is the daily dose of harmful chemical consumed by the recipient;

SF - cancer slope factor for the substance, which characterizes the degree of increase in cancer risk along with the increasing of dose per unit.

Table 2. Classification of risk levels

Risk		Risk level
Noncancerogenic HQ (HI)	**Cancerogenic CR**	
<1.0	$< 10^{-6}$	Minimum - desired (target) risk value during the conduct of health and environmental protection measures.
1.0–10.0	$10^{-4} - 10^{-6}$	Medium - acceptable for conditions of military service. If effects the civilian populationand requires a dynamic monitoring of the environment.
10.0–100.0	$10^{-3} - 10^{-4}$	Significant - unacceptable for population; for military service conditions, dynamic control and in-depth study of the sources and consequences of possible harmful effects deciding on risk management measures is required.
>100.0	$>10^{-3}$	High - not acceptable for military service during peacetime and for the population. It is necessary to implement measures to eliminate or reduce the risk.

Noncarcinogenic risk is determined by hazard index *HI*

$$HI = \sum_{j=1} HQ_j, \quad (3)$$

where *HQ* - hazard quotient of j^{th}-substance;

N - total number of hazardous substances.

$$HQ = ADD/RfD, \quad (4)$$

where *RfD* - reference dose, the value that characterizes the daily effect of the chemical during lifetime and probably does not put sensitive groups at health risk.

The average daily dose of *ADD* is determined from the equation (5),

$$ADD = \frac{(C_w \cdot CW_w \cdot EF_w \cdot ED_w) + (C_f \cdot CW_f \cdot EF_f \cdot ED_f)}{BW \cdot AT}, \quad (5)$$

where *C* - concentration of the chemical;

CW - quantity of drinking water and food consumed by a person per day;

EF - frequency of action, the number of days per year;

ED – action duration, number of years;

BW - average human body weight during exposure;

AT - averaging period of exposure in days.

Indexes «w» and «f» relate to drinking water and food, respectively.

Obviously, when calculating food consuming risk, we mean the additional risk caused by consuming products grown on the territory of the former missile base.

The territory of the former base is not used for agriculture, but locals pick up and consume wild berries and mushrooms.

The concentration of chemicals in food C_f is determined from the equation (6)

$$C_f = C_s \cdot UF_p, \quad (6)$$

where C_s - concentration of the chemical in the soil;

UF_p - factor of bioaccumulation of chemicals by plant from the soil.

UF_p values which borrowed from [5] are presented in Table 3.

Risk calculations were carried out separately for adults and children. Initial data are presented in **Table 3**. **Table 4** presents the results of calculations.

Table 3. Initial data for the determined coefficients of hazard and carcinogenic risks assessment

Parameter	Cu	Mn	Zn	Pb	Ni	Fe
C_w, mg/l	0.0042	0.089	0.024	0.00	0.093	5.20
C_s, mg /kg (dry mass)	56.7	4.75	26.45	280.3	12.8	21.34
UF_p	0.4	0.123	0.123	0.045	0.032	0.123
RfD chron., mg / kg	0.019	0.14	0.3	0.0035	0.02	0.3
SF, (mg /(kg ·day))$^{-1}$	---	---	---	0.047	0.91	---
	Children			Adults		
CW_w, l/ day	1			2		
CW_p, mg /(kg · day)	Berries– 35, mushrooms – 2			Berries – 35, mushrooms – 10		
EF_w, day	350			350		
EF_p, day	Berries – 90, mushrooms – 150			Berries – 90, mushrooms – 150		
ED, years	Children – 6			Adults – 30		
BW, kg	Children – 15			Adults – 70		
AT, day	Children – 2190 (6 years), carcinogens – 25550 (70 years)			Children – 10950 (30 years), carcinogens– 25550 (70 years)		

Note: The weight of food is given in dry mass per unit of human body weight [6]

Table 4. Results of determined coefficients assessment of hazard and carcinogenic risks from chemical contamination of soil and underground water sources

Parameter	Cu	Mn	Zn	Pb	Ni	Fe	Σ
Consumption of water from underground sources							
HQ (children)	0.05	0.04	0.01	0.00	0.30	1.11	HI = 1.47
HQ (adults)	0.0061	0.0174	0.0022	0.00	0.127	0.475	HI = 0.63
ICR (children)	---	---	---	0.00	4.64E-04	---	CR = 4.64E-04
ICR (adults)	---	---	---	0.00	9.94E-04	---	CR = 9.94E-04
Consumption of plants grown on polluted soil							
HQ (children)	1.70E-05	4.58E-06	1.38E-06	1.04E-06	8.35E-07	2.11E-05	HI = 0.0013
HQ (adults)	1.2E-03	4.0E-05	6.22E-06	4.01E-04	5.6E-05	9.0E-05	HI = 0.0018
ICR (children)	---	---	---	4.20E-09	6.51E-08	---	CR = 6.93E-08
ICR (adults)	---	---	---	2.83E-08	4.39E-07	---	CR = 4.67E-07

The above presented calculation shows that, from the toxicological point of view, underground water sources and plants grown in the soils of the former base, practically are not dangerous for people who consume them.

However, consumption of water from underground horizons has a significant carcinogenic hazard. The value of risk is within $10^{-3} – 10^{-4}$ and basically is unacceptable for the civilian population. It is clear that in a case like this it is advisable to conduct more complex probabilistic risk assessment since the environmental decisions, based on the results of deterministic evaluation, require additional expenditures on risk reduction.

2.2. Probabilistic risk assessment

While applying probabilistic risk assement, instead of point values of reference variables we use their probabilistic distributions, which are used as substitutions in the models for risk assessment. Thus, by employing the Monte Carlo method [7] we ultimately determine probability distribution of risk values. The Monte Carlo method suggests random selection of fixed values of the probability distributions of reference values and using them in models that form a decision. After a number of iterations you can build a distribution of desired value.

A probabilistic approach should include all components of the evaluation

process. However, in practice only the component of exposure assessment is usually employed, at least in assessing the impact of pollutants on human health. In this respect, it is recommended to use values *RfD* and *SF* as point values till receiving additional data [6].

Thus, to determine risk probability values (equation (1) and (3)), it is necessary to determine the distribution of the average daily *ADD* dose of chemical substances that enter a human body with drinking water (receiving carcinogens from plants grown in contaminated soil will be neglected). This can be done by substituting probabilistic values of reference values in equation (5) and determining distribution of *ADD* by the Monte Carlo method. Except for the concentration of a C_w chemical, other values are common physiological parameters of human body and for that reason surrogate data defined in a different place can be used. For example, according to [6]

$$ADD = (C_w \cdot IRW)/1000, \qquad (6)$$

where *ADD* - normalized per mass unit daily dose of a chemical mg / (kg · day);

C_w - concentration of the chemical in drinking water, mg / l;

IRW - normalized per mass unit amount of drinking water, consumed by person per day, ml / (kg · day).

It is estimated [6], that *IRW* has the form of lognormal distribution with parameters depending on the age of the person consuming water. Hypothesizing that the data scatter on the concentration of harmful substances in water has normal distribution and is defined only by time variability, equation (6) can determine the distribution of *ADD*, and equation (1) can determine the distribution of *CR*. Initial data for the lognormal distribution *IRW* are given in **Table 5**, and normal distributions of C_w are presented in **Table 1** (for each substance the values of the average concentration and its standard deviation are given).

