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CONTENTS

BEST PRACTICE PRINCIPLES FOR PROFESSIONAL MILITARY EDUCATION: A LITERATURE REVIEW

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Abstract: *This paper reviews the best practice principles that support tertiary-level military education programmes, as highlighted in the existing literature. It draws attention to some of the tensions existing around military education, and issues with a traditional approach to this. Recognising that military curricula need to change, the author focuses on the challenges of ensuring critical thinking, openness, and diversity are addressed by stakeholders and military educators alike, and summarises key principles which should be implemented during three phases (planning, delivery, and post-delivery) of a professional military education programme.*

Keywords: *best practice, military education, planning, military curricula.*

1. INTRODUCTION

This paper aims to investigate the best practice principles that support tertiary-level military education programmes, as highlighted in the existing literature. Military staff and stakeholders, and those working in military education more broadly, could all benefit from further insights into multiple factors contributing to effective delivery, including curriculum design, the student experience, and elements affecting student performance. Such insights could articulate for stakeholders different interventions that could be implemented to raise standards and student achievement, and to develop best practice from staff. They could also help educators and curriculum designers gain a deeper understanding of, for example, student expectations, as well as cultural sensitivities and challenges experienced by students working in a bilingual and/or multicultural environment. This review will help identify aspects of learning, teaching, and delivery which may be applicable in many contexts, such as face-to-face, fully online, and/or a blended delivery of Professional Military Education, and the delivery of other cross-cultural educational programmes, including courses for other professionals who are undertaking mid-career postgraduate-level studies.

2. WHAT IS "BEST PRACTICE"?

The phrase "best practice" is used in education for a variety of systems, procedures, and behaviours

which "may or may not have been rigorously evaluated" (Arendale: 2018). Arendale, while questioning the frequent use of the term, defines best practice as the "wide range of individual activities, policies, and programmatic approaches to achieve positive changes in student attitudes or academic behaviors" (ibid.).

Such "positive changes" are certainly one aspect of best practice, but Hargreaves and Fullan (2012, p.51) go one step further, defining best practice as "existing practices that already have a good degree of widely agreed effectiveness". Investigating military education programmes, in relation to recognised effective practices, will contribute to further understanding of best practice in education, in similar contexts.

3. FOCUS ON PROFESSIONAL MILITARY EDUCATION

When reflecting on military education, it is important to distinguish between different levels of training. Higher-level Professional Military Education aims to develop strategic leaders and commanders; professionals who may be diplomats and/or scholars, as well as soldiers (Kümmel: 2006). Command and Staff Courses, for instance, provide advanced education and training for mid-career personnel who have already achieved a certain status and military rank. This contrasts with initial military training and Officer Cadet Schools, intended for civilians who are new to the military profession. This paper is not claiming to address all aspects of military education at different levels, nor is it aiming to analyse academic-military tensions in depth. Similarly, its principal focus is not on how military education helps personnel in their professional roles. It does, however, aim to review findings from research in key areas relevant to Professional Military Education.

Just as ongoing professional education is important for those working in fields such as law, medicine, science, or education, so too is it essential for military personnel. The available literature around Professional Military Education (PME), however, highlights several issues, including tensions that may exist in relation to military, academic, and ethnic cultures, issues around compliance and conformity, versus leadership and individualism, and the difference between education and training (Abbe & Halpin: 2009; Cucolo & Betros: 2014; Foot: 2001; Kelley & Johnson-Freese: 2014; Lamb & Porro: 2015; Murray: 2014; Syme-Taylor & Jalili: 2018). It is not clear to what extent such tensions continue once personnel return to their professional roles (Jenks et al.:

2007; Pigeau & McCann: 2002), as, to date, the effectiveness of mid-career PME has not been extensively investigated, and research into curriculum design and course content in PME, while it does exist (see, for example, Jolly: 2004; Reisman: 1994), is also scarce (Allen: 2015). Having said this, "A substantial body of recent work argues that the traditional approach to joint professional military education needs reform" (Lamb & Porro: 2015: p. 41), and one thing that all of the existing literature on Military Education agrees upon is that there is a need to review Military Education (Caforio: 2018; Martin & Yaeger: 2014; Murray: 2014; Silverstone: 2016; Watkins: 2016). As Murray (2014: p. 13) succinctly asserts, Professional Military Education "needs to change both what it is doing and how it is doing it". Military academies and institutions, then, must actively reflect on how they are tackling the education of their personnel (Allen: 2015; Ayers: 2016; Emilio: 2000; Gerras: 2008; Miller & Tucker: 2015; Simons: 2011; Straus et al.: 2014).

4. TRADITIONAL MILITARY EDUCATION

If we consider the current state of military education today, what principles of best practice already exist? There is relatively little published research around best practice and/or key performance indicators in military education generally, or within Command and Staff courses more specifically. Much of the literature that does exist is less than complimentary about traditional PME, delivered by military institutions. Martin and Yaeger (2014: p. 40) emphasise that a "common critique is that [the] curriculum is focused on the past, at the expense of the emerging future, […] and not enough on critical thinking skills relevant to current issues".

Lamb and Porro (2015: p. 41) summarise critics' views that military academies and colleges "fail to attract top-flight faculty, teach outdated curricula, no longer pioneer or use innovative teaching methods, and pamper rather than challenge students".

Emilio takes a slightly more positive stance, arguing that "For today's military leader, Professional Military Education[…] offers one last chance to remedy past educational inadequacies" (2000: p. vi), while highlighting the shortcomings in a traditional approach to education; one which prioritises what to think, rather than how to think. Tollefson (2017: p. 90) agrees: "We train our young leaders to think monologically - in a simple, linear fashion". Similarly, both Brodie (1973) and

Owen (2016) question education that teaches military personnel to follow orders, rather than to reflect on why they are doing so. Traditional military education, then, does not seem to be the answer for the development of modern military leaders, even if the need for ongoing military education is undeniable.

5. THE CHANGING FACE OF MILITARY EDUCATION

An increasing number of PME Courses are now conducted in co-operation with academic institutions, enabling students to work towards postgraduate qualifications in addition to the military qualification. The aim is for learners both to develop their communication skills, so that they may prepare themselves for higher command appointments, and to broaden their academic and professional knowledge, including, for example, theories and practices of leadership, management, and command, as well as major trends and dynamics (including historical, political, economic, cultural, and military). As Allen highlights, "Education is a necessary and valued component of leader development" (2010: p. 100). The global security environment is complex, and calls on the military to interact and engage with multiple and diverse cultures in different political contexts, in order to reduce the risk of escalating conflict and to ease relationship building between different states. In military education: "The potential range of issues that must be addressed is… widening due to the varied types of activity the military can become involved with. Peacekeeping or peace enforcement and humanitarian relief operations pose very different types of challenges to those found in 'traditional' high-intensity, state-on-state warfare" (Whetham, 2018: p. 143).With significant potential for ethical challenges in the field, then, military personnel need to adopt critical thinking strategies to understand such dilemmas from multiple viewpoints.

6. THE CRITICAL THINKING CHALLENGE

A National Security Report from the U.S. Army emphasises that "the Army's most critical asset will not be technology; it will be critical thinking" (Association of the United States Army, 2005: p. 21). This echoes the U.S. Air Force Doctrine, which states, "Success in war depends at least as much on intellectual superiority as it does on numerical and technological superiority" (Drew, 1992: p. 2).

Different services, then, (the U.S. Army and U.S. Air Force, in these examples) support the

importance of critical thinking for military personnel. This is significant given that many PME programmes incorporate multiple military forces with an emphasis both on joint operations and on preparation for promotion. As McCauley (2013: para 10) highlights: "To better prepare our forces[…], 21st Century Joint Force leaders must transform their approach to strategy and plan development from the linear intelligence-based thinking resident in the industrial age to one that embraces strategic foresight, to identify the complexities and uncertainties that mark today's information environment".

It would seem, however, that military graduates, even mid-career, often lack vitally important critical thinking skills (Cojocar: 2011; Hatfield et al.: 2011; Lamb & Porro: 2015), and this can result in poor communications, ill-judged decisions, and, ultimately, casualties in the field (Facione: 2015; Vogel-Walcutt et al.: 2010). The call to embed critical thinking in military curricula has existed in literature since at least 1973, right through to 2018 (see Table 1). Indeed, it is this aspect of military education for which there appears to be the most published content, and yet it remains unresolved.

It could be argued that, even in the phrase 'Professional Military Education' itself, a tension exists between the idea of professionalism and the objectives of education. For Metz (2013: para 9), "education suggests a broadening beyond the confines of [professional] knowledge, and the development of critical thinking and creativity".

A 2014 article by Nicholas Murray, an Associate Professor at the U.S. Army Staff College, stresses that, in PME, "the amount of time devoted to critical thinking has hardly changed despite the emphasis on a command system that is absolutely dependent upon it" (2014: p. 11).

Murray also questions how the U.S. Command and Staff Course can justify its decision to reduce the amount of time spent learning about critical thinking, when the Chairman of the U.S. Joint Chiefs of Staff recommended the exact opposite; "What message is sent to the PME community and to the Armed Forces writ large?" (ibid.). Similarly, Gerras (2008), a retired Colonel and a Professor at the U.S. Army War College, draws attention to the gap between what military educators and policymakers would like to see, and what happens in reality. He goes on to highlight that: "Assessing an issue from alternative points of view is sometimes difficult for [military] students. By the time an accomplished lieutenant colonel […] has reached this

level, they are sometimes inclined to believe that they have figured out how the world works, and, moreover, that their view is correct" (ibid., p. 8).

This view may be valid, to a certain extent. Command and Staff Course students, for instance, have attained at least the rank of Major (or its equivalent), and have usually progressed through the ranks thanks to their success and decision-making abilities in different roles. Individual advancement may have also resulted from respect for military culture and norms, including traditional hierarchical structures, yet these same structures often cause a barrier to thinking critically; "To foster critical thinking, Army teams must at times leave rank at the door" (Fastabend & Simpson: 2004, pp. 20-21). For Facione (2015, p. 22), critical thinking "leads us away from naïve acceptance of authority […] and culminates in principled reflective judgement".

Taking all of this into consideration, one principle of best practice in PME could be to ensure that critical thinking is incorporated at all stages of a military curriculum, in order to generate better leaders, and more successful military academics, in the long run.

7. ENCOURAGING OPENNESS

Although military students are usually well-travelled and are open to different ideas and self-expression, given their established careers in the armed forces, expressing personal thoughts and commenting on the work of published academic authors, for example, in front of colleagues, superior officers, or one's elders (in terms of age) may be perceived as professionally and/or culturally inappropriate. This is a significant issue, particularly for those studying at postgraduate level. To encourage openness, and to address any concerns that course participants and military staff may have about the degree to which they may speak freely, institutions may choose to adopt the Chatham House rule of confidentiality, established in June 1927 by the Council of the Royal Institute of International Affairs (Chatham House: 2018). The rule states: "When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed" (ibid.).

In other words, whatever is said during the course may be shared but will not be attributed to any person in particular. Allowing individuals to speak freely and to express views which may, on occasion, clash with organisational beliefs, through the use of the Chatham House rule

(or similar), may be another example of best practice within military education.

8. THE NEED FOR DIVERSITY

The call for diversity among both learners and educators is important, and appears regularly throughout the existing literature (see Table 1). For Martin and Yaeger (2014, p. 41), PME should allow mid-career students, such as those enrolled in Command and Staff courses, to be paired with "fellow students from other departments, agencies, and other countries to expand their understanding of alternative views and cultures".

Critics argue that "while diverse perspectives seem recognised as essential for complex decision-making and improving the performance of organisations, … it is sorely lacking in professional military education institutions" (Johnson-Freese et al.: 2014, p. 59), with male faculty, mostly retired from military positions, dominating (Johnson-Freese et al.: 2014; Lamb & Porro: 2015; Murray: 2014). Several authors (Allen: 2010; Cucolo & Betros: 2014; Foot: 2001; Kelley & Johnson-Freese: 2014; Lamb & Porro: 2015; Murray: 2014; Waggener: 2015) appeal to PME institutions to review both the calibre and balance (including military versus civilian) of their teaching staff.

In terms of relationships, it is important to reflect too on the teacher-learner connection, investigating, for instance, whether students respond differently to different lecturers, such as those from a Western background compared with those from a non-Western background, staff with or without military experience, or male versus female academics. These relationships may vary, depending on the cultural background of the individuals and on their professional experience. Understanding these intricacies will be of help to educators in military programmes and to anyone involved in multicultural education.

9. CURRICULUM DESIGN

With regard to best practice principles concerning the curriculum, Murray, for instance, recommends incorporating research time for students, as well as regular writing tasks, under the guidance of "the best serving officers and civilians – not only in terms of qualifications, but also in terms of their teaching skills" (2014, p. 13).

Teaching, though, "should not dominate the schedule. There has to be time for officers to think about what they have learned. Only that will allow us to excel at the critical thinking required by the Armed Forces of the future" (ibid.).

Thinking skills should take precedence over technical skills (Ulmer: 2010). Martin and Yaeger (2014, p. 41) concur, calling for PME to be "grounded in a core curriculum and enriched by electives and research". Others believe that students should be able to choose elective papers (Cucolo & Betros: 2014; Martin & Yaeger: 2014), participate in seminars or scenarios which encourage reflective practice and synthesise learning across different papers (McCauley: 2013; Thain et al.: 2008; Vogel-Walcutt et al.: 2010), and complete a research project which, for instance, "challenges students to demonstrate what they have learned… by solving a practical problem in an area of their choosing relevant to their career goals" (Martin & Yaeger: 2014, pp. 41-42).

Stephens (2011, p. 75) stresses that "mechanisms should be available for individual learners to personalise their interaction with the content as well as with fellow students".

In summary, the application of learning (and not just the learning itself) should be embedded throughout military curricula.

10. ASSESSMENT DESIGN AND ADMINISTRATION

Just as in any other educational context, practices around assessment design and administration within military education should be regularly reviewed; as Wiggins underlines, "good teaching is inseparable from good assessing" (1992, p. 33). Although student and tutor understanding of what exactly is required to produce a 'successful' piece of work might differ (Lea & Street: 1998; Starfield: 2004), principles of best practice should be considered here. Is it enough for teaching staff to provide instructions and marking guides, for instance, for each assessment? It may well be that students and stakeholders, possibly from different countries and cultures, have different expectations around how much information and support should be available to learners, so that they might succeed in an assessment. Understanding the complexities faced by international students attending military education programmes in a country other than their own is also essential for stakeholders.

Added to this are considerations around cultural sensitivities. Alongside the potential challenges posed by the hierarchical culture within the military, students may also be impacted by their national values when it comes to critical thinking

and reflective practice. In some cultures, for example, "authority is seldom criticised" (Prescott: 2002, p. 247). This respect for authority may affect students' ability, or possibly willingness, to critique published articles, for example, or to challenge something which is presented in class. This brings us back to the call for military educators to embed critical thinking and reflective practice throughout their programmes, whilst enabling freedom of speech (through adoption of the Chatham House rule, for instance), ensuring diversity, and reviewing the cultural and contextual appropriacy of their curricula, materials, and pedagogical approaches.

11. ADDITIONAL RECOMMENDATIONS

Other recommendations in the existing literature include conducting institutional self-assessments (Cucolo & Betros: 2014), establishing an alumni network (Thacker & Lambert: 2014), building online communities of practice (Stephens: 2011), seeking regular feedback from students on their experiences in PME (Lamb & Porro: 2015; Martin & Yaeger: 2014), incorporating more variety in assessment tasks (Thain et al.: 2008), using a portfolio approach to demonstrate students' progression through the programme (Allen: 2015), including distance-learning modules prior to the face-to-face course (Ulmer: 2010), and reflecting on the academic rigor of programmes which everyone passes (Cucolo & Betros: 2014; Kelley & Johnson-Freese: 2014; Lamb & Porro: 2015; Syme-Taylor & Jalili: 2018; Ulmer: 2010; Waggener: 2015). These strategies could all be included in principles of best practice when designing and developing quality education programmes.

12. CONCLUSIONS

Table 1 synthesises findings from a critical review of the existing literature, showing principles which should be implemented during three key phases (planning, delivery, and post-delivery) of a professional military education programme. Many of these recommended practices are iterative, and one would hope that military educators and stakeholders might consider them part of 'business as usual', as professional military education is brought into the twenty-first century. Institutions, both military and academic, would do well to reflect on and review their capabilities in light of these recommendations.

PHASE	BEST PRACTICE PRINCIPLE	AUTHORS
PLANNING	Ensuring diversity (across professional roles, genders, cultures, teaching staff (military vs. civilian),…)	Allen, 2010; Cucolo and Betros, 2014; Esterhuyse and Mokoena, 2018; Foot, 2001; Johnson-Freese, Haring, and Ulrich, 2014; Kelley and Johnson-Freese, 2014; Lamb and Porro, 2015; Martin and Yaeger, 2014; Mukherjee, 2018; Murray, 2014; Perry, 2016; Syme-Taylor and Jalili, 2018; Waggener, 2015
	Reviewing currency of curricula and learning materials	Goldrick, 2017; Lamb and Porro, 2015; Sookermany, 2017; Syme-Taylor and Jalili, 2018; Watkins, 2016; Whetham, 2018
	Reviewing academic rigour	Cucolo and Betros, 2014; Kelley and Johnson-Freese, 2014; Lamb and Porro, 2015; Syme-Taylor and Jalili, 2018; Terziev, 2018; Ulmer, 2010; Waggener, 2015
	Facilitating distance-learning modules (e.g. before course begins)	Esterhuyse and Mokoena, 2018; Syme-Taylor and Jalili, 2018; Terziev, 2018; Ulmer, 2010
DELIVERY	Enabling freedom of speech / adoption of Chatham House rule	Fastabend and Simpson, 2004
	Implementing a core curriculum and choice of electives	Cucolo and Betros, 2014; Goldrick, 2017; Martin and Yaeger, 2014
	Embedding critical thinking throughout the curriculum	Association of the United States Army, 2005; Brodie, 1973; Cojocar, 2011; Drew, 1992; Emilio, 2000; Facione, 2015; Fastabend and Simpson, 2004; Gerras, 2008; Hatfield et al., 2011; Lamb and Porro, 2015; Martin and Yaeger, 2014; McCauley, 2013; Metz, 2013; Murray, 2014; Owen, 2016; Syme-Taylor and Jalili, 2018; Tollefson, 2017; Ulmer, 2010; Vogel-Walcutt et al., 2010
	Including research time / research project	Martin and Yaeger, 2014; Murray, 2014; Ulmer, 2010
	Including time for regular writing	Murray, 2014
	Encouraging / embedding reflective practice	McCauley, 2013; Thain, McDonough, and Priestly, 2008; Vogel-Walcutt et al., 2010
	Facilitating personalised, applied projects	Martin and Yaeger, 2014; Stephens, 2011; Terziev, 2018
	Adopting a variety of assessment tasks	Thain, McDonough, and Priestly, 2008
	Using a portfolio of learning	Allen, 2015
	Implementing institutional self-assessment	Cucolo and Betros, 2014
	Enabling regular feedback (both to and from course participants)	Lamb and Porro, 2015; Martin and Yaeger, 2014
	Maintaining academic rigour	Cucolo and Betros, 2014; Esterhuyse and Mokoena, 2018; Kelley and Johnson-Freese, 2014; Lamb and Porro, 2015; Syme-Taylor and Jalili, 2018; Terziev, 2018; Ulmer, 2010; Waggener, 2015
POST-DELIVERY/ ONGOING	Establishing alumni network	Thacker and Lambert, 2014
	Building communities of practice	Stephens, 2011
	Reviewing academic rigour	Cucolo and Betros, 2014; Kelley and Johnson-Freese, 2014; Lamb and Porro, 2015; Syme-Taylor and Jalili, 2018; Ulmer, 2010; Waggener, 2015

Table 1: Summary of best practice principles for military education, identified in literature

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THE ROLE OF MILITARY ETHICS AND MORALE AS A SUBJECT OF PEDAGOGY IN THE LEADERSHIP TRAINING OF OFFICERS FOR MULTINATIONAL ENVIRONMENT

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Abstract: *Military ethics is a subject of pedagogy that can not be ignored if the success in providing the security is to be achieved through the highest standards of professionalism. The aim of the paper is to focus on specific moral and ethical issues which are pertinent to the present or future multinational security environment. The presented article provides an overview of multi-pedagogical thinking. The current requirement and existing demand for this approach is the implications of the armed conflicts, doesn't matter military or peacekeeping in nature, because the objective of military pedagogy is to translate ethical behaviour into effective action. Here in the article, the author attempted to find out the importance, as well as the role of military ethics and morale as a subject of pedagogy in multinational troops tasked with maintaining the security environment.*

Keywords: *security, military ethics, morale, environment, education, pedagogy, officer, leadership, multinational.*

1. INTRODUCTION

Military pedagogy is the part of military sciences that inquires into the philosophies, conceptions, visions, doctrines, aims, methods, and technologies of military education and training [1]. It should entail all possible subjects to brace the military personnel for current and future security environment. Leadership training is particularly important in the development of military ethics and high moral standards. However, out of three aspects of leadership – moral, physical and intellectual, the most difficult to harvest is moral development. This aspect – intended to inculcate ethical conduct in others is far more difficult to develop in leaders and can be far more time consuming [2]. Military ethics, like medical or media ethics are a core capacity that every service member should gain, develop, and enhance

throughout their career [3]. Thus, the paper addresses two questions: What role do ethics and morale play in the officers' military professionalism? What all principles of the military ethics and morale should be implemented in the multinational environment?

2. THE ROLE OF MILITARY ETHICS AND MORALE AS A SUBJECT OF PEDAGOGY

Considering the nature of the military environment, an officer should meet particularly high moral demands, and they ought to be ethically motivated. In order to handle moral problems and to choose the right moral criteria as well as to act in a morally conscientious way, the essence of ethics needs to be perceived in the first place. With this purpose in view, the officers have to be taught military ethics in the institutions designated to prepare military leaders [4]. There are various arguments that prove this claim. For Aristotle, the study of ethics was the study of excellence or the virtues of character. It means the study and practice of the good life, the kind of life people ought to live [5]. According to Hans-Georg Gadamer, "A person who has to make moral decisions must be able to apply moral knowledge. However, moral knowledge can never be knowable in advance in the manner of knowledge that can be taught" [1]. Pfaff states that, ethical military decision-making requires balancing moral obligations associated with achieving a just cause, minimizing harm to civilians, and protecting soldiers [6]. American major-general Buckingham demands, "From the beginning of their military education and throughout their careers, officers should study the elements of ethical decision making" [1]. According to James Toner, "Teaching military ethics is an exercise in consciousness – raising [7]. Russian Professor Yuri Noskov also underscores a sound ethical leadership in the military: "The professional and moral duty of military officers is to arm their junior officers and younger soldiers with basic moral principles they can rely on to make the right moral choice in complicated situations. This is the meaning of ethical leadership" [1]. Daniel Callaghan states: "We argue about ethics because it is so fundamental, and because how we ought to live our lives" [7].

However, some see a conflict between ethics and professional

military activities, because the military profession demands a strict and exact execution of orders. We may cover the following points that supports this argument:

- the subject is not clear or exact;

- ethics is nothing but a matter of taste and preferences of leaders who matter;

- ethics cannot be taught in a rational way.

- the subject is disturbing and should be avoided.

"Who has the time for it?" as said by the vast majority of the personnel in the Army [7].

Nevertheless, it is quite clear that "no member of military profession, especially in the officer corps, can be expected to make pragmatic ethical decision without an understanding of the philosophical foundations of that decision" [4].

In their interactions with contemporary society, military professionals are likely to find themselves in situations which pressure them to lower their standards. The armed forces have to take the necessary preemptive and corrective action by injecting moral energy into the system to arrest the real and perceived moral erosion, for the greater good of the organization and the society [5]. And this requires the transaction from a typical type of education and training which is designed to impart the officers and military leaders a certain knowledge and skill to a type of education and training that provides oportunity to particularly officers to develop themselves as the subject of creative activity and behaviour. Only this type of education can lay the groundwork for officers and military leaders to integrate into "military society" responding to the criteria and requirements of the dynamic internal and international security environment. The primary purpose of ethics education is to provide individuals with the capacity to morally distinguish the right from the wrong when laws are no longer helpful. It promotes building strong morals, which prevents internal and external misconduct [3].

On the one hand the development of the military sciences and on the other hand the changes happening in the international environment require military pedagogical activity to be dynamic to meet the needs of officers' training to enable them to develop themselves from the ethics and morale point of

view, along with the job skills and military professionalism. Particularly, I would like to emphasize that an experienced officer involved in the international security environment should be able to treat appropriately – professionally and ethically with the personnel under his or her command, besides accurately organizing the activity of the staff. If we approach to the subject of our study from this point of view, we can have a clear picture and come to a conclusion that how important the military ethics and morale are as a subject of pedagogy.

Military ethics and morale being a subject of military pedagogy are a significant part of training and education to prepare cosmopolitan officers and military leaders who are bound by high moral standards. Teaching the military leaders ethics and moral enhances the well-being of the troops and deters the probability of misdemeanors. When conducted at early stages it helps to forge better leaders from the beginning and is a critical factor in reaching mission success at all levels [3].

The formation and development of military ethics and morale of an officer appear in the process of discourse with the staff depending on his duties and missions along with his or her military service. An officer's opinion on military service, his/her behavour and manner affects his/her relations with his/her fellow officers.

According to Jeff Stouffer and Stefan Seiler, there are three main principles of military ethics and morale: courage, fellowship and commitment-integration [8]. That is to say, military service has its particular and certain ethics and morale, attitudes and morality norms.

3. MORAL AND ETHICAL LEADERSHIP DEVELOPMENT FOR MULTINATIONAL TROOPS

Military ethics and morale should also be taken into consideration as a part of military leadership and professionalism. Because, they have an important place and role in the implementation of successful military service and the performance of officers or military leaders. As it is seen, the points of military ethics and morale are multiangled. Military ethics and morale are always changeable as they are inextricably linked with the psychology and contain dynamic processes.

Since the role of military ethics and morale in the officer and

military leardership training requires fundamental studies, we intend to dilate upon only one aspect, which appears in multicultural environment - in another word, we attempted to analyze military ethics and morale of the officers or military leaders serving in multinational troops.

The method of integration among civilisations could be a factor for expansion of the cooperation among the military staff members from various countries in pursuit of ensuring the security enviroment in the World. Culture is usually understood as norms, values or traditions of people living in groups. Some taboos, norms and values in a certain culture differ from the values and norms of other civilisations. So, while describing the civilisations or cultures, values of a nation or ethnic groups or any type of groups it is important to take the subtleties into consideration. That is why, officers, commandants or military leaders engaged in multinational troops should know military ethics and morale norms, methods and principles of managing diversities very well and follow them appropriately for carving out succesful achievements together with a staff which includes various and colorful cultural values [8].

If we take into account that, the method of collective approach of pedagogy may not always be applied, then the method of an individual approach comes to the fore. Thus, an officer or a military leader should pay attention to the method of individual approach along with the method of collective approach in a multicultural military enviroment considering ethnic, religious and other sensitive values of the staff and should take each person's individual cultural and sensitive views into consideration.

For maintaining the security in the World, military ethics and morale obedience by an officer or a military leader is a major factor in the management of the diversities in military formations comprising the representatives of various ethnic-cultural values, religions, races and etc. When we talk about military ethics and morale of officers and military leaders in terms of management of religious, cultural, ethnic, gender, socio-economic and other diversities, it should be understood and paraphrased as mutual respect among the representatives of various civilisations, religions, ethnic groups, etc. and simultaneously military leader's or commandant's implementation of protecting the

balance of values and environment of mutual respect [9]. That means, the subject of pedagogy which we are talking about - military ethics and morale are necessary to be taught to the officers and military leaders engaged in staff management, particularly in the military formations reflecting multicultural values in its content.

Military ethics and morale of the officers and military leaders in the sense of management of the staff entailing the representatives of disparate cultures and values in the multicultural troops symbolizes the moral categories, such as fairness, equality, loyalty, tolerance and responsibility regardless of race, nationality, religion, language and other values of the personnel [10]. These qualities guarantee mutual respect and understanding, which is the essence of modern leadership.

First of all, regarding these principles, officers or military leaders should treat fairly with either representative of different countries engaged in multinational troops and must gain trust and sympathy of the staff. The precondition of the solid military ethics and morale and military professionalism is building mutual and social trust. Richard Dannat comments in his book "Values and standarts in British army" that, reputation and success of any organisation depend on the level of reciprocal trust [10].

Against the backdrop of relations among the military personnel and local civilians in the conflict zones, we might witness the necessity and importance of military ethics and morale. This necessity is to be considered while teaching military pedagogy with the purpose of enhancing the relations among the military staff, civilians and local agencies. Let us prove our argument referring to some general cases.

History witnessed some occurrences, when soldiers refused to obey orders, robbed or killed their commanders as a result of dearth of moral qualities. Such violence, for the most part, occurred on battlefields facing defeat and even happened in high disciplined forces of England and Prussia.

The most prominent example is the 2003 Abu Ghraib scandal (During the war in Iraq, personnel of the United States Army and the Central Intelligence Agency committed a series of violations against detainees in the Abu Ghraib prison). This case perfectly represents the importance

of an absolute need for an ethics education. The illegal actions of those involved individuals had repercussions at the strategic, political, and international level. The public protest was so fierce that the leadership dismissed the unit commander, who was not even directly involved. The illegal actions of few guilty individuals overshadowed the achievements of the thousands of dedicated men and women during the Iraq War [3].

Since the international military coalition forces are deployed to primarily muslim countries, officers and troops who are part those deployments are required to be cognizant of the pecularities of muslim cultures, taboos and oriental civilisations. Particularly the officers engaged in the security missions should pay attention to the oriental cultural issues and are required to treat civilisations and cultural values respectfully. At this point, we may come to a conclusion that militaries involved in the missions in Islamic countries must follow the military ethics and morale pursuant to Islamic values, along with the concept of military professionalism. If the military leaders and low ranked officers who are involved in missions for maintaining the security don't consider military ethics and morale criteria and rules in relations with the representatives of other civilizations, religions, civilians dwelling at the scene of the conflicts, as well as local agencies or if the norms and rules do not turn out appropriately, it may cause them severe problems and failures in mission accomplishment and even scuffles amongst the staff or with the local people. If the problem of openly flouting military ethics and morale in multinational troops persists, it could lead to ethnic, religious and racial clashes. Officers or military leaders' obedience of military ethics and morale may be a pre-emptive measure to thwart ethnic divisions, nationalism and racial radicalism, xenophobia, anti semitism and islamophobia. If we approach to the issue from this point of view, officers' or military leaders' ethics and morale contain important features for the sake of ensuring the internal and international security environment [11; 12; 13].

If we have a look at the achievements in the field of teaching military ethics and morale in the military institutions of the Republic of Azerbaijan, we may deduce that, the military personnel depoloyed overseas for international peacekeeping missions have not

faced any severe problems so far, as the military ethics and morale have been successfully imparted to the personnel of the Army. The officers underlined exclusive personal qualities such as self-discipline and high moral standards.

The training and development of military leaders in the ethical field must begin in the training institutions. Thus, the subject of ethics and morale has already been included for a pretty long time in the curriculum program of Azerbaijan High Military School named after Heydar Aliyev, the youngest military institution for higher education. So, first of all, the incorporation of this module into the curriculum of the military school contributes to the formation of military ethics and morale of the officers and leaders, dedicated to providing local and international security. Secondly, teaching military ethics and morale as a subject creates favourable conditions to respect others in an international environment. The lectures and seminars of this subject in high military school are mostly devoted to the issues of tolerance, courtesy, tact, bravery, loyalty, dignity and comradeship and other pertinent ethical problems. The military personnel of Azerbaijan Army are instructed to adhere to military ethics and morale rules and norms and use it as a major instrument in terms of relations with their foreign fellows, civilians in the conflict zone and local agencies.

4. CONCLUSIONS

In order to maintain the security environmet successfully, it would be better if the following principles are implemented in the multinational troops:

- to set up a fair mechanism for equal political attitude towards various convictions;
- to form the precepts for taking care of the personnel not on the plane of assimilation but on the plane of integration with the purpose of protecting ethnic values and diversities;
- to provide support for the development of multicultural values and to form sympathy for either culture and moral values;
- to make clear the position of the army as an integral part of the society rather than distancing the military from its civilian environment.

If these principles of military ethics and morale are taken as a key instrument in military education and if they are followed in future, the personnel involved in the accomplishment of security missions, who represent various races, ethnics, religions, nations would not feel

themself as strange elements in the multinational troops. Besides, officers' or military leaders' ethics and morale stipulate an efficient use of internal capability of a military coalition and at the same time it boosts the reputation of the military personnel of the multinational coalitions either among the civilians in conflict zones or in an international arena.