Table no.5. The parameters for the lognormal distributions of drinking water consumed by person per day (*IRW*), ml / (kg · day) [6]

Age group,years	μ	σ	Lower limit	Upper limit
1-3	3.49	0.75	5.81	186.49
4-6	3.33	0.68	5.80	135.78
7-10	2.97	0.68	4.04	94.71
11-14	2.66	0.71	2.77	74.24
15-19	2.43	0.74	2.02	63.93
20-44	2.61	0.68	2.77	67.11
45-64	2.92	0.52	5.45	62.71
65-74	2.92	0.49	5.92	58.47
75+	2.88	0.50	5.61	56.84

μ - average value of the natural logarithm *IRW*; σ - standard deviation of the natural logarithm *IRW*.

Risk assessment was conducted for children aged 1-6 and for adults aged 20-75.

Modeling was performed using spreadsheet Excel® with adding superstructure Crystal Ball®. Graphically the distribution of risks is reflected in **Figure 1**. The same figure demonstrates the risk values while using determined risk values for children and adults (straight lines).

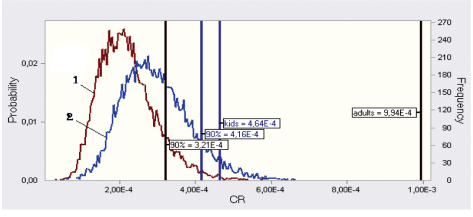


Fig. no. 1. Probabilistic distributions of cancer risk while consuming water from underground sources: 1 - children; 2 - adults.

From the figure it is clear that the use of deterministic exposure values gives rather too conservative risk assessment, especially for adults. More precise values are in smaller quantities. It is possible to state that for 90% of children, consuming water, risk value

does not exceed $4{,}16 \cdot 10^{-4}$, for 90% of adults $3{,}21 \cdot 10^{-4}$.

3. CONCLUSION

Probabilistic risk analysis provides additional, more accurate information for decision making about the application of environmental protection measures. Often it enables to decrease expenses for conducting these measures.

REFERENCES

[1] KUSTROVA, M.: Nature Conservation Projects In Military Districts. / Journal of Defense Resourses Management. – 2014, V.5, № 1, P. 105 – 112.

[2] Human and Ecological Risk Assessment: Theory and Practice// Dennis J. Paustenbach (Ed.). - New York, NY: Wiley, 2002. - 1586 p.

[3] OREL, S., IVASCHENKO, O. Ecological safety management of forces through ecological risk assessment. / Science & Military. - 2014, V.9, №1, P. 42-46.

[4] NADTOCHIY P. et al. Problems of rehabilitation of the ground-landed resources of the Zhytomyr region, contaminated by military activity. // General ecology and agroecology. - 2009. - N2. - P. 3-32. (in Ukrainian).

[5] EPA 530-D-99-001C. Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities. V.3. - Washington, DC, 1999. - www.csu.edu/cerc/ researchreports/documents.usWasteCombustionFacilitiesVolume3.pdf.

[6] EPA/600/R-09/052F. Exposure factors handbook. - Washington, DC, 2011. - http:// www.epa.gov/ncea/efh.

[7] SOBOL I.M. Method Monte-Carlo/ Moscow: Nauka, 1985. - 80 pp. (in Russian).

RELATIONAL APPROACHES REGARDING FOCUSED LOGISTICS IN MODERN WARFARE JOINT OPERATIONS

Gheorghe MINCULETE*
Polixenia OLAR**

* Colonel, PhD in Military Sciences, professor at the Logistics, Finance and Accounting, Department, "Carol I" National Defence University, Bucharest, Romania
** Teaching Assistant, PhD, English teacher at the Joint Operations, Strategic and Security Studies Department, "Carol I" National Defence University, Bucharest, Romania

The military joint operations of the future are characterized by large concentrations of forces and conventional means on the directions that permit the exploitation of the technological superiority and the manifestation of the offensive spirit of the commanders of the joint operation force groups. Having in mind the fact that the relation between the combatant forces and the logistic ones will shift more and more in favour of the latter, the aforementioned operations will be usually supported by modern flexible logistic structures.

The constituted force groups will have a significant joint force character, ensuring superior quality of the troops' combat training, both at individual level and collective level of units and large units. The current article presents innovative aspects of focused logistics, adapted for the modern warfare, which should be designed and achieved in order to increase the operational potential of the joint force groups.

Key words: *security environment; modern battlefield; forces transformation, anticipatory distribution based logistic system; focused logistics; planning of focused logistics; Sense and - Respond Logistics.*

The current evolutions in the international security environment bring to the attention of the NATO member countries' armed forces new challenges and dilemmas. Nowadays it is necessary to ensure an optimum balance between the need to have well prepared and modern forces, the growing number of complex missions and the increasingly limited resources available.

The transformation of the armed forces will also modify the manner in which the wars of the future will be waged. Military specialists see this transformation as a process of re-thinking of the priority objectives and structure of the armed forces, from the model adopted during the Cold War to a new type of forces capable of carrying out a growing spectrum of missions and of assuring the success of joint operations. This requires not only new technologies, but also changes at the doctrinal level, a new philosophy of training, command and organizational structure, the increase of the degree of availability of equipment and facilities and, last but not least, well trained military personnel in new fields [1].

Logistics, together with strategy and tactics, will still continue to define in the future the decision making process of the joint military actions. Commanders will continue to hold responsibility for the build-up, support and engagement of combat forces, while logistics will play a major role in the act of command through the creation and support of armament and force systems that will be engaged at tactical level for the achievement of strategic objectives.

The fundamental logistic processes that contribute to flexibility in the military strategy are those involved in the generation process of military power, the implementation of military force, as well as the support of it.

The War in Iraq from 2003 emphasized the characteristics of the military operations of the future, demonstrating at the same time many of the limitations of military logistics. The logistics of modern armies were adequate and constitute an answer the necessities of a conflict according to the scenarios of the Cold War, but it no longer matches the military operations specific to the era of information superiority. It thus results that the logistic system of modern forces is and will be in this century more and more flexible, agile and adaptable, just like the forces that it supports.

The need to be able to manage the changes and their results on the modern battlefield has led the US Defense Department Joint Vision 2020. The document states that the main objective is to attain information superiority that will provide knowledge superiority to the joint force and lead to decision superiority for the entire duration of the conflict. Among other concepts, at the origins of the Joint Vision 2020 we can also find the concept of Focused Logistics.

The new reality of the security environment made the US government initiate three new initiatives of force transformation: 1. Network-centric warfare; 2. Sense and Respond Logistics; 3. Transforming Military Culture [2].

The traditional concepts of *manoeuvre*, *strike*, *protection* and *logistics* are augmented by the information superiority provided through technological innovations, to produce improvements that are potentially so drastic that they can become, in fact, new operational concepts. As shown in Figure 1, these continuously evolving operational concepts appear as follows:

- *Dominant Manoeuvre* – the multidimensional application of information, engagement and mobility capabilities in order to position and engage the common air, sea, land and space forces that are dispersed to carry out the assigned operational tasks;
- *Precise engagement* – a system of systems that permits our forces to locate the objective or target, assures the adequate command and control, generates the desired effect, evaluates our level of success and retains the flexibility to precisely re-engage when necessary;
- *Multi-dimensional protection* – the multi-layer offensive and defensive capacity to protect own forces and facilities against all levels of enemy attacks, maintaining at the same time the liberty of action during deployment, manoeuvre and engagement;
- *Focused logistics* – the fusion of information, logistics and transport technologies in order to provide rapid crisis response, to track and change goods, even during shipping, and also to provide personalized logistical packages and support directly at the strategic, operational and tactical levels of the operations [3].

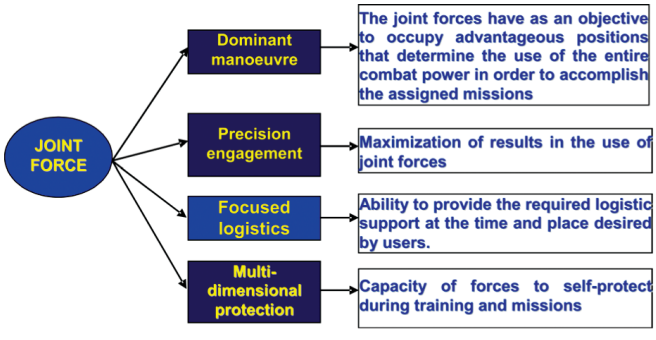


Fig. no. 1. Operational concepts applied by the US Military

The process of the armed forces modernization requires the use of high-tech armament systems and munitions that equal or surpass those of the competitors in the following key areas: tanks require a high level of fire power, mobility and reliability; combat aircraft require long flying range, large payload, superior avionics and high manoeuvrability; war ships will have to be able to survive in a hostile environment, to independently face a large array of threats and to effectively use their fire power at large distances.

From an operational point of view, the necessity to effectively accomplish the assigned missions by the joint forces led to the creation of modular military organizations, represented by a sufficient number of more flexible large units (combat and logistic support units) that will permit the planning and creation of force packages of an adequate size for a timely and efficient deployment and engagement. This fundamental objective entailed the transformation of the joint military forces manner of action and structure, through the integration and close connection between *information*, *operations* and *logistic* structures, whose actions are focused on *supporting the materialization of the commandant's conception*. The result is the need for the theoretical-applicative use of focused logistics, which requires sustained anticipative and proactive logistic support actions.

In modern warfare, *focused logistics* represent an operational concept of the US armed forces. It represents the fusions of information, logistics and transport technologies to ensure a rapid crisis response, to rapidly track and change the destination of the necessary quantities of materials and means (even during their shipping), to deliver to the beneficiaries quantities and categories of materials that are adapted to their concrete situations and to ensure direct support directly at strategic level, as well as at the operative and tactical levels of the military actions.

Based on the experience of recent conflicts, the requirements of network centric warfare evidently emphasizes the necessity to develop in optimum conditions the focused logistics that will permit the adequate support of the forces engaged in joint military operations, as well as the optimum process of rapid response force projection in operation theatres / areas with a duration of notification significantly smaller than at present.

Thus, *focused logistics represent the capacity to ensure the logistic support necessary to large units and units from the structure of a group of joint forces, which consists of adequate personnel, resources and equipment at the required location, time and in the required quantities*, during the participation in various military actions in the theatres/ areas of operations.

Focused logistics is the one that answers the complex logistic support requirements, adequate to the conditions of the modern battlefield. It represents a complex and difficult process, due to the rapid change of the operational situation and the effects determined by the technological potential of the new destruction capabilities. From this point of view we should underline the positive effect brought by: the new information technologies; the growing strike accuracy; the large scale usage of air manoeuvre and transport platforms; standardization; low consumption of fuels and lubricants; the use of evolved systems of monitoring of supply stocks, as well as the technical state of major equipments; the significant reduction of the size and weight of vehicles, sensors and armaments; the smaller crews; reduced in size operational and logistic support structures; the use of drones; the shift to electric vehicles etc.

All these technological achievements permit and facilitate: the simplification of re-supplying with materials and services specific missions; the reduction of the size of stocks as a consequence of the reduction in material consumption; the significant growth of the movement, transport, storage and maintenance capacity; the replacement of slow and hard to manage logistic support structures and systems.

In the same time, digitalization and automation of the operational logistics

domains can determine an increase of the vulnerabilities' level, which requires supplementary risk management measures in order to provide an opportune, effective and efficient logistic support of forces for the achievement of missions, according to the requirements of the stages of joint actions [5].

In order to establish adequate response options to the current and future challenges and threats to global security, both US and NATO forces act at strategic, operative and tactical levels in the following directions: full knowledge of the situation; obtaining of superiority in all domains, in order to support the intentions of the commanders; adaptation to new situations; the supply of the necessary logistic packages, focusing on speed versus quality and on effectiveness versus efficiency; analysis and valorisation of simultaneous solutions, locally optimized, globally anticipated and expected, in rigorous accordance with: the intentions of the commanders, the strategic, operational and tactical situation, the battlefield and the abilities of the forces; logistic support decision making adapted to and in full awareness of the situation; gathering, analysis and adequate reaction to new experiences and lessons learned; the management of force capabilities and the achievement of a proactive logistic support, adapted to the intentions of the operational commanders; autonomous and one-to-one demand and supply, automated supply, agile procurement [4] **(Figure 2).**

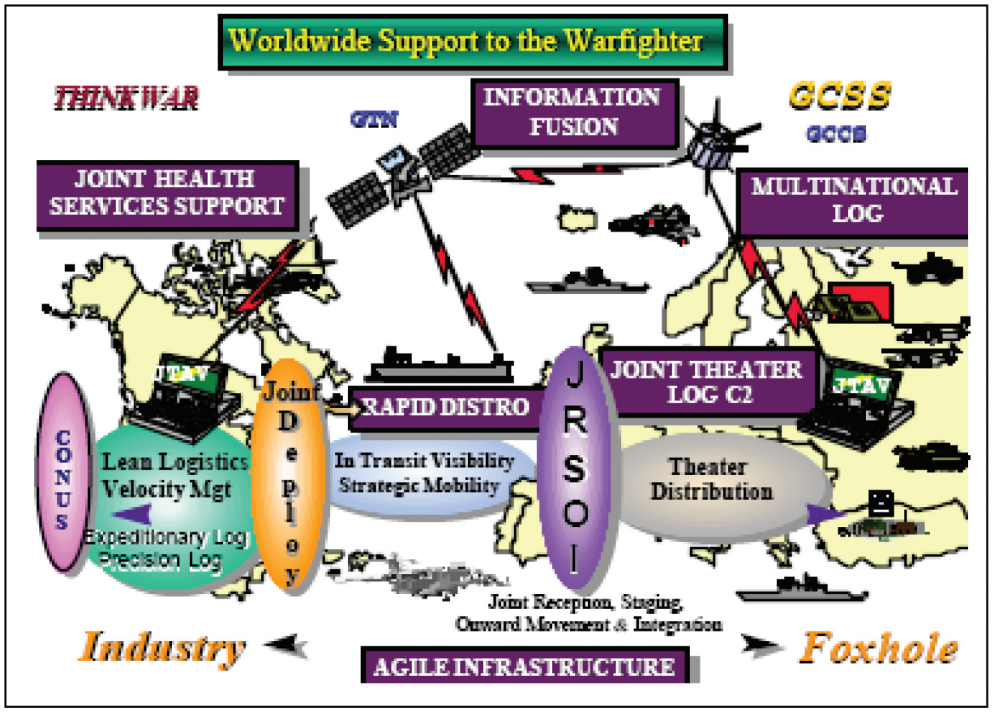


Fig. no.2. Focused Logistics Approach [3]

The aforementioned requirements can be supported by operational examples from the wars waged in the Persian Gulf. Thus, if during the 1991 Iraq War it took two days from the moment a target was detected to the moment when troops were sent to destroy it, in 2003 this procedure took approximately 20 minutes and it is anticipated that will take less than one minute in the future.