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HOW MUCH SUCCESSFUL THE TRADITIONAL STRATEGY-MAKING MODELS IN THE CONTEMPORARY STRATEGIC ENVIRONMENT?: THE ANALYSIS OF THE ENDS, WAYS AND MEANS FORMULA

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Abstract: *Strategy-making is a multi-dimensional and multi-faceted process. It encompasses interrelationships among and within parties and the strategic environment at different levels, and incorporates a series of actions and reactions into a strategic plan. The deep consideration of interrelations and the length of the calculus of interactions affect the outcome, a strategy.*

New era has brought new requirements to strategy-making. Globalisation, technological advancements and unsettled global order after the collapse of the Soviet Union are new phenomena that have increased the level of uncertainty, complexity and ambiguity. The 'old' model and methods of strategy development are increasingly becoming inadequate to address the challenges associated with the modern strategic enviornment. Even carefully crafted classical strategies may become obsolete in a short period of time in today's fast-paced world.

These modern phenomena have raised criticism to existing concepts and models as strategies continue to fail. Current strategy-making model and concepts are required to be investigated in dept in order to understand if addressing especially the hybrid constructed challenges of the modern strategic environment would be possible by traditional strategies.

Keywords: *Strategy, formulation, strategy-making, ends ways means, material-based strategy, uncertainty, contemporary environment.*

1. INTRODUCTION

Strategy formulation has been one of the most substantial topics throughout history. People have been exploring new ways of establishing successful strategies from micro to macro levels. It has become much complicated since interconnectedness and dynamism of strategic environment have increased due to globalisation, advancements in technology and unsettled global order after the collapse of the Soviet Union. These phenomena together

drive the contemporary world towards a more complex, ambiguous and uncertain environment.

The world is now more interconnected than ever before. A crisis in one country can shake the entire security system; a single world leader's unpredictable decision can affect stability and prosperity in the world. For instance, a crisis in the subprime mortgage market in the United States in 2008, rapidly became a global problem and affected entire global financial system. Globalization has many different facets, including such areas as political, economic, sociological, technology, culture, finance and production[1]. It has brought inevitable global economic integration and continues to harmonise other areas. Beside the new success ways, the globalization carry risk factors and failure potentials for the strategies.

Furthermore, astonishing advances in technology extra complicates the situation. It is getting more uncertain due to the accelerating pace of change in technology. Now the world is on the entry of the fourth Industrial Revolution[2] which will add further complexity and complications for strategists. The further development and wider use of new technologies such as artificial intelligence, quantum technology, nano-technologies, robotics, and the Internet of Things would affect the strategy-making. Recently founded two domains - space and cyber would create tremendous opportunities as well as policy and security challenges.

Beside, the challenges brought by globalisation and technological advances, emerging new world order after the collapse of the Soviet Union adds dynamism to security environment. Global economic power is gradually moving eastward. Russia's appetite for risk-taking, China's rising assertiveness, US unpredictability, the EU's fragility and the UN's weakness adds more uncertainty to the security environment. Such conditions create new opportunities for mid-powers to conduct independent policies. These new global relationships have

[1] "How does globalization relate to strategy, especially in large companies?", https://www.global-strategy.net/how-does-globalization-relate-to-strategy/

[2] Commons Select Committee, "Fourth Industrial Revolution inquiry launched", 01 May 2018, https://www.parliament.uk/business/committees/committees-a-z/commons-select/education-committee/news-parliament-2017/fourth-industrial-revolution-launch-17-19/, (accessed July 07, 2018)

created a contemporary environment in which strategic realities can, and do, shift rapidly.

Global interconnectedness and the changing global order fueld with the technological revolution, have changed the character of warfare from a traditional to a hybrid construct. Current dynamism and complexity drives future into more uncertain and unpredictable strategic environment, which pose serious challenges to strategy makers.

This research analyses the classicalized strategy-making model against the challenges of the contemporary strategic environment through the ends, ways, means and other necessary factors perspective. It tries to reveal the level of successful application of this formula in the long-term strategies, considering the level of change in the time being.

2. ANALYSIS OF CURRENT MODELS

Recent political and military failures are indicators of a continuously changing security environment. The issue might not be the way that all necessary factors are taken into account, but the model of strategy-making. Not only the right application of the instruments of power but also the strategy-making model itself affect the level of success of any strategy. The analysis of the current model in the context of the modern challenges would help us to evaluate its level of success in the contemporary strategic environment. The ends, ways and means formula which introduced by Arthur Lykke[3] is accepted as a classicized strategy-making model. All three pillars - ends, ways and means - of this model expose to some serious challenges in today's strategic environment that raises questions about the validity of the model.

Development brings changes. These changes could appear in the form of both, the emergence of new resources and changes in strategic goals. The ways are inclined to change in accordance with the level of changes in means and ends.

3. MEANS

Availability of resources is a critical factor for strategy-making. They are translated into the means to constitute one of the pillars of the model. Lykke's formuliac structure assumes all information about ends and means as known in advance. It assumes that not much

[3] Colonel Arthur F. Lykke was a military strategist in the 1980s. His work remains the cornerstone for military strategy instruction at the U.S. Army War College.

critical information would become available or known during the implementation process.[4] Earlier speed of change and its low level of impact on strategy made possible to incorporate the minor changes in strategy during the implementation phase. However, technological rise exelerated the change process. Now exponential technological growth, as foreseen by Moore's Law[5] causes in significant changes, thus the high impact. This growth facilitates the emergence of unplanned resources with significant affects on opposite parties of the "Positional Strategy". In many cases such a change necessitates development of an entire new strategy. Former U.S. Defense Secretary Donald Rumsfeld's following statement could be treated as a manifestation of deficiency of the end, way, means based on strategy-making. Once he said, "We go to the war with the Army (or Navy) we have. However, we don't necessarily win wars with the same armed forces or strategy with which we began them"[6]. This statement highlights the fact that strategies can be changed due to some factors and change in means is one of them. A few great powers and giant companies might afford the financial consequences of changing the strategy, but it might not be feasible for many states or companies.

Another deficiency of Lykke's formula is in its material-based architecture. It makes intangible and non-materiel-based resources harder to account in the strategy, which are often difficult to measure. However, contemporary conditions require their utilisation in strategy formulation process. Now, the conflicts are more hybrid rather than traditional ones. This fact per se is the sign of increasing role of intangible and non-material factors. Utilisation of geopolitical and geostrategic position, human domain, quality and effectiveness, strategic culture, public support, ability to reach information and deliver it to a wider auditorium, consideration of psychological, religious and legal aspects of the issue, cultural awareness and respect, reputation in international relations are samples of this category that need to be incorporated into new

[4] Mintzberg, Henry. "The Rise and Fall of Strategic Planning," The Free Press: New York (1994), pp 24-25.

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genegaration strategies. Recent events around the globe display that material superiority stand alone is not enough for success. Overwhelming material superiority does not provide successful ultimate outcome even for the great powers. The fact is that the U.S.-led operations in Afghanistan, Iraq and Syria, have not yet come to an end is an evidence of this new realm. Recognizing this new paradigm and suggesting a new way to solve this emerging challenge, General Joseph Dunford insisted that the focus of the U.S. Department of Defense's professional military education system should be the development of intellectual overmatch, beside the materiel overmatch[7].

4. ENDS

The ends, ways, means model's formuliac structure requires a *clearly articulated end state* to formulate a strategy. Without it the achievable objectives cannot be driven and a timeline cannot be set. Two main challenges, the complexity of the contemporary environments and the unpredictabile developments as a result of the interacting factors and actors within the environment, are serious threats for leaders' to set clear long-term goals. As a result, a planning and execution become a challenge. However, ends are not so clear-cut, especially in the contemporary environment, therefore it might be easy to say, but difficult to implement. Williamson Murray and Mark Grimsley acknowledge the issue by saying "it is easy to state that the policy goals should be clear before a strategy starts being developed, in reality, achieving such clarity and defining exactly what needs to be done can be extremely difficult"[8].

The world order emerging after the collapse of the Soviet Union is still at the stage of formation. In the current strategic environment, the realities on the ground might change rapidly and cause significant changes in ongoing strategies. For example, Turkish and Russian relations drastically shifted between 2015 and 2017. In a short period of time, just after downing a Russian attack aircraft and assassination of Russian ambassador (2016) in Turkey they were on the brink of a trade war and military conflict. But later, this state

[7]"Developing Today's Joint Officers for Tomorrow's Ways of War," Predecisional Draft Working Papers, Unclassified, February, 2019.

[8] Mintzberg, Henry. "The Rise and Fall of Strategic Planning," The Free Press: New York (1994), pp 24-25.

were transformed into high economic cooperation again, consulting strategic issues such as Syria and a deal of strategic weapon S-400. Russia-Ukraine is another vivid example. They had close relations by 2014, but now they are adversaries. Such rapid-changes indicate the re-balancing process of the strategic relations in an unsetteled global order which composes very dynamic strategic environment. Under such curcimstances thinking for a long-term and planning to an ultimate end state might not be succefful through the ends, ways, means formula.

Furthermore, frequently tasks are given to develop a strategy which aims to disfunction an undesired actor or factor within the environment rather describing the desired end state. It is belied that this would solve the issue. For example, General Tommy Franks was given the end state of regime change and WMD removal during this Operation Iraqi Freedom in 2004, without describing the post-Saddam Iraq[9]. Such inadequate thinking illustrates the lack of clear vision and would continue to as much as political or strategic leaders would prefer what they don't want, rather they want.

5. WAYS

The ways is aligning the ends and means, according to the Lykke's formula. It directs a strategist to consider all aspects and create an image that adding all available information to the formula would help to produce a successful strategy. It would be simplistic to believe that the strategists could consider the all variables, their interrelationships and potential long-term effects, and incorporate them into a strategy-making in contemporary strategic environment. Such approach presents some shortfalls that must be better understood for successful outcome. Firstly, adding all-important factors to the model might not be possible due to the complexity and dynamism of the current strategic environment. It would counteract as Collin S. Gray highlights: "because strategy embraces all aspects of the military instrument (among others), as well as many elements of the polity and society it serves, the maximum possible number of things, can go wrong"[10]. Secondly, the more variables reduces the agility and increases the possibility of establishing a passive strategy.

[9] Franks, Tommy, "An American Soldier," Harper Collins: New York, (2004), pp. 331-333.

[10] Gray, Colin S. "Why Strategy Is Difficult." *JFQ: Joint Force Quarterly* 22 (1999): 6-12.

On the other hand, new strategic realities require agile and proactive strategy to be able to address the complexity challenges. Lastly, considering all variables, their interrelations and long-term precautions and adding each factor to a plan reduces the velocity of the strategy-making process. However, in many occasisons strategy-makers are under time pressure. Time and timing has a great value in this complex and dynamic environment. Therefore, the number of variables must be limited for the planning purposes.

This model is preferrable due to its linear and easy way of thinking. It guides and directs strategic *thinking* and *planning* in a similar way: all efforts are focused on achieving end state from the begining to the end with the means available. This monotony eliminates the difference between thinking and planning which reduces strategy-makers' level of self-criticism and creativity. By its nature, a linear engineering-oriented design of the model restricts numbers of creative variations of possible ways. Thus, Dr. Jeffrey W. Meiser describes traditional strategy formulation model as "inherently uncreative, noncritical, and limits new and adaptive thinking"[11].

6. OTHER FACTORS

There are some important factors besides the ends, ways and means that affect the result of the strategy formulation process. A good strategy-making model should account those factors for the successful outcome. For example, a clear *division of responsibilities* among strategy-making bodies of policy-maker, strategy-maker and strategic planer is necessary for strategy formulation in today's contemporary environment. This would help to employ right people with relevant skills and expertise at the appropriate organizational level to make decisons. Each body has different ways of approach to issues, different priorities and they have different responsibilities and obligations. As Colin S. Gray, stresses this tension saying, "Politicians, by virtue of their craft, perceive or fear wide ramifications of action, prefer to fudge rather than focus, and like to keep their options open as long as possible by making the least decision as late as feasible"[12]. Due to the tension between policy and strategy one of the characteristics of the strategy-making model should

[11] Meiser, Jeffrey W. "Are Our Strategic Models Flawed? Ends+ Ways+ Means=(Bad) Strategy." *Parameters* 46, no. 4: 2016-17.

[12] Gray, Colin S. "Why Strategy Is Difficult." *JFQ: Joint Force Quarterly* 22 (1999): 6-12.

facilitate the balancing role between politicy-makers and strategists while identifying the goals of the strategy. This would align political goals and strategic objectives and enhance their synergetic work. Unfortunately, Lykke's formula does not present such mechanism or play such role.

The *information* and *time* are other necessary factors in the strategy-making process. Gathering the required information takes much longer than expected in many occasions. Especially, under the time pressure people would not make extra effort to gather detailed information. Dietrich Dörner describes this condition by stating, "Politicians faced with the need to make a decision will rarely have time to digest even readily available information, much less to pursue new lines of inquiry"[13]. However, an ends, ways, means type of strategy-making model requires sufficient time to gather information and calculate the consequences of remote goals. Addiltionally, the velocity of processing information in the time available might be adequate for the accuracy of the decision in 20th century, however, similar speed could not be enough for the contemporary security environment. Much time is needed to analyse and process due to its abundance and the "info pollution". On the other hand, this process creates a time pressure on decision makers.

[13] Dorner, Dietrich, The Logic of Failure, New York: Metropolitan Books, 1996,44

7. CONCLUSIONS

It is a beggining of a new era where the strategy-making and its execution face serious challenges posed by the complex and dynamic nature of the strategic environment. It is not that easy to generate a good strategy in such unpredictable environment. Besides the environment, there is a significant role for the strategy-making model which needs to have required characteristics in order to achieve in successful outcome. Any inability to meet requirements of the strategic environment would further exacerbate the strategy-making process.

The result of analysis of the ends, ways, means formula clearly shows its limitations in addressing the contemporary challenges. Recent strategic developments drive the world to an uncertain, complex and dynamic environment where all three pillars –ends, ways, means - of Lykke's model might easily change.

It is not an easy task to generate a healthy strategy on this shaky pillars. On the other hand, the model itself faces significant challenges due to its formulaic, result-oriented architecture. Some failures could be assessed as an outcome of the model's insufficiency and unflexibility. For example, difficulties in converting intangible and non-material resources into the means and utilising them in the formula; inability to adapt big changes in means and ends; inflexibility of strategic thinking; inability to distinguish the functions and responsibilities of different strategy-making bodies are some of main deficiencies of this model. Instead of being a whole strategy-making model, ends+ways+ means is a better fit for the planning.

The research acknowledges that the strategic environment is too complex and dynamic due to globalisation, technological advancements, and an unsettled world order. These phonemena made a result-oriented, linear and pre-planned strategy-making obsolute and thinking and planing everything ahead impossible. Strategy-making has become a multi-dimensional and multi-faceted process in contemporary era. The increasing number of variables and their interrelationships require a much artistic approach and a more novel mindset.

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DEVELOPMENT STRATEGY OF REVOLUTION IN MILITARY AFFAIR CONCEPT BY INDONESIA ARMED FORCES (TNI) IN THE SOUTH CHINA SEA

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Abstract: *TNI must consider the developing concept of Revolution in Military Affairs (RMA). This paper aims to develop an RMA concept strategy by the TNI in the South China Sea region. PEST (Political, Economic, Socio-cultural, Technology) and SWOT analysis methods are used to support research. Analysis of opportunities and challenges, the development strategy in developing the RMA concept by the TNI in the South China Sea is the novelty of this research. In addition, this paper also contributes to the development of military strategies in handling issues in the South China Sea. The results of the analysis of the QSPM matrix obtained a strategy that is in accordance with the development of Indonesia Armed Forces capabilities in the South China Sea, it is the WO strategy. It consists of 6 (six) sub-strategy steps, they are 1) Building integrated defense strength and capability towards the posture and defense structure of minimum principal strength (MEF); 2) Strengthening the title of Indonesia Armed Forces troops in the South China Sea region and the buffer zone supported by the construction of defense facilities and infrastructure; 3) Utilizing the national defense industry in the context of increasing the independence of defense and rejuvenating defense equipment on a national scale; 4) Integrating all components and powers that are authorized in handling security problems and law enforcement in the South China Sea; 5) Increasing capacity and capability in early monitoring and detection through the modernization of intelligence technology and enhancing the competence of human resources; 6) Increasing the protection of information systems and state secrets through improving the management of transmission systems and certain information that is effective and efficient.*

Keywords: *Revolution in Military Affair (RMA), Indonesia Armed Forces (TNI), South China Sea.*

1. INTRODUCTION

The development of the Asia Pacific region in the South China Sea has become very complex and dynamic (Thayer, 2010). These conditions have an impact on the economy and defense and security. The Government of Indonesia through the Indonesian Armed Forces (TNI), as the main component of national defense should have taken concrete steps and upheld the highest standards of defense in anticipation of facing the potential for widespread LCS conflict (Hamilton-Hart & McRae, 2015). From the perspective of national defense which is described in the title of TNI strength.

In the current conditions, the TNI must consider the developing concept of Revolution in Military Affairs (RMA), namely the deployment of military operations units that are more effective and responsive through increased joint operations. Based on this background, an analytical study of RMA concept development for the TNI is needed.

This paper aims to develop an RMA concept strategy by the TNI in the South China Sea region. PEST (Political, Economic, Socio-cultural, Technology) and SWOT analysis methods are used to support research. Analysis of opportunities and challenges, the development strategy in developing the RMA concept by the TNI in the South China Sea is the novelty of this research. In addition, this paper also contributes to the development of military strategies in handling issues in the South China Sea.

There are several previous studies to support this paper. The research about RMA such as O'Leary (2014) describes the relationship of the RMA with the global war against terrorism. Cassingham (2016) describes the rise of Drones with RMA in the Southeast Asian Region. Hansel and Ruhnke (2014) explained the RMA transition with the democratic process. Silverstein (2013) describes the advantages of Hirst driving in RMA.

The research about PEST analysis, likely Keung-Ho (2014) proposed the construction of a systemic PEST analysis diagram. Alava et al (2018) explain the PEST analysis on the neutrosopnic map. Acar (2015) explains about the analysis of PEST in an unstable economic environment. Stoyanova and Harizanova (2017) explain the analysis of PEST on Green Jobs in Bulgaria.

The research about SWOT analysis, namely Susilo et al (2018) explained the strategy of developing the Navy's posture to support operational tasks. Yogi et al (2017) SWOT to provide analysis,

appropriate strategies that can be used to plan base relocation. Maulina and Raharja (2018) explained SWOT to determine Virage Awi's strategy to achieve market share in a foreign country. Putra et al (2018) explained SWOT to analyze the differentiation strategy in the Never Get Old Company brand convection business in Malang.

In this research there is a systematically. Section 2 discusses RMA theory, PEST analysis, SWOT theory, flowchart and analysis. Section 3 discusses the paper results and discussion. Section 4 explains the conclusions of the research.

2. MATERIAL/METHODS

2.1. Indonesia Armed Forces (TNI).

Indonesia Armed Forces (TNI) as the main component of national defense concentrate and innovates in various efforts to build readiness to face threats as a negative impact of the strategic environment development (Reza, 2017). In carrying out its role as a defense tool in accordance with Law No. 3 of 2002 concerning National Defense, Indonesia Armed Forces are acting as a deterrent and responding to threats, as well as recovery after military operations. In maintaining the sovereignty and integrity of the territory of the Unitary Republic of Indonesia (NKRI), Indonesia Armed Forces together with the people and all components of the nation, realize it by utilizing all national resources for defense (Ministry of Defence, 2015).

a. The Role of Indonesia Armed Forces.

Based on Article 30 of the 1945 Constitution of the Republic of Indonesia, the Indonesia Armed Forces acts as a tool for the state to defend, protect and preserve the integrity and sovereignty of the state. In carrying out their duties, they are always based on state policy and political decisions, they are policies and political decisions made by the Government together with the Indonesian Parliament and formulated through a working relationship mechanism between the Government and the Indonesian Parliament, in accordance with statutory regulations (Ministry of Defence, 2015).

b. Basic Duty of Indonesia Armed Forces.

The Basic Duty of the Indonesia Armed Forces is the elaboration of the State Mission which becomes the Indonesian Government's Duty in accordance with Paragraph IV of the Opening of 1945 Constitution of the Republic of Indonesia, it is: “The Indonesia Armed Forces protect the safety of all Indonesians

and participate in efforts to maintain world order/peace". Then the formulation of the Indonesia Armed Forces Basic Duty still needs to be elaborated through the process of analyzing the Basic Duty (Mission Analysis) to find the Basic Duty of Indonesia Armed Forces which has been restated (Restated Mission). The analysis of basic duty is the process of finding Specified Tasks, Implied Tasks and Essential Tasks (Ministry of Defence, 2015).

2.2 South China Sea

The South China Sea is part of the Pacific Ocean, which covers parts of Singapore and Malacca Strait to Taiwan Strait with an area of about 3.5 million km². The South China Sea is the second largest or widest waters area after the five oceans. The South China Sea is waters with enormous potential because it contains oil and natural gas and besides that, its role is very important as a global oil distribution, trade and international shipping route (Wang, et al., 2014).

The South China Sea Region when viewed in an International Ocean system, is an area that has economic, political and strategic value. So that makes this region contains the potential for conflict as well as the potential for cooperation. In other words, the South China Sea region which contains the oil and natural gas contained in it, as well as it's very important role as a world oil trade and distribution channel, has made the South China Sea region the object of regional debate for years (Morton, 2016).

In the South China Sea there are four islands, and corals, they are: Paracel, Spratly, Pratas, and Maccalesfield Islands. Although territorial disputes in the South China Sea are not limited to the two groups of Spratly and Paracel islands, (such as disputes over the Phu Quac Island in the Gulf of Thailand between Cambodia and Vietnam), Spratly and Paracel's multilateral claims are more prominent because of the intensity of the conflict (Popescu, 2017). The South China Sea is a central trade channel, whether for export or import. The value of the trade flow is estimated at more than 5 trillion US dollars per year, with a note: it is estimated at 2016. While in 2035, an estimated 90 percent of oil from the Middle East to Asia passes through these waters (Kosandi, 2014).

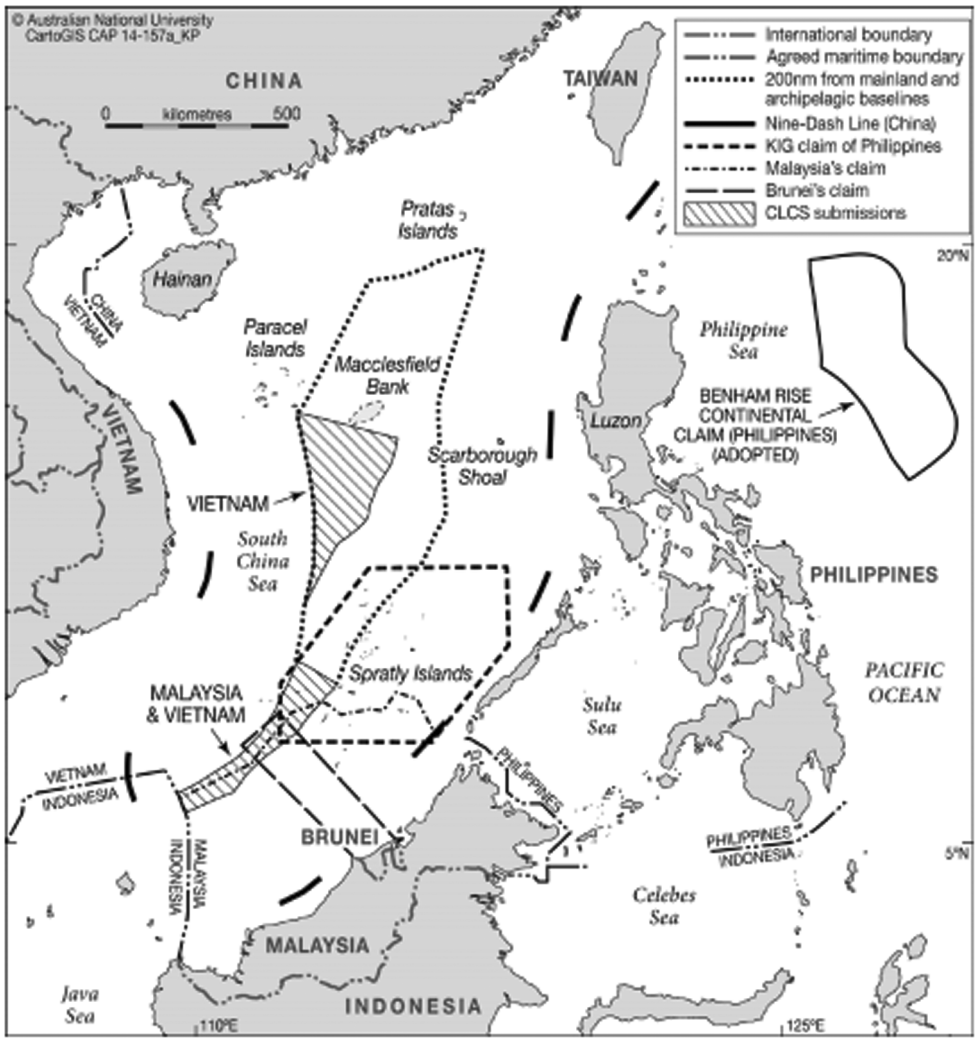

Figure 1. South China Sea Cartography.
(Morton, 2016)

2.3. Revolution in Military Affair (RMA).

RMA (Revolution in Military Affairs) is a theory of future wars, which is often associated with the ability to be ready to make changes to technology and organizations aimed at warfare. Future wars are information warfare, network-centric warfare, Command and integrated control which are all based on information technology which leads to National Security. Countries throughout the world today have carried out a combat revolution because this action is not solely to

conduct conventional fighting but there has been a very large shift in the military field (Davis, 1996).

RMA (Revolution in Military Affairs) is the development of the way of thinking of US military circles that occur due to the emergence of technological developments that are triggered by technological advancements, particularly communication technologies including computers, internet and remote sensing technology, print media, and electronic media. This has resulted in important changes in command and supervision, communication systems, accuracy in locking delivery of guided missiles or other modern weapons and collecting data, information and dissemination of general and intelligence information (Liaropoulos, 2006).

The rapid technological advances greatly influenced the military world in particular and were considered so important that the RMA terminology became a major new step as a "Revolution" in the military world. The RMA exerted influence on the change of command and supervision in the deployment of forces, the title of the army and played an important role in the integrity of the command while being guaranteed by fast communication, right through the support of advances in computerization and the internet (Cuoco, 2010).

The characteristic of this RMA is the use of communication and information technology to increase effectiveness in combat. This effectiveness is obtained by making changes in a number of military elements, they are weapons, organizations and doctrines, through the application of a system called the "system of systems. Thus, the RMA can simply be understood as a paradigm shift in the character of the armed forces and how to conduct war in the current era, with the use of new technology into the military system which is combined with innovative operational concepts and overall organizational adaptation (Chin, 2019).

2.4. PEST Analysis

PEST analysis is related to the influence of the environment on a business. PEST is a useful tool for summarizing the external environment in business operations PEST analysis is related to the influence of the environment on a business. PEST is a useful tool for summarizing the external environment in business operations (Stoyanova & Harizanova, 2017).

According to Ward and Peppard (2002) PEST analysis is an analysis of business external environmental factors which include the political, economic, social and technological fields. PEST is used to assess the market of a business or organizational unit. The PEST analysis direction is a framework for assessing a situation,

and assessing strategy or position, company direction, marketing plan or idea, in which this analysis can be taken to a new opportunity or threat to the company.

PEST or PESTEL analysis is a simple and effective tool for identifying which external forces might affect your business. This power needs to be identified because it can create opportunities and threats. Therefore the purpose of conducting PEST is to: 1) find current external factors that can affect the organization; 2) Identify external factors that might change in the future; 3) Take advantage of opportunities or avoid threats from external factors (Keung-Ho, 2014).

The result of the PEST Analysis is an understanding of the whole picture of the company. This analysis can also be used to assess new market potential. The more negative forces that affect the market, the more difficult it is to do business in that market. Difficulties encountered in these markets can reduce the company's profit potential and limit the company's business movements in the market (Alava, et al., 2018).

2.5. Borda Method

Borda Rules are included in the class of ranking rules in which points are awarded to each candidate or alternate according to rank in voter preferences (Caillaux, et al., 2011). Each decision-maker must order an alternate option according to the preference specified. One point is given to the highest choice alternative; the second received two points and so on (Mohajan, 2012).

In this method if there are n alternatives, the first choice of voters is given (m -1) points, the second point (m-2) and so on to the last option, which is 0 points. Then, in each alternative, summaries of all points are given from all decision-makers (or by criteria). The alternative is to rank in the order corresponding to the number, the fewer points gained, the better the alternate in the rankings.

The formula describes as (Junior, et al., 2014):

$$P_a = \sum_{i=1}^{n} r_{a1}$$

Where P_a is the total number of points obtained by alternative *a* and r_{ai} is the rank of alternative *a* in criterion *i* .

a. Determining criteria related to the educational system of Indonesian Navy in order to support technology mastery.

b. Giving value of the related criteria and determining the priority in the strategy implementation.

2.6. SWOT Analysis

SWOT analysis is the systematic identification of various factors to formulate a company's strategy. This analysis is based on

logic that can maximize strengths and opportunities, but simultaneously minimize weaknesses and threats. The strategic decision-making process is always related to the development of the company's mission, goals, strategies and policies. Thus, strategic planning must analyze the factors of the company's strategy (strengths, weaknesses, opportunities and threats) in the current conditions.

2.7. SWOT Elements

SWOT elements consist of Strength, Weakness, Opportunity, Opportunity, Threats. External and internal factors According to Wang et al (2014) are to analyze more deeply about SWOT, it is necessary to look at external factors and internal as an important part in the SWOT analysis, they are:

a. External Factors

These external factors influence the formation of opportunities and threats (O and T), where this factor is related to conditions that occur outside the company that affects the company's decision making. These factors include the industrial, economic, political, legal, technological, population and socio-cultural environments (Živković, et al., 2015).

b. Internal Factors

These internal factors affect the formation of strengths and weaknesses (S and W). Where this factor is related to the conditions that occur in the company, which also influences the formation of company decision making. These internal factors include all kinds of functional management: finance, operations, human resources, research and development, management information systems and corporate culture.

SWOT analysis compares the external factors of opportunity and threat with the internal factors of strengths and weaknesses. Internal factors are entered into a matrix called the internal strategy factor matrix or IFAS (Internal Strategic Factor Analysis Summary). External factors are entered into a matrix called the EFAS external strategy matrix (External Strategic Factor Analysis Summary). After the internal and external strategy factor matrix is completed, the results are then included in a quantitative model, the SWOT matrix to formulate competitive strategies in the organization (Yogi, et al., 2017).

Table 1. IFAS and EFAS Matrix of SWOT Strategies

Aspect	Weight	Rating	B x R
Aspect 1	X	Y	X.Y
Aspect 2	X	Y	X.Y
Aspect 3	X	Y	X.Y

2.8. Flowchart

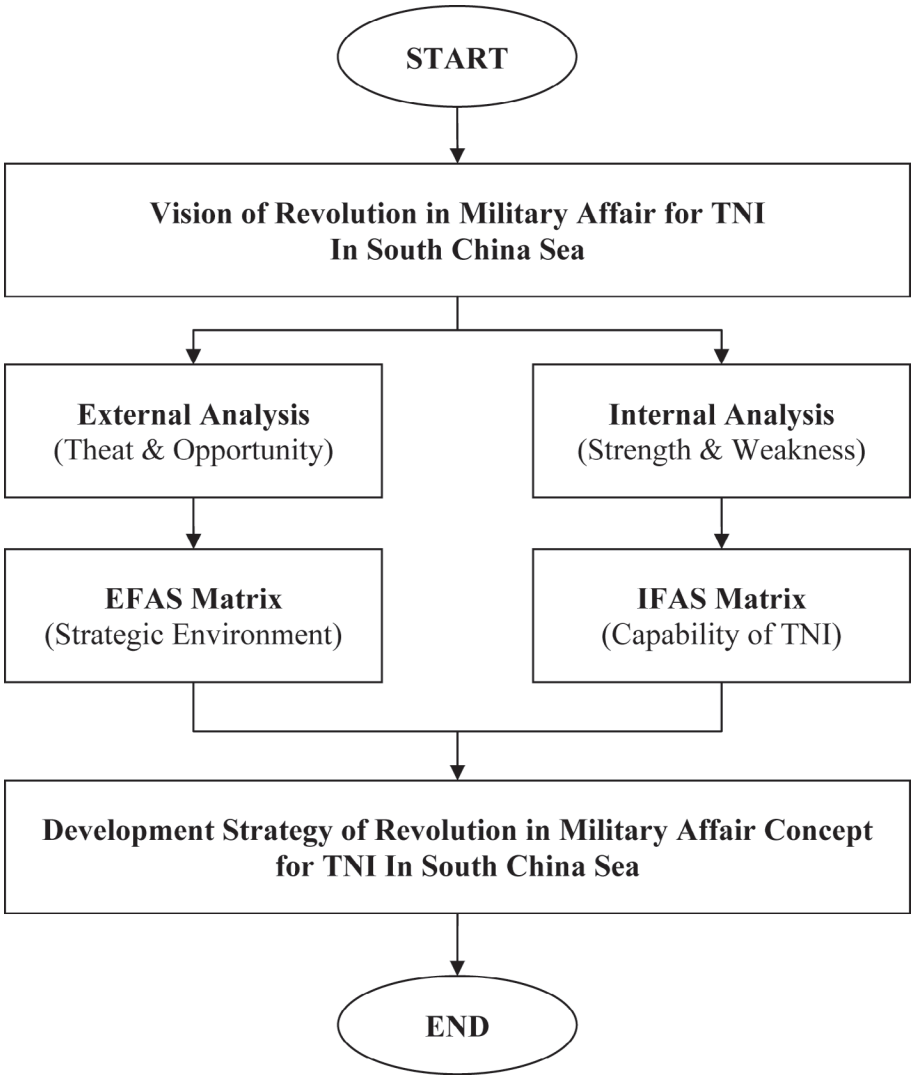

Fig. 2. Flowchart for Development Strategy

The development of the RMA concept strategy on the Indonesia Armed Forces capabilities in the South China Sea in the initial step is to formulate a vision and mission. Next, to identify the influential factors, including internal and external factors. Third, arrange the IFAS and EFAS matrices of each variable obtained. The variables obtained were weighted using the Borda method and Likert scale questionnaire with four expert personnel. Fourth, develop a development strategy from the weighting results by identifying the strategy quadrant (SO, ST, WO, WT).