From the same perspective of the rapid evolution of information

technology, we can mention that in 1991, 500,000 soldiers had at their disposal an information transfer capacity of 100 megabits per second. In 2003, 350,000 soldiers reached objectives a lot more rapidly, thanks to the growth of the transmission rate to 3 Gigabits per second, which is a 30 fold growth.

The superior military technological developments of the recent years determined important previsions for the future, thus being estimated that in the first minutes from the beginning of hostilities a number of over 500 strategic targets could be destroyed.

All these examples imply adequate logistics, being in continuous development, as a consequence of the rapid evolutions in the operational, technical and economical domains. Thus, modern technology and procedures will continue to act in the future as major transformation elements in the domain of focused logistics.

In these circumstances, the following trends will gather way: the *military and economic transformations* will determine a change in the logistic managerial business practice itself (as a result of the growth in forces' missions complexity, and of the availability of resources and business practices); the *technological changes and the improvement of the information management* will allow IT logisticians to shorten de decision making process and to solve the problems specific to focused logistics in shorter time [7]; the application of modern management concepts, procedures, methods and techniques will bring about focused, flexible and real time logistic flows [4].

Focused logistics emphasizes those essential elements that effectively envisage: flexible and agile acting organizational structures, with logistic support development capabilities - which permits the deployment into the theatre of military operations of smaller logistic organizations with well defined missions; ongoing logistic operations, flexible and adapted for optimum support, from supply / re-supply sources to end consumers; the use of very mobile movement and transport means, which could be rapidly relocated, recovered and redeployed, regardless of the state of the infrastructure in the theatre / area of joint operations; the capacity to make accurate logistic analysis or estimates and to clearly identify all forces and means through the available sensor system (location, state, configuration, tracking etc.); to compile records from the national and international trading organizations to evaluate and determine the available capabilities which ensure to resources involved in the supply / re-supply processes, as well as the services they offer [4].

According to these, in order to reach superior level of support performance, focused logistics requires superior (improved) transportation capabilities and a wide array of other technological innovations, doubled by computerized command, control and communication system and structures, which will substantially modify the traditional logistics. The ability to know precisely where each person, logistic item or unit is in real time, through the creation and use of a system of sensors specific to network centric warfare, will permit precise knowledge with regard to the exact situation of the logistic support and of the state of specific flows. This level of knowledge will ensure the degree of flexibility and the speed of reaction necessary to the forces that will be supported.

The magnitude, complexity and rapidity of military actions specific to modern warfare require that forces be ready to deploy or re-deploy at any moment, in order to be able to face threats and challenges through the creation of modular operational structures. In these conditions a shift in the functions of logistics takes place from those specific to rigidly vertically structured organizations to those modularly integrated, adequate to flexible support systems. Thus, the structures within the integrated logistic systems should be proactive, and provide opportune logistic support necessary to joint forces for the full accomplishment of their operational missions. To this end, an effective management is ensured by the information subsystems of the logistic modules (S4, A4, N4, G4, J4),

which represent the components of the group of joint forces' command and control system.

At the same time, the management and execution logistic structures will have closer links and will cooperate more with the commercial companies, in order to apply and benefit from their advanced business practice, supply and distribution processes, and material management programs as well as from the specific economic networks and flows.

According to the requirements of modern warfare, focused logistics primarily requires adequate *planning*. Having this aspect in mind, operational planning will be continuously improved, so that the information systems specific to logistics will be able to effectively ensure and support the planning process of the joint forces' missions. The new information systems will be designed in such a way as to be able to generate logistic estimates, precise and rigorous alternatives, and also the transposition of the operation concept (at strategic, operative and tactical levels) directly in logistic terms [8] (**Figure 3**).

High technology and accurate armament systems increase the lethality and efficiency of operational forces and decrease the demand for a very developed logistic infrastructure. Automated sensors embedded in the logistics networks diagnose the state of their own system, when the concrete situation calls for that. To this end, according to the speed of the actions, the stockpiles of the combat structures will also have to undergo rapid re-deployment. This should be much better achieved through the usage of a system of sensors that will permit both the permanent visualization of the needs for logistic support, the continuous movement of resources, and the predicted later deployments toward the areas of interest.

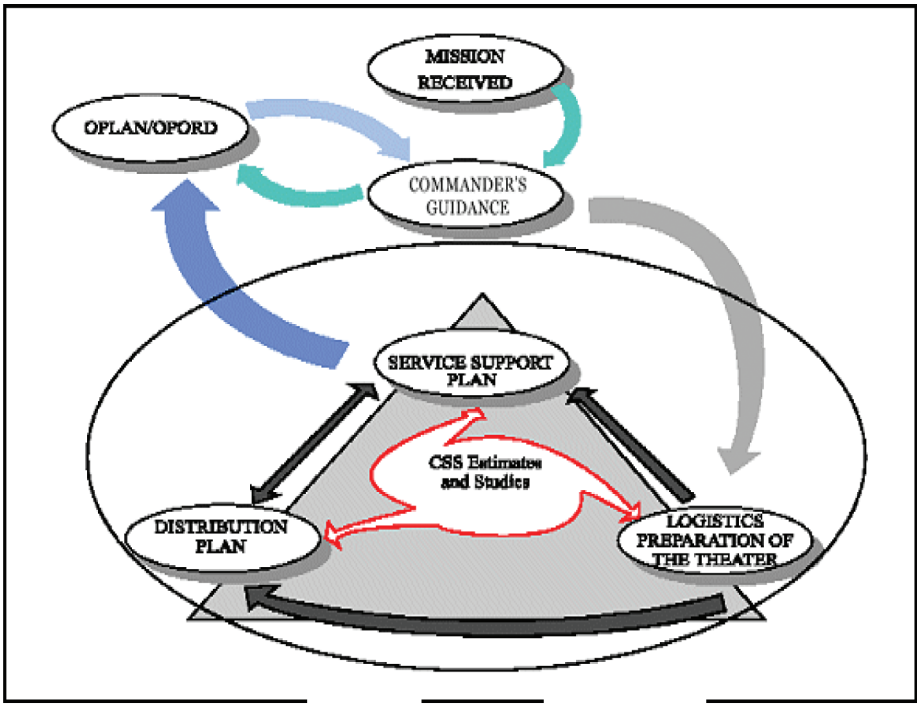


Fig. no. 3. Logistics Focused Planning [8]

At present, modern armies experiment the so-called "anticipatory logistics" concept (for oil products, munitions and maintenance), which is in fact, logistics focused on real consumption needs. This concept uses technologies, information systems and procedures designed to foresee and establish fundamental priorities in order to be able to ensure an adequate logistic support according to actual consumption [9].

The continuous modernization of logistics will also determine the reduction in the size of the forces and means deployed for the preparation and waging of joint operations and in the same time a growth in their efficiency, the reduction of the dependency of combat forces on slow and unreliable logistic systems in order to ensure continuous operativeness regardless of the weather [10]. To this end, focused logistics will have the following objectives: to *standardize logistic techniques and procedures*, both in the military and in the civilian / commercial field; to obtain *real time information on stockpiles*; to *minimize the waiting time of the consumer*; to *correlate military and commercial efforts in the field of supply – distribution chain management* [11].