Table 2. Likert Score Scale

Score	Description
1	Very Bad
2	Bad
3	Moderate
4	Good
5	Very Good

3. RESULT & DISCUSSION

3.1. External environmental analysis.

The dynamics of the global and regional environment will always have an influence on national developments, both positive and negative influences. Positive influences will bring benefits to the government in supporting national policy lines, while negative influences will present a potential threat to national stability. In addition to the influence of external factors from the development of the strategic environment, there are internal factors that have an influence on national stability, especially national security issues.

In the current globalization era, Indonesia as an archipelago has potential problems that pose a threat to an archipelago. These threats are in the form of territorial violations, violations of law which include armed robbery, human smuggling (illegal immigrants), smuggling of goods, illegal fishing, sea pollution, illegal exploration and exploitation of natural resources, and other violations in the sea. This can be concluded because of the lack of security and physical clarity of sovereignty in the sea border area

If it uses the National Resilience approach of the Republic of Indonesia, the strategic environment is mapped in natural determinants, they are geography, demographics, natural resource wealth and social determinants, consisting of ideology, politics, economics, socio-culture, and defense-security. The whole gatra is also called the eight gatra or astragatra. Natural Gatra is also called trigatra which has static properties. Whereas social gatra is also called pancagatra which has a dynamic nature.

Table 3. External Factor Analysis

ASPECT	OPPORTUNITY	OBSTACLES
Global	- The global population as a large market share, as well as cheap labor costs.	- Large global population poses a threat to foreign workers. - Total world population as a constraint to the quantity of the Global military Army
Regional	- Indonesia with active free politics has a big influence as rebalancing power.	- Increased regional military capabilities as a result of the arms race.
National	- South China Sea, an opportunity in a campaign to improve military capabilities.	- LCS conflict has the potential as a means or a new battlefield.
Geography	- Indonesia's strategic position as the World Maritime Defense Axis.	- Military threats as a cross position from China and the US
Demography	- Amount angkatan kerja yang melimpah sebagai SDM aspek pertahanan. - An abundant workforce as the Human Resources of defense aspect.	- Obstacles to an uneven level of education. - Social inequality is still high.
Natural Resources	- Abundant natural resources as defense logistics assets.	- The abundance of natural resources is a constraint in the use and control of territories by foreigners
Political, ideology, socio-culture, defense and security.	- The ideology of a country that is strong enough to face the threat of left or right radical.	- Massive right and left radical threats - Economic threats from the US and China trade wars.

Table 4. Result of Scoring and Weighting for External Factor from Opportunity Aspect

No	External Strategy Factors	Weight	Rating	Value
O	**Opportunity**			
1	The global population as a large market share, as well as cheap labor costs	0.074	3	0.223
2	Indonesia with active free politics has a big influence as rebalancing power	0.196	4	0.784

No	External Strategy Factors	Weight	Rating	Value
O	**Opportunity**			
3	South China Sea, an opportunity in a campaign to improve military capabilities	0.054	4	0.216
4	Indonesia's strategic position as the World Maritime Defence Axis	0.203	4	0.811
5	The abundant workforce as a human resource in the defense aspect	0.088	4	0.351
6	The abundant natural resources as defense logistics assets	0.162	4	0.649
7	State ideology that is strong enough to face the threat of left or right radical	0.068	4	0.270
8	The rise of the National Defense Industry	0.155	4	0.622
Amount		1.000		3.926

Table 5. Result of Scoring and Weighting for External Factor from Threat/Obstacle Aspect

T	Threat/Obstacles			
1	Large global population is a threat in foreign workers	0.043	3	0.128
2	The world's population as a constraint to the quantity of the Global military Army	0.138	4	0.553
3	Increased regional military capabilities as a result of the arms race	0.186	4	0.745
4	LCS conflict has the potential as a means or a new battlefield	0.144	4	0.574
5	Military threats as a cross position from China and the US	0.191	4	0.766
6	Barriers to an uneven level of education	0.037	3	0.112
7	Social inequality is still high	0.048	3	0.144
8	The abundance of natural resources has become an obstacle in the use and control of territories by foreigners	0.106	4	0.426
9	The economic threat is the impact of the US and China trade wars	0.106	3	0.319
Amount		1.000		3.766

3.2. Internal environmental analysis

Military defense is held in order to prepare universal defenses, prepare active defensive defenses and arrange multi-layered defenses. This is held in a balanced and proportional arrangement arranged in accordance with the characteristics of Indonesian geography as a function of deterrence, repression and recovery. While the Indonesia Armed Forces Strength which is the Main Component is built among others through the modernization of Alutsista, increased maintenance, organizational development, and support of facilities and infrastructure that are supported by the empowerment of the defense industry, professionalism of soldiers. Strengths of Main Components are developed to be able to face increasingly complex challenges through the use of Indonesia Armed Forces power in an integrated and synergized manner in the context of joint operations.

The deployment of Indonesia Armed Forces power to date has been seen as less than optimal and is still centered on Java. Most of these strengths are also complemented by obsolete defense equipment and the slow pace of modernization. The development of Indonesia Armed Forces capability is not evenly distributed, as is the modernization of defense equipment towards a system of cohesion or interoperability that is felt to be less than optimal. Analysis of the condition of the title of the Indonesia Armed Forces based on the Integrated Trimatra, including:

Table 6. Internal Factor Analysis

ASPECTS	WEAKNESS	STRENGTH
The Condition of Main Defense equipment of Weapon System (Alutsista) based on Integrated Trimatra	- The main weaponry system is concentrated in Java. - Main Defense equipment of Weapon System (Alutsista) age that tends to be old. -The number of defense equipment is still limited in quality and quantity.	- National Main Defense equipment of Weapon System (Alustista) Rejuvenation Program. - A Revival of the National Defense Industry.
Facilities and infrastructure	- There is no realtime information in the LCS region - The new operating control system is limited to the internal communication of each dimension.	- The establishment of Operation Control Center of Indonesia Armed Forces has been done (tactical level)

A Pattern of Integrated Trimatra	- Sectoral ego in the planning of Indonesia Armed Forces defense equipment. - Interoperability that has not been maximized between dimensions. - Combined tactical communication and operational control center constraints have not yet been established	- There is a joint command unit in each exercise.
Integrated Indonesia Armed Forces Unit (STT)	- The Integrated Command of Defense Area (Kogabwilhan) has not been established) - The completeness of personnel fulfillment has not been fulfilled.	- There is already an Operation Base (FOB/Forward Operation Base). - HR continues to be added and upgraded.

Table 7. Result of Scoring and Weighting for Internal Factor from Strength Aspect

No	Internal Strategy Factor	Weight	Rating	Value
S	**Strength**			
1	National Main Defense equipment of Weapon System (Alustista) Rejuvenation Program	0.333	4	1.333
2	The establishment of Operation Control Center of Indonesia Armed Forces has been done (tactical level)	0.200	3	0.600
3	There is a joint command unit in each exercise	0.100	3	0.300
4	There is already an Operation Base (FOB/Forward Operation Base)	0.117	3	0.350
5	HR that continues to be added and upgraded	0.250	3	0.750
Amount		1.000		3.333

Table 8. Result of Scoring and Weighting for Internal Factor from Weakness Aspect

W	Weakness			
1	Main Defense equipment of Weapon System (Alutsista) conditions are still concentrated in Java	0.168	4	0.673
2	Main Defense equipment of Weapon System (Alutsista) age which tends to be old	0.159	4	0.636
3	The number of Alutsista is still limited in quality and quantity	0.132	3	0.395

W	Weakness			
4	The absence of realtime information in the LCS region	0.055	4	0.218
5	The new operating control system is limited to the internal communication of each dimension	0.032	3	0.095
6	Sectoral ego in the planning of Indonesia Armed Forces defense equipment	0.050	4	0.200
7	Interoperability that has not been maximized between dimensions	0.091	3	0.273
8	There is no tactical communication and joint operational control center constraints	0.059	4	0.236
9	The establishment of Operation Control Center of Indonesia Armed Forces has not been done	0.127	4	0.509
10	Fulfillment of personnel	0.127	4	0.509
Amount		1.000		3.745

3.3. SWOT Matrix Analysis

Basically, the Implementation of National Defense contains 3 (three) basic things,they are what is maintained, what is to defend it and how to maintain it. The substance of the National Defense Strategy is how to defend the Unitary Republic of Indonesia (NKRI) with all its interests, so that the National Defense Posture is a reflection of the National Defense Strategy. The purpose of national defense is to safeguard and protect national sovereignty, territorial integrity and national safety from all forms of national defense threats must be prepared early so that the nation and state have effective deterrence.

The national defense aims to protect the sovereignty of the country, the integrity of the Unitary Republic of Indonesia and the safety of all nations from all forms of threats. The national defense is organized and prepared early by the Government through efforts to build and foster the ability of the nation's defensive abilities. The implementation of defense is inseparable from how the defense strategy is applied and how the defense doctrine functions as a perspective of the defense component in carrying out its duties and as a response to the defense organizer against threats and challenges to be faced.

The use of Indonesia Armed Forces power is directed to be able to overcome the challenges and threats of national defense, both global, regional and national issues, which are becoming more prevalent lately, it is the issue of transnational crime, security issues that are closely related to international terrorism, maritime and air security, border security and non-military security dimension issues. For the deployment of forces, directed towards the realization of

the effectiveness and efficiency of the implementation of the main tasks of the Indonesia Armed Forces in the South China Sea by measures to strengthen the title of the integrated military force of the Trimatra, evaluating the title of territorial unit to support operations in the border area with neighboring countries and outer islands faced with the development of threat dynamics, especially in the Natuna region.

Based on the results of the IFAS and EFAS Matrix analysis, a strategy development model was obtained consisting of SO, ST, WO, and WT strategy. From the research of the strategy, among others:

Table 9. Quadran Analysis of IFAS and EFAS

S	W	Quadrant	Axis
3.333	3.745	-0.412	X
O	**T**	**Quadrant**	
3.926	3.766	0.160	Y

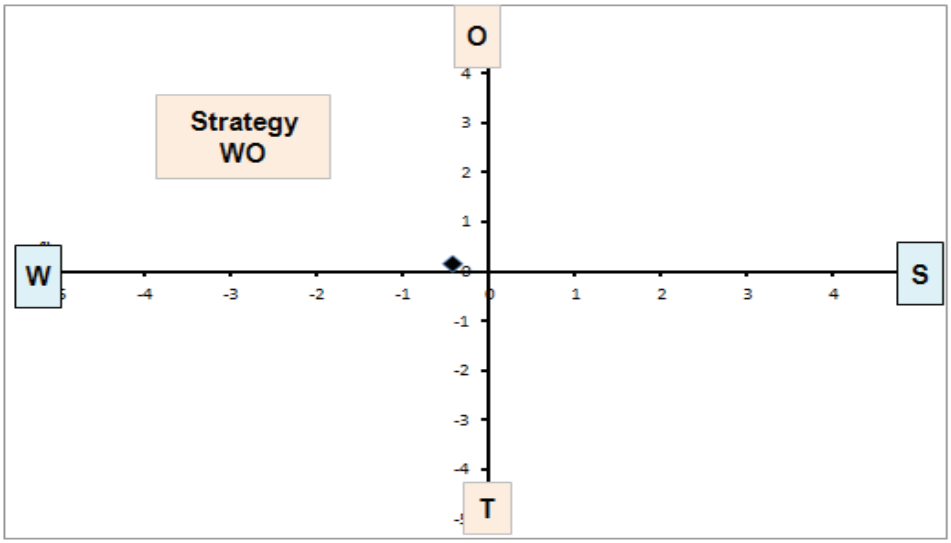

Figure 3. Diagram Analysis Strategi of SWOT

Based on four alternative strategies (SO, ST, WO, WT), one strategy needs to be known in accordance with the steps to develop Indonesia Armed Forces capabilities in the South China Sea. The results of the QSPM matrix analysis and SWOT diagram, the appropriate strategy is the WO strategy, which is to take the opportunities that exist in the strategic environment to improve the weaknesses of TNI capabilities in

the South China Sea. The WO steps include:

a. Building strength and defense capability in an integrated manner towards the posture and defense structure of minimum principal strength (MEF).

In this strategy, the strength and capabilities of the Land, Sea and Air dimensions continue to be optimally established and developed. The stabilization and development of this dimension are carried out within the framework of the Integrated Tri Matra that is capable of carrying out joint operations, possessing striking force and capability as a foundation for building a deterrent effect.

The implementation of national defense not only plays a role in strengthening the military defense posture to support the implementation of national defense, but even more crucial is to increase the deterrence effect of military defense postures against outsiders which will disrupt the sovereignty of the state. Faced with geography as an archipelago, military defense architecture must be prepared early as one of the prerequisites for the success of the national defense system in realizing the world's maritime axis.

b. Strengthening the title of Indonesia Armed Forces troops in the South China Sea region and the buffer zone supported by the construction of defense facilities and infrastructure.

The concept of Indonesia Armed Forces troop title is a strategic matter, which is good in the interests of long-term defense. The concept of Indonesia Armed Forces troop title must pay attention to changes in national development paradigms that are no longer centered in Java Island (Javacentric), but must be Indonesian centric. With the condition of the vast territory of the country that cannot be maintained only from Java, there need to be places that are strengthened including the South China Sea region. Placement of the title of the Indonesia Armed Forces was strengthened in the outermost and foremost points of the Republic of Indonesia, which also became potential areas as centers of national economic growth and mobilization. With these conditions, the Indonesia Armed Forces will be better equipped to face the future battle patterns amid the geographical conditions of the country as an archipelago.

Furthermore, the title of the existing troops must be supported by adequate facilities and infrastructure. Defense infrastructure as a segment of the supporting components of national defense has a very important role in supporting the economic, social and cultural activities of the community. National infrastructure will be useful to support military combat operations on land, sea and air. Thus, in times of peace national infrastructure facilities need to be

arranged and prepared so that when needed they can be utilized for defense purposes.

c. Utilizing the national defense industry in the context of increasing the independence of defense and rejuvenating defense equipment on a national scale

Indonesia Armed Forces have an interest in the development of the domestic defense industry, as a form of independence in supporting and fulfilling the needs of the Indonesia Armed Forces Main Tool and Weapon System. Rejuvenation of the main weaponry system is considered to be very urgent, because with the increasing intensity and escalation of threats, due to the development of the strategic environment, demands TNI professionalism. At present many countries are competing to develop their defense industry to become the leader, including Indonesia being started. The development of the independence of the domestic defense industry, is a real effort in building internal capabilities and rejuvenating main defense equipment of weapon system (Alutsista).

d. Integrating all components and powers that are authorized to handle security problems and law enforcement in the South China Sea.

The law mandates a National Defense System that is universal, involves all citizens, territories and other national resources, and is prepared early by the government, implemented in a total, integrated, directed and continuing manner to uphold national sovereignty, territorial integrity and the safety of all nations. of all threats, through efforts to build strength and capability for national defense, the universal defense system combines a military and a non-military defense system.

To deal with military threats, placing Indonesia Armed Forces as the main component is supported by the reserve component and supporting components, whereas to deal with non-military threats, placing government institutions outside the defense field as the main element, in accordance with the form and nature of the threats faced, is supported by other elements of the nation's power.

e. Increasing capacity and capability in early monitoring and detection through modernization of intelligence technology and enhancement of human resource competencies.

To support intelligence performance and the challenges that will be faced in the future, especially crimes in the field of technology, human resources (HR) and equipment modernization need to be built. With the maximum performance of intelligence, national development can run smoothly in line with expectations, national integrity or unity and integrity can be

maintained and can secure national interests from threats both from within and from outside.

f. Increasing the protection of information systems and state secrets through improving the management of transmission systems and certain information that is effective and efficient.

The development of information and communication technology today is so rapid and has touched almost every aspect of life. Information technology is not only used in the industrial or economic fields, but also in the field of defense which utilizes a lot of information technology for the process of policy-making and decision making. Advances in information technology also shifted the nature of threats coming from the state threat through the use of weapons of mass destruction into groups (non-state threats) with high-tech control. The threat to the state is no longer related to military power, but the broader spectrum is non-military such as the threat of cyber-crime.

4. CONCLUSION

Based on the results of the analysis in the research, the concept of Revolution in Military Affairs can be applied in the context of developing Indonesia Armed Forces capabilities in the South China Sea. Internal factor analysis results obtained 5 (five) aspects of strengths and 10 (ten) aspects of weaknesses. The results of the analysis of external factors obtained 8 (eight) aspects of opportunities and 9 (nine) aspects of challenges.

The results of the analysis of the QSPM matrix obtained a strategy that is in accordance with the development of Indonesia Armed Forces capabilities in the South China Sea, it is the WO strategy. It consists of 6 (six) sub-strategy steps, they are 1) Building integrated defense strength and capability towards the posture and defense structure of minimum principal strength (MEF); 2) Strengthening the title of Indonesia Armed Forces troops in the South China Sea region and the buffer zone supported by the construction of defense facilities and infrastructure; 3) Utilizing the national defense industry in the context of increasing the independence of defense and rejuvenating defense equipment on a national scale; 4) Integrating all components and powers that are authorized in handling security problems and law enforcement in the South China Sea; 5) Increasing capacity and capability in early monitoring and detection through the modernization of intelligence technology and enhancing the competence of human resources; 6) Increasing the protection of information systems and state secrets through improving the management of transmission systems and certain information that is effective and efficient.

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NON-ALLIANCE POLICY AS A PRINCIPLE OF SHAPING THE NATIONAL SECURITY WITH A FOCUS ON THE CASE OF AZERBAIJAN

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Abstract: *Non-alignment, both as a foreign policy perspective of some particular states is a critical factor of contemporary international relations. The paper focuses on the history of non-alignment policy during the Cold War and after its demise. The evolution of Non Aligned Movement is delineated, the challenges are highlighted and prospects are estimated. The article looks at the current state of the NAM in the face of rapidly changing international order. The paper presents the comparative analysis of Azerbaijan's security policy as a country pursuing non-alignment policy.*

Keywords: *non-alliance policy, Non Aligned Movement, balance, neutral, organization.*

1. INTRODUCTION

Conducting collaborative struggle against fascism and militarism allied countries did not continue their cooperation after the Second World War. The economically and militarily-politically active counry, USA was claiming the world leadership. USSR in its turn was trying to carry out a communist revolution in Europe. And this confrontation between two different ideologies formed the struggle between two sides vying for dominance, exploiting every opportunity to exert undue influence especially on European countries [1]. The emergence of a bipolar world and the formation of two military blocks (NATO and the Warsaw Pact) after

the Second World War ushered in an intense rivalry between different countries. Finding an effective grand strategy to survive between two hostile powers inevitably requires a balanced policy. In this context, the underdeveloped countries felt the need to join efforts for the common defense of their interests, to strengthen their independence and sovereignty and to express a strong commitment with peace by declaring themselves as "non-aligned" from either of the two nascent military blocks [2]. This need ended up with the formation of new organization, Non-Aligned Movement (NAM). The stated dominant objective of the NAM was to facilitate and provide a viable platform for countries, which did not want to align themselves militarily with the two Cold War era superpowers–the United States and the Soviet Union [3]. It in the past enabled the NAM aspired countries to avoid the limitations and entanglements of other alliances. In fact, non-alignment for those countries was a strategy for survival as a free and independent sovereign nation. The NAM was born at a tumultuous time when a plethora of countries was striving to get rid of the colonial rule. Moreover, the arms race threatened the planet as never before.

The term non-alignment was first coined by George Liska. Who used to describe it the policies of the states, which decided not to join either of the two power blocs in world politics of post war years. George Liska was the first to come close to accepting the term of Non-alignment, in a really scientific manner [4]. The decision to adopt non-alignment was not merely an idealistic dream of neutrality, but was, rather, based on a realistic assessment particular countries' geopolitical situation. It gave those countries room to maneuver according to their own interest rather than allowing them to become confined within the limitations of a Cold War alliance. Hindsight reveals the consequences of this approach.

2. NON-ALLIANCE POLICY: CHALLENGES AND PROSPECTS

Non-Aligned Movement was founded by the countries that wanted to resist the efforts of NATO and Warsaw Pact to enlist them in the Cold War. Despite the criticism and

skepticism of some politicians and experts, such as John Foster Dulles and Henry Kissinger, nonalignment functioned throughout the Cold War both as a movement and as a strategy [5]. With the collapse of Soviet Union in 1991, the détente between former adversaries rendered the NAM useless, where the United States is considered the only superpower. However, approximately thirty years after the end of the Cold War, the Non-Aligned Movement still exists. Is it considered the remnant of the Cold war or today's geopolitical situation also necessitates its existence? NATO was also deemed the vestige of the bygone era, but later proved its relevance, even importance right after 1991 Rome summit, through adopting its new Strategic Concept, which ushered in the whole transformation of the Alliance. The international system or, to be precise, the dynamics of the new world order are constantly changing. This also justifies the need to continue because the system could end up with several rival blocs or power centers in the future. In order to continue and be relevant and efficient, the movement must be revamped and reshaped [6]. Today, the main purpose of the NAM is to serve as a mechanism aimed at applying the principles of international law. The movement believes that each country is a sovereign and independent state and everything must be accorded with the status regardless of the size of that country. In order to shed light on it we should hark back to Bandung conference when core principles of NAM were adopted for the first time. The Bandung principles include [2]:

1. Respect of fundamental human rights and of the objectives and principles of the Charter of the United Nations.

2. Respect of the sovereignty and territorial integrity of all nations.

3. Recognition of the equality among all races and of the equality among all nations, both large and small.

4. Non-intervention or non-interference into the internal affairs of another -country.

5. Respect of the right of every nation to defend itself, either individually or collectively, in conformity with the Charter of the United Nations.

6. a. Non-use of collective defense pacts to benefit the specific interests of any of the great powers.

b. Non-use of pressures by any country against other countries.

7. Refraining from carrying out or threatening to carry out aggression, or from using force against the territorial integrity or political independence of any country.

8. Peaceful solution of all international conflicts in conformity with the Charter of the United Nations.

9. Promotion of mutual interests and of cooperation.

10. Respect of justice and of international obligations.

We apparently see that the Bandung principles state that member countries will refrain from using force against the territorial integrity or political independence of any country, settle all international disputes by peaceful means and promote mutual interests and cooperation. In a nutshell it contributes to world peace through creating a third group to water down the tension between different blocs. If the members of this Movement had taken sides in the Cold War between the Eastern and the Western blocs, the war would have been more deepened than it was. Through declaring their non-alignment policy, the countries participating in the NAM avoided being the playgrounds of the confrontation of the superpowers. For instance, through pursuing non-alignment policy India, Brazil Australia and New Zealand managed to survive unscathed unlike Afghanistan, Vietnam, Oman and Korea, those countries suffered most. Because of the positive neutrality that the Movement exhibited, the world has become a more peaceful place to live in [7]. NAM countries have been immensely contributing troops to UN and NATO operations when the objectives coincide.

But it is no exception that sometimes malign ambitions (because of diverse and competing interests of member states) overcome the founding principles of NAM. Apart from the proclivity towards either blocs (Western or Eastern) some members have even gone to war with one another (for instance, India and Pakistan, Iran and Iraq). As well as, the global powers such as the United States, EU, Russia and China have resources to limit NAM's ability to impact global trends or to enforce its own resolutions. NAM does not have any viable tools and

internal mechanisms to enforce UN resolution, which have been pending for years. The NAM has never assumed any mediating role between the countries which are in conflict with each other and has not defined such a role for itself. That is the reason the Movement is broadly accepted impotent in the face of political instability and border disputes amongst member states. Continued ties with their former colonial masters in some countries (control and hegemony of external forces) impose undue limit on their independent policies. NAM is a coalition of nations seeking consensus - the closest possible convergence of views on matters of mutual interest. However, sometimes a conflict of interest and ideological difference among leaders are inevitable, and of course, it wreaks havoc on the efficiency of the whole Movement. And these are the most sobering challenge for member states looming over future years. In spite of it, the NAM could have a larger role in the future. The Movement has influenced international thinking on many issues including apartheid, decolonization, wars of national liberation, withdrawal of foreign forces from fledgling countries and sovereignty over natural resources. Even though it does not rule out the conflict, but reduces its likelihood. Non-Aligned Movement affords its members a forum where they can discuss their common problems and work out strategies to tackle international complications of peace, security, development, terrorism, human rights and environmental safety. It is important to recognize that when the NAM was founded its principles did not seek to form a third or alternate bloc in order to serve as a counterbalance against the influence of the superpowers [8]. The bottom line is, we have to perceive the NAM as a movement not an organization which leads to more equitable, peaceful, prosperous and secure world.

3. THE EXPERIENCE OF AZERBAIJAN AS A COUNTRY PURSUING NON-ALLIANCE POLICY

Geopolitical realties are what largely shape a state's attitude towards others. The geopolitics of the South Caucasus is complicated, volatile and fragile. Three independent countries (Azerbaijan, Georgia and

Armenia) once were a part of the same empire. After the demise of the Soviet Union, all three countries got their independence. The paths of the three South Caucasus republics have been different ever since in terms of their geo-political orientations, with Armenia being a CSTO member, Azerbaijan pursuing an independent policy regarding global powers, and Georgia, apparently, demonstrating a pro-NATO position [9]. The lack of diplomatic relations between Armenia and Azerbaijan due to the Nagorno-Karabakh conflict, Russia's increased assertiveness in the region and the absence of a NATO presence are central elements in understanding the current situation in the region [10].

In 1993 when national leader Heydar Aliyev came to power, Azerbaijan was teetering on the brink of civil war [1]. The mixture of internal politics with geopolitics had made the conduct of foreign policy much more complex. Having gone from a checkered past to a democracy, Azerbaijan was struggling to institutionalize democratic changes. Then President Heydar Aliyev established the balanced foreign policy in order to get around the looming civil war in the country. Today his balancing act is evident in relations with the West, Russia and Iran, which aims to avoid antagonizing global and regional powers.

Today Azerbaijan is in a situation of war. 20 percent of its territory has been occupied by Armenia, which is the member of CSTO. However, it in fact does not intimidate Baku. Because an occupied part is an integral part of Azerbaijan and CSTO does not have any right to meddle in, if a war breaks out again. Azerbaijan's rising global profile is reshaping its approach towards major partnerships in the changing global order. Azerbaijan is showing signs of pursuing strategic autonomy separately from non-alignment since it has all resources to sustain this approach. The country benefits from utilizing different partnerships rather than shunning them. Azerbaijan needs deeper engagement with its friends and partners if it is to develop advantage in its dealings with its adversaries. Azerbaijan is today well positioned to define its bilateral relationships on its own terms without political and ideological crutches from other countries.

A non-aligned approach to relations with global and regional powers has been in practice long before Azerbaijan's formal integration in 2011. It makes sense to differentiate three phases of Azerbaijan's foreign policy after it gained the independence for the second time: 1991-1993, 1993-2003, 2003-present). The overridingly important objective goal in the next two phases was and is to preserve Azerbaijan's independence and make it a leading country in the region, as well as increase its role in the international arena. Thus, Azerbaijan's non-alignment is an upshot of pragmatic foreign policy rooted in ground realities. Rather than representing a drastic shift in its external orientation, Azerbaijan's membership in NAM is a natural extension of the "balanced foreign policy" introduced by the national leader Heydar Aliyev and is successfully conducted by the incumbent government. This essentially informal realist approach was initiated in the context of the severe challenges posed by domestic instability, encirclement by hostile regional powers and the loss of sovereignty over nearly one-fifth of the national territory to Armenian occupying forces [8]. Azerbaijan remains neutral and judges every issue on its merit. Azerbaijan does not allow others to use its territory for any hostile activities against its neighbors or any other countries. Not aligning with any of the superpower military alliances is one of the stated objectives of Azerbaijan's foreign policy. The moment it takes sides, there will be a serious trouble. In a nutshell, Azerbaijan's non-alignment policy is predicated on the principles like peaceful coexistence with neighbors, nonparticipation in military pacts and no granting of military bases to the great powers. As national leader Heydar Aliyev mentioned: "You can't be friends with some countries and enemies with others despite the fact that this is the way most countries function. Azerbaijan doesn't want to be an enemy with any country. At the same time, we will not become victim to another country's policies. Azerbaijan has its own independent policy. We are developing good relations with Europe and America and seek to benefit from their experiences while preserving our own national identity and resources" [8].

Some countries have argued that non-alignment requires equidistance from the superpowers, but that is a minority view. The reality is that there is no concept of an equal relationship in global geopolitics. It has been broadly accepted that a tendency towards any superpower (US or Russia in Azerbaijan's case) does not disqualify a nation from membership in the NAM. Participating in the NAM obviously means non-alignment with military blocs. Some members of the NAM are involved in alignment with any other superpower, such as US, Russia and China in pursuit of deepening their bilateral relations in the changing global arena. For instance, Belarus is a member of CSTO, India and South Africa are in BRICS, Uzbekistan is in SCO. Apart from these all African countries participating in the NAM are the members of AU at the same time. Non-alignment is not an ideology but a smorgasbord of positions, which have varied over time [11]. Azerbaijan has tacitly supported NATO while strategic objectives chime with each other's and contradicted the policy measures what it found irrelevant (for instance Kosovo issue). Azerbaijanis is was one of active members of the anti-terrorist coalition, dedicates certain amount of troops to these operations. Between one third and 40 percent of US supplies to Afghanistan went through Azerbaijan or its air space [12]. Then, Azerbaijan eschewed imposing sanctions on Iran while the whole Europe did it even though there has been no security threat posed to Azerbaijan. On the other hand, it is abundantly clear that siding with the West it opposed to some of the moves that Russia and Iran made (regarding Russo-Georgian and Syrian wars and Crimea crisis). The objectives of Azerbaijan's security policy are to preserve its independence, maintain peace, contribute to stability and security in the region and strengthen international peace and security. Azerbaijan as a NAM country pursues a policy of non-participation in military alliances. This security policy, enabling our country to remain neutral in the event of conflicts, serves us well. For instance choosing Baku to arrange the meetings between the US and Russian (February 2017), as well as NATO and Russian (September 2017) military leaders was not a coincidence. Azerbaijan's multivector policy enables it to earn

friends in an international level. Azerbaijan's membership in the NAM provides it with a formal foundation for its independent foreign policy that potentially reinforces its leadership position within and beyond the South Caucasus region [8]. Looking to the future, it is more apparent than ever that security is more than the absence of military conflict. Threats to peace and the security of the country can best be averted by acting concertedly and in cooperation with other countries. Azerbaijan will chair the NAM in 2019-2022. The XVIII Summit of the NAM will be held in Baku. It has a symbolic meaning, because exactly 30 years after the 1989 Belgrade Summit Europe will have an opportunity of hosting the heads of the states and governments participating in the NAM. Through holding this remarkable Summit and assuming the chairmanship for the next three years Azerbaijan exhibits the signs of allegiance to the objective and principles of the NAM and it will certainly contribute to international peace, security, and cooperation.

4. CONCLUSIONS

The world again faces convoluted crises identical to Cold War era threatening development and security. The bipolar international system (so called "Second Cold War") brings the NAM's founding principles to the fore again. Now more than ever, NAM's existence is vital to contributing to world peace. Non-alignment, as a foreign policy instrument ensures multilateralism, equality and mutual understanding in maintaining peace and security and promotes the needs of member countries to effectively deal with the new global realities and challenges. Today, Azerbaijan's neutrality consists of refraining from taking sides, both militarily and politically, in case of armed conflict. The neutrality for Azerbaijan is a part of the national identity, every debate on international involvement. Azerbaijan's membership in the NAM therefore provides it with a formal foundation for its independent foreign policy that potentially reinforces its leadership position within and beyond the South Caucasus region. It has the opportunity to pursue any economic, political, cultural and social goals of its choice. It does not expect any form of interference from any quarters especially from any of the two world powers, the

US and Russia. It is however, erroneous to assume that only the small states need and could use the NAM as a platform. Non alignment does not mean isolation. Azerbaijan is an enthusiastic partner of NATO and maintains warm relations with both Russia and Iran. The growing partnerships with other Alliances do not forestall the engagement with these countries. Azerbaijan will not be cajoled, enticed or coerced into actions that would jeopardize its standing as a leading country in the South Caucasus region.

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STRATEGIC DEVELOPMENT THE CAPABILITY OF INDONESIAN WARSHIP (KRI) „dr. SOEHARSO-990“ FOR COMBINE OPERATION OF HUMAN ASSISTANCE/DISASTER RESILIENCE (HA/DR) IN SOUTHEAST ASIAN REGIONAL

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Abstract: *In the aspect of disaster response, the Indonesian Navy has KRI: dr. Soeharso-990 which has been equipped with medical supplies in carrying out the operation task of disaster response in the regional area. However, as a KRI which is diversified as hospital-aids ship (BRS), KRI: dr. Soeharso-990 still has several obstacles in the implementation of emergency response operations. Based on the current conditions, it needs a training strategy to develop the capability of KRI: dr. Soeharso-990 during a joint emergency response operation. This study aims to provide an alternative formulation of strategy to train the capability development using approach of Strength, Weakness, Opportunity, Threat (SWOT), Interpretative Structural Modeling (ISM), and aspects of Balanced Scorecard (BSC). Based on the results of the SWOT matrix analysis, the SO Strategy consists of 3 (three) strategic steps; ST Strategy consists of 3 (three) strategic steps; WO strategy consists of a strategy step; and WT strategy consists of a strategy step so that all total consists of 8 sub-strategies. Based on the results of the elements' classification in the strategy, it was obtained 5 (five) levels of the hierarchical structure. In this hierarchical structure, it can be seen that sub-strategy of ST-3 and sub-strategy of WO-1 were at level V. Meanwhile, sub strategy of ST-1 and ST-2 were at level IV. Sub-strategy of SO-2, WT-2, SO-1 were at level III, II and I.*

Keywords: *Indonesia Warship (KRI) SHS-990, Humanitarian Assistance/ Disaster Resilience (HA/DR), SWOT, ISM, BSC.*

1. INTRODUCTION

Indonesian Navy, which is an integral part of Indonesian National Armed Forces, has a role as a major component of the defense and security of the maritime state, carrying out its duties based on state policies and political decisions to uphold national sovereignty, maintaining the territorial integrity of Unitary State of the Republic of Indonesia (NKRI) based on the Pancasila and The 1945 Constitution (Ministry of Defence, 2015).

Based on the basic tasks mentioned before, the Indonesian Navy participated in carrying out military operations other than war in the context of disaster response (Laksmana, 2014). In the aspect of disaster response, the Indonesian Navy has KRI: dr. Soeharso-990 which has been equipped with medical supplies in carrying out the task of disaster response operations in the Regional area. However, as a KRI which is diversified as hospital-aids ship (BRS), KRI: dr. Soeharso-990 still has several obstacles in the implementation of emergency response operations. Those obstacles are some physical abilities, professions that come from the health team, and the support of volunteers in which there are many of them who do not have the readiness to carry out their duties, so do not know who to do. These causes ineffectiveness and overlap in the implementation of tasks (Rianto & Purwanto, 2017).

This study aims to provide an alternative formulation of strategy to train the capability development using approach of Strength, Weakness, Opportunity, Threat (SWOT), Interpretative Structural Modeling (ISM), and aspects of Balanced Scorecard (BSC). The SWOT approach is used to formulate a strategy to develop capability development, ISM methods and BSC methods which are used to determine priorities and conceptualize the strategy map in order to support the development of capability of Indonesia Warship (KRI).

There are several methods used in developing strategies to improve capability. Ahmadi et al (2011) explained about strategy of the defense system monitoring in the selection of Indonesian Navy Base. Yogi et al (2014) used the SWOT and AHP analysis methods in planning the strategy of base selection. Susilo et al (2019) used the SWOT and ISM methods in the priority of a strategy to develop the capability of Indonesian Navy. Firoz & Singh (2012) use the ISM method to identify logistics suppliers. Research on Balanced Scorecard (BSC), among others, BSC is as a methodological concept for system dynamics-based performance evaluation. Stavrakakis et al (2010) implemented the BSC to education and training of Indonesian Navy.

Sales et al (2016) implemented the BSC is as an information technology dynamic of the Indonesian Army.

This study is expected to provide input for the Indonesian Navy in the Training and development of the capability of KRI: dr. Soeharso-990 on the operations of disaster emergency response. This study is expected to contribute to research science of military operations in strategic management, training and development of the strength and capability of the KRI.

2. MATERIAL/METHOD

2.1. The Indonesian Navy (TNI AL)

The Indonesian Navy, which is an integral part of Indonesian National Armed Forces, has a role as a major component of the defense and security of the maritime state, carrying out its duties based on state policies and political decisions to uphold national sovereignty, maintaining the territorial integrity of Unitary State of the Republic of Indonesia (NKRI) based on the Pancasila and The 1945 Constitution, as well as protect all the people of Indonesia and their entire native land from threats and disturbances to the integrity of the nation and state through the implementation of military operational level of war (OMP) and military operations other than war (OMSP) (Marsetio, 2013).

2.2. Role and Duties of Indonesian Navy

The duties and roles of Indonesian Navy in the future are a result of dynamic of strategic environment development of global, regional, and national which will be more complex.

a. The role of Indonesian Navy.

The Indonesian Navy has a universal role, those are the role of military, diplomacy, and the constituent (police) known as the "Universal Trinity Roles of the Indonesian Navy"(Susilo, et al., 2019). These three roles are also the responsibility of the Indonesian Navy, including: 1) The Role of Military; 2) The Role of Diplomacy; 3) The role of Police.

b. The duty of the Indonesian Navy.

In accordance with Regulations, Article 9, Number 34 of 2004 concerning the Indonesian National Armed Forces, the duties of the Indonesian Navy are as follows (Putra, et al., 2017):

1) Implementing the duties of the Indonesian Navy in the field of defense.

2) Upholding the regulation and maintaining security in the marine areas of national jurisdiction in accordance with the provisions of ratifying national and international regulation.

3) Implementing diplomacy task of Indonesian Navy in order to support foreign policy set by the government.

4) Implementing the tasks of the Indonesian National Armed Forces in the construction and development of the strength of the Indonesian Navy.

5) Implementing empowerment of marine defense areas.

2.3. KRI: dr. Soeharso-990

As hospital-aids ship, KRI: dr. Soeharso-990 has a strategic role and can be main choice in health services in coastal areas and small islands in Indonesian territory. KRI: dr. Soeharso-990 is designated as a Hospital-aids ship based on *Skep Kasal* Number: Skep/1100/VIII/2007, dated August 24, 2007. The function of KRI: dr. Soeharso-990 is a Hospital-aids ship which has the ability as a Level II Hospital which in its organization is included in co-fleet II of the Republic of Indonesia in the ranks of supporting forces. As for the operation, it follows the KRI pattern and objectives in hospital-aids ship units(Rianto & Purwanto, 2017).

Fig. 1. KRI dr. Soeharso-990

2.4. Humanitarian Assistance/ Disaster Relief (HA/DR)

The military approach for HA/DR is driven by a set of principles derived from the core values of its foreign policy. One of them is the emphasis on the centrality of territorial sovereignty and the principle of non-intervention in the internal affairs of the state. HA/DR assistance must be provided only with the approval of the affected country, and its principle is based on an official request from the state authority (Raja Mohan, 2014).. Authority is wary of non-governmental organizations having access to the affected zone and having access to provide direct assistance to the government. India emphasizes the importance of the principle that HA/DR assistance must be based on demand (Winn, et al., 2014).

The role of the Indonesian Navy in HA/DR is very important and has a strategic objective in providing assistance to countries in the Southeast Asian area after a disaster (Thuzar, 2015). The Indonesian Navy has the ability to project soft power through the capability of KRI: dr. Soeharso-990 as a hospital-aids ship. In accordance with the Strategy of National Security in an effort to support joint HA/DR operations in the Southeast Asia area, the HA/DR mission has now become a priority (Sani, 2013).

2.5. SWOT Analysis (Strength, Weakness, Opportunity, Threat)

SWOT analysis is the most common technique that can be used to analyze strategic cases. SWOT is a tool often used to analyze the internal and external environment to achieve a systematic approach and support for decision situations (Hill & Westbrook, 1997). SWOT is an acronym for Strength (S), Weakness (W), Opportunity (O) and Threat (T). The first two factors (strengths and weaknesses) are related to factors of internal organization, while opportunities and threats cover the broader context or environment in which the entity operates (Collins-Kreiner & Wall, 2007).

Internal and external factors are referred to strategic factors, and they are summarized in the SWOT analysis. Strength and weakness are factors in the system allowing and hindering the organization from achieving its goals. Opportunity and threat are considered as external factors facilitating and limiting the organization in achieving its respective goals (Wang, et al., 2014).

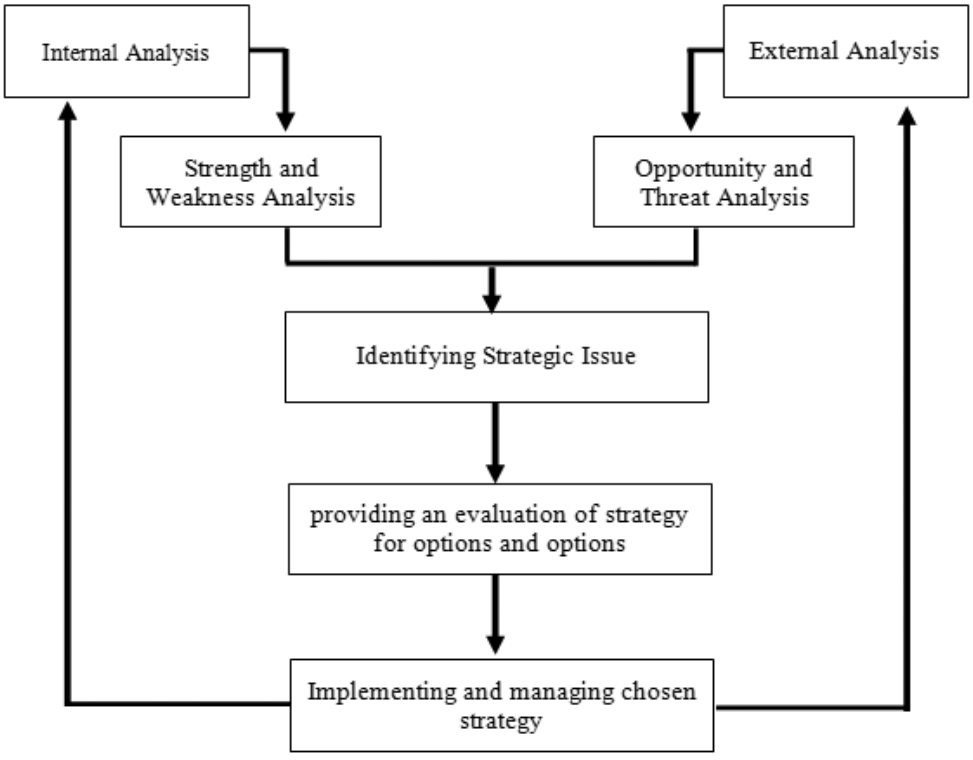


Fig. 2. SWOT Flowchart
(Yuksel & Dagdeviren, 2007)

2.6. Interpretative Structural Modeling (ISM)

Interpretative structural modeling (ISM), used for ideal planning, is an effective method because all elements can be processed in a simple matrix (Wang, 2015). ISM has been proven well to identify structural relationships among system specific variables. The basic idea is to use practical experience and expert knowledge to break down complex systems into several sub-systems (elements) and build multilevel structural models (Attri, et al., 2013).

ISM is often used to provide a basic understanding of complex situations, as well as to compile a series of actions to solve a problem. ISM is started with identifying relevant elements to problems and extending to group problem solving techniques (Firoz & Rajesh, 2012). A Structural Self Interaction Matrix (SSIM) was developed based on the comparison of paired elements. There are procedures or stages in the use of the ISM method, these stages include (Soti & Kaushal, 2010):

a. Parameter identification.

The elements that must be considered for relationship identification are obtained through the literature surveyor by conducting a survey.

b. Development of Structural Self Interaction Matrix (SSIM).

The development of interpretive structural models begins with the preparation of structural self-interaction matrices, which show the direction of contextual relations among the elements. In developing SSIM, there are four symbols used to indicate the direction of the relationship between the two obstacles of i and j according to Table 1.

Table 1. Symbol Rules on SSIM

Symbol	Relationship between row (i) and Column (j) elements
V	Barrier j will lead to barrier i, not in reserve direction
A	Barrier i will lead to barrier j, not in reserve direction
X	Barrier I and j will lead to each other, in both directions
O	Barrier i and j are unrelated

c. Reachability Matrix.

From the Structural Self Interaction Matrix (SSIM), the relational indicator is converted to binary numbers 0 and 1 to get a square matrix, called the reachability matrix, with the following information:

1) If (i, j) the value in SSIM is V, in the reachability matrix, (i, j) the value will be 1, and (j, i) the value will be 0.

2) f (i, j) the value in SSIM is A, in the reachability matrix, (i, j) the value will be 0 and (j, i) the value will be 1.

3) If (i, j) the value in SSIM is X, in the reachability matrix, (i, j) the value will be 1, and (j, i) the value will also be 1.

4) If (i, j) the value in SSIM is O, in the reachability matrix, (i, j) the

value will be 0, and (j, i) the value will also be 0.

Table 2. Sample on Reachability Matrix

No	Code	Strategies	4	3	2	1
1			A	O	O	-
2			V	A	-	
3			V	-		
4			-			

d. Partition level.

From the reachability matrix, common variables in the reachability set and the antecedent set are allocated to the intersection set. The top-level element for each hierarchy is the element where the antecedent set and the intersection set are the same in the ISM hierarchy. After the top-level barriers are identified. Then, they are removed from top-level of considerations and barriers. This process will continue until all levels of each barrier are found.

e. Interpretative structural modeling construction (ISM).

From the partitioned parameters and the reachability matrix, the structured model is derived, showing parameters at each level and arrows showing the direction of the relationship. Such a graphical representation of the model is called a diagraph.

2.7. Balanced Scorecard (BSC)

Concept of Balanced Scorecard develops in line with the development of the implementation of that concept. The Balanced Scorecard consists of two words: (1) score card(scorecard) and (2) balanced. A scorecard is a card used to record a person's performance score. Score card can also be used to plan scores that is wanted to be realized by someone in the future. Through a score card, the scores wanted to be realized by someone are compared with actual performance (Sales, et al., 2016). The results of this comparison are used to evaluate someone's performance in a balanced way from two aspects: financial and non-financial, short-term and long-term, internal and external. The word "balanced" in the Balanced Scorecard means that:

a. The owned performance measures have represented the four perspectives mentioned above.

b. Performance measures represent the results of past actions (financial) and measures that are factors driving future performance (customers, internal business processes, learning & growth).

c. Performance measures representing objective and subjective measures.

The company uses the Balanced Scorecard to manage the management process, as in the following figure (see Figure 2):

a. Clarification and translation of mission, vision, and strategy.

b. Communication and linking between goal and objective measures.

c. Planning, goal setting, and aligning strategic initiatives.

d. Improvement of strategy and knowledge feedback.

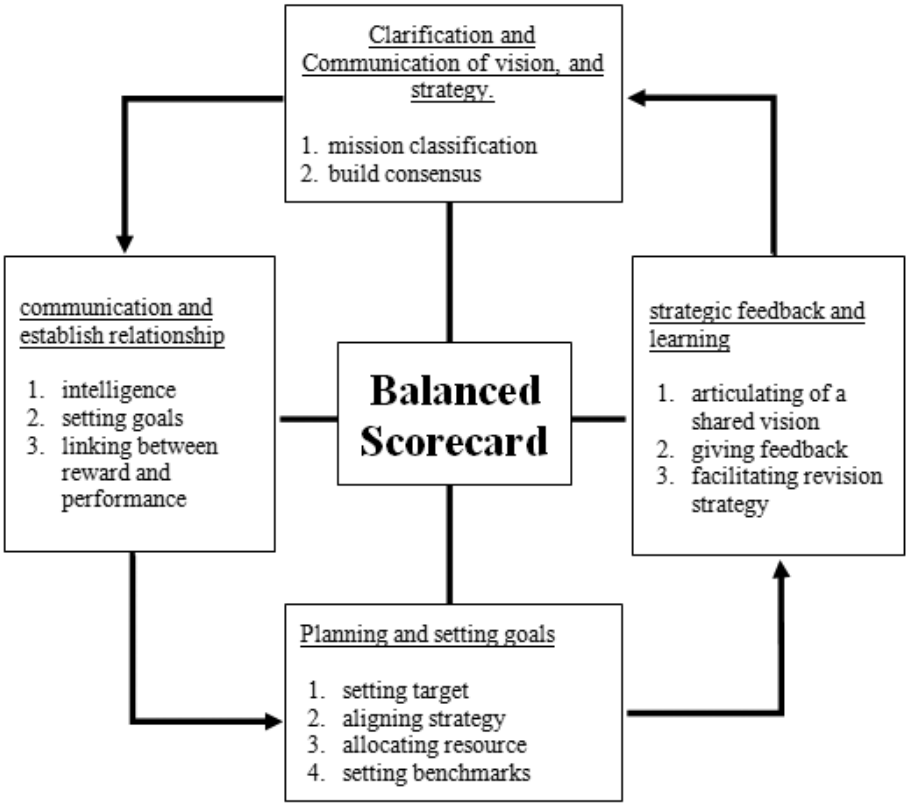


Fig. 3. Balanced Scorecard in the strategy management framework

The objectives of the use of Balanced Scorecard in the company as a management system framework are (Stavrakakis, et al., 2010):

a. Creating value for shareholders with appropriate financial management.

b. Creating value for customers through responsive marketing strategies to customer needs and expectations.

c. Creating value for the future, through the creation of a conducive work atmosphere.

d. Working efficiently and effectively with reference to business processes that enable synergistic cooperation.

2.8. Research Diagram

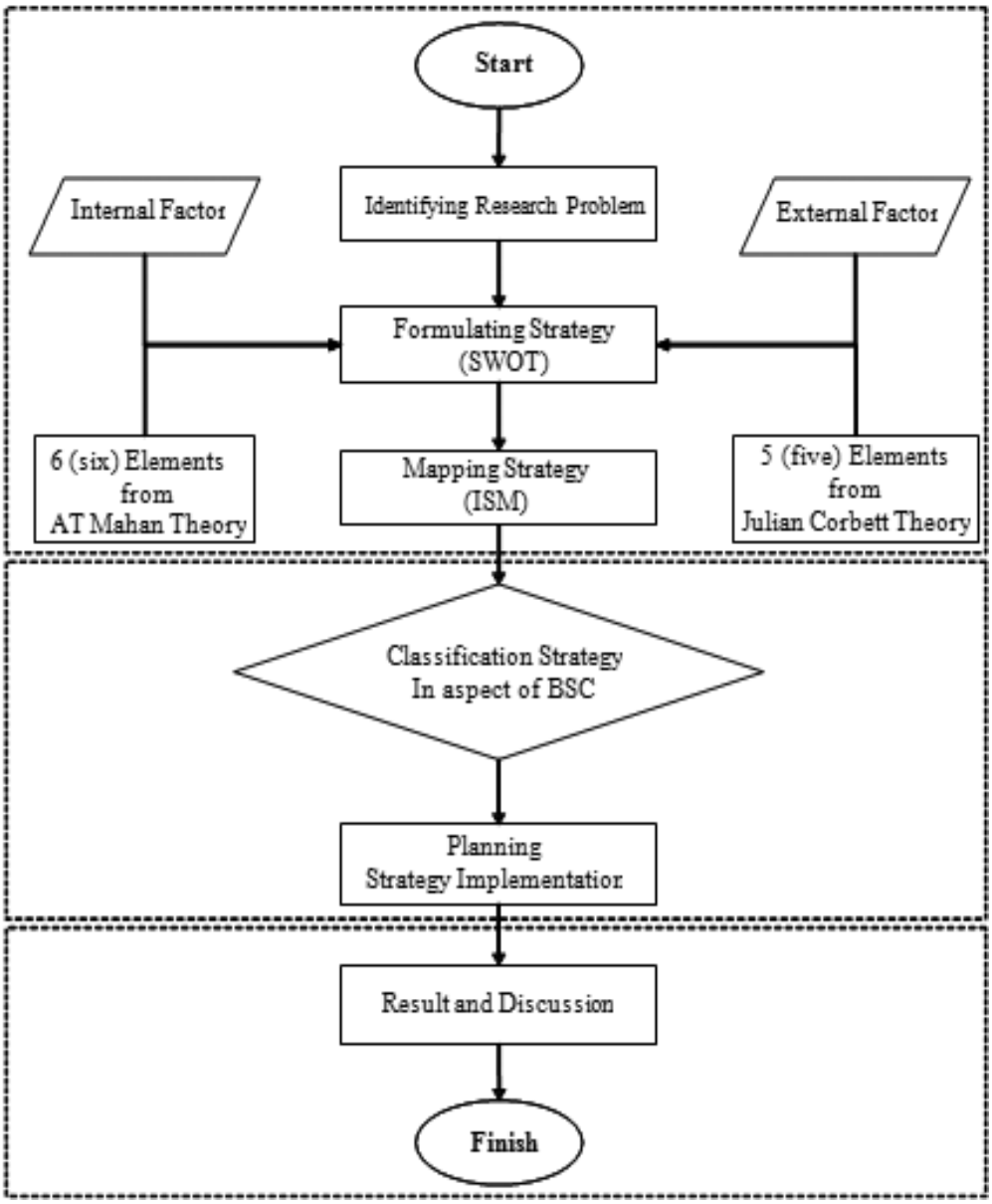


Fig. 4. Research Diagram of Capability Training of KRI: SHS-990

This study was divided into 3 (three) stages according to Figure 3 with the following explanation:

a. Stage I, it was started with the identifying the research problem formulation, and it continued with the formulation of strategy of training and development. In the formulation of the strategy, SWOT analysis method was used in combination with AT Mahan and Julian Corbett's theories in supporting HA/DR operations. Furthermore, the strategies that had been formulated. Then, it was made the determination of the strategy map in order to identify the priorities of sub-strategies.

b. Stage II, at this stage, it aimed to make a classification of sub-strategies that have been formed and arranged based on aspects of the Balanced Scorecard. This stage also aimed to prepare a roadmap for the strategy implementation plan that was formulated in the previous stage.

c. Stage III, it analyzed and discussed the results of the research concepts in stage I and stage II. In stage III, it also discussed the implications of the formulation of a strategy for training and developing the capability of KRI: dr. Soeharso-990 for the operational tasks of the Indonesian Navy.

3. RESULTS

3.1. Strategy formulation

Based on the identification of various internal and external factors, the next step can be formulated strategy factors. From internal and external factors that were then combined to determine alternative strategies to improve the support capability of KRI: dr. Soeharso-990. The research stage began with data collection by conducting interviews with six Expert personnel (E1; E2; E3; E4; E5; E6) in the development of strategy of KRI: SHS-990. The following strategies were formulated and generated from the SWOT matrix. This matrix illustrated how external opportunities and threats facing the company were aligned with their strengths and weaknesses.

Table 3. Identification of SWOT Analysis

Analysis of Internal Factor	
Strength (S)	**Weakness (W)**
S1. Potential is as the largest Navy in southeast Asia. S2. A good ability of diplomacy is as part of the ability of the Indonesian Navy. S3. It has an information system infra-structure platform. S4. Capability of KRI: dr. Soeharso is as the first hospital ship in ASEAN.	W1. The power of information and cyber systems is still partial. W2. The defense budget is still below international standards (2% of GDP).

Analysis of External Factor	
Opportunity (O)	**Threat (T)**
O1. It is as the largest maritime country in Asia. O2. Geographical conditions and physical form are as a strategic route of world traffic. O3. Economic growth supports an increase in the defense budget.	T1. World maritime axis policy is still not going well. T2. Geographical conditions require extra surveillance in marine areas including vulnerability to the threat of natural disasters. T3. The defense industry is still dependent on foreign technology. T4. Information systems and fisheries infrastructure are still partial.

Based on the analysis of external factors in Table 3 above, obtained 3 (three) factors are in the form of opportunities, and 4 (four) factors are in the form of threat. 4 (four) factors are in the form of strengths, and 2 (two) factors are in the form of weaknesses.

Table 4. Strategy Matrix of SWOT Analysis

Development Strategies	
Strength-Opportunity (S-O)	**Weakness-Opportunity (W-O)**
(SO)1. Becoming a leader of the maritime axis in the ASEAN area Including with disaster and humanitarian response operations. (SO)2. Enhancing the role of the Indonesian Navy diplomacy in supporting Government policy in HA/DR operations. (SO)3. Enhancing capability of information and cyber systems as security controllers and disaster response in ASEAN	(WO)1. Upgrading weaponry equipment with the latest technology adaptation.
Strength-Threat (S-T)	**Weakness-Threat (W-T)**
(ST)1. Increasing the ability of HA/DR to elements of KRI: dr. Soeharso in facing the threat of natural disasters in the ASEAN area. (ST)2. Improving the ability of other KRI in carrying out HA/DR operations as part of Indonesian National Armed Forces diplomacy in the regional area. (ST)3. Integrating information systems from KRI: dr. Soeharso to main commands and as part of the ability of Search and detection in supporting the task of operating HA/DR.	(WT)1. Optimizing the existing defense equipment capabilities in the supervision of the marine area.

Based on the results of the SWOT matrix analysis (Table 4), the SO Strategy consists of 3 (three) strategic steps; ST Strategy consists of 3 (three) strategic steps; WO strategy consists of a strategy step; and WT strategy consists of a strategy step so that all total consists of 8 sub-strategies. The next step, all the strategy steps that have been compiled into a strategy step, determining priorities and mapping the strategy.

Table 5. Compilation of strategy to improve support Capability of KRI: SHS-990

No.	Code	Sub-Strategy
1	(SO)1	Becoming a leader of the maritime axis in the ASEAN area Including disaster and humanitarian response operations.
2	(SO)2	Enhancing the role of the Indonesian Navy diplomacy in supporting Government policy in HA/DR operations.
3	(SO)3	(Enhancing capability of information and cyber systems as security controllers and disaster response in ASEAN.
4	(ST)1	Increasing the ability of HA/DR to elements of KRI: dr. Soeharso in facing the threat of natural disasters in the ASEAN area.
5	(ST)2	Improving the ability of other KRI in carrying out HA/DR operations as part of Indonesian National Armed Forces diplomacy in the regional area.
6	(ST)3	Integrating information systems from KRI: dr. Soeharso to main commands and as part of the ability of Search and detection in supporting the task of operating HA/DR.
7	(WO)1	Upgrading weaponry equipment with the latest technology adaptation.
8	(WT)2	Optimizing the existing defense equipment capabilities in the supervision of the marine area.

3.2. Strategic Mapping and Strategic Implementation Plan

In this section, it is presented mapping and determination the prioritization of sub-strategies to improve the capability of KRI: dr. Soeharso-990. The method used was Interpretative Structural Modeling (ISM). The first step is to identify the elements that need to be investigated. In this study, these elements were obtained from the results of determining the strategy in the SWOT analysis.

Table 6. Reachability Matrix for Upgrading the Capability of HA/DR.

No.	Code	Sub-Strategy (WO)								
			8	**7**	**6**	**5**	**4**	**3**	**2**	**1**
1	**(SO)1**	Becoming a leader of the maritime axis in the ASEAN area Including disaster and humanitarian response operations.	O	A	A	A	A	A	A	
2	**(SO)2**	Enhancing the role of the Indonesian Navy diplomacy in supporting Government policy in HA/DR operations.	O	X	X	A	X	X		
3	**(SO)3**	Enhancing capability of information and cyber systems as security controllers and disaster response in ASEAN.	X	X	X	A	X			
4	**(ST)1**	Increasing the ability of HA/DR to elements of KRI: dr. Soeharso in facing the threat of natural disasters in the ASEAN area.	O	X	X	A				
5	**(ST)2**	Improving the ability of other KRI in carrying out HA/DR operations as part of Indonesian National Armed Forces diplomacy in the regional area.	O	X	X					
6	**(ST)3**	Integrating information systems from KRI: dr. Soeharso to main commands and as part of the ability of Search and detection in supporting the task of operating HA/DR.	X	X						
7	**(WO)1**	Upgrading weaponry equipment with the latest technology adaptation.	X							
8	**(WT)2**	Optimizing the existing defense equipment capabilities in the supervision of the marine area.								

Table 7. Results of Interpretative Structural Modeling in upgrading the Capability of HA/DR of KRI SHS-990

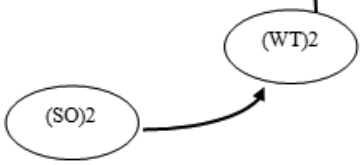
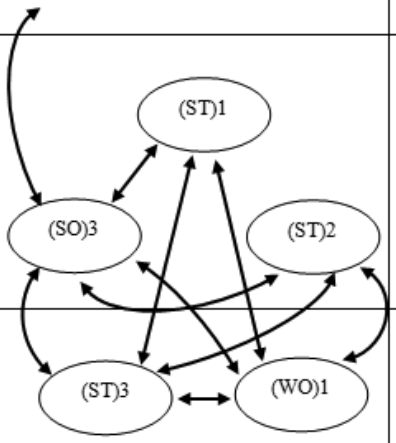
No.	Code	Sub-Strategy								DP	Rank
		1	2	3	4	5	6	7	8		
1	**(SO)1**	1	0	0	0	0	0	0	0	**1**	**8**
2	**(SO)2**	1	1	1	1	0	1	1	0	**6**	**6**
3	**(SO)3**	1	1	1	1	0	1	1	1	**7**	**3**
4	**(ST)1**	1	1	1	1	1	1	1	0	**7**	**3**
5	**(ST)2**	1	1	1	1	1	1	1	0	**7**	**3**
6	**(ST)3**	1	1	1	1	1	1	1	1	**8**	**1**
7	**(WO)1**	1	1	1	1	1	1	1	1	**8**	**1**
8	**(WT)2**	0	0	1	0	0	1	0	1	**3**	**7**

Based on the results of the elements classification in the strategy, it was obtained 5 (five) levels of the hierarchical structure. In this hierarchical structure, it can be seen that the sub-strategy integrated the information system of KRI: dr. Soeharso to main commands and as part of the ability of Search and detection in supporting the HA/DR (ST-3) and sub-strategy operations in implementing upgrade weaponry equipment with the latest technology adaptation (WO-1)wereat level V.

Afterwards, the sub-strategy of improving the ability of information systems and cyberspace as security controllers and disaster response in ASEAN (SO-3); Upgrading the ability of HA/DR to elements of KRI: dr. Soeharso in facing the threat of natural disasters in the ASEAN area (ST-1); and improving the ability of other KRI in carrying out HA/DR operations as part of Indonesian National Armed Forces diplomacy in the regional area (ST-2) was at level IV.

At level III, sub-strategy Increased the role of the Indonesian Navy diplomacy in supporting Government policies in the operation of HA/DR (SO-2). At level II, the sub-strategy optimized the capability of defense equipment in the supervision of the marine area (WT-2). At level I, the sub-strategy was to become a maritime axis leader in the ASEAN area including the operation of disaster and humanitarian response assistance (SO-1).

Table 8. Results of Strategy Mapping and Strategy Implementation

Level	Aspect	Indicator	Target	Rlz
I		o Becoming leader of Maritime Axis in ASEAN area	100%	
II-III		o Achievement of marine area surveillance (WT)2 o Increasing the role of the Indonesian Navy's diplomacy in ASEAN	100% 100%	
IV		o Capability and cyber system increase (SO) 3 o Capability of HA/DR KRI: dr. Soeharso Increases (ST) 1 o Capability of other KRI Increases (ST) 2	100% 100% 100%	
V		o information systems integration (ST) 3 o achieving latest technology (WO) 1	100% 100%	

The next step is strategy mapping. Strategy mapping will make it easier for organizational actors to monitor the development of strategy implementation. The results of the analysis of the strategy mapping design correlate the Balanced Scorecard with the designed strategy which is a development in supporting the development of enhancing the support capability of KRI: dr. Soeharso-990. In this case, BSC is arranged with 4 (four) aspects, namely perspective I (Technology); perspective II (internal process); perspective III (learning and growth); perspective IV (consumer). Perspective I (Technology) consists of two sub-strategy steps namely (ST-3) and (WO-1); Perspective II (internal process) consists of three sub-strategy steps namely (SO-3), (ST-1), (ST-2); Perspective III (learning and growth) consists of two sub-strategy steps namely (SO-2), (WT-2); Perspective IV (consumers) as the goal of the sub-strategy namely sub-strategy (SO-1).

4. DISCUSSION

In this study, the SWOT analysis method was used to identify and form10The next step is strategy mapping. Strategy mapping will make it easier for organizational actors to monitor the development of strategy implementation. The results of the analysis of the design of the strategy mapping correlated the Balanced Scorecard with the designed strategy which was a development in supporting the development of enhancing the support capability of KRI: dr. Soeharso-990. In this case, BSC was arranged with 4 (four) aspects, namely perspective I (Technology); perspective II (internal process); perspective III (learning and growth); perspective IV (consumer). Perspective I (Technology) consists of two sub-strategy steps namely (ST-3) and (WO-1); Perspective II (internal process) consists of three sub-strategy steps namely (SO-3), (ST-1), (ST-2); Perspective III (learning and growth) consists of two sub-strategy steps namely (SO-2), (WT-2); Perspective IV (consumers) as the goal of the sub-strategy namely sub-strategy (SO-1).