The sensors mounted on the combat and on the support equipment ensure the monitoring of the stockpile levels, their exact location within every unit, the state of the equipment, etc. and they transmit these data to decision makers of the field of logistics. Knowing the situation of operational logistics at a certain moment, in greater detail will allow decision makers to be able to better configure the re-supply demands. They will use the new evaluation instruments of focused logistics, such as: *extended diagram*, *automated testing* and *data analysis and processing means*, in order to provide combat and support forces with more efficient logistic support by using fewer means [12].

On the basis of the facts presented above, it results that focused logistics require that logistic structures - that are part of combat (or about to be operational) large units and units, as well as of logistic support ones, to be organized in a modular manner and be capable to support the components of the joint force according to the operational requirements. The size of these structures will be related to the specific of the theatre of operations and the assigned mission, so that their configuration could be modified in order to satisfy the logistic support requirements.

Focused logistics is part of an efficient logistic system established to provide anticipative and distribution based logistic support that will have to ensure: *effective information management; adequate operative/„readiness" level of management; efficient and effective management of the supply – distribution chain; management of logistic capabilities in accordance with the existing logistic support requirements*.

As a fundament of focused logistics, the concept of Sense and Respond Logistics requires the existence of adequate abilities in the fields of information gathering and usage. This allows the military command and control system, as well as the operational activities associated with it, to dynamically adapt to the continuous evolution of the conception of the commander, to the strategic, operational and tactical situation, to the environment and to the continuous change of the force ability, capabilities and logistic resources.

The technological progresses related to the information era, especially those that ensure superiority in joint actions, will also give consistency to the concept of focused logistics and the capabilities needed to force projection and force support anywhere in the world, in any type of military operation.

It is obvious that, in order to cope with the existing realities and tendencies in the development of modern weapons, specialists claim that focused logistics must be in a continuous process of transformation and adaptation. But it is only through perseverance (in the direction of obtaining maximum advantages from the economic realities of the civilian environment) that we will achieve success in harmoniously mix them with the requirements specific to the military sector. In this way we will

shape the future logistic and support missions for the forces participating in operations, both on national soil and also in foreign external operations.

In conclusion, the necessity to continuously transform the military structures within the joint forces, according to the requirements of the war of the future, demands important modernizations. For attaining the requirements of focused logistics, an extremely complicated and gradual endeavour is needed, which call for adequate actions and changes from a conceptual and action point of view.

REFERENCES

[1]William Grisoli, "*Army Transformation*" Department of the Army Transformation Office, Carlisle: U.S. Army War College, February 2002.

[2] Joint Vision 2020. *Conduct of Joint Operations (Operational concepts),* pp.20-25.

[3] Joint Vision 2010. Chapter II: Vision and Strategy, p. II-1.

[4] COL Michael W. Snow (2011), *Focused Logistics: Putting Agility in Agile Logistics (A Monograph*). School of Advanced Military Studies United States Army Command and General Staff College Fort Leavenworth, Kansas, pp.31-35.

[5] Sava Postolache, Gheorghe Toma, Ioan Oros, *Managementul instabilității*, Editura Academiei de Inalte Studii Militare, Bucureşti, 2003, p. 241.

[6] Joint Vision 2010. *Focused Logistics. A Joint Logistics Roadmap*, p. 5.

[7] MC 0319/3 *NATO Principles and Policies for Logistics*, 2014, p. 9.

[8] FM 100-10-1 Theater Distribution, Chapter 5: *Distribution Management and Planning,* Section III. - *Distribution Planning*.

[9] Major Joshua M. Lenzini (2002), Anticipatory Logistics: *The Army's Answer to Supply Chain Management***,** USA.

[10] *Strategia de Transformare a Armatei României, Bucureşti*, 2007, pp. 25-26.

[11] Shoshanah Cohen, Josep Roussel (2004), *Strategic supply chain management*, Amazon com. pp. 37-41.

[12] Dr. Kristine Lee Leiphart (2001). *Creating a Military Supply Chain Management Model*, USA, pp. 72-75.

A CYBERNETICS APPROACH TO THE SOVEREIGN DEBT CRISIS

Alexandra Maria CONSTANTIN

Bucharest University of Economic Studies, Faculty of Cybernetics and Statistics, Bucharest, Romania

The purpose of this paper is to approach the sovereign debt crisis from a cybernetics perspective, as a system that includes several interrelated subsystems. We emphasize the dynamic nature and sustainability of the sovereign debt system. The paper also discusses the transition from a sovereign debt dynamic system to a sovereign debt crisis dynamic system, transition included in the feedback control loop of the dynamic system of national economy.

Key words: *sovereign debt crisis, cybernetics approach, dynamic system, national economy, feedback.*

JEL Classification: C22, H63, P4.

1. INTRODUCTION

The systemic approach to the national economy through the dynamics, feedback and self-regulation of internal mechanisms is determined by the multidimensional complexity of the micro, meso and macroeconomic systems, which are adjusted through macroeconomic policies.

Starting from the widening strategy of covering budget expenditures by making loans, sovereign debt is one of the tools which irreversibly influence the internal and external behavioral trajectories of the economic system, thus causing the economic system's response to internal and external changes.

The cybernetics of sovereign debt crisis requires a comprehensive approach, which should be framed into the macroeconomic system. The system corresponding to sovereign debt is composed of complex elements. These elements are interdependent (e.g. debtor-creditor relations, the amount borrowed, contractual terms, balance of payments etc.) and work together to achieve the desired objective (namely, covering the budget deficit).

2. THE DYNAMIC SYSTEM OF NATIONAL ECONOMY

The National Economy System (NES) is defined by the characteristics of a Complex Adaptive System (CAS). The study of processes within the national economy system is carried through aggregated indicators that comprise "flows and levels of connections and interdependencies" between the subsystems of the national economic system [1] (Scarlat & Chiriță, 2012).