5. CONCLUSIONS

Based on the results of the SWOT matrix analysis, the SO Strategy consists of 3 (three) strategic steps; ST Strategy consists of 3 (three) strategic steps; WO strategy consists of a strategy step; and WT strategy consists of a strategy step so that the total consists of 8 sub-strategies. The next step, all the strategic steps that have been compiled into a strategic step, determining priorities and mapping the strategy. Based on the results of the classification of elements in the strategy, it was obtained 5 (five) levels of the hierarchical structure. In this hierarchical structure it can be seen that the Sub-strategy (ST-3) and sub-strategy (WO-1) were at level V. Sub-strategies (ST-1) and (ST-2) were at level IV. At level III, II and I, they were sub-strategies (SO-2), (WT-2), (SO-1).

The results of the analysis of the strategy mapping design correlated the Balanced Scorecard with the designed strategy which is a development in supporting the development of enhancing the support capability of KRI: dr. Soeharso-990. In this case, BSC was arranged with 4 (four) aspects, namely perspective I (Technology); perspective II (internal process); perspective III (learning and growth); perspective IV (consumer). Perspective I (Technology) consists

of two sub-strategy steps namely (ST-3) and (WO-1); Perspective II (internal process) consists of three sub-strategy steps namely (SO-3), (ST-1), (ST-2); Perspective III (learning and growth) consists of two sub-strategy steps namely (SO-2), (WT-2); Perspective IV (consumers) as the goal of the sub-strategy namely sub-strategy (SO-1).

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MIGRATION PROCESSES AS THE MEANS OF THE DESTRUCTIVE HYBRID ACTIONS

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Abstract: *In contemporary geopolitical conditions the world politics actors in striving to achieve their goals have to change their approaches and methods. In so doing they must take into account the changes that are taking place in the system of international relations, in particular in the international security. At the same time they have the opportunity to take advantage of improvements in science and technology and exploit the benefits of information society. In these terms the migration that is getting more large-scale and is gaining new patterns and peculiarities can act as the instrument to achieve the political goals, for example the destabilization of the target country or region on the hybrid war context. The reasons for the actors to use migration as the means to achieve their goals and the ways to direct and use it are provided in the article. Besides, we have proposed the system of indicators to be monitored to define if the migration processes are gaining attributes of destructivity and if they are being used by the certain world politics actor.*

Keywords: *migration, modern conflicts, hybrid warfare, conflictogenity, information technologies*

1. INTRODUCTION

Among the wide spectrum of means, including the non-military ones, the world policy actors resort today for achieving their goals, there are also the means which prima facie do not have the conflict potential. In certain circumstances, as the analysis and research show, they can acquire conflictogenity both spontaneously and due to the targeted and hidden indirect external influence. The advantage of such hidden and indirect influence is the possibility for the actor to stay behind the scenes. It means that it will not be treated like an aggressor, so it will be able to avoid responsibility, inter alia, under the international law. These means can be also used when the actors have the political and geostrategical plans but do not have enough resources

and capabilities to implement them using the direct forceful methods.

2. TOPICALITY AND THEORETICAL ACKGROUND

From our perspective one of the phenomena which became the characteristic feature of contemporary world and influence the present-day international relations and international security is the migration. The scale of the migration is getting has been steadily increasing. In 2015 there were approximately 244 million migrants in the world that comprised 3,3% of the world population and their growth rate is getting higher. (IOM:2018, p. 2). It can be assumed that this unpredictable growth was resulted from the global financial crisis in 2008 and the conflicts in some countries of the Middle East, but the effect of the root causes of migration also tends to be more intensive.

There is also the significant growth of the number of the forcibly displaced people, who left their permanent place of living because of the persecution, conflict, violence and the human rights violation. Actually their quantity has reached 70,8 million people. (UNHCR:2018, p. 2). There are 19.9 million refugees and 41,3 million internally displaced people among them (IDMC:2018, p. 2).

It is obvious that the migration processes often played their part in history. The Migration Period from IV to VII centuries AD created the prerequisites to form the national states in Europe. There often was the following sequence of actions: invasion – conquest – transmigration – creation of the new state. During the period of Modern History the creation of the new states in North America, South America, Australia and New Zealand was inextricably linked with the intercontinental migration. It happened according to the above-mentioned sequence of actions. The colonists displaced aborigines, subjugated them, sometimes exterminated them, and seized the resources. Then the processes of transmigration and the creation of the state continued.

In contemporary world the intensive and large-scale migration processes are taking place in the new and specific conditions and have their patterns. Because the consequences of the migration are remote in time and are influenced by different factors, including the unpredictable ones, we have to analyze continually the course of migration processes taking into account the variable

external factors. In this case we will be able to identify the emergence of the destructive properties of migration and to determine if they are used by the actors in achieving their goals.

The objective of the article is to examine the peculiarities of the influence of migration on the geopolitical situation and their transformation as the means of the hybrid destructive actions. Accordingly it makes possible to determine in what way the world politics actors can use migration in order to achieve their geopolitical goals. To achieve the objective we should do the following **tasks**:

- to find out the new trends and patterns of migration;

- to substantiate the fact that the new trends of migration and the modified approaches to the achievement of political goals create the prerequisites for the emergence of the new type of migration – the directed one;

- to find out in what way the migration, including the directed one, is able to gain the destructive properties;

- to determine the indicators which make possible to figure out if the migration start gaining the destructive properties and if the threat to national and international security emerges.

The term migration was introduced into the scientific parlance in the end of XIX century by E.G. Ravenstein in his book "The laws of migration". He considered migration as the continuous process that is driven by four groups of factors: the factors that operate in the country of origin, during their travelling, in the country of their destination and the factors of a personal nature. He formulated 11 laws of migration and laid the theoretical groundwork for the research of the migration (Ravenstein:1885). W. Thomas, F. Znaniecki in their classic paper "Polish peasants in Europe and America" analyzed the implications of migration processes using the qualitative research methods. (Thomas and Znaniecki:1918.) The above-mentioned papers became the theoretical basis for the migration studies. In the beginning of the XX century the industrialization and urbanization strengthened the researchers' interest in migration. століття процеси індустріалізації і, відповідно, урбанізації посилили інтерес вчених до міграції. E.W. Burgess, Robert E. Park and R. McKenzie in their paper "The

City" substantiated the idea that migration was both the indicator and the accelerator of the social mobility. (Park et al., 1925)

The diversity of approaches to the migration processes studies is explained by its complex multidimensional nature although the economical approach was the dominant one. Under this approach we would mention the theory of the migration factors by E. Lee (1966), theory of the inverse relationship of economic cycles by B. Thomas (1954), new economic theory by O. Stark (1985), the theory of the segmented labour market by M. Piore (1979), the theory of human capital by T. Schultz (1961). In the economic approach the reasons and factors of migration are analyzed at the macro and micro levels. In the micro approach the economic differences in particular the supply and demand for labour, in wages and conditions of labour between regions and countries as the main reasons for migration. In the micro approach the individual behavior resulted from the social and economic reasons that exist in the country of origin and encourage migrants to leave the place of living is studied. The economists in their studies consider migration as the objective process that is resulted from the different demand for labour and different level of wages. They insist that migration has both advantages and disadvantages for the country of origin and for the country of departure. However, studying the positive and negative implications of migration they treat migration as the process that helps to solve the problems, resolve the contradictions and contributes to the social and economic development of the society.

The globalization and the necessity to take its specifics into account strengthened the positions of historical and structural approach and of integrative approach, but the economic aspect also plays an important role there. According to the S. Castles (2008) theory of historical structuralism, the migration seems to be the way to mobilize the cheap labour force for the developed countries. The integrative approach explains migration as the result of inequality that is reproduced by the national and global economies.

Among the theories, that were developed in the framework of the positivistic approach it is necessary to mention the migration networks theory and the D. Massey (1990) theory of the aggregate causation, the institutional theory of migration and the M. Kritz (1998)

theory of international migration system. D. Massey considered the migration networks as the system of interpersonal relations that were formed between migrants and between people who have already migrated and people who remained in the home country, mostly relative and friends. These networks assist in the formation of the desire and intention to migrate because they diminish the possible risk and cost. It means that people who are socially connected with migrants will highly likely become migrants themselves. Nowadays, when the means of communication are widespread, affordable and developed as never before the migration networks play an increasing role in the intensification of migration processes. The theory of aggregate causation can be considered as the one that grew out of the social networks theory. It states that each act of migration changes the environment and circumstances for the next acts of migration by other people and makes it much more possible (Massey:1993).

In the institutional theory of migration the attention is focused on the functioning of legal and illegal agencies and organizations and on the activity of people which support migrants in their wish to leave their place of origin and help them to travel, cross the border, find the job, accommodation, etc. This also encourages migrants to take decision to change the place of living.

The American scientists M. Kritz, L.Lim and H. Zlotnik developed the theory of the migration systems. They understand migration system as the group of countries that are tied together. Their ties are explained both by the historical roots and economic interest. In this case the geographic proximity plays the significant but not the major one (Kritz et al., 1998). A. Simmons and V. Picke developed this theory and identified 5 migration systems: North American, European, Asia-Pacific, Southern American and the system that links the Persian Gulf countries. (Simmons and Picke:2002, p. 116). The former USSR countries are also proposed as the separate migration system (Ivakhnjuk:2016, p.29).

The above-mentioned approaches and theories make it possible to understand the reasons and factors of the migration processes, to find out the mechanism of their reproduction and sustainability. But the changes that take place all the time in the world politics and economy put some factors at the forefront or the new factors emerge while the

effect of other factors weakens. It leads to the formation of the new trends and patterns of migration and we must thorough investigate them in order to find out if the new trends become dangerous and if the new patterns constitute a security threat. Moreover, the growing migration in the context of the contemporary geopolitical reality requires us to consider the potential conflictogenity of migration processes and to figure out their possible role in undermining the security system in all levels (national, regional, global).

3. NEW APPROACHES IN ACHIEVING POLITICAL GOALS

The migration trends and their role cannot be studied without taking into account the current international relations and international security trends. These in turn are significantly influenced by the new phenomena in the philosophy of war, military strategy and the practice of war. For instance, it also refers to the new type of military conflict based on the innovative technologies, the modified or substantially new forms, methods and means to reach political particularly foreign-policy goals.

First of all it is the actors' goals that have been changing. It was anticipated by E. Messner in his papers about Mutiny-War (Messner:1971). He specifically noted that in the past it was very important to conquer the territory, in the future the most important thing will be the conquering of souls in the rival state. So, the center of gravity was supposed to shift from physical to mental domain.

There are some other changes that are taking place in the contemporary security-related spheres in the context of the formation of the new threats and the transformation of the existing ones and their influence on the different levels of security (national, regional, international).

Nowadays the old system of the world order or the old paradigm of security has started its deformation. Firstly, the principle of parity is deforming. Contrary to the past when there was the probable enemy and it was possible to determine in advance the direction and the strength of the enemy's attacks and, respectively, create the system of defence now the enemy is unknown as well as its plans, means, capabilities and its possible course of actions. The threats become exterritorial and asymmetric.

Secondly the principle of mutual intimidation is also deforming. In the world arena the

new and potent powers emerge. They are able to concentrate sufficient recourses to pose a threat to other countries and regions. All this can with a high probability cause in XXI century the outbreak of a number of wars and military conflicts.

Thirdly, the cognitive component of the security system is becoming the dominating one. Due to the cognitive component the "unknown and invisible adversary" is able to implement the destructive actions not only through the physical or tangible environment but also through the spiritual and ideological framework of the society. The special technologies aimed to influence on the public consciousness and the cyberwar technologies are actively developing (Danyk et al., 2006). It generated the awareness of the realities of the threats to the security at all levels exactly in high-technologies sphere.

It should be noted that the modern society is extremely vulnerable to the at first glance insignificant and even negligible impacts but performed using the high-tech means. So, the more developed the country is the more its national security in high technologies sphere can be influenced.

This was translated into the practical implementation of the elements of new strategic concepts: «global fighting», «asymmetric fighting», «network-centric warfare», «strategic paralysis», «parallel wars», «directed wars», «hybrid wars», «cognitive warfare", global presence, proxy wars, smart defense, and more (Danyk:2018, p.58).

The main aspects of taking external control over the state through the use of a wide range of innovative technologies were described in 1989 in the article "The changing face war: into the fourth generation" (Lind et al., 1989). The key in the wars of the fourth generation in the views of the authors of the article is the war of cultures, its initiation, support and nourishment from the outside and the organization within the state the psychological and informational pressure on its people and leadership, taking the external control and management, creating the conditions for increasing the socio-economic chaos and self-depletion of military, financial and other resources. These issues have been developed by both foreign and Ukrainian scholars.

As an example, the issues of systemic disruption of the functioning of the state up to the crisis level were proposed and implemented during the preparation of the Operation

Desert Storm in 1991 by Colonel John Warden. Within the framework of his systemic cybernetic approach, he identified five major vital segments of each state - the armed forces, industry, infrastructure and communications, the population and the government. Each state has the unique places of vulnerability, or «centers of gravity», «centers of gravity», «critical nodes (points)», etc in its main segments. Their proper identification and destructive effect on them leads to the effect of systemic «paralysis» of the state in certain spheres or in general (Danyk:2018, p. 59)

Currently more and more conflicts are covered by the definition of «hybrid», in which military action is combined with other, mainly political, economic, diplomatic, information, psychological, cybernetic, cognitive and other ones. Acting in an integrated manner they lead to systematic destabilization in all spheres of functioning of the target state. In such conditions, any large-scale social processes, including migration, can be used to destabilize the socio-political situation in the target region or country, to transform the life of the country into chaos, to weaken the country, etc.

Such perception of migration processes is made possible not only by changing approaches as for the setting of political and military-political goals and as for the methods of their achievement, but also by other changes that are taking place in the world. In particular, it is the globalization and development of mass media. In the context of increasing globalization trends, the simplification of border crossing procedures, the establishment of visa-free regimes between countries, the reduction of transport costs, the intensive information impact contribute to the increasing the scale of the migration processes. Due to the dissemination of information through television and the Internet about economic opportunities in other countries the potential migrants not only realize their predicament comparing to residents of more prosperous regions. They also realize that they can improve their situation due to their migration to these prosperous countries.

4. THE CONFLICTOGENITY OF MIGRATION

An important new trend of modern migration processes is that new socio-demographic groups of the population, which were previously

unmotivated, are becoming involved. In particular, the proportion of people with low levels of education and skills; women, children and teenagers which was traditionally low, has increased (Ryazantsev:2003). Due to the current level of development of communication and information systems and the Internet, their affordability to the general public, migrants are exposed to adaptation and assimilation mechanisms to a lesser extent than in the past. In the past, migrants were more isolated from their country of origin, from their compatriots, it forced them quickly integrate into the host community. In today's context, there is a constant level of cognitive ties with the country of origin.

To evaluate the conflictogenity of migration, and to identify how migration is taking on the conflictogenous properties the mechanisms of acquisition by migration of these conflicting properties we can use both quantitative and qualitative approaches. Starting from a quantitative perspective, mass immigration to a country or region will inevitably lead to an increase in the share of migrants. The transformation of Kosovo's ethno-demographic structure due to the active migration has become one of the most important factor of the Kosovo crisis. The active migration of Albanians to Kosovo and the high birth rates within their community have increased their share of the population 3.2 times between 1948 and 1991, reaching 82.2%. Kosovo Albanians, who sought independence for Kosovo and Metohija, became the social base of the conflict (Gusjkova et al., 1999, p.93).

Even the rapid population growth resulted from the mass immigration alone can break the existing balance and make it difficult to achieve a sustainable standard of living. The lack of resources and their unequal distribution can lead to resentment and frustration both among migrants and the local population that in turn can lead latent and even actual conflict.

At the same time, if the number of migrants becomes large enough to deteriorate the living standarts in the country, then the country will lose its attractiveness for potential migrants, so according to the principle of capacity difference the number of those seeking a better life in this country will decrease. But in our view, this is only true when there is no external influence or external actor that is interested in weakening the country. Otherwise, targeted

measures to increase the flow of migration can disrupt the migration self-regulation processes.

However, there is still debate in the scientific community as to whether rapid population growth underlies such crisis phenomena as poverty and declining living standards and, in general, the emergence of socio-economic and political problems, or vice versa, it leads to accelerated economic growth. In particular, it can be argued that population growth stimulates economic development, as large populations generates greater consumer demand So it provides economies of scale, reduces production costs, and increases low-cost labour supply. Moreover, the free market is able to adapt to population growth.

Here, we must pay attention to the fact that economic growth, including one caused by the growth of population, does not automatically increase income or living standards for everyone. Moreover, the population growth resulted from the mass arrival of migrants entails an increase of the level of horizontal inequality and its transformation both among migrants and between migrants and the local population (Danyk and Semenkova: 2019). In order to understand how horizontal inequality is transforming, we must also take into consideration the qualitative characteristics of migrants. The average migrant is a proactive young and middle-aged person with education and savings, motivated and ready for change. The host community is more diverse in terms of age, life position, education, health, etc. Migrants fall into new socio-economic conditions and depending on how favorable these conditions are for migrants as well as due to migrants' personal qualities the level of intergroup inequality can be changed according to two different scenarios. The first scenario assumes that people who have arrived at the new place of residence successfully do well for themselves over time, replacing locals in the key positions. Over a certain period of time, the socio-economic status of newcomers becomes better than the one of local population. The second scenario reflects the opposite situation: the overwhelming number of migrants are unable to adapt to the new environment and are in a worse socio-economic situation than the local ones. Moreover, their level of life might be even worse than they expected when deciding to move. If either of these scenarios is implemented, the risk of conflict resulting from horizontal inequality

increases. It is because in both cases, the change in the level of inequality causes dissatisfaction with one group or another and accordingly an increase of the protest and conflict potential.

As for the change in the level of inequality within the migrant community, which also occurs due to their living in new circumstances other than those in their homeland, such as the need for other specialities, language proficiency level, etc., it can also cause the psychological discomfort and, accordingly, can lead to the increasing of conflict potential. Thus, the transformation of horizontal inequality causes the emergence and exacerbation of contradictions, increasing the level of conflict in the whole society. This can be used to destabilize the situation in a country or region in the context of hybrid wars, directed wars, cognitive war, etc.

Intergroup contradictions do not always arise on the basis of actually existing socio-economic inequality. They are sometimes formed through interpretations of contradictions in people's conciousness. Even when people in their daily life are able to coexist peacefully, these contradictions can be artificially created from the outside, which is purposefully done in the context of the hybrid conflict. The external actors can artificially shape tensions, often creating a distorted perception of the current state of affairs for example when the achievements of the representatives of certain social groups, are perceived as undeserved. The use of special technologies enables to create and artificially unwind a situation of managed chaos. At first it there can be the peaceful protest actions but then turn them into the means of achieving the goal and that can be especially useful in the hybrid warfare context (Ruschenko:2015, p.13).

Moreover, not only the perception of inequality, but also the dissatisfaction can be created artificially, particularly due to the use of modern information technologies. For example, it can be done by virtual exaggeration of the real level of inequality and social contradictions or by promoting certain narratives and messages among the population. In this way, protest potential is formed, the aggressive emotional states of the population are provoked, including feelings of disappointment due to unjustified expectations, alienation, hostility, hatred due to social inequality, suspicion. etc.

Such feelings and moods, if widely shared in the community, are a fertile ground for the dissemination of ideas, including radical ones and those that are imposed by external actor. It is believed that most mass movements seek their adherents among people of a certain type, those who, for one reason or another, feel that their lives are being wasted. If those who have reached their goals in life want to maintain the status quo, then those who have faced the disilusionment and lost their life chances seek change (Hoffer:1951, p.74). 84% of members of radical Islamic groups operating in Europe are Muslims who have been separated from their families and unable to find themselves and fully integrate into the socio-economic life of society (Netchitajlo:2017, p.152).

Uniting the young people who are dissatisfied with the social reality and their further organization becomes possible due to the development of the means of mass communication and their affordability for an increasing number of people. The above-mentioned means of mass communication enable to instill people certain ideas and to organize mass events at the shortest time possible including public meetings, riots etc. In this way, people who feel objectively existing or perceived deprivation accentuate their ethnic or religious specificities and often become participants in protest movements.

In addition to transforming the level of intergroup inequality, there are other effects of migration that can increase the likelihood of conflict. In our view, the most important of these is the increase in the proportion of proactive young people in a particular region, which is actually observed now in the countries of European Union. An analysis of the structure of the EU population shows that in general migrants are much younger than local people. As of January 1, 2018, the average age of locals in the EU was 44 years, while of those born abroad was 36 years. The migrants who arrive is even younger. For example, the average age of 2.4 million immigrants who arrived in 2017 was 28.3 years (Eurostat:2018).

Thus, the natural or artificial concentration of a large mass of unemployed youth in a particular place is, as the theory of the predominance of youth suggests, a prerequisite for the origin of the conflict. Disgruntled young people are relatively easy to mobilize - young people are more willing to embrace new, sometimes even radical ideas, at

the same time they aren't constrained with family or career commitments. Among them are many who did not have special needs before moving to big cities or to the prosperous countries, and after moving they are suddenly gaining ambitions, desires and aspirations. The inability to satisfy them quickly makes them feel frustrated and frustrated. An equally important indicator in this case is the share of educated youth among the unemployed or among people employed on low prestigious and low-paid jobs, because the education, especially higher education, raises expectations. Moving people to socio-economically attractive centers in the country means further enlargement of large cities. However, if the level of urbanization exceeds the level of economic development, the risk of political instability increases.

It should be noted that external influences, in particular in the form of manipulative influences on consciousness, agitation, etc. can occur at all stages of migration. For example, at the initial stage of the formation of a motivation for migration, when migrants decide to leave their country of residence. People are encouraged to move by the expected benefits, so at this stage the influence on consciousness can be very effective. Through the focused information policies the migrant flows can be directed to the target region or country. This can be done both through immigrant networks and through migrant support organizations, through the media, social networks, etc. Moreover, the purpose of the external actor at this stage may be not only the "saturation" of the target country with the migrants, but also the artificial reduction of the certain share of population of the country the migrants move from. For the country of origin, it also poses a threat to its development and security, as the country loses human capital as its most promising citizens. In particular, the mass departure of young people entails a degradation of education and science, which, in turn, leads to the backlog in other fields, especially in the high-tech ones. Such a backlog, as well as a decrease in the number of young people who are needed for the country's sustainable economic development or that could be called up to the Armed Forces, have a negative impact on the country's economic growth prospects and defense capabilities. The fact that the young people and in general people of reproductive age leave the country will lead to permanent negative

dynamics of population growth, which in turn will continue its negative impact on the development of the state.

5. DIRECTED MIGRATION AS THE INSTRUMENT IN HYBRID WARFARE

In the scientific literature, migration is classified by the direction of flows (external and internal), by duration (short-term, seasonal, long-term, irreversible, the commuting), by forms of organization (organized and unorganized, voluntary and forced, legal and illegal), etc. But in view of the material presented in the article, we consider it necessary to distinguish between directed and spontaneous migration as the forms of organization of migration. Unlike spontaneous the directed migration is the movement of people not because of objective circumstances, but because of the imposed and purposefully formed people's expectations through the means of manipulative influence, agitation, etc. Moreover, the dichotomy Spontaneous - Directed has a semantic content different from Voluntary - Forced, because the latter indicates that a person makes a decision about moving, focusing on those benefits and prospects that are waiting for him in a new place or because of the difficult situation in which the person lives and that makes him to leave the place of permanent residence.

The directing of the migration can be implemented both when potential migrants decide to move and at the stage of choosing the direction of migration, i.e it can be done both to make people just to leave the territory of a country or region, and to direct flows of migrants to a specific country or region. For example, the actor of international policy can be interested in weakening or destabilizing of certain state or region, in worsening its defense capabilities, in deterioration of functioning and destruction of its branches of economy, etc it can use the directed migration to make the mass of the young people to leave their place of permanent residence. Some political circles within the country, which consider it an opportunity to reduce the number of people disloyal to them, reduce the burden on the social sphere during a period of crisis in society and prevent the mass riots, etc., may be also interested in certain mass of people to leave the country.

Directing migration flows may be beneficial for the country where they are directed to, for example,

if it feels the need for manpower, or wants to adjust the demographic situation in case of the aging of population or negative dynamics of its reproduction. At the same time, another actor may be interested in this, who, by initiating and stimulating mass migration to the target country, plans to undermine its stability from the insight. This can best be done by directing the flows of migrants from conflict-affected countries or regions to the target ones, taking into account the particularities of migration processes caused by them, for example the presence of people with the combat experience among the migrants (Danyk and Semenkova., 2019). We can even assume that the conflict, including the hybrid one in a particular country or region can be waged deliberately to form and direct migration flows to the target country or region.

Given the above, the destructive properties of migration processes can manifest themselves both in the case of their spontaneous formation and development and in the case of partial or full impact on them from the external actors.

So, the model that we referred to in the beginning of the article as for the influence of the migration factor on the geopolitical processes, which is:

- invasion – conquest - settlement – statehood

is transforming due to the above-mentioned factors and as follows:

- infiltration – contradictions – destabilization – external control.

As for the latter model, its effect can finish at any stage. For example, the last stage - the country's readyness to be taken over by the external actor - may be absent if migration processes develop without the involvement and influence of the interested external actor. In addition, this model can be stopped at any stage if there is a sound and competent policy in the country to respond to changes occurring in this area in order to prevent the process from going into a stage when it becomes uncontrolled and destructive. For this purpose and as the proposal for further research the system of indicators for conducting differential assessment of the probable destructive impact of migration processes should be developed.

6. CONCLUSIONS

At the different stages of human history, migration has significantly influenced the

development of certain countries and regions, the state of international relations, and so on. However, in contemporary circumstances the new trends and patterns of migration identified in the article make it a convenient and attractive means of achieving political goals. Due to the development of information and communication technical means, as well as changes in approaches as for the setting political and foreign policy goals and due to the methods of achieving them, external control of migration flows can be carried out. We have also substantiated that such external control can be carried out during the making decision to migrate, during the process of choosing the country to migrate, and during the stay of migrants in the host country. Notably, the transformation of inter-group inequality is one of the mechanisms of increasing the level of conflictogenity of migration, and in its turn the migration conflictogenity may become a factor of destabilizing the socio-political situation in a country or region. In order to predict the destructive concequences of migration, we have proposed a system of indicators for differentiated diagnostics of the destructive impact of migration processes. Mechanisms of systematic analysis of these processes make it possible to predict the negative consequences of migration processes as well as to reduce their negative effects and even prevent them.

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THE IMPACT OF NTMS ON TRADE: EVIDENCE FROM DEVELOPING COUNTRIES

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Abstract: *Non-tariff measures such as food safety and technical standards are used to achieve the non-trade objective of protecting consumers' health and safety. On the other hand, they can also be deployed as a trade secure tool to drive a price wedge between foreign and domestic producers. This study investigates the protectionist tools of 34 developing countries food safety standards using a sample of developing countries food imported from developed and other developing countries with a specific focus on vegetables, Trunks, machinery, and tobacco. We employ theoretical framework of gravity equation by applying SGMM estimation. Our results indicate that vegetable and machinery variables are negative and statistically significant. Meaning that both variables have a negative impact on GDP, in other words, both variables are not support GDP and economic growth in the developing countries. Finally, Trunk variable is positive and statistically significant. It shows that, this variable leads to promote economic growth in the developing countries. While Tobacco is positive and statistically insignificant, meaning that this product is not play an important role in the trade sector in our sample countries.*

Keywords: *Trade Protectionism, Non-tariff measure, Food Safety Standards, Developing countries.And SGMM*

1. INTRODUCTION

Over the past few decades, reducing global tariffs has shifted the focus of trade policy research to better understand the impacts of non-tariff measures (NTM). It is described as policy measures other than tariffs which can have an economic impact on the global trade (UNCTAD, 2010). Measures for agricultural production, sanitary and phytosanitary (SPS) and technical barriers to trade (TBT) are costly trade barriers (Cadot et al 2015, Skorobogatova and Knebel 2011) While SPS and TBT measures are put

in place to ensure that imports meet food safety, animal or plant health, and importing countries' technical regulations, these requirements may affect trade through the addition of increased compliance, inspection, and operating costs. Exporters have declared that some SPS / TBT measures have requirements that are disproportionate to actual levels of risk and hamper trade excessively, often acting as disguised trade barriers. On the other hand, it can be difficult to determine the impacts of types of measures. Unlike tariffs, NTMs are neither transparent nor easily measured, resulting in many challenges in terms of data, methodology and concept.

This study empirically investigates the impacts of SPS / TBT measures in the 34 developing countries around the world on imported agricultural and machinery trade. This analysis applies a more advanced GMM system estimation method that explores the impacts of specific SPS / TBT concerns on commodity trading raised importers from developing nations.

The rest of this paper is organized as follows: Section 2 argues the NTM in developing countries. Section 3 reviews the previous literature. Section 4 presents an overview of the methodology and data collection. Section 5 discusses the finding and results. Finally, Section 6 discusses the concluding remarks.

2. NON-TARIFF MEASURE IN THE DEVELOPING COUNTRIES

In some developing countries, resource poor are in a double bind. On the one hand, they are involved in a race against time to create sufficient jobs to absorb huge compatriots of young people attempting to enter working age. Failure to deliver these jobs can mean renewed political turmoil, whether against a background of democracy or not. On the other hand, on world markets, many developing countries today do not have a clear competitive advantage. They do not have the educational/ R&D infrastructure to remain competitive in; high tech; industries; but in labor intensive industries they do not have the flexible and cheap labor force they need to compete. The primary source of competitive advantage of some developing countries is that they are located in some large and important markets such as Middle East countries. This may motivate them generate assembly activity in industry sectors where time based competition is important.

To take full advantage of this prospective competitive advantage, everything should be targeted to wards productivity and reliability, from Infrastructure to legislative environments to private sector management, so that all elements of supplier quality are programmable for large buyers. In addition,

infrastructure is insufficient, the business environment is overwhelmed by" legacy regulations" trade facilitation is not up to international standards, there is not even the beginning of a competitiveness oriented dialog between private and public sectors, and the management of the private sector is far from the lean.

All this can and should change, but attempts to reform have been far too timid to make a difference to date. Understanding why efficient advice is essential. Many economic and Political factors that contribute to the impasse, but regulations are a non-negligible part of the picture, including non-tariff measures (NTMs).

Econometric analysis performed for this note reveals that their arsenal of NTMs increases the internal price of impacted products considerably, ultimately making a contribution to poverty and social discontent. Furthermore, NTMs are a specific example of a broader syndrome of heavy and ill-targeted economic intervention, resulting in ineffective and sometimes even paralysis.

In this regard, they provide a gateway to a broader regulatory reform agenda, with a two-fold objec tive: (i) directly reducing trade costs, and (ii) contributing to the creation of a culture of competitiveness oriented dialog between public administrations and the private sector, in which issues such as those discussed above could be affectively addresssed.

3. LITERATURE REVIEW

The literature on standards and global trade flows concentrated on the impact of minimum quality standards and standards of compatibility on trade flows (Grandal and Shy, 2001; Otsuki et al, 2001; Disdier et al, 2008; Ferro et al., 2015; Fontagne´et al., 2015; etc).

Latest contributions have, however, investigated how standards could be used as an instrument of legislative protectionism. Although the literature on the protectionist use of safety standards is abundant, in contrast to the very limited empirical literature, some theoretical works are available. On the theoretical side, early research in this field has qualified protectionism to occur when the welfare that maximizes domestic country ards is higher than the social planner's, and vice versa for anti-protectionism. They demonstrated that domestic policy makers specify the number of standards to maximize productivity and consumer welfare in accordance with the welfare of certain interest groups.

These domestic standards are then compared to a worldwide appropriate international standard implemented by a social planner to maximize social welfare, including foreign profits (Fisher and Serra, 2000; Marette and Beghin, 2010). Furthermore, the major conclusion that emerges from these theoretical literature publications is that standards

are being used as tools of disguised protectionism to protect domestic producers from competition. The main conclusion of these theoretical literatures is that standards are used as tools of disguised protectionism to preserve domestic industries from competition (Anderson et al., 2004; Fischer and Serra, 2000; Sturm, 2006; Sheldon, 2013).

Nevertheless, some other authors' extensive theoretical background has pointed out that standards are not necessarily protectionist and may sometimes be anti-protectionist (Maertens and Swinnen, 2007; Marette and Beghin, 2010; Swinnen and Vandemoortele, 2011; Tian, 2003). However, the empirical validation of these theoretical predictions are rare, a gapwhich this study attempts to fill. On the other hand, the empirical validation of these theoretical estimation, however it is rare, a gap that this study aims to fill out. The divergent nature of these theoretical assertions indicates the need for standards to be empirically analyzed product by product before ultimately categorizing them as protectionist tools an indication that empirical analyses are of paramount importance. The different nature of these theoretical statements shows that the need for product by product empirical study of standards before fundamentally categorizing them as a protective tolls as indicated that empirical analysis is of paramount important.

4. METHODOLOGY AND DATA COLLECTION

4.1. Methodology

Many of the literature studies that examine the issue of bilateral and multilateral trade relations using gravity models to identify and assess the issues raised and test their different hypotheses. The main reason for using these models is that they are responsible for the political, spatial and temporary manufacturers in trade relations (see Head and Mayer, 2013). The basic form of the trade gravity model implies that the trade volume between any two trade partners is an increasing component of their national income and populations, and a reducing function of the distance between them. The theoretical basis of the gravity model is appropriate to almost every full-scale trade model, as shown by Evenett and Keller(2003). The theoretical framework for the model of our study is derived from the new theory of trade, which provides scale economics and an imperfect market. Moreover, Bergstrand (1990) gives a description of the link between the gravity equation and bilateral trade patterns within the framework of monopoly competition in the new theory of trade (Anderson (1979), Bergstrand (1990) and Helpman and Krugman(1985).

Based on product differentiation, they derive gravity equations from trade models and increase scale returns. The model is also extensively used. The model is also widely used by Shepherd and Wilson (2010), Czubala, Shepherd and Wilson (2009), Portugal-Perez, Reyes and Wilson (2009), and Shepherd (2007) Determining the impact on imports of non-tariff measures, therefore, this study uses mostly unexploited data from the different types of database. Specifically, the study tests the impact of Non-Tariff measures on trade in the 36 developing countries and for this study we estimate a system GMM model in cross section data. To test this correlation, gravity model is specified as follows:

$$\ln(Ex_{ijt}) = a_i\ \Phi\left[a_1\ SPS_{ij(t-1)s} + a_2\ TBT_{ij(t-1)s} + a_3 \ln(GDP_{it} \times \ln GDP_{jt})\right] + a_3\ X_{ij} + a_4\ MR_{ijts} + v_i + v_j + v_s + v_t + \varepsilon_{ijt} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where $\Phi(.)$ is a standard normal distribution function, and an outcome equation of the form

$$\ln(Ex_{ijt}) = \beta_1\ SPS_{ij(t-1)s} + \beta_2 \ln(GDPC_{it} \times \ln GDPC_{jt} + \beta_3\ TBT_{ij(t-1)s} + \beta_4 \ln(GDP_{it} \times \ln GDP_{jt} + \beta_5\ X_{ij} + a_4\ MR_{ijts} + \beta_\lambda \lambda(\alpha) + v_i + v_s + v_t + \varepsilon_{ijts} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where $\ln(Ex_{ijt})$ denotes the exports value of a specific HS6 products of country I to country j at time t. SPSij (t−1)s reports a concern over a SPS measure between the reporting country i and the maintaining country j at time t − 1 for a specific HS6 product line. ln (GDPCit × GDPCjt) depicts the log of the product of Gross Domestic Product per Capita of country i and country j at time t and ln reports a concern over a technical barriers to trade between the reporting country i and the maintaining country j at time t − 1 for a specific product line.

In addition, the vector Xij contains the usual gravity controls, such as the log of distance, measured as the geographical distance between capitals. Furthermore, the vectorMRijts contains multilateral resistance terms based on distance, as well as on the SPS concern. We follow Bergstrand (2009), who derive theory-consistent MR indexes from a Taylor series expansion of the Anderson and Van Wincoop (2003) gravity equation. We adapt their strategy to the panel data for our estimation. Hence, all regressions include multilateral resistance terms. To control for any country- specific characteristics, product specifics and time trends,we include full arrays of importer vi, HS6 product vs, and

separately in the equation. Hence, we control for a wide array of observable and unobservable factors.

Error terms εijts are Heteroscedasticity-robust and clustered at the country-pair level. λ(ˆα) indicates the inverse mills ratio which is predicted from equation (1). The concentrate of this paper is on SPS and TBT concerns reported by importers to the developing countries.

For SPS measures, we consider different variables: (i) vegetables and tobacco concerns are notified at the 6-digit level of the HS classification, and (ii) a normalized frequency measure SPSFreqij (t−1) s. The normalized SPS measure is defined as the number of concerns on HS6 products. For TBT we also concentrate on different variables for our estimation such as machinery and trunk products.

4.2. Data collection

Table 1. Variable descriptions and sources

Variable	Description	Source
Ex	Export	World Development Indicators (WDI)
Dist	Distance between capital of each countries	the CEPII database (the Centre d'Etudes Prospectives et d'Informations Internationales in France database) 2019
Mach	Machinery	UNCTAD-Trade Analysis Information System (TRAINS) 2019.
Veg	Vegetables	UNCTAD-Trade Analysis Information System (TRAINS) 2019.
Trun	Trunks	UNCTAD-Trade Analysis Information System (TRAINS) 2019.
Tob	Tobacco	UNCTAD-Trade Analysis Information System (TRAINS)2019.
GDPC	Gross domestic products per capita	World Development Indicators (WDI) 2019.

5. RESULTS AND DISCUSSIONS

Table 2 presents the results of the estimations by using of System of generalized method of moments (SGMM). Moreover we observe that the models yield statistically significant results and testing that some coefficients are close to zero produces a p-value equals 0.01 for the F statistic.

The standard gravity model variables are significant in the two cases and had the expected signs. Additionally, the magnitudes of the coefficients of these variables are

negative such as Machinery and GDP per capita. And it stringency has a negative impact on trade and is significant at 1% and the estimated parameter value is 0.00.

Also, the trunk variable identifying developing countries are positive but not significant in our estimation model, which analyzes the disaggregated stringency indices. This implies that developing countries on average have a lower intensity of trade with developed countries for trunk commodities.

Furthermore, regulations and standards have a negative effect, although when considering the dimensions of regulations or standards, not all standards have the same effect on trade. The results demonstrate that phytosanitary regulations have a negative effect on trade intensity, but the parameter tobacco is not significant, meaning that ithas no impact on trade in the developing countries. Moreover, Li and Beghin (2013), in a meta-analysis of SPS impacts on trade, conclude that the use of a direct NTM variable in estimated trade models leads to larger effects on trade than the use of more aggregated indices. Likewise, Drogue´ and DeMaria (2012), however, find that similarities in NTM between countries may even increase trade. However, they also recognize that cross-country differences in these limits will restrict trade.

Table 2. One step difference GMM

Variables	Coefficient	Standard Error	T-Value	Interval
CONSTANT	13.54913	2.807923	4.83*** (0.000)	19.05256
Distance	.0875556	.283725	0.31 0.758	.6436465
Vegetables	-.0328683	.0250398	-1.31 0.189	.0162089
Machinery	-.0698912	.0289325	-2.42*** 0.016	-.0131846
Trunks	.0250312	.0317015	0.79 0.430	.087165
Tobacco	.003787	.0273204	0.14 0.890	.057336
GDPC	-.3653701	.0953075	-3.83*** 0.000	-.1785707

Ln Sargant Test	517.4004 0.0000
AR(1)	-5.7594 0.0000
AR(2)	1.9004 0.0574
N	544
T	15
Obs per Group	14
N.Group	34

Note: All variables are in log form except the dummy variables. The equations are estimated with the multilateral trade resistance variables. *, ** and *** denote significance levels at 10%, 5% and 1% respectively.

In addition, table 3 presents the results for the selected agricultural and industry commodities, i.e. Tobacco, vegetables; Machine and Trunk for the extensive margin of import estimations by using the second step of SGMM model which is the estimation for the same variables which are little bit different from the first step. The economic mass of the trading partners (exporters and importers' GDPs) propels the probability of exporting developed countries to the developing countries. There is an increased probability of exporting goods by new exporters and by those that have exported in the past but are no longer exporting (disappearing exporters) and would want to export in the future, as well as by those that are currently exporting with a probability of expanding their exports for every instance of economic growth witnessed. Economic growth in the exporting countries enhances the possibility of new firm entries into different types of goods. A 1 % decreases in GDP raises the probability of new imports. Similarly, expenditure on developed countries export such as vegetables, measured by the GDPs of the importing countries, it shows that this commodity is a normal good such that an additional 1 % increase in expenditure on this commodity will enhance the probability of exporting on it.

Moreover, the developing countries standards on vegetables do not hinder the extensive margins of it, means that the standards are not restrictive in that they prevent imports of vegetables at the extensive level and this is statistically significant. This implies that many of

the imports at this line of trade often considered the standard requirements for market access beforehand and ensured adequate compliance prior to entering the market. This result is in conformity with Maertens and Swinnen (2007), Mangelsdolf et al. (2012), Xiong and Beghin (2011), Lui and Yue (2011), Reyes (2011), Jaffe and Henson (2004), Henson and Humphrey (2008) and Henson and Jaffee (2008). Moreover, some importers assisted many of their exporters and potential exporters technologically in complying with the technical regulations, which is in line with the hypotheses and findings of Okello and Roy (2007). The trade costs by distance proxy do not inhibit exports of vegetables, machine at this level of trade, although they are statistically insignificant. However, GDPC is a significant factor at the extensive margin of imports and it has a negative statues. In addition, others independent variable such as tobacco is positive and statistically insignificant.

Moreover, GDP in the developing countries are impacted negatively and significantly on the extensive of vegetable imports. Given the fact that vegetables are a high-value commodity, many industrial countries often promote and encourage export of the commodity through improving investment-friendly domestic policies. Vegetables are an economically important normal good in the developing countries. There is a virtually negligible marginal propensity to consume this commodity at additional levels of consumer income. This means that tastes and preferences in this market do not really encourage the propensity to import. Thus, the trade intensity effect of developing expenditure on vegetables is negative and indistinguishable from zero. This is similar to Ganslandt and Markusen's (2001) result, although they find a significant propensity to consume. The result also shows that developing countries SPS on vegetables have significant adverse effects on the extensive margin of imports. This could be due to the nature of the commodity, which is perishable. The fact that the commodity needs to be imported the same day that it is harvested and it will affect prospective exporters that do not have the science and technology to preserve the quality of the commodity. Similar findings are reported by Chen, et al. (2006), Chevassus-Lozza, et al. (2008). Trade does not hinder the flow of this trade and they are economically and statistically insignificant.

In a study on the international trade in fruits and vegetables, Emlinger et al. (2008) obtained smaller values for distance of between 0.58 and 0.84, where the higher value

corresponds to the group of more perishable products. In this case, we expect distance to have a large impact, as some developing countries are far from all destination markets and vegetables are a perishable product, although postharvest technology has in recent years allowed for improved conservation during shipping. In this regard, imports of vegetables are negative and statistically significant in our samples of developing countries.

This is relevant as the Organization for Economic Cooperation and Development (OECD) and the Food and Agriculture Organization (FAO) predicting that by the end of the decade, developing countries will experience greater surges in agricultural production, consumption and trade than developed countries (OECD–FAO, 2009). Furthermore, Machine and trunk are another important factor for development countries to import them and they are good tools for economic improvement, in this regard both are statistically significant, but machinery is negatively related to the economic situation in the developing countries. Meaning that, it is not a good factor to promote economic development.

Table 3. Two Step difference SGMM

Variables	Coefficient	Standard Error	T-Value	Interval
CONSTANT	13.58517	.7685876	17.68*** 0.000	15.09157
Distance	.085435	.0798819	1.07 0.285	.2420007
Vegetables	-.033687	.0139508	-2.40*** 0.016	-.006144
Machinery	-.0735088	.0155285	-4.73*** 0.000	-.0430736
Trunks	.0264443	.0099809	2.65*** 0.008	.0460065
Tobacco	.0037846	.016465	0.23 0.818	.0360554
GDPC	-.3627207	.033125	-10.95*** 0.000	-.2977969
Ln Sargant Test	33.91222 0.0012			

Variables	Coefficient	Standard Error	T-Value	Interval
AR(1)	-5.7013 0.0000			
AR(2)	1.5688 0.1167			
N	544			
T	15			
Obs per Group	14			
N.Group	34			

Note: All variables are in log form. The equations are estimated with the multilateral trade resistance variables. *, ** and *** denote significance levels at 10%, 5% and 1% respectively.

Finally the estimation in table 4 suggests that the economic mass of the trading partners does not significantly contribute to improvement in imports of machine at the extensive margin. However, the developing countries standards have a significant negative impact on machinery such that for every additional standard requirement imports decline by about 1.96%. This confirms the findings of Chevassus-Lozza et al. (2008) and Van Tongeren et al.(2010). Moreover, Distance variable does not significantly inhibit the extensive margin for machine. The results further indicate that higher prices significantly affect exports at this margin of trade. This means that high costs of compliance often lead to higher prices, which in turn adversely affects exports. In addition only machinery and GDPC are negative and significant, meaning that importing any kind of machine into the developing countries do not lead and effect on economic seriously. In addition, the rest of other variables are not statistically significant. The estimation shows that machinery standards have a significant direct relationship with exports from industrial countries, so that prospective exporters are not discouraged even in the presence of standard requirements. An evaluation of the developing countries directives on machinery, vegetables, tobacco and trunk standards indicate that there has not been relative stability and consistency in the directives, which gives exporters at this margin

of trade leverage in exporting. Income in exporting countries does significantly propel exports of these commodities. This could be a result of government and the organic production requirements in this market, which developing countries are not yet struggling to comply with.

Table 4. Two-step difference GMM with robust (SE)

Variables	Coefficient	Standard Error	T-Value	Interval
CONSTANT	13.58517	1.986579	6.84***	17.47879
			0.000	
Distance	.085435	.1808936	0.47	.43998
			0.637	
Vegetables	-.033487	.0340674	-0.98*	.0332838
			0.326	
Machinery	-.0735088	.0374265	-1.96***	-.0001542
			0.050	
Trunks	.0264443	.034832	0.76	.0947138
			0.448	
Tobacco	.0037846	.0397967	0.10	.0817846
			0.924	
GDPC	-.3627207	.0763941	-4.75***	-.2129909
			0.000	
Ln Sargant Test	33.91222			
	0.0012			
AR(1)	-5.7013			
	0.0000			
AR(2)	1.5688			
	0.1167			
N	476			
T	15			
Obs per Group	14			
N.Group	36			
N.Instruments	21			

Note: All variables are in log form. The equations are estimated with the multilateral trade resistance variables. *, ** and *** denote significance levels at 10%, 5% and 1% respectively.

6. CONCLUSIONS

In many countries non-tariff measures, such as SPS and TBT regulations and standards arebecoming increasingly stringent in an attempt to address foodsafety issues that threaten public health and environment of the planet. However, these new regulations and standards can have detrimental effects onthe exports of both developedand some developing countries. This paper employed agravity model approach to analyze the impact that stricter regulations and standards, as perceived by importers, had on vegetables, tobacco, trunk, and machine from several developed and developing countries. For our estimation we have applied SGMM model, in the firststep and second step in SGMM we have used the same variables, but we have found a different results in our estimation, for example in the first step of SGMM, only 2 variables are significant, while in the second step the significant of variables are increased into 4 variables, this is meaning that the technique is crucial in our estimation. In addition, the evidence shows stricter regulations have a negative overall effect on trade and further suggests that the effect is larger if a developing country imposes the standard. Furthermore, SPS and TBT regulations have detrimental effects on trade, and GDPC has a negative impact on trade, it is supporting the hypothesis in the literature that standards are a not promote trade. The results reveal that importers perceive differences in stringency across countries and stringency has increased in recent years, but not equally across countries or types of standards. Thus, the trend toward increased stringency in sanitary and phytosanitary and TBT standard swill affect global agricultural and industrial trade, and the effects will differ depending on which markets and standards become more stringent.

7. APPENDIX

List of the countries in our estimation

Countries Group	Members
Importers (Developing countries)	Algeria, Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Bolivia, Brazil, Brunei, Cambodia, Chad, Chile, China, Colombia, Congo, Egypt, Fiji, Georgia, Ghana, Haiti, India, Indonesia, Iran, Jamaica, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyz, Lebanon, Mexico, Morocco, Oman, Qatar, Saudi Arabia.
Exporters (Developing and developed countries)	USA, Japan, Australia, South Korea, China, Malaysia.

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DETERMINATION OF CRITICAL PATTERN OF 60 METER SHIP CONSTRUCTION PROJECT USING PRECEDENCE DIAGRAM METHOD (PDM)

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ABSTRACT: *PT. XYZ in Surabaya is engaged in the production of commercial ships, providing ship repair and maintenance services as well as general engineering with specifications based on orders. Along with the development of the technology industry, ship production requires every shipyard to evaluate the system used. The time delay is the problem of building a 60 meter commercial ship. The Precedence Diagram Method (PDM) is a method for scheduling project time and showing critical trajectories of project activities. The results showed that in the project scheduling, there are 13 activities that have a zero value or critical activity which are activities 1, 2, 3, 4, 5, 7, 9, 15, 16, 20, 22, 23, 26, 27, 28 So that it needs more strict control and supervision from the contractor in carrying out the activities of the 60 meter commercial ship building project activities for each activity/activity so that it does not experience delays and the project can be completed on time.*

Keywords: *Controlling, Planning, Critical trajectories, PDM.*

1. INTRODUCTION

PT. XYZ in Surabaya is engaged in the production of commercial vessels, providing ship repair and maintenance services as well as general engineering with specifications based on orders (Silvianita, 2018).

Along with the development of the technology industry, ship production requires every shipyard to evaluate the system used. The new ship building project is required to work fast according to the schedule. Poor performance, low quality, and cost overruns often occur in a project (Arica Dwi Susanto, 2018).

The literature used in this paper were obtained to support the research. These literature includes paper titled A fuzzy pert approach to evaluate plant construction project scheduling risk under uncertain resources capacity (R.Lin, 2009).

Earned Value Management Systems: Challenges and Future Direction (Wilson, 2013). CPM, PERT and Project Management With Fuzzy Logic Technique and Implementation On A Business (Mazlum, 2015). Integration of Building Information Modeling and Critical Path Method Schedules to Simulate the Impact of Temperature and Humidity at the Project Level (Shan, 2014). Comparative Study of Management Operation System Techniques (MOST) and CPM in Construction Scheduling (Shailla, 2014). Extension of Time Determination in Construction Projects in Nigeria: The Critical Path Method (Andawei, 2014). Critical path analysis for the management of fractured neckof femur (Balla, 1995). The Critical Path Method In Estimating Project Duration (Nafkha, 2016). Critical Path Analysis for New Product Planning (Wong, 1964). Measuring the Actual Energy Cost Performance of Green Buildings: A Test of the Earned Value Management Approach (Dwaikat, 2016). Cost Control and Performance Review of Software Projects by Using the Earned Value Management (Alecu, 2014). Critical Path Method in Designing Feasible Solutions (Agarwal, 2013). Traditional Critical Path Method versus Critical Chain Project Management: A Comparative View (M, 2015). Project Planning And Control With Pert And Cpm (K.K.Khandelwal, 2002). Project Planning And Scheduling Using PERT And CPM Techniques With Linear Programming: Case Study (Agyei, 2015). Fast Missile Boat Project Planning using CPM and What If Analysis Method (Silvianita, 2018). CPM Schedule Summarizing Function of the Beeline Diagram Method (Kim, 2012). Earned value method as a tool for project control (Czarnigowska, 2008). The Factors Affecting The Methods of Construction Projects Scheduling: An State of The Art and Overview (Fatemeh Nouban, 2017). Contruction Project Scheduling with Time, Cost and Material Restrictions Using Fuzzy Mathematical Models and Critical Path Method (Daniel Castro-Lacouture, 2009). Planning and Monitoring of industrial punch development processes (Y. Arslan, 2017)

PDM is a network that is generally in the form of a rectangle, while the arrow is only as a guide to the relations of the activities in question. The activity relationship shows the relationship between activities with one line from the previous node to the next node.

This Paper is organized as follows. Section 2 review about the basic ship theory. Section 3 gives result and section 4 discussion of research. Finally, in section 5 present conclusion this paper.

2. MATERIALS AND METHODS

2.1. Technical Concept

In determining the exact duration factors:

1. Volume of work
2. The condition in project fields
3. Weather conditions
4. Resources conditions (labor, materials, equipment)
5. Experiences on previous project (similar project)

2.2. Project Time Management

There are three stages to be performed in project management:

1. Planning Process

Planning process includes the setting of goals, defining projects and forming team organizations. Regarding the capability in working on several projects at once (mostly in large companies), an effective way to assign labors and physical resources is through the project organization. The project organization is led by a project manager who coordinates project activities with other departments and reports to top management.

2. Scheduling

Scheduling is the link between labor, money, and materials used in a project. Project scheduling involves specifying the duration of project activities to be completed, raw materials, labor and time required for each activity. The popular approach used is the Gantt Chart or the Bar Chart Method. Other project scheduling methods are PERT (Project Evaluation and Review Technique) and CPM (Critical Path Method).

3. Controlling

Project controls include control over resources, cost, quality and budget. Project control is also used to revise the project plan and allow to change/shift resources to a needed places (rearranging) so that the time and cost can be appropriate. Project control involves strict supervision of resources, cost, quality and budget. Control also means the use of feedback loops to revise the project plan and resource arrangements where needed.

2.3. Network Component

There are two approaches to describe the project network: activity on node - AON and activity on arrow (AOA). At the AON convention, the point indicates the activity, whereas at the AOA, the arrow indicates the activity.

2.4. Precedence Diagram Method (PDM)

Precedence Diagram Method is a networking method that is included in the classification of AON (Activity On Node). In this method, the activity is written in a node that is generally rectangular, while the arrows as a pointer relationship between the activities concerned. Thus the dummy which is an important sign to indicate the dependence relationship, is not required in PDM.

The precedence method diagram can be described as four relations of activity/logic, Each node has two ends, namely the beginning or beginning = (S) and the end or end = (F) that is (Tan, 1998):

In the precedence diagram method, the existence of four relations of activity/logic can be described. Each node has two ends namely the beginning/starting tip = (S) and end/ finish tip = (F) (Tan, 1998):

1. Activity relation of *Start-to-start* (SS): When A starts, B can be started.

2. Activity Relation of *Start-to-finish* (SF): When A starts, B can be finished.

3. Activity Relation *Finish-to-Start* (FS): When A finish, B can be started.

4. Activity Relation *Finish-to-finish* (FF): When A finish, B can be finished.

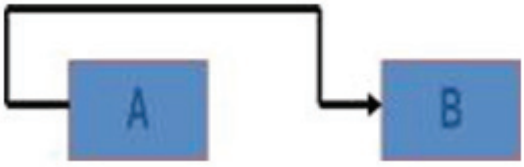

Fig. 1 Activity Relation of *Start-to-Start* (SS)

Fig. 2 Activity Relation of *Start-to-Finish* (SF)

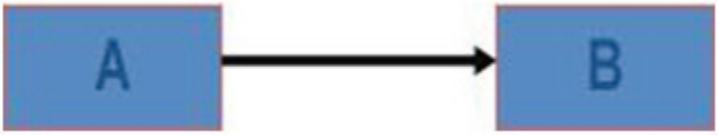

Fig. 3 Activity Relation of *Finish-to-Start* (FS)

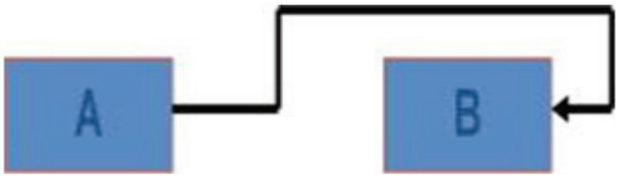

Fig. 4 Activity Relation of *Finish-to-Finish* (FF)

2.5. Method of Research

Analysis of this research data are as follows:

Calculations was performed using excel software whose results can handle planning an activity, organizing and controlling time and costs that convert input data into an output data according to purpose, then the overall time of building a 60 meter commercial ship can b e known.

3. RESULT

In this part, the authors would like to discuss about critical path with PDM, so that the expected time can be in accordance with the planning of the 60 meters commercial ship construction

The time and cost plan data of a 60 meter commercial ship construction project was for 314 days. The data on the schedule and duration of the 60 meter commercial ship building planning project along with the time duration are presented in table 1 and the cost budget design data are listed in table 2.

Table 1. Schedule and Duration of the 60 Meter Commercial Ship Construction Project

No	Activity	Duration (hari)	Start	Finish
	Hull Construction		10/10/2016	06/06/2017
1	Hull Fabrication	70	10/10/2016	15/01/2017
2	Hull Sub Assembly	104	18/10/2016	11/03/2017
3	Hull Assembly	137	26/10/2016	06/05/2017
4	Hull Erection	137	25/11/2016	06/06/2017
	Painting anode Catodic Protection		01/10/2016	22/05/2017
5	Blasting and Painting Raw Material	48	10/10/2016	15/12/2016
6	Block Blasting and Painting	137	15/11/2016	31/05/2017
7	Finishing Hull	27	06/06/2017	12/07/2017
8	Painting Outfitting	79	06/06/2017	22/09/2017
9	Anode	19	14/03/2017	07/04/2017
	Hull Outfitting		10/10/2016	05/10/2017
10	Seat and Foundation	86	10/10/2016	07/02/2017
11	Deck Machinery and Equipment	86	07/02/2017	07/06/2017
12	Interior	171	07/02/2017	05/10/2017
	Machinery Outfitting		10/10/2016	05/10/2017
13	Piping System Including Ducting	181	10/10/2016	20/06/2017
14	Shafting	51	20/06/2017	30/08/2017

No	Activity	Duration (hari)	Start	Finish
15	Machinery Outfitting	25	31/08/2017	05/10/2017
	Electric, Electronic Outfitting		10/10/2016	05/10/2017
16	Cabling	172	10/10/2016	07/06/2017
17	Power Supply	172	02/11/2016	01/07/2017
18	Illuminiation	172	26/11/2016	26/07/2017
19	Communication and Instrumentation	178	21/12/2016	18/08/2017
20	Computing and Information	172	13/01/2017	12/09/2017
21	Nautical and Radio	172	07/02/2017	05/10/2017
	Function and Commisioning		05/10/2017	30/10/2017
22	Machinery Commisioning	9	05/10/2017	18/10/2017
23	Equipment Commisioning	8	10/10/2017	21/10/2017
24	Lighting Commisioning	4	18/10/2017	24/10/2017
25	System Control Commisioning	4	24/10/2017	30/10/2017
	HAT and SAT		02/11/2017	18/12/2017
26	Harbour Acceptance Test	31	02/11/2017	16/12/2017
27	Yard Trial	14	27/11/2017	18/12/2017
	Delivery		20/12/2017	20/12/2017
28	Delivery to Customer	0	20/12/2017	20/12/2017

Table. 2 Budget Plan

No.	Job Description (Thousands Rupiah)		Cost	
A	**Hull Construction**			
	1	Hull Fabrication	Rp	46.176.942
	2	Hull Sub Assembly	Rp	6.244.996
	3	Hull Assembly	Rp	8.286.629
	4	Hull Erection	Rp	8.286.629
B	**Painting anode Catodic Protection**			
	5	Blasting and Painting Raw Material	Rp	3.242.594
	6	Block Blasting and Painting	Rp	2.522.018
	7	Finishing Hull	Rp	1.621.297

No.	Job Description (Thousands Rupiah)		Cost
	8	Painting Outfitting	Rp 4.743.795
	9	Anode	Rp 1.140.913
C	**Hull Outfitting**		
	10	Seat and Foundation	Rp 5.224.179
	11	Deck Machinery and Equipment	Rp 5.224.179
	12	Interior	Rp 10.388.311
D	**Machinery Outfitting**		
	13	Piping System Including Ducting	Rp 10.928.743
	14	Shafting	Rp 3.122.498
	15	Machinery Outfitting	Rp 1.561.249
E	**Electric, Electronic Outfitting**		
	16	Cabling	Rp 4.203.363
	17	Power Supply	Rp 4.563.651
	18	Illuminiation	Rp 4.383.507
	19	Communication and Instrumentation	Rp 4.743.795
	20	Computing and Information	Rp 4.803.843
	21	Nautical and Radio	Rp 3.963.171
E	**Function and Commisioning**		
	22	Machinery Commisioning	Rp 600.480
	23	Equipment Commisioning	Rp 540.432
	24	Lighting Commisioning	Rp 120.096
	25	System Control Commisioning	Rp 420.336
F	**HAT and SAT**		
	26	Harbour Acceptance Test	Rp 1.921.537
	27	Yard Trial	Rp 900.721
G	**Delivery**		
	28	Delivery to Customer	Rp 120.096
	TOTAL		Rp 150.000.000

3.1. Gantt Chart Planning Data for 60 Meter Commercial Ship Construction Project

Making a planning schedule for a 60 meter commercial ship construction project used the Gantt Chart to determine when the activities / activities were started, postponed and completed.

The plan schedule of a 60 meter commercial ship construction project can be seen in the following figure below:

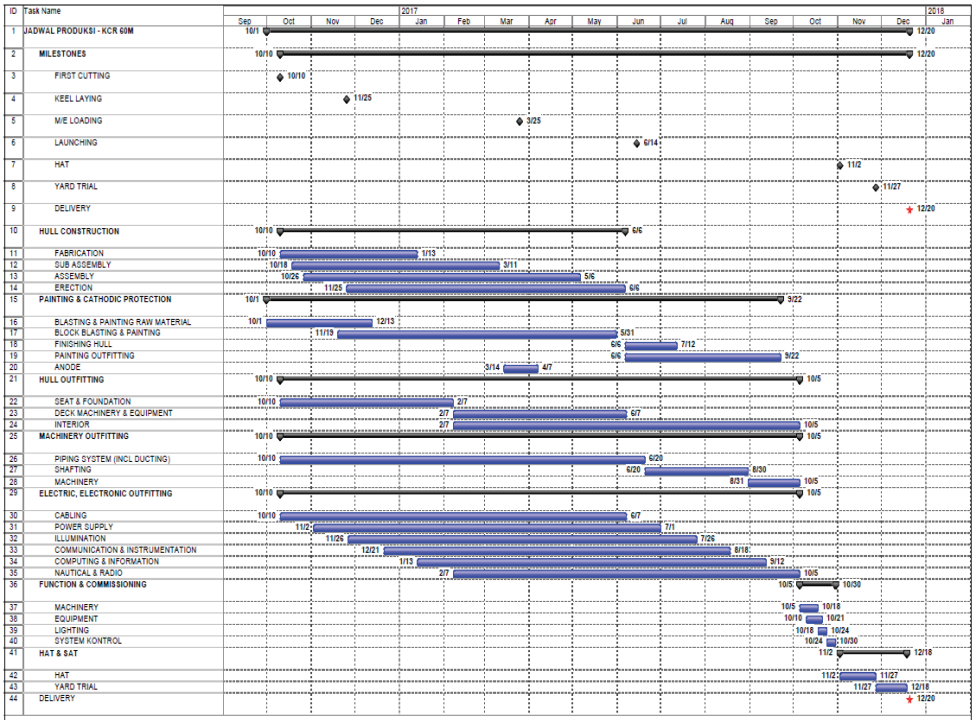

Fig. 5 Gantt Chart Planning Data for 60 Meter Commercial Ship Construction Project

4. DISCUSSION

In this study, the PDM method used one determinant number and four constraints. The four constraints in the Precedence Diagram Method (PDM) are important components in the formation of its network. In addition, the four constraints give different forms by placing activity information in the display of precedent diagrams as nodes.