3. THE DYNAMIC SYSTEM OF BUDGET DEFICIT FINANCING

Sovereign debt - a regulating instrument in the feedback mechanisms

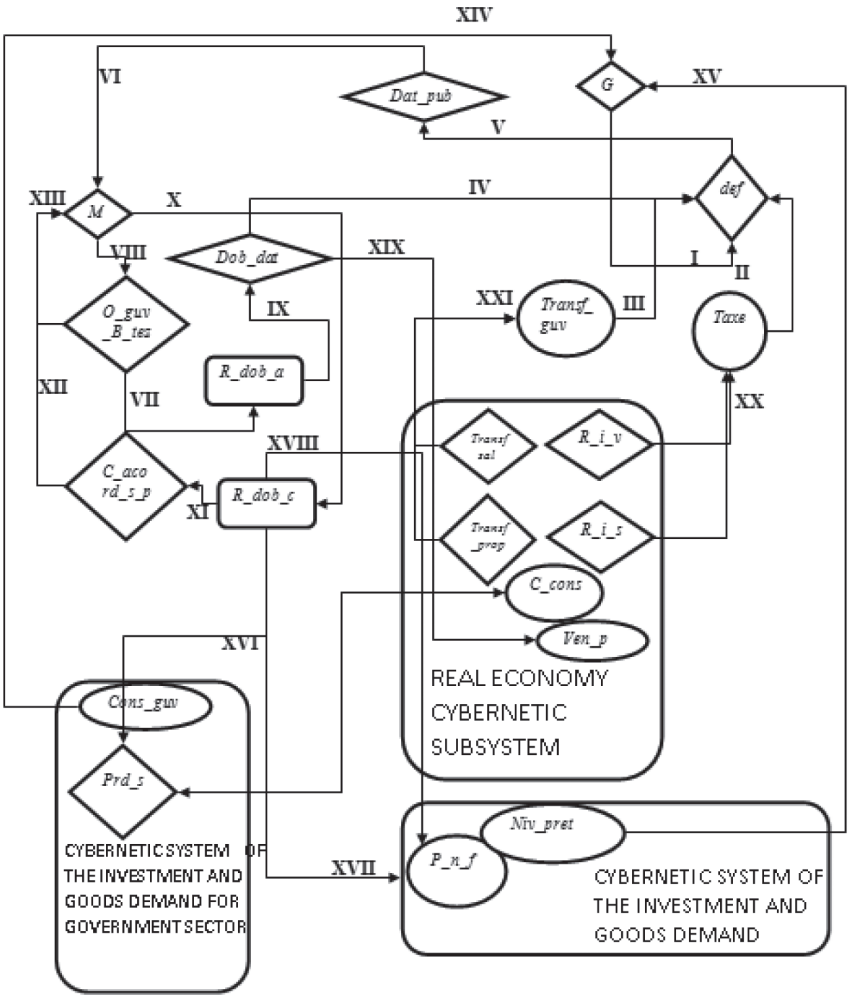


Fig. no. 1. The processes of budget deficit financing

for financing the budget deficit - requires a brief presentation of the budget deficit, according to [2] Scarlat (2005). The relationship defining the budget deficit is:

$$Def_t = Bud\_rev_t - Bud\_exp_t \quad (1)$$

where:

Def_t - The budget deficit at time t;

Bud_rev_t - Budget revenue at time t;

Bud_exp_t - Budgetary expenditure at time t;

The constituents of the process of budget deficit financing (**Figure 1**) are:

M – money supply;

O_guv_B_tez – is the value of government bonds and treasury bills;

C_acord_s_p – are the loans to the private sector;

Dob_dat – is the interest paid on public debt;

R_dob_a – is the interest rate on government assets level;

R_dob_c – is the interest rate on loans to the private sector;
Cons_guv – is the government consumption;
Prd_s – is the production volume stored;
P_n_f – is the net profit in the companies / businesses;
Niv_pret − the level of prices;
Ven_p − is the income from property;
C_cons − is the demand at consumers level;
Transf_prop − represents the money transfers directed to owners;
Transf_sal – represents the money transfers directed to employees;
R_i_s – represent the property tax rate;
R_i_v − represents the income tax rates;
Transf_guv – represens the government transfers;
Taxe − represents volume of the taxes and the duties;
def – is the value budget deficit;
Dat_pub – is the volume of public debt;
G – is the the volume of government spending.

Starting from the systemic approach of sovereign debt, it results that the Real Economy Cybernetic Subsystem is influenced through government transfers, taxes and duties. Moreover, a positive budget deficit will induce the rise of public debt, while a negative budget deficit will induce a decrease in public debt.

If the debt can be fully exchanged in coins, the volume of available money supply would exceed the values of CTD (current transactions demand), SMD (speculative money demand) and SD (security demand). At the same time, governmental strategies are oriented to achieving loans - whose aggregate value would amount to the total value of government bonds and treasury bills – relationship included in relationship (VIII). The interest rate for government assets (*R_dob_a*) is what determines the amount of interest paid on debt related (*Dob_dat*), conditioning shown through relationship (V). There also is an inverse relationship between the volume of money supply (*M*) and the

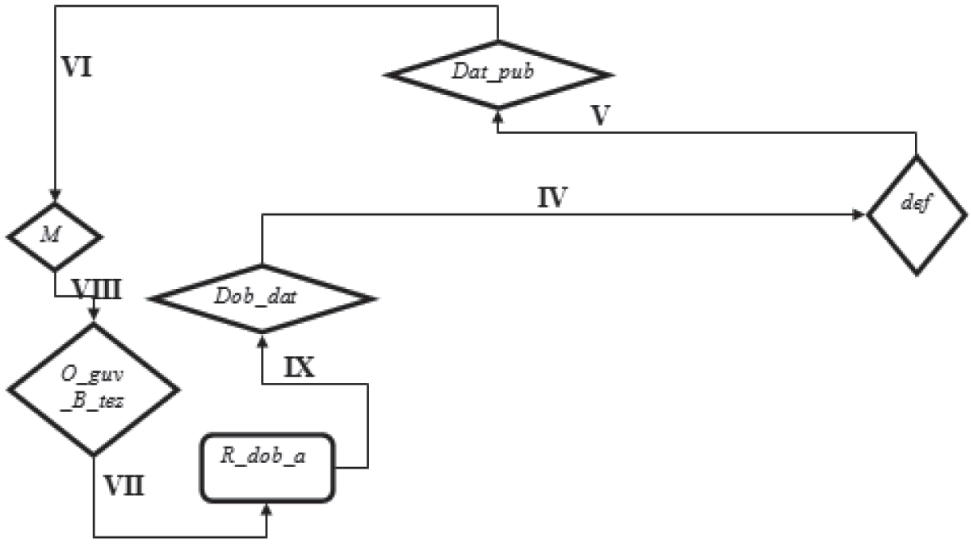


Fig. no. 2. The basic feedback loop formed at the level of the budget deficit financing system

value of government bonds and treasury bills (*O_guv_B_tez*), as emphasized by (XIII). On the other hand, *O_guv_B_tez* influences the value of the interest rate on government assets (*R_dob_a*). The volume of money supply (*M*) is strongly influenced by the level of loans granted to the private sector (*C_acord_s_p*), as evidenced in relationship (XII). Relationships (X) and (XI) highlight the inverse proportionality between the money supply (*M*) and the interest rate on loans to the private sector (*R_dob_c*) and respectively, the direct proportionality between *M* and the level of loans granted to the private sector (*C_acord_s_p*), An increase in the interest rate on loans to the private sector will lead to a diminishing consumption value. According to relationship (XVII), a significant interest rate on loans to the private *sector* (*R_dob_c*) will lead to a decrease in the net profit of companies (*P_n_f*).

The Monetary Economy Sistem (MES) affects the path of the Real Economy System (RES). But RES also has a major impact on MES, a phenomenon highlighted by relationships (XIV) and (XV), through government consumption (*Cons_guv*) and prices level (*Pr_lev*).

The basic feedback loop formed at the level of the budget deficit financing system is presented in figure 2. Therefore, the feedback loop presents in its structure reverse connections between its constituent elements. A growing trend in the annual budget deficit (*Def*) leads to an increased public debt (*Dat_pub*) and also to an increased risk of rising government debt. An increase in the volume of public debt leads to the need for a greater money supply and also to an increased volume of government bonds and treasury bills transactions (*O_guv_B_tez*), increasing the value of stock assets. Reducing the value of the interest rate on government assets (*R_dob_a*) - which is induced by the increased value of stock-type assets - determines a diminished value of the interest paid on public debt (*Dob_dat*). Subsequently, the feedback process reaches the starting point and ends with a diminished budget deficit. A negative status of the feedback loop designates the interrelation between money supply (*M*) and public debt (*Dat_pub*), in order to optimize the covering of budget deficit.

4. THE DYNAMIC SYSTEM OF SOVEREIGN DEBT AND ITS SUSTAINABILITY

According to Albu [3] (2008), the equation of budget constraints is considered the starting point for studying the dynamics and sustainability of sovereign debt and looks as follows:

$$\Delta dat = (\rho_t + r_t) dat_{t-1} + def_t + fin_t \qquad (2)$$

where:

$\Delta dat = dat_t - dat_{t-1}$ – the difference between government debt at time *t*, Dat_t, and government debt at time *t*-1, Dat_{t-1}.

r_t – the average nominal interest rate on public sector debt, at time *t*;

ρ_t – the coefficient of the revaluation effect of public sector debt at time *t*;

def_t – the primary deficit at time *t*, expressed as a percentage of GDP;

fin_t – the direct budgetary funding from the Central Bank at time *t*.

Optimizing the budget constraint equation implied dividing relationship (2) to the nominal rate of GDP, yielding to:

$$\Delta dat = def_t - fin_t + \frac{dat_{t-1}(\rho_t + r_t}{1+n_t} \quad (3)$$

where:

n_t – is the nominal growth rate of GDP in period *t* to *t*-1.

The nominal GDP growth rate will be regarded as the sum between the changes produced in the GDP deflator (*defl*) and the real GDP growth rate [4] (Albu, 2008). Equation (3) becomes:

$$\Delta dat = def_t - fin_t + \frac{dat_{t-1}(\omega_t - g)}{1+n_t} \quad (4)$$

where:

g_t – the real growth rate of GDP in period *t* to *t*-1.

w_t – the average real effective interest rate on public sector debt.

The iterative resolution of relationship (4) determines the dynamics of debt accumulation. We therefore have:

$$dat_{T=} dat_0 \lambda_T \sum_{j=1}^{T-1} (def_j - fin_j)\, \lambda_{T-j}$$

where: $\lambda = \frac{1+w+defl}{1+defl+g}$;

$defl$ – the GDP deflator.

A positive real growth rate of GDP induces a decreasing debt ratio in GDP.

Sustainability requires complying with the system limitations, which implies maintaining its continuous functionality to acceptable levels. Controlling the impact of economic activities upon the micro and macroeconomic policies in order to optimize the structuring and implementation of adequate policies is a good example in this direction.

According to Albu [4] (2008), the function expressing the sustainability of the sovereign debt dynamic system is:

S=((def-fin)/dat)+((w-g)/1+g+defl) (5)

where: *def* – is the he primary deficit as a percentage of GDP;

fin – direct budgetary funding from the Central Bank, relative to GDP; *w* – is the effective average interest rate on real public sector debt; *g* – is the real rate of GDP growth in the current time against reference period *defl* – is the GDP deflator; *dat* – is the government debt.

The first order condition of the sustainability function implies that relation (6) will converge to zero in dynamics or towards an infinitesimal constant amount. The switching from dynamic system of sovereign debt to the dynamic system of sovereign debt crisis is comprised in the control of the feedback loop, represented in **Figure 2** by the governmental risk of not being able to honor its term obligations towards foreign creditors, banks, etc. When this risk intensifies, the connections at the NES level change and, for a quick adjustment, NES will suffer major shocks, reflected in the harsh austerity policies adopted at the level of banking, government spending etc.

REFERENCES

[1] Scarlat, E., Chiriță, N. (2011-2012). *The cybernetics of national economy, Chapter 1: Structure and properties of the national economy as a Complex Adaptive System* (academic course), Faculty of Cybernetics, Statistics and Informatics, University of Economic Studies, Bucharest.

[2] Scarlat, E. (2005). *Cibernetica sistemelor macroeconomice reale, Capitolul 5. Structura şi funcţionarea Sistemului Cibernetic al Economiei* Reale,

ISBN: 978-973-709-183-3, p. 163, Editura Economică, available at: http://www.biblioteca-digitala.ase.ro/biblioteca/pagina2.asp?id=cap7, last accessed: 24.07.2014

[3] Albu, L.L. (2008). *A simulation model of public debt sustainability*, MPRA Paper No. 11713, University Library of Munich, Germany.

[4] Contessi, S. (2012). *An application of conventional sovereign debt sustainability analysis to the current debt crises*, Federal Reserve Bank of St. Louis Review, 94(May/June 2012).

[5] Constantin, A.M., Cristea, A. (2015). *Analysis of the macroeconomic causal relationships which can determine a country to enter a sovereign debt crisis*, 14th International Conference on Informatics in Economy, IE 2015, Proceeding of IE2015, ISSN: 2284-7482, pp.428-431, ISI Proceedings.

[6] Molănescu, G., Aceleanu, M.I. (2011). *Consecinţele deficitului bugetar în România în contextul crizei actuale. Implicaţii asupra pieţei muncii*, Economie teoretică şi aplicată, vol. XVIII, no. 2(555), pp. 58-74, available at: http://store.ectap.ro/articole/556_ro.pdf, accessed 22.07.2014.

[7] Online cybernetics course, available at: http://cyberproiect.3x.ro/, last accessed 25.07.2014

ACKNOWLEDGEMENT

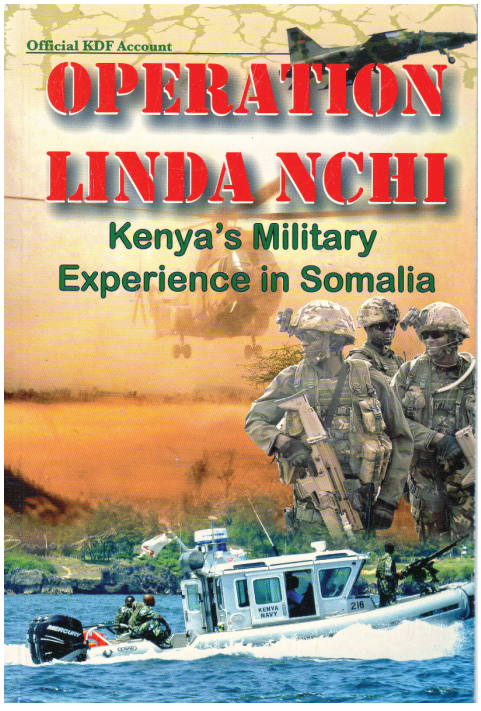
Part of the information presented in this paper is also found in the author's doctoral thesis entitled "Sovereign debt crisis – a complex approach".

BOOK REVIEW
OPERATION LINDA NCHI
An insight into the art of modern warfare

Kenya Defence Forces
Publisher: Kenya Literature Bureau (KLB)
Number of pages: 304
Year of publication: 2014

REVIEWER:
SGT (REV) ELIJAH ONYANGO STANDSLAUSE ODHIAMBO
Kenya Military Academy (KMA), Ministry of State for Defence (MOSD) and Dept. of Peace and Conflict Studies (PCS) Masinde Muliro University of Science and Technology

The Operation Linda Nchi conducted by Kenya Defence Force (KDF) in 2011 resonates as one of the landmarks in the fight against global terrorism. Advocates of the statist approach to war would applaud this event. They argue that terrorist acts by Al-Shabab constitute acts of war since they violate domestic and international law. The cosmopolitan approach in addressing terrorism subscribes to the view that terrorism is a criminal act that requires a multilateral and multifaceted approach within the tenets of International Law. Operation Linda Nchi is documented in a 16 chapter book that is described as "a systematic and holistic account of the KDF operation in Somalia starting from the entry into Somalia on 14 October 2011 up to the rehatting of Kenyan troops to be part of the Africa Union Mission in Somalia (AMISOM)."