The results of the construction data determination on the 60 meter commercial ship construction project can be seen in the following table:

Table 3. Determination the Construction of the 60 Meter Commercial Ship Construction Project

No	Kegiatan	Konstrain
1	Hull Fabrication	-
2	Hull Sub Assembly	SS(1-2) = 6
3	Hull Assembly	SS(2-3) = 6
4	Hull Erection	SS(3-4) = 22
5	Blasting and Painting Raw Material	-
6	Block Blasting and Painting	SS(5-6) = 30
7	Finishing Hull	FS(9-7) = 42
		FS(3-7) = 22
		FS(4-7) = 0
		FS(6-7) = 4
8	Painting Outfitting	FS(4-8) = 0
		FS(6-8) = 4
9	Anode	FS(2-9) = 2
10	Seat and Foundation	-
11	Deck Machinery and Equipment	FS(10-11) = 0
12	Interior	FS(10-12) = 0
13	Piping System Including Ducting	-
14	Shafting	FS(11-14) = 9
		FS(13-14) = 0
15	Machinery Outfitting	FS(7-15) = 37
		SS(8-15) = 63
		FS(14-15) =1
16	Cabling	-
17	Power Supply	SS(16-17) = 17
18	Illuminiation	SS(16-18) = 35
19	Communication and Instrumentation	SS(16-19) = 52
20	Computing and Information	SS(16-20) = 70
21	Nautical and Radio	SS(16-21) = 86
22	Machinery Commisioning	FS(12-22) = 0
		FS(15-22) = 0
23	Equipment Commisioning	FS(16-23) =89
		FS(17-23) = 72

No	Kegiatan	Konstrain
		FS(18-23) = 54
		FS(19-23) = 31
		FS(20-23) = 20
		FS(21-23) = 4
24	Lighting Commisioning	SS(23-24) = 6
25	System Control Commisioning	FS(24-25) = 0
26	Harbour Acceptance Test	FS(22-26) = 11
		FS(23-26) = 9
		FS(25-26) = 3
27	Yard Trial	SS(26-27) = 18
28	Delivery to Customer	FS(27-28) = 2

Table. 4 Table of Activities for Construction of a 60 Meter Commercial Ship Constraction Project

No	Job Description	Activity Code	Initial Activity	Duration (hari)
	Hull Construction			
1	Hull Fabrication	1	-	70
2	Hull Sub Assembly	2	1	104
3	Hull Assembly	3	2	137
4	Hull Erection	4	3	137
	Painting anode Catodic Protection			
5	Blasting and Painting Raw Material	5	-	48
6	Block Blasting and Painting	6	5	137
7	Finishing Hull	7	3, 4, 6, 9	27
8	Painting Outfitting	8	4, 6	79
9	Anodizing	9	2	19
	Hull Outfitting			
10	Seat and Foundation	10	-	86
11	Deck Machinery and Equipment	11	10	86
12	Interior	12	10	171
	Machinery Outfitting			
13	Piping System Including Ducting	13	-	181
14	Shafting	14	11, 13	51

No	Job Description	Activity Code	Initial Activity	Duration (hari)
15	Machinery Outfitting	15	7. 8. 14	25
	Electric, Electronic Outfitting			
16	Cabling	16	-	172
17	Power Supply	17	16	172
18	Illuminiation	18	16	172
19	Communication and Instrumentation	19	16	178
20	Computing and Information	20	16	172
21	Nautical and Radio	21	16	172
	Function and Commisioning			
22	Machinery Commisioning	22	12, 15	9
23	Equipment Commisioning	23	16,17,18,19,20,21	8
24	Lighting Commisioning	24	23	4
25	System Control Commisioning	25	24	4
	HAT and SAT			
26	Harbour Acceptance Test	26	22, 23, 25	31
27	Yard Trial	27	26	14
	Delivery			
28	Delivery to Customer	28	27	0

Based on the series of project activities in the table above with the addition of constrains provisions in table 4, they were then described in the form of a networking planning diagram using activity signs in the activity on node (AON) model as shown below:

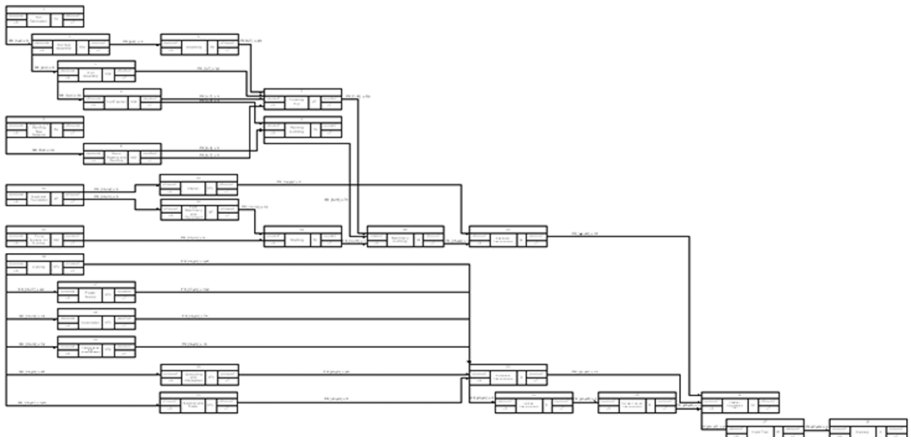

Fig. 6 Activity On Node of 60 Meter Commercial Ship Constraction Project

After the Time Schedule was known, the next step was the researcher to perform the PDM calculation to find out the project completion time.The PDM it consists of two stages, namely forward pass and backward pass.

1. *Forward Pass*

o Activity 1
ES (1) = 0
EF (1) = 0 + 70 = 70

o Activity 2
ES (2) = 0 + 6 = 6
EF (2) = 6 + 104 = 110

o Activity 3
ES (3) = 6 + 6 = 12
EF (3) = 12 + 137 = 149

o Activity 4
ES (4) = 12 + 22 = 34
EF (4) = 34 + 137= 171

o Activity 5
ES (5) = 0
EF (5) = 0 + 48 = 48

o Activity 6
ES = 0 + 30 = 30
EF = 30 + 137 = 167

o Activity 7
ES (7) = 130 + 42 = 172
= 149 + 22 = 171
= 171 + 0 = 171
= 167 + 4 = 171
EF (7)= 172 + 27 = 199

o Activity 8
ES (8) = 171+ 0 = 171
= 167 + 4 = 170
EF (8) = 171 + 79 = 250

o Activity 9
ES (9) = 110 + 2 = 112
EF (9) = 112 + 18 = 130

o Activity 10
ES (10)= 0
EF (10)= 0 + 86 = 86

o Activity 11
ES (11)= 87 + 0 = 86
EF (11)= 86 + 86 = 172

o Activity 12
ES (12) = 86 + 0 = 86
EF (12) = 86 + 171 = 257

o Activity 13
ES (13) = 0
EF (13) = 0 + 181 = 181

o Activity 14
ES (14) = 172 + 9 = 181
= 181 + 0 = 181
EF (14) = 181 + 51 = 232

o Activity 15
ES (15) = 199 + 36 = 235
= 171 +62 = 233
= 232 + 1 = 233
EF (15) = 235 + 25 = 260

o Activity 16
ES (16) = 0
EF (16) = 0 + 172 = 172

o Activity 17
ES (17) = 0 + 17 = 17
EF (17) = 17 + 172 = 189

o Activity 18
ES (18) = 0 + 35 = 35
EF (18) = 35 + 172 = 207

o Activity 19
ES (19) = 0 + 52 = 52
EF (19) = 52 + 178 = 230

o Activity 20
ES (20 = 0 + 70 = 70
EF (20) = 70 + 172 = 242

o Activity 21
ES (21) = 0 + 86 = 86
EF (21) = 86 + 172 = 258
o Kegiatan 22
ES (22) = 257 + 0 = 257
= 260 + 0 = 260
EF (22) = 260 + 9 = 269
o Activity 23
ES (23) = 172 + 89 = 261
= 189 + 72 = 261
= 207 + 54 =261
= 230 + 31 = 261
= 242 + 20 = 262
= 258 + 3 =261
EF (23) = 262 + 9 = 271
o Activity 24
ES (24) = 262 + 6 = 268
EF (24) = 268 + 4 = 272
o Activity 25
ES (25) = 272 + 0 = 272
EF (25) = 272 + 4 = 276
o Activity 26
ES (26) = 269 + 11 = 280
= 269 + 9 = 278
= 275 + 3 = 279
EF (26) = 280 + 31= 311
o Activity 27
ES (27) = 280 + 18 = 298
EF (27) = 298 + 14 = 312
o Activity 28
ES (28) = 312 + 2 = 314
EF (28) = 314 + 0 = 314

2. Backward Pass.

o Activity 28
LF (28) = 314
LS (28) = 314 – 0 = 314
o Activity 27
LF (27) = 314 – 2 = 312
LS (27) = 312 – 14 = 298
o Activity 26
LF (26) = 298 - 18 + 31 = 311
LS (26) = 311 - 31 = 280
o Activity 25
LF (25) = 280 – 3 = 277
LS (25) = 277 – 4 = 273
o Activity 24
LF (24) = 273 – 0 = 273
LS (24) = 273 – 4 = 269
o Activity 23
LF (23) = 269 – 6 + 8 = 271
= 280 – 9 = 271
LS (23) = 271 – 9 = 262
o Activity 22
LF (22) = 280 – 11 = 269
LS (22) = 269 – 9 = 260
o Activity 21
LF (21) = 262 – 3 = 259
LS (21) = 259 – 172 = 87
o Activity 20
LF (20) = 262 – 20 = 242
LS (20) = 242 – 172 = 70
o Activity 19
LF (19) = 262 – 31 = 231
LS (19) = 231 – 178 = 53
o Activity 18
LF (18) = 262 – 54 = 208
LS (18) = 208 – 173 = 36
o Activity 17
LF (17) = 262 – 72 = 190
LS (17) = 190 – 172 = 18
o Activity 16
LF (16) = 262 – 89 = 172
LS (16) = 173 – 172 = 1
= 18 – 17 = 1
= 36 – 35 = 1
= 53 – 52 = 1
= 70 – 70 = 0
= 87 – 86 = 1

- Activity 15
  LF (15) = 260 – 0 = 260
  LS (15) = 260 – 25 = 235
- Activity 14
  LF (14) = 235 – 1 = 234
  LS (14) = 234 – 51 = 183
- Activity 13
  LF (13) = 183 – 0 = 183
  LS (13) = 183 – 182 = 1
- Activity 12
  LF (12) = 260 – 0 = 260
  LS (12) = 260 – 171 = 89
- Activity 11
  LF (11) = 183 – 9 = 174
  LS (11) = 174 – 87 = 86
- Activity 10
  LF (10) = 87 – 0 = 87
  = 89 – 0 = 89
  LS (10) = 87 – 86 = 1
- Activity 9
  LF (9) = 172 - 42 = 130
  LS (9) = 130 - 18 = 112
- Activity 8
  LF (8) = 235 - 62 + 79 = 252
  LS (8) = 252 - 79 = 173
- Activity 7
  LF (7) = 235 - 36 = 199
  LS (7) = 199 - 27 = 172
- Activity 6
  LF (6) = 172 - 4 = 168
  = 173 - 4 = 169
  LS (6) = 168 - 137 = 31
- Activity 5
  LF (5) = 31 – 30 + 54 = 55
  LS (5) = 55 – 54 = 0
- Activity 4
  LF (4) = 173 - 0 = 173
  = 172 - 0 = 172
  LS (4) = 172 -138 = 34
- Activity 3
  LF (3) = 172 - 22 = 150
  = 34 – 22 + 137 = 149
  LS (3) = 149 – 137 = 12
- Activity 2
  LF (2) = 112 - 2 = 110
  = 12 – 6 + 104 = 110
  LS (2) = 110 - 104 = 6
- Activity 1
  LF (1) = 6 - 6 + 70 = 70
  LS (1) = 70 - 70 = 0

Table 5. Recapitulation of ES, EF, SL, LS and LF Value Calculation of the 60 Meter Commercial Ship Construction Project

Activity Code	Duration (Hari)	ES	EF	SL	LS	LF
1	70	0	70	0	0	70
2	104	6	120	0	6	120
3	137	12	149	0	12	149
4	137	34	173	0	34	173
5	48	0	48	0	0	48

Activity Code	Duration (Hari)	ES	EF	SL	LS	LF
6	137	30	167	1	31	168
7	**27**	**172**	**199**	**0**	**172**	**199**
8	79	171	250	2	173	252
9	**19**	**112**	**130**	**0**	**112**	**130**
10	86	0	86	1	1	87
11	86	86	172	1	87	173
12	171	86	257	1	87	258
13	181	0	181	1	1	183
14	51	181	232	2	183	234
15	**25**	**235**	**260**	**0**	**235**	**260**
16	**172**	**0**	**172**	**0**	**0**	**172**
17	172	17	189	1	18	190
18	172	35	207	1	36	208
19	178	52	230	1	53	231
20	**172**	**70**	**242**	**0**	**70**	**242**
21	172	86	258	1	87	259
22	**9**	**260**	**269**	**0**	**260**	**269**
23	**8**	**262**	**271**	**0**	**262**	**271**
24	4	268	272	1	269	273
25	4	272	276	1	273	277
26	**31**	**280**	**311**	**0**	**280**	**311**
27	**14**	**298**	**312**	**0**	**298**	**312**
28	**0**	**314**	**314**	**0**	**314**	**314**

Based on Table 5, the critical path from the PDM calculation was obtained. The critical path is the path through which critical work passes, namely the work that has the earliest start time equals with the last start time (ES = LS) and the earliest completion time equals with the latest finish time (EF = LF). The critical path on PDM can be seen in the following figure:

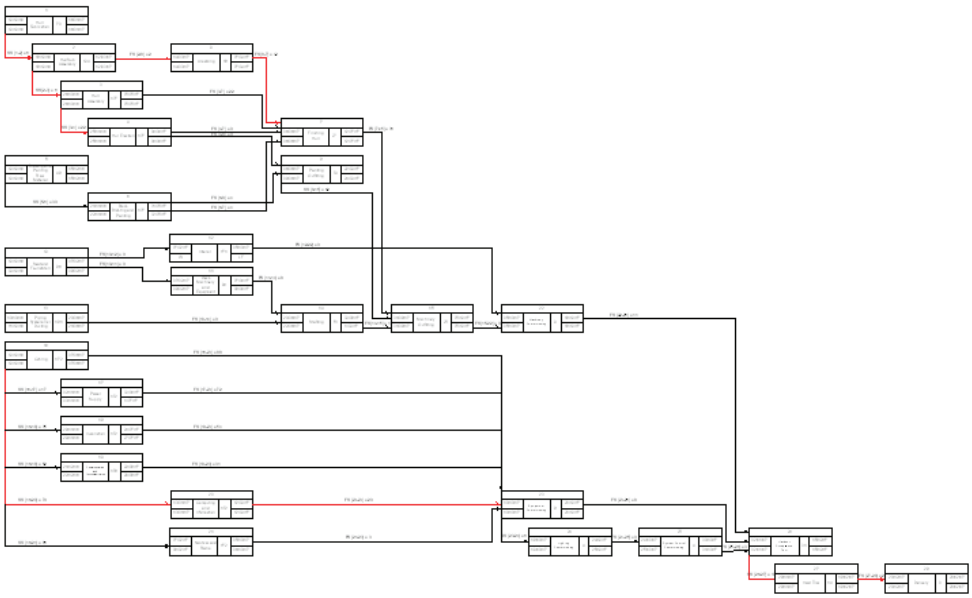

Fig. 7 PDM critical track on the 60 Meter Commercial Ship Construction Project

5. CONCLUSION

Based on the calculations obtained, activity 1, 2, 3, 4, 5, 7, 9, 15, 16, 20, 22, 23, 26, 27, 28 are critical paths. Thus, control and supervision is more stringent in carrying out the activities of the 60 meter commercial ship building project activitiesthan the contractor on each activity to avoid delays so that the project can be completed on time.

ACKNOWLEDGEMENTS

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EFFECTIVE INNOVATION THROUGH MILITARY INSTITUTIONALIZATION

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Abstract: *This paper will focus on the elements of military organizations, whether how to innovate effectively in the realm of the twenty-first century' fast-changing rhythm. The emerging new world order changes the nature and scope of the interaction of components and the whole in determining the development of military culture, the degree of the value of the impact of individual elements, on the one hand, and system-wide processes on the other, on its (military culture) evolution. The paper aims to provide a conceptual, theoretical framework to an institutional culture where it is an essential element to innovate successfully, and that enables interpretation of strategic assessments to military capabilities. In the meantime, strategic assessment requires the involvement of political and military leadership styles, strategies, and techniques to calculate the strategic factors with close harmonization. Military organizations could be adaptive when they embrace practical lessons learned system: with one crucial component having personnel with a mindset of Mission Command Philosophy; significantly with a flexible doctrine that fosters and promotes it. Not always, the best and smart groundbreaking ideas come true in real life. Enlightened military intellectuals are the ones who make their ideas go through and understand the military as a continuation of policy-making. The foundation for such military intellectualism must take its roots from history based military theory.*

Keywords: *culture, war, mission, military, innovation, force, state.*

1. INTRODUCTION

The newest phase of development of the Worlds' society is portrayed by disunity, social stratification, conflict, uncertainty, and inconsistency. The complex tasks of transforming society require the search for credible mechanisms for managing social processes, improving institutions that can mitigate the strictness of social tension. The transitory essence of society necessitates a rethinking of the social interaction, the success of which is primarily due to the change of linear, waiting for influence on the interactive arrangement of the interests of the

subjects, principles of dialogue, transparency, understanding, and trust. Eliminating the alienation of subjects from each other through manageable intermediaries' patterns of synergy actualizes the exploration for new advances and attitudes on communication activities, including military interactions with the public notice, which in society play a unique integrating role.

The transitional phase of each society is delineated by a reassessment of the classical management paradigm, the search for new paths, and the revision of the existing critical provisions of rational management, which is still based on the traditional principles of direct object influence.

Therefore, the search for adaptive control methods in these conditions with innovations (lat. "innovatio" - "update," "improvement"), which ensures the effectiveness of the functioning of subjects of political and socio-economic activities, efficient resource management, positive changes in relevant social institutions and objects of military leadership contingencies in pursuit of excellence.

In November 1917, at the battle of Cambrai, the British Army partially demonstrated Blitzkrieg tactics by employing tanks in warfare. Although British military historians Fuller and Hart forecasted promising future of armored warfare, it was German Army that implemented the Blitzkrieg successfully in 1940, which achieved most decisive victory in the operational war in military history (Barry and Williamson, 2007, p. 378). By the end of WWI, Britain with twelve-aircraft carriers had the best naval aviation, but at the beginning of WWII, the US had the strongest aircraft carrier fleet, and closest follower was Japan. What reasons were behind the success of Germany and the US? The stance of this paper is to assume that military organization must have an institutional culture, effective lessons learned system, meritorious, experienced, and idealistic individuals that set the conditions to innovate effectively. The central concern of this work will focus on the use of historical examples to support the argument. This article contributes an introductory and comprehensive summary of these phenomena, using a series of case studies to illustrate how organizational and military culture shaped the understanding of security threats, perceptions of warfare, and intuitive replies to security challenges; simply put how this culture formed military knowledge and behavior.

2.THE *CULTURE* AS A TOOL FOR PROFESSIONALISM

Cultures define specific patterns of actions as 'good,' 'useful' and 'practical,' turn those definitions

into undeniable truths, and often set practices – military methods as well – in stone, even if new realities prove them old-fashioned. Studying at organizations instead of societies as units of analysis, organizational culture can explain organizational behavior, beliefs, and hidden assumptions. Military organizations present a particularly clear case of a cultural organization. Military culture influences military performance by undeviatingly affecting soldiers' understandings of operations' context, most distinctly in the way they perceive their enemy, the nature of the mission, standards of proper behavior, and threat levels. When soldiers deploy in operation, their military culture, with its preexisting beliefs, norms, attitudes, and values, accompanies them and profoundly forms their interpretation of the surrounding circumstances, decreases the range of actions they will consider convenient and viable, and thus affects their ultimate behavior (Ruffa, 2017, p. 394).

Armies are profoundly systemized, formed, declaratively patterned organizations. They rigorously regulate activities through official doctrines that reflect and reproduce their 'obvious' intrinsic cultural truths and derive actions from those truths (Vardi, 2008, p. 296). Institutional culture plays a crucial role in how armed forces prepare themselves for future war. From this point of view, it signifies an essential element in successful innovation. Based on the research of the interwar period, military forces that innovated successfully were the ones who could interpret strategic calculations to military capabilities and had a practical lesson learned system. In 2017, Griffin (p. 203) published a paper in which he described that given its contemporary predominance, one would assume the 'Cultural School' to have articulated some convincing disputes for the primacy of strategic and organizational culture not just in shaping innovation but in describing the very terms in which militaries recognize the changing character of the conflict itself. Indeed, some of the mightiest proponents of the impact of culture illustrate how culture exerts that influence each of the elements of fighting power: moral, physical and conceptual.

Military institutions must have the ability to conduct strategic assessments to get ready for future wars. As Vardi (2008, p. 297) points out failure to adjust to new trends might render the whole structure obsolete; prosperous military institutions are therefore ones that handle to adapt their organizational culture, and hence their manners, usefully to new realities. Accordingly, the components of strategic assessments include; anticipation of the enemy, operational theatre,

the proximity in distance and time from the possible outbreak of war, the balance between deterring war or simply preparing to fight it, the likely length of a potential conflict, the role of allies, and the "lessons of the latest war" (Allan, 2007, p. 336). Bearing in mind that a successful outcome of the future wars depends on how well military organizations in coordination with political leadership calculates strategic factors given above and interpret them to military capabilities. A recent review of the literature on this subject (Rech et al., 2015, p. 56) argue that the research of the military, of militarism, and processes of militarization, should not be undertaken solely for its own sake, but should also be conducted by the probability of engagement with the forces and institutions responsible, and should not be bashful about doing so. So, to be critical is to be involved in critique; it is not to be dismissive. Critical engagement with military forces, and military and militarized institutions, can be underpinned by comprehension of these institutions as accountable to the civilian world, and necessarily understood as potentially open to collaboration and knowledge exchange, even where this opinion may initially seem ridiculous. Aircraft development of the US in the interwar period is an excellent example of assessing the strategic environment and creating appropriate military capabilities. When President Franklin Roosevelt and Congress collaborated to enlarge the US armed forces, they invested in the navy and army aviation (Allan, 2007, p. 342). The premise for doing that was because they did not anticipate the land threat in future wars. Political and military leadership predicted the war with Japan and envisioned the naval war fight in the Central Pacific, where land-based air would be scarce and vulnerable. These considerations set the conditions the rise of the US aircraft carrier fleet, which was the clearest and one of the most successful innovations of military history.

Recent developments in institutional culture and reform heightened the need for transformation and research such as that conducted by Lindley-French (2006, p. 269) showed that transformation is considered specifically to strengthen institutional development with capability. To that end, NATO's transformation is itself designed to provide the Alliance a true structural intervention capability through effective transatlantic military interoperability at ever greater points of influence built around a force concept that highlights advanced expeditionary coalition operations, effects based operations (EBO) and transformative doctrine and capabilities or, as NATO puts it, changing the twentieth century NATO into a twenty-first century force.

3. INNOVATION VIA LESSON LEARNED

Another essential characteristic of the innovative military institution is to have effective lessons learned system. Predominantly in operational lesson learned system, one crucial component of it is required to create an officer corps educated, encouraged to innovate and committed to their profession. German Armed Forces during the interwar era are a good example. As conventionally, German Army practiced the *Auftragstaktik* (mission command philosophy) that encouraged lower echelon commanders to exploit local opportunities, exercise initiative and take a risk. Mission command not only promotes successful decentralized command but also encourages unhindered self-criticism to see the problems and improve an organization. Even after the very successful Polish campaign in 1939, Lewis says that the willingness of German officer corps to improve its army qualitatively through self-criticism and identifying problems were atypical and unique (Lewis, 2014, p. 214). Some analysts (e.g., Foley, 2012, p. 803) have attempted to draw subtle distinctions between military innovation and effective leadership. In his seminal article, Foley identifies that even in the organizational cultural paradigm; individuals perform a focal point in innovation. A close analysis of the German Army in World War I, however, shows that there exists another, hitherto unexplored, model by which an army can innovate. Rather than being reliant on a few key individuals high in the military hierarchy or several exceptionally bright junior officers who can shape their battlefield experience into new doctrine, the German Army on the Western Front between 1916 and 1918 displays that an organization can innovate without these circumstances. Because of changes on the battlefield, German tactical units emerged new informal doctrine and disseminated this new doctrine extensively throughout the Army without expecting this to come from above. Consequently, throughout the war, official German doctrine tended to lag behind the practice in the field. Thus, the case study of the German Army in World War I illustrates us an unconventional model of military innovation – *horizontal* innovation, which is another manifestation of Mission Command culture. In this form of military innovation, new notions – best practices or learned lessons – are spread between units, not from the high command down or from the frontline up. In organizations practicing horizontal innovation, the stimulus for the development of new ideas comes directly from the staffs and commands of combatant units seeking out and experiencing new practices and knowledge without

waiting for regulation from above. Furthermore, although individuals are crucial for moving this knowledge, few if any claim 'ownership' of new ideas or doctrine. This type of military innovation is much more flexible than that described by the existing literature on innovation, and, in the case examined here, allowed the German Army to face the challenges of a rapidly transforming battlefield.

As another component of effective lessons learned system, military institutions must ensure that the nature of military doctrines set conditions to foster and promote lesson learned culture among all echelons of the military hierarchy. This finding is in agreement with King's (2006, p. 262, 264) examination, which illustrated a comprehensive analysis of the British army's doctrine developments based on mutually beneficial lessons learned formulation. In his groundbreaking research, King concluded that the primary intent of British doctrine is flexibility. This flexibility is lengthened to the relationship between senior and junior officers and, indeed, all the way downs the chain of command. British military culture actively promotes the ambition of junior commanders. They are trained and supposed to take the initiative if they consider that response launched locally will further the strategic intentions. Modern British doctrine contrasts quite considerably from descriptions of army officer culture in the past. It should be remarked that this new flexibility could not be learned by rote. British Defence Doctrine does not consist of a range of firm and globally applicable beliefs, as it highlights. Doctrine does not conceive solely logical and rational rule following in which individuals apply formulas inflexibly. On the contrary, doctrine assumes a much broader social reality to which it is insolubly correlated. In particular, doctrine flows from and is applied about a particular social group – the members of Britain's armed forces. The professional culture of the British military is one such 'form of life' that is generated in the course of this group's movements. This 'form of life' cannot be lessened to a deadening series of autonomous policies. A doctrine is a form of life created by a social group, military professionals, and doctrine gets its life and its reality not from the text, nor any formal set of rules, then, but from the members of the British military acting together as a group. Indeed, the written doctrine is ultimately no more than a description of what members of this group is required to do. Members of the British armed forces can be innovative and flexible because the group of which they are part of actively fosters evolution and individual initiative.

The flexibility which is at the heart of British doctrine is an outcome of a dense social group, whose mutual perceptions are so dominant that members of the organization can innovate autonomously in a way which promotes rather than undermines group coherence and the achievement of collective goals.

4. INTELLECTUALISM ORIENTED SOCIETY

Another essential quality for effective innovation in a military organization is to have experienced, visionary, and emotionally intelligent individuals. By Katz's "Skills of an Effective Administrator" theory, top-level managers must possess the most conceptual and human skills, and the least technical skills (Katz, 1955, p. 34). Moffet gave a successful example of having the skills of an effective military leader who designed the US naval aviation in the interwar era. He was not as super intelligent as many officers in a navy nor was he technically oriented (Trimble, 2014, p. 4). He was an extremely experienced traditional navy officer, a great visionary who believed and conceptualized the future of aviation as an integral part of the navy. He could not achieve this without a deep understanding of human nature, creating a great team in the Bureau of Aeronautics, and building vital connections with higher naval and political officials. It was a time when there were severe budget cuts for military and serious opponents like General William Mitchell who championed the aviation as the separate service as it was in RAF in Britain. Moffet's mastery of human skills to gain the trust and respect of the political officials and effective use of mass media gained upper hand against Mitchell and made carrier aircraft development one of the most successful innovations in the military history. This also accords with Dandeker and Gow's (1999, p. 62) study, which showed that new missions arrange armed forces in a war prevention or peacekeeping manner. The purpose of the armed services in forming stability has significant indications for their traditional culture. In particular, actual fighting roles become of secondary concern. Military victory becomes a tactical aim, with the strategic goal being defined as shaping a solid basis for peace. Military leaders can no longer be supported to think or act in terms of pure military categories but only in correspondence with the broader political goal of shaping the peace. Calculations must not be confined to a military appreciation but include the broader political and social context of the operation.

In the same vein, Esterhuyse (2013, p. 138) in his article regarding South African military culture, found that the most apparent determinant shaping corporate military decision-

making, in general, is defense policy. Armed forces, and armies, in particular, their structure and responsibilities, are shaped by the general security situation of their society and, more concretely, the defense policies of their governments. Any organization is only as good as the leadership afforded by the top. The structure may make up for a lot, but sound leadership is crucial. Some particular concerns affect senior and high-level military leadership and decision-making in the South African National Defence Force (SANDF). Most of these factors are related in some way or another to the policy and the societal and organizational environments that support or disrupt the executive processes of the SANDF.

Successful military organizations must have enlightened intellectuals to bridge civil-military phenomena as a component of the whole. Beckley (2010, p. 50) provides in-depth analysis and suggest that Western democratic countries with low levels of civil-military disagreement, and high levels of human capital, should be soldier-for-soldier, dollar-for-dollar are more militarily influential and powerful than states that lack these features. The possible implications of these conclusions are enormous, not only for the examination of military power but for the complete range of international relations: if political and social constituents decisively form the formulation of military power, then a large number of academic theories and policy assessments based on materialist thoughts of military power may be perilously flawed. There might be a plethora of innovative ideas and smart people in military organizations. It is well structured institutional culture of a military organization that required to have and assess the strategic environment, and to process experiences and exercises through well-implemented lessons learned system to identify what is to modernize and how to innovate effectively. These outcomes further support the idea of organizational culture and military intellectualism and the present findings seem to be consistent with Kober's (2011, p. 708) research which he illuminates that the jewel in the crown of military intellectualism, which is also strategy's nucleus universal knowledge, is a history-based military theory, which is assumed to serve as a cornerstone for military doctrines, plans, operations, and lesson learning. In cases where commanders lack combat experience, intellectual activity is one of the few ways of compensating for this void. Although knowledge is best obtained via a combination of combat experience, good intuition, and formal learning, many commanders seem to prefer the first two channels, feeling uncomfortable with the third. The extent to which the military is involved in studying military history and theory appears to be the best sign of the presence of intellectualism.

Organization theory also initiates the question of how innovative technologies and disciplines will be consolidated into national military establishments, whether they will be imitated, and if they can be leveraged efficiently by other states to alter the balance of global influence. A military institution may acquire new technology, but face obstacles to developing the organizational formation or doctrine required to achieve a radical increase in military effectiveness (Goldman and Andres, 1999, p. 93).

The world is not perfect and not always, the best innovative ideas will be supported by the higher military and political officials no matter how perfect institutional culture is. Farrell (2005, p. 465) further points out that means of orthodox warfare offer highly rationalized scripts for military institution and activity. Apparently, such scripts may occasionally be coherent. To be sure, military isomorphism makes sense for great powers, as well as regional powers, which have the assets and requirements to warrant expensive, high-tech conventional forces. That is why, visionary, experienced, and skilled individuals in human relationships must be supported and promoted to higher levels of military bureaucracy to endorse and implement the innovations.

5. CONCLUSIONS

The armed forces in the contemporary sense as a social institution and a tool of the state to achieve political goals by military means developed in modern times to protect the national state interests. Any culture in the course of its evolution attests that it comprises ambivalent configurations, described in particular by aspects of war and peace. In general, culture is orientated towards peace and peaceful permanence, since it is the latter that generates various requirements for its maintenance, but the war is rooted in it so high that it will be somewhat superficial to address only about peace. Therefore, one should pay attention to the culture and, in fact, the military culture of society, since it is oriented toward military professionalism, it embraces many features that are applicable in peaceful circumstances, furthermore, capable of strengthening, sustaining and improving the world. It is a meaningful part of the world system and Pacific culture, as it includes anthropological, scientific, spiritual and aesthetic aspects, that is, all parts of culture that are familiarized to the world. This finding corroborates the ideas of Huntington's (1957, p. 10), who advocated that the distinguishing peculiarities of the military profession as a special kind of activity in the classical definition of are compe-

tence, denoting in leadership, management, and control of an organized mass of people. Also, the responsibility to the state for the performance of their skills and corporate spirit, which is manifested in the presence of a bureaucratic apparatus, traditions and customs, and a particular way of life. The components formulated by Huntington in 1957 to determine professionalism - expertise, responsibility and corporateness are the definition of centuries-old notions about the military profession.

This analytical research and the results obtained from them should focus on the conformity of civil-military institutions that together define the armed forces, which serves to maintain peace and defend it from military intrusions. Additionally, military culture is the basis of the political culture of society. After all, it is apprehended that the stronger the military power, the more independently the state can feel.

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APPLICATION OF THE MATHEMATICAL MODELS OF COMBAT ACTIVITIES AND MEANS OF FIRE DESTRUCTIONS FOR TROOPS MILITARY OPERATION

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Abstract: *The article describes the history of mathematical models of combat activities and combat means of destructions, and their development paths of the use of troops in process of preparation of the operational activities. The possibilities of using mathematical models of operations (combat and fire destruction) in process of the preparation and conduct of operational preparations were considered.*

Keywords: *mathematical model, combat activities, destruction by combat means, activity of operational preparations, modeling of management.*

1. INTRODUCTION

One of the main mechanisms for the preparation and implementation of decision-making process and implementation of combat operations and destruction activities, as well as assignments to troops (forces) is applying of the computer information technologies, including geographical and video information technologies, mathematical models, information, information computing and computing complex application of issues. These are the main principles of automation of the troops (forces) and management of guns damage processes. These are gives much more opportunities to the commander of the troops and staffs of the command and control center of troops to continuously getting an information, analyzing it, evaluating the situation and making decision.

Development of information and computer technology requires a qualitatively new approach to the application of mathematical modeling of combat activities and activities of guns damage in planning proccesses. The practice of applying mathematical models and information as well as data computing issues in the process of operational preparations determines the needs to clarify specific software requirements. The dynamic development of computing techniques, proqramming and telecommunication technologies makes a strong leap in he field of creating operational modeling

systems, and gives an opportunity to simulating combat operations in the process of operational preparation of troops and activities of firearms damage by computerized mathematical model [1]. So, the effectiveness of planning and management of combat operations is enhanced by improvement and implementation of mathematical modeling.

The urgency of the issue in this case is determined by the increased intensity of researches and supply of armed forces with information technology carried out in different countries [2]. The analysis shows that it is necessary to use mathematical programming to predict the operations by comander and command and control staff during operational preparation.

2. JUSTIFICATION OF THE APPLICATION OF THE MATHEMATICAL MODELING OF COMBAT ACTIVITIES AND FİREARMS DAMAGE

According with the instructions the main functions of the command and control posts are data collection, assessment, forecasting real condition and planning of operations. It is well known that the planning should be fairly clear, and here, mainly to intend the solution of computational issues. Miscelaneous mathematical prediction methods for assessment of the combat condition, prediction its changes, comparative methods of rating planned activity of troops and its use are required.

The development of the methods of mathematical modeling of martial arts and firearms damage is the nessessity of resolving the constant contradiction between the two contradictory tendencies [3]. This is to increasing the accuracy of the predicted results and to reduce the modeling time. This contradictions is due to the fact that the time of modeling according to the necessity of increasing the number of factors that are modeled for increasing the accuracy of the prediction and the number of factors to be taken into account. There are always research for the way to improve the relevance and efficiency of the problem during the modeling.

During operational preparations, for a more detailed assessment of the impact of contradiction to the nature of application models their division into the next stages can be nated:

– preparation of operational activity;

– carrying out operational activity;

– analysis of the results of operational activitycarried out.

Depending on use purpose, it can be headquarters (HQ) and research operational madels. As a rule, they are differ according to the used mathematical modeling apparatus, the degree of detailing

and the number of factors that are taken into consideration. Because of the form of description of the mutual contingency process of the parties involved in the conflict, mathematical models are divided into analytic and research [1]. HQ models typically use analytical imitation modeling, research model use random imitation modeling. It is imperative to achieve a reduction in the time of modeling, while maintaining the integrity of the results, in the course of operational precautionary measures, when it is time-consuming for mentally computing. For this reason, the use of headquarters models is more important [4].

HQ models include mathematical models of operations designed to provide practical operation activity of command and control posts. There are two basic requirements:

– the ability to apply a real-time operation in accordance with the operational algorithm in the decision-making process;

– ensuring objectivity and justification of decisions taken to command and control of troops (forces) on the basis of comparison of the results of the alternative variants.

From the latter requirement seems that the headquarters model should have a comparative feature of the different decision options. Necessary conditions for this are the duplication of predictive results with the starup data in the same database.

Random models can not provide this, except when the middleware results of the some models are handled by same way. This approach in the real is not practically used by headquarters.

From the scientific research experience of mathematical models in many countries, it can be seen that more detailed research models may be used when there is sufficient time to conduct and analyze operational preparations. The practical application of random models is not used because the comparison of the result of the decision its repeatability is very complicated. It is therefore more appropriate to use analytical headquarters models that use legitimate methods of imitation modeling of combat and fire-damage activities during operational preparations [4].

In some cases, the following factors should be clarified in terms of the correct understanding of the matter:

– adoption of the mathematical modeling termonology;

– classification of mathematical models and prediction methods:

– use and realize technology of contemporary mathematical models;

– basic methods and fields of application of mathematical models.

It identifies the mathematical model and computational issues of the automated control system of

troops, mathematical and software applications. The mathematical model of the operation (combat activity and firearms damage) – is a mathematical mindset and mentality system that allows the compiler to calculate the basic elements of the warfare models modeled in time and to calculate the edict value of the predictions and outcomes of the predicted combat phenomena [5].

The computational issue – is the result of mathematical dependences, algorithms and data for operational tactical (operational – strategic) or special calculations, which require the assessment of the conditions that might arise as a result of the intended activities [6]. For computational issues, as a rule, it is sufficient to use the appropriate dependencies wthout taking immediate time and spatial structure to the process considered. Mathematical models are not created without the imitation structure of the modeled action, with no time and space indices. In this sense, mathematical models are practically always imitated. Thus, simplification may be due to the nature of prediction methods used in calculating issues, headquaters and research models:

– computational issues use an analytical framework that directly describes the impact of the starting point on the outcome of the calculations;

– the headquarters models are generally based on the specific methods of imitation models;

– research models typically use random methods of imitation modeling.

In their function, models are divided into two groups: those are directly (descriptive) and optimistic. The first ones answer the questions "what will happen in this case," and the second one "for this case what need to do". The more illustrative models are applied in the militiary issue. The application of perspective models prevents the complexity of the issues created to find the optimal solution of a large number of factors. Also, it is becoming hard to use the obtained results. Here, the model should be understood as a support link of one the steps of a mechanism for the assessment of quality of taken decisions, but not as a direct order to use of troops.

Models can be used:

– directly composition of the specific proggram software of automated command and control systems of troops (ACCST);

– composition of Fixed and mobile special designed modeling centers (computerized combat activities and filling firefighting computer centers).

Headquarters mathematical models that provide functionality within ACCST specific software should provide automated information exchange with other systems and data bases of this system. The management interface

of modeling prosess should allow to effectively use staff models for officers of comand and control staff

Different and sophisticated models depending on their functionality,can be used in a spesific computer modeling center, not incluted in the ACCST specific program content. This is due to the folowing factors:

– more skilled professionals are required to handle complex models;

– complicated models, complexes and systems can form more tecnical requirements than the opportunity of resources of ACCST.

Computer centers of modeling of combat activity and firearms damage proccess being stasionar and mobile can be equipped with a variety of compact computers. However, in this case, the terms of information compatibility between the computer center and ACCST must be observed.

3. ESTABLISHING HEADQUARTERS MODELS OF COMBAT ACTIVITIES.

In recent years, great experince has been gained in the way to creating research models of Army operations. Gradually, this model has been upgraded and used in integrated and modern information technology to create a variety of militiary modeifications of combant activities of troops and firearms damage operation. Scientists from the leading countries are working on updating the software, taking into account the experience of the latest armed conflict. These models are activale used in managment during operational preparations. It has been discovered that that they have been over-sized and have been devoting much time to the initialization of the modeling. In this case, it seems to be necessary to develop more updated mathematical models that can be used directly in the preparation of operational preparations, teamwork and training exercises, as well as inthe course of combat operations. Unlike research models, the development of the new models involved the creation of a mathematical apparatus of the model, the organization of data preparation, its incorporation into the system and the modification of the models.

The first deployed military operations headquartes model had many advantages, allowing 15 days of the militiary operation to be counted for 40 minutes by computer technology. The wide-range experience practice of this model in operational preparations has allowed it to plan further improvements and to inentify tasks for creating new versions of the militiary operation model.

Further, improving the exchange of information among users of the model enabled the officials to directly control the process of modeling, adjust the decision-making process, divide the forces and tools during the operation ,and re-group the second echelons and resources.

The model of the army operation is designed to predict the outcome of combat operations, as well as the options for effective use of forces and means of their troops during the preparation and conduct of the operation [1]. The Commander and his staff are able to draw conclusions from the main elements of the decision by analyzing and summarizing the modeling outcomes, the intent of the operation, the content of the tasks assigned to the troops, and the key questions of the interaction. The army Operation Model is widely used in command and staff exercises and exercises, practically used in the headquarters of all troops (military) as well as in ilitary training and research institutions. Then the gained experience is used to creaty new headquarters model and issues.

Currently, information technology, reflective means, geoinformation systems and information base are developing at high tempo. All of them contribute to the creation and development of the new ACCST [5]. In such circumstances, the reserch team is instructed to create a model of combat operations and firearms damage activity models in the development of these technologies. Developed mathematical models are used in the ACCST special safeguard software for general operations. It is tendency that defines the characteristics of the application of combat operations and mathematical models of fire-fighting in operational preparations.

The basic methodological principles of preparation and implementation of operational preparations of many countries are determined and information technologies are applied in the headquarters' activities in a complex form. As a rule, the use of the operation (combat operations and fire-fighting) models and other computational components in these activities is carried out by specially designated officers in the headquarters. This is due to the constant increase in the requirements for the specialization of officials in the governing bodies and the continuous improvement of the modifications of the modules.

Prepare a pre-trainee training program with the use of a generic operation model in operational preparations. During this period, the IT officers have been trained to work with the software makers in their respective headquarters. Such training is repeated every time before the training. In team headquarters games or exercises, the mathematical modeling team is codified in the governing points [5]. Also, the trained administrators are assigned specifically assigned specialists for methodological support for operational-tactical calculations and mathematical modeling.

In the course of operational preparations, the use of mathematical models and information-calculation issues is based on the indicators of combat capability, the strength and the means of fighting, the intent and the modeling of the decision in the headquarters games or events [6]. Calculation and modeling results of combat activities are submitted to the headquarters for analysis of the training. Considering the development of information technology and the provision of technical means, the computing-modeling complex that functions in a single database and navigation system can be in the next form.

The means of planning and decision-making are:

– mathematical model of air operations;

– calculation and modeling complex to ensure overall planning of firearms in the operation;

– mathematical model of the general operation;

– the calculation of the strengths and resources of the parties, operational and tactical intensity;

– complex of information-calculation issues on calculation of the time of preparation of the operation.

Reorganization planning tools:

– complex of information and computing issues to ensure strategic and operational resettlement of troops (forces);

– calculation of anchor (junction) anchor;

– a set of information computing issues to ensure the planning of transportation of troops (vehicles) by different means of transport.

Information support means:

– a specialized database and its means of communication;

– system of mapping and handling of the electron map of the area.

Just the practice of applying mathematical models and information-computing issues will allow them to form realistic requirements after training, make necessary corrections, and use them in the next operational preparations.

The development of mathematical models of combat activities and fire-fired illnesses will allow the use of the next technologies consistently through their application in operational preparation requirements:

– modeling of combat activities and fire damage in a rectangular coordinate system on a topographic map background;

– automatic mapping of the characteristics of the area in map mappings with geoinformational systems;

– choosing a more efficient version of simultaneous operation with several modeling options and application of their own troops;

– integration of model database with different databases;

– information support within the computational-modeling complex of various models;

– forming a modeling model for the start-up of the data acquired from the previous stage for internal control by the operator;

– application of the model of co-ordination of the parties involved and the distribution of databases.

The mathematical models of operations have become a mechanism that allows the selection of a scientifically justified effective version of the application, in accordance with the operating conditions and the assigned task, forces and means in limited time.

The results of the modeling meet the criteria for selective evaluation of combat activities and the effectiveness of firearms. In this case, the considered option is the basis of the intent of the upcoming operation, and its separate elements can be considered as the basis of the contents of the tasks for the troops. With the development of the GIS, various software tools have been deployed to workplace headquarters. Collection of condition information, implementation of video conferencing, etc. at the same time with questions, constitutes the computational-analytical activity of the key roles of the managers. However, despite the successful implementation of the model in the headquarters, stationary computers are located in computing centers and are far from operative management. Since direct users of the model are officers of the computing center, their assignment from the operating staff reduces the effectiveness of the model in the headquarters operation.

The following are the main reasons for this:

– lack of experience in the design and use of models of officials involved in computational and analytical activities in the military administration;

– spend a lot of time in the execution of proposals and suggestions from the governing bodies, because large-scale and very labor-intensive work is being done.

Mathematical models can be adapted directly to the user's needs, with a systematic approach to the development of the models. The model of the application of the other types of troops in the leading scientific research institutions is developed and developed [7]. This is a modular unit that combines the types of troops based on the general operation model. New computing modules are being developed that allow you to improve the accuracy of modeling processes. Along with the questions of the model of the general operation model for the new programming, the work is carried out in the following directions:

– development of the model management tools - the main module

that coordinates the sequence of the components of the model in accordance with operational tasks;

– development of appropriate modules for harmonization of types of troops between time and events;

– creation of database model and its integration into database of other calculation and modeling tools.

The model of the other type of force (type of force) is developed as a universal governance system that enables modeling of non-contact combat activities and fires, as well as modeling classic peer-to-peer operations.

4. CONCLUSIONS

Mathematical modeling of combat operations and firearms in the general operations, its development and use remains relevant. It is expedient that it is necessary to ensure the continuity and scientific accompaniment of the establishment process:

- in addition to good programmers, mathematicians and analysts, specializing practitioners should be involved in the design and implementation of models for combat activities and fire-fighting;

- ensure close interaction between the Western science and experts in the field of science on continuing work on the creation and development of armed conflicts models.

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DEVELOPMENT OF HUMAN RESOURCES MANAGEMENT IN HEALTH ORGANIZATIONS

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Abstract: *The management of human resources in health organizations is essential to enable the provision of effective and efficient medical services, as well as to obtain patient satisfaction. The scientific research aims to investigate the impact and influence of the human resources management on the quality of the healthcare service, the satisfaction of the patients, as well as the improvement of the performance of the personnel working in the organizations of the health field.*

Keywords: *strategic planning, management, human resources, public health.*

1. INTRODUCTION

At the level of health organizations, managers were perceived by employees and other institutions as valuable items. They were considered to be capable leaders with distinct management styles to guide the teams within the organization on the path of success. For this reason, managers were often considered indispensable.

Currently, managers are seen as worthless, even useless. In the sense of some of the employees, managers represent at the level of an over-sized organization that very well paid, but not involved, part of the work of the organization. However, managers are not unnecessary relics, rapidly outdated components of corporate culture. Many managers use management styles that harm organizations.

2. MANAGEMENT RESEARCHES

Studies conducted in the United States by Randall Beck and Jim Harter, Gallup researchers in 2012, have shown that in over 82% of organizations, organizations do not make the right decision in choosing a manager [1] . The decision to hire a manager is very important for the organization, but 8 out of 10 such decisions are wrong. These incapable administrators have cost billions of dollars to US businesses each year.

In healthcare organizations, many managers contribute to the degradation of the economic situation and to the depreciation of the managers-employees

relationship. As a result of the lack of leadership involvement, the employees' reaction is mimetic, with Gallup researchers finding that only about 30% of US employees and about 13% of employees around the world prove workplace involvement at work, the trend being depreciation their commitment to organizations.

The decision to hire a real talent manager is erroneous in over 82% of cases due to the fact that the people involved in the selection do not have the necessary knowledge. 70% of personnel variation is due to faulty management. This situation has also led to a continuous decrease in the level of employee involvement in current activities.

Gallup researchers have found that successful managers possess a range of talents that focus on the interests of the organization they are working for. They motivate each employee to act and they hire people who have a compelling mission and vision. These managers show assertiveness, have the talent to lead to the desired results, and have the ability to overcome adversity and resilience, creating a culture of clear accountability, building trustworthy relationships, open dialogue and full transparency, making decisions based on productivity, not on politics.

Gallup's research shows that about one in ten people has the talent to be a manager. Although many people are endowed with some of the features needed to be a manager, few have the unique combination of talent and qualities that is needed to help a team achieve excellence in a way that significantly improves the organization's performance.

These people, when involved in the roles of managers, naturally involve both team members and customers, keep top performances and support a high productivity culture. Employee commitment is very important, generating, along with performance management, greater productivity, better work quality, and fewer workplace problems, with theft and absenteeism.

A committed workforce, in doing so, performs the tasks received very well. In this context, good managers can become inefficient, and managers considered bad can be reformed. Thus, it is possible to analyze the decision to dismiss a manager, which has implications at the level of management of the organization's activity but which would not solve the problem favorably.

The real cause of the emergence of these problematic situations at the workplace that separates successful managers from those who have failed

is the management style, that is, the way the manager makes decisions about the subordinates. Management styles are very dependent on corporate culture. A mismanagement style leads to the demotivation of the organization's employees, a drop in labor productivity and it creates disagreements among employees, causing some of them to ask for job change or even leave the organization.

In a study published in February 2019 [4], researcher Andrew McDermott identified several management styles, each with its own set of arguments, pros and cons. In the right environment, all can be effective, but the right environment is not always favorable. Certain management styles are expected to be remarkable. Well-known consultants, managers and executives may have a preferred management style as ideal, it all depends on the organization in which it is applied.

Randall Beck and Jim Harter, Gallup researchers, said that a suitable candidate for a management position is 82% wrongly chosen, and finding a suitable candidate depends on the suitability of management style and organizational culture. Andrew McDermott has indicated that health organizations have a number of seven management styles.

3. MANAGEMENT STYLES

Authoritarian management styles are for managers who have a high level of conscientiousness and low acceptability. They tend to be hardworking, orderly, mellow and less confident in people. The command and control of this management style is based on a strict hierarchy. Thus, the management of the organization gives orders, and the employees respect and execute them. Disobedient employees are punished. Authoritarian management styles are dominated by fear of uncertainty and doubt.

Managers using these styles keep their employees in a state of permanent fear, they use feelings of fear, guilt and shame to terrorize their team, and lower-level managers use their power to control every detail, with employees being forced to work in a rigid structure that is in line with preconceived ideas of team or organization leadership.

Extroverted management styles are used by managers who are very agreeable, and largely offer their own extraversion. These managers are usually slow, understanding with subordinates, compassionate and attentive with team members or organization. This style of management is or has

been used by charismatic managers such as Elon Musk or Steve Jobs. He relies on the power of charisma and the personality of managers to lead subordinates. Transformational styles are based on a "give and receive" mutual relationship, where managers and employees rely on each other.

Transactional styles are based on giving positive rewards, such as incentives, bonuses, and securities (shares, titles) to motivate employees to improve performance. These styles are less effective with employees wishing to socially evolve at work. The servant style is proper to those friendly, servile managers who consider themselves to be supporters of the team, using leadership and power, in supporting their colleagues, choosing to serve others first before their own agenda.

The adaptable complex style is based on the idea that everyone in the organization is a leader. Organizations with a paid organizational structure, such as Amazon's Zappos, prefer this management style, and employees are expected to influence, convince and motivate each other.

Political management styles are applied by people who have a high political conscience and have a low level of contentedness, managers who are competitive, skillful, capable, computable or manipulative finding this ideal style. Managers using a mushroom management style retain their authority and power by controlling the flow of information. The more the team knows, the better is for them, leading to faulty communication, misunderstanding between employees, and confusion within the team.

These managers assume the rewards received by the team for a good thing, or attribute the failure of another teammate. The office-based management style is used by those who want to win and maintain their power, being much less interested in profit, productivity or performance, and choosing to focus their time and attention on ascension on a hierarchical scale. These managers are trying to keep their subordinates fulfilling their political objectives.

Managers with administrative management styles have a high degree of conscientiousness by rigorously following the orders received. They focus on how things should be done superlatively, choosing to respect rules and processes, to the detriment of preferences and intuition. Process-based managers follow predetermined procedures, choosing to implement each stage of the process to maximize

results, typically being interested in optimizing the process, and less interested in employees or their ideas. Rule managers adhere strictly to rigid rules, even in situations where a predefined rule is meaningless.

Managers with democratic managerial styles have great openness to innovation. They show a high level of intellectual curiosity, preferring a variety of ideas, being imaginative, open to feedback and ideas from their team. They are more than willing to experiment, preferring to try something new to achieve results. Participatory managers make every effort to get contributions and feedback from their colleagues and subordinates, are more influential, giving colleagues the chance to openly express their ideas. Consensus managers, like their participatory counterparts, prefer the decision by approaching the committee. Group thinking and joint decision-making may be problematic for this management style. Democratic management styles can conflict with organizational cultures with high conscientiousness and low contentedness, creating disagreements and frustrations among employees with the same attributions.

Managers with Laissez-faire management styles have a high level of congratulation, with a high degree of trust in others, having confidence in the team and their subordinates on which they rely, to perform at a high level without consistent involvement. Cowboy managers, like the Results-Only-Work-Environment (ROWE) move, focus exclusively on results. They inspire, motivate and support the team, but they prefer a hands-off approach that is popular in sales and marketing departments. Seagull managers prefer a complete hands-off approach, they only get involved when something goes wrong. "Trust but check" managers show confidence in their team by regularly reviewing their results to give them useful directions and constructive feedback.

The cultural management style is characterized by the fact that culture and social conditioning play an important role in it. Often these roles will replace the personality and preferences of an individual manager. The paternalistic management style is specific to organizations in which power is distributed and discreetly transferred. Subordinates are subject to the application of cultural norms and a set hierarchy. Employees must accept their place in the hierarchy.

4. MANAGEMENT AND MANAGERS

Organizations with organizational cultures with great openness and high level of enjoyment will thrive, with leaders with a democratic management style, but will shine with an authoritative management style. In organizations with a culture of neuroticism and low in agreeability, managerial styles of servant, transactional or transformational type are needed. Managerial style servant can change the culture of an organization over time. In the case of a high extraversion culture, and with moderate conscientiousness, charismatic managers, inclined towards the transactional management style, may be exactly what the organization needs.

The vast majority of organizations do not wonder if these management styles are appropriate. They are simply stuck in making the decision, which inevitably leads to disaster. It can be avoided, as long as a style is chosen to complement the organization. A mistaken choice of management style will lead to negative outcomes, such as low productivity, poor quality work, low profitability.

The hands-off approach gives subordinates the freedom they need to come up with ideas, decent or not, and even stunning. Through this approach, subordinates are inspired, motivated and supported, but things remain under control until results are evaluated. Thus, there has been an adaptation of the management style to the performance and results required by the organization.

Managers are valuable, being seen as capable leaders who have guided the teams of their organization to success. Sometimes they are considered indispensable. When things go wrong, not the manager is always the problem. Sometimes it may be a style mismatch. Managers are not an unnecessary relic. They are needed, more than ever. Good managers manage organizations, while big managers change organizations to become better.

According to a study by Becker's Hospital Review in 2016, in health organizations, leaders set the direction and managers are doing things that were previously thought by leaders. However, leadership and management skills are not mutually exclusive at the executive level, with the leader being much more demanding than the manager. The latter is genuinely responsible for leading the organization's upgrading according to its vision. The realization

of this vision can be maximized by the manager by creating a strategic plan that links all assets of the organization, intellectual assets, technology, facilities, relational and human resources [5].

In health organizations, a manager must do things well, and a leader must do as well, as Drucker said. Doing things well means meeting a set of expectations, and executing items from a checklist. This important managerial capability is only a precursor to leadership. Leadership and management are often used interchangeably, but they are not the same thing. Although managers need to demonstrate their leadership skills and high-level leaders have leadership responsibilities, the manager's breadth of responsibilities extends far beyond supervision. Even if high-ranking leaders raise claims, understanding the differences, however subtle they may be, between the duties of manager and leader is important [2].

Managers must be top careers who are constantly looking for professional development. At the same time, the manager's personal values and goals must be aligned with those of the organization. Managers need strategic minds to appreciate how the organization's functions interact with each other instead of treating each one independently. According to a study by Becker's Hospital Review in 2015, managers must be specialized communicators, with 91% of employees considering that communication problems can diminish the position of a manager [6].

Managers need to be ready to communicate more often than they did in the role of inferior managers. This includes communicating with other managers, employees, patients and their families, even with non-medical leaders. Leaders aim to achieve a congruence, who they really are and what they work day by day. Their desire is for patients to benefit from the best healthcare and professional expertise with the best results.

5. TEAM MANAGEMENT

When a person is motivated, inherently, to become a leader, the path to success is much clearer. This is more malleable and more motivated, which is transferred to the rest of the organization as another important criterion for leaders being emotional intelligence, ie their ability to accurately perceive emotions, both own and others, of understanding the signals that emotions transmit, interpersonal

relationships, and manage your own and other emotions. Emotional intelligence does not necessarily include personal qualities. Thus, in emotional intelligence, initiative, optimism or self-confidence is not always found.

Interestingly, EQ scores, measuring emotional intelligence, grow on the organizational scale from the individual contributor to the manager, but have a steep decline beyond the middle management. CEOs, managers, on average, have the least emotional intelligence. Of these, top performers have the highest EQ scores.

According to the explanatory dictionary, consciousness represents "totality, feelings, conceptions, interests that are the property of a society, a social group". According to the same source, social consciousness is "the totality of the representations, ideas, concepts, knowledge, mentalities of a human collectivity, reflecting the conditions of existence and social psychology of individuals" [7].

In the explanatory dictionary, individual consciousness is defined as "the consciousness of each person, expressing the level of realization of psychic phenomena through language, knowledge, symbols, values, and the extent to which he acquired the culture, the system of values and norms of the society he is part of". In this respect, collective consciousness represents the "whole set of opinions, beliefs and feelings shared by a community and before individuals" or even public opinion.

According to American psychologist Daniel Goleman, even if a person can have the best training in the world, an incisive, analytical mind and an endless intelligent source of ideas, they will not make him a great leader without emotional intelligence. One of the biggest differences between leadership and management is how skill sets are mastered. Business schools and profile books contribute to learning important management lessons and skills, but training in a school environment as a leader is considered impossible [3].

6. CONCLUSIONS

Human resource management is involved not only in securing and developing the talent of individual workers, but also in implementing programs that increase communication and cooperation between employees, all of which contribute to the stimulation of organizational development and the development of human resources is linked to the

progress of organizational objectives and employees.

The main responsibilities associated with human resources management include job and personnel analysis, employee organization and use, measuring and evaluating employee performance, implementing reward systems for them, professional development of workers and maintenance of the workforce. The small number of studies that cover the subject of human resources management regarding the quality of healthcare could affect the development strategy in the health sector and, without adequate studies in this field, could contribute to weakening the performance of the health organizations.

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STRATEGIC COMMUNICATION

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Abstract: *In the world of profit and management for success, strategic communications is an essential element used to move and influence public policy or to promote an agenda. Strategic communication contributes positively and directly to the successful accomplishment of all operations, missions, and activities of an organization through its capacity to build public awareness and understanding of the organizational objectives and mechanisms and consequently, to build support in different audiences for specific activities carried out by the organization.*

Keywords: *communication; organization; success, strategies; goals; objectives; results;*

1. STRATEGIC COMMUNICATION- DEFINITION AND CHARACTERISTICS

Depending on the nature of an organization, strategic communications can range from marketing to policy. According to Emily Tynes, Director of Communications for ACLU "In the world of nonprofits, strategic communications is an orchestrated use of channels of communication to move and influence public policy or to promote an agenda. By comparison, strategic communications planning in corporations is mainly geared towards the promotion of products" (Bonk Kathy, Henry Griggs, Emily Tynes, 1999).

Strategic communication is a term that in from a general perspective comprises the activities or, at least, is encountered as a component of several disciplines, including public relations, diplomacy, managerial communication and advertising. It is also a sub-domain within the broader communication field. It aims to sharpen the ability of all organizations - whether they are for-profit or non-profit, state or private - to develop a manner of communication that has a well-established purpose and which presupposes a cause-and-effect relationship through which the strategic objectives and activities of the organization are achieved.

Strategic communication contributes positively and directly to the successful accomplishment of all operations, missions, and activities of an organization through its capacity to build public

awareness and understanding of the organizational objectives and mechanisms and consequently, to build support in different audiences for specific activities carried out by the organization.

Communication is considered strategic when it is in line with the organization's mission, vision, values and when it aims and is able to increase the strategic positioning and competitiveness of the organization among its competitors. When understanding the concept of strategic communication we should perceive it from the organization's perspective and not from any other entity's (internal or external) point of view.

Strategic communication results from the organizational communication strategy, „The nature of organizational communication in general and strategic communication in particular is defined as the intentional use of communication by an organization in order to accomplish its mission" (Hallahan et al. 2007). Therefore, Strategic Communication Planning should be developed by aiming at aligning communication objectives with the external and internal environment, stakeholders and personnel.

However, strategic communication is not only about objectives and their translation into words, but also, about actions. Too often we face the situation of „*do as I say (as it is said officially), not as I do*", which is a dangerous situation because actions speak louder than words and are more likely to be mimicked than barren words. Therefore, words that are not matched up by actions will be a source of mistrust and disengagement.

Organizations that take steps to implement strong strategies, which impact the effectiveness of their business communications can achieve important results. According to Mulhern (2009), technology is an important factor of change in businesses as well as and every other social aspect, not only from the production perspective, but also from the strong effect it has upon organizational communication. Now that the speed of information transfers and the volume and area covered by the information expanded, the impact it has upon individuals increased also. Telecommunications, the media and the internet increased the power of communication. „These changes mean that marketing is in a much more challenging competitive environment in trying to meet the desires and needs of customers, while trying to develop long-term relationships" (Mulhern, 2009). The changes that have occurred in the communication domain will help structuring communication, the messages and the channels used and consequently and in the end, the achievement of communication objectives.

The ability of a communication channel is influenced by its ability to transmit different meanings simultaneously, to facilitate feedback, and to concentrate information individually, for each individual agent Besides these huge change brought by technology, knowing who the public is remains a very important requirement because the channels will be chosen and the message will be tailored according to the public and not the other way around.

2. UNDERSTANDING THE FACTORS THAT INFLUENCE STRATEGIC COMMUNICATION

We need to take into consideration many aspects and angles when working with strategic communication (generational, ideological, regional, religious etc.). Organizational communication (strategic communication especially) is an essential element of any business since it functions as the connection among individuals and it can also be an indicator of the future of the business. It is about shaping the individuals with regard to the organization that is why the message should be dynamic and adaptable.

When developing strategic messages the „push" and the „pull" factors pay very important roles. „Push" factors are those factors that make the situation prone to instability like the social conditions (difficult access to training, promotion, marginalization, lack of opportunities etc.). „Pull" factors are the psychological factors that can trigger reactions, for example personal beliefs, cultural, religious elements etc. Along with the „pull" factors we can mention the „facilitators", people who can influence audiences (formal or informal leaders, famous people). These factors should all be analyzed and used when developing strategic messages in order to match the proper message to the most efficient channel and the right audience thus, obtaining positive results.

The analysis made in order to see whether the target aimed was reached through the message, should present two approaches: analyzing the tangible results on the one hand and the intangible ones on the other hand. For example, the accomplishment of an operation, a merger, is the tangible result, but if the loyalty and trust of the people going through this process are not gained along the way, the intangible results have not been obtained thus, putting in danger the tangible one(s) in the long run.

When communication flows freely in an organization, the chances for its members to understand how the organizational mechanism works increase, it is easier to understand the consequences and impact all actions have upon the entire mechanism and

the level of trust between individuals increases.

The integrated nature of strategic communication enhances the capacity of the internal actors and agents of the organization to participate in achieving the objectives. Communication is the solution through which employees can become more productive, and the interaction created gives management greater credibility with the employees.

The objectives of communication, which are part of the strategic communication program, represent attempts to modify or to develop the level of knowledge of the audience, the way in which the audience receives the matters discussed and the behavior that appears in the aftermath of the words.

The strategic communication model proposed by Argenti (Fig. no.1) (Argenti P.A. 2015) represents a practical and direct application of the real communication.

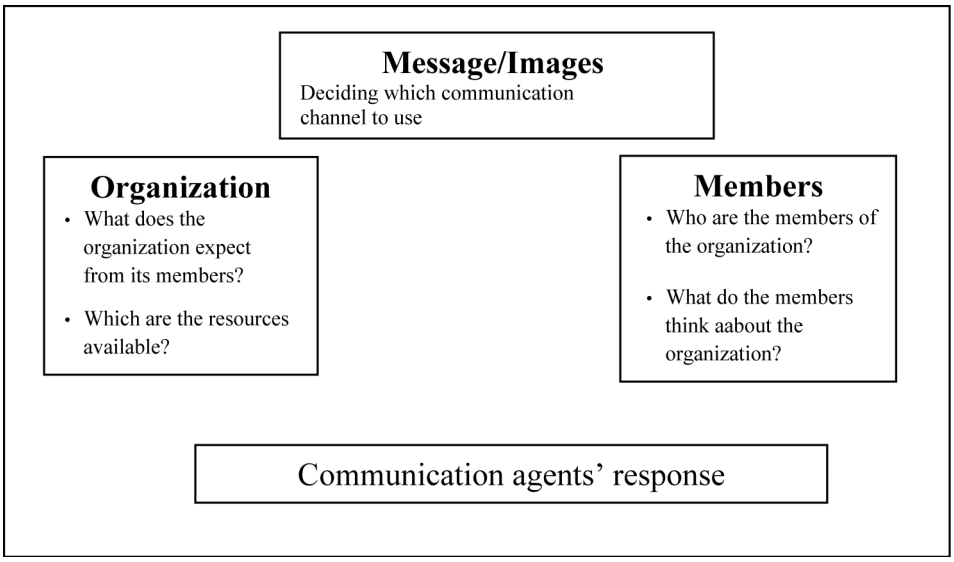

Fig. No 1. *The strategic communication model (Argenti P.A. 2015)*

This model represents a collection of interconnected variables that describe a continuous, cyclical process. The first variable of the process is the organization itself, which has the power to communicate and determine its credibility based on the perceptions of the various agents. With the help of this information, the organization will communicate the messages together with the desired image. The resources (temporal, financial and human) necessary to achieve these objectives must be

well determined. The message is created taking into account both the intention of the transmitter and the characteristics of the audience or the receivers. Audience analysis is often an ignored variable but which, treated with more attention, can ensure the success of the communication process.

The combination of message and audience analysis allows choosing the appropriate channel and psychology for the communication process.

Other elements such as time, proximity and confidentiality must be taken into account when choosing the transmission channel. Another important decision that must be taken when sending the message refers to the psychology that must be adopted. Direct psychology involves presenting the main idea followed by explanations, while indirect psychology presents the explanations, followed by the main idea.

In Western organizational culture, direct psychology is practiced. After the message is transmitted, the communication process cannot be considered complete without identifying and evaluating the feedback. Depending on the conclusion reached, other messages may be needed.

Strategic communication, through the way it is organized, influences the business process, which is why, if an organization is successful