This book, the first one of its kind in Kenya, not only provides a clear account of how KDF carried out its war in Somalia, but also provides detailed perspectives into the art of modern warfare. It resonates well with the current times and provides "valuable and unique lessons for world militaries fighting against "faceless enemies" waging asymmentrical wars across the globe." The book offers an in-depth insight into how KDF responded to the violation of Kenya's sovereignity through employing both the

statist and cosmopolitan approaches in the fight against terrorism.

Described as one of its kind in Kenya, the book "gives a unique, inside view of KDF and what they are capable of doing". It provides clear lens through which security analysts, scholars, and the general public may understand the events that unfolded in the fight against Al-Shabab. The strategies used and *modus operandi* have been well articulated, making it suitable as a handbook or manual for use in training on how to deal with non-traditional security threats. As one delves into the book, it is apparent that the triumphal note which pervades its pages is justified. KDF succeeded in the harsh, uncertain, highly volatile and dangerous Somalia context, a country which has been without a central government since the fall of the Siad Barre government in 1991. This unexpected success astounded the world and established KDF as a highly effective war machine.

Terrorism has emerged at a time when society is characterized by increased complexities and rapid change. In the first part of the book, the reader is introduced to the concept of "a just war", more specifically *jus ad bellum* and *jus in bello*. It provides historical and security reasons to demonstrate that Kenya did not enter Somalia as an occupational force. A holistic account of the events leading to the operation is given and justifications for intervention are discussed. Under International Law, states are accorded the right to use military force in self-defense when all other efforts have failed. In the contemporary international system, state survival has been threatened by emerging terrorist organizations (non-state actors). The authors show how Kenya fell victim to Al- Shabaab attacks that threatened state integrity and sovereignty. KDF makes a strong and credible case backed by international law and practice to justify its entry into Somalia. Due to the porous nature of the Kenyan border, Somali-based bandits and Al-Shabaab sympathizers carried out numerous incursions and precipitated a reign of terror in the country, particularly targeting its tourism industry and international NGOs. In addition, over half a million Somali refugees, with close family and clan affiliations to the Al Shabaab militia, provided a foothold for the terror group to operate easily within the country. The book cites numerous and escalating cases of attacks on tourists and humanitarian workers which adversely affected Kenya's economy and threatened her sovereignty.

The KDF war was a culmination of more than 20 unsuccessful attempts by the United Nations (UN), the regional leaders and the African Union (AU) to use political means through negotiation, to bring peace to Somalia. These efforts finally resulted in the establishment of the Transitional Federal Government (TFG) in 2014, which failed to establish a functioning government giving rise to diverse clan-based militia groups controlling various parts of Somalia and its economic resources and making it extremely insecure. In this scenario, the militia groups benefited economically from the protracted conflict and were instrumental in the proliferation of small arms and light weapons in Kenya and the region. The authors go further to inform the reader that KDF acted in accordance to Article 51 of the UN Charter, which "reaffirms a state's right to self-defence" since the lives of its citizen were threatened. Kenya reacted to the growing treat of Al Shabaab's terror activities that threatened its security and made KDF respond to armed attacks with force.

In the Second and Third parts of the book, the reader is taken through the dynamics of asymmetric warfare that terrorist organizations use to render the use of conventional methods of warfare less effective. The Second Part specifically

identifies the key ingredients that are necessary in planning and executing military operations against terrorist fighters, who have no military insignia and are known to melt into the society almost at will. The book reveals that KDF had done extensive research and gathered sufficient intelligence through diverse means which was critical to reveal the enemy's capability and future direction. In the course of the war, KDF mobilized and released information on the campaign through the print and electronic media to enhance national and international support for its campaign. KDF used counterterrorism tactics including deception, propaganda, misinformation, and "soft power" in Kenya and Somalia to garner public support for its mission.

The reader will become familiar with KDF, a well-oiled war machine, with highly trained and motivated personnel; an organization that is well equipped militarily, highly organized and coordinated, and extremely effective both at the Command and Control level and in the battlefield. The book reveals the military precision and technical superiority of KDF with exceptionally effective planning, reconnaissance, coordination, control, and implementation capabilities. In reading the book, the reader is informed that KDF were extremely familiar with the nature of the terrain, the enemy's strengths and weaknesses. The reader is informed of the meticulous planning and superior logistical preparations prior to entering Somalia and as the war unfolded. The authors state that the KDF were prepared for the long haul, if necessary, and made extensive efforts to ensure that their troops were taken care of materially and psychologically throughout and after the campaign.

The final part of the book examines the application of the concept of "soft power" through looking at the humanitarian aspect of the war. This provides great insight into the diplomatic aspect of war that is aimed at "winning the hearts and minds" of the civilian population. It is in this final part that the reader appreciates the effective use of smart power, which involves a combination of hard and soft power arsenals in the battlefront. By reading this book, the reader travels with the KDF, as it were, witnessing first-hand, all its engagements, and the successes it meets with.

KDF learned some lessons too, including the fact that the enemy they were challenging was strong and highly organized but were weakened by the intractable clan affiliations that rendered them incapable of working in the spirit of togetherness that worked so well for KDF.

So what does the reader take away from reading this book? Overall, this book is rich in descriptions, enabling the reader to have in-depth knowledge of the art of modern war, the principles of a just war, and the legal frameworks that relate to war. The book highlights the changing nature of modern war, especially in dealing with the invisible, insidious "faceless enemies", who would also be described as "terrorists without borders". This book is particularly relevant at this time in history and it has many lessons that can be learned especially in "asymmetric warfare" where the opponents are unequal.

This being a book produced by Kenya Defence Forces, some readers may look at it as being a subjective account of the events. In the world of academia, this is normal. It provides an opportunity for others to respond by providing an academic critique of the book. The book also provides an example that other militaries can follow. They should also pick up the cue and document their events, more so on security matters.

This book, produced by Kenya Defence Forces, meets its objective of being a handbook and training manual. It is also a Kenya classic, being the first such book to discuss military operations in such great

detail, and KDF is to be commended for such a feat. Every soldier would find a lot of useful practical information to hone his/her military acumen. It would be useful for other non-military security forces, security training institutions, and policy makers who are involved in governance. International relations scholars and researchers, policy makers and implementers, as well as the general public will find this book interesting and highly enlightening. The principles used by KDF as described in the book can be applied in other non-military institutions as well. Kenyans will be proud to know that they have well-trained, equipped and committed security forces that are able to use the entire arsenal at their disposal to successfully plan and execute operations against any threats to national security. This is a must-have book that is applicable in this era of global terrorism and the emergence of non-state actors in war, who have the capacity to threaten the survival of the state.

The strength of this book is that it is the first of its kind on Military in Kenya. It details discussion on military strategies and warfare. This is elucidated by citation of several and relevant examples and makes it interesting to those who want varified facts. Pictoral section in the book adds flavour to the reader in the sense that it encourages the reader to follow systematically Kenya Defence Forces movement from Kenya to capturing Mogadishu.

The book is well researched and written in understandable English, and arranged thematically. This is a must read book for all persons interested or already involved in Military Science, International relations, Diplomacy, history and political Science should be a reference book to scholars, lecturers and students of graduate and undergraduate of the above named areas of specializations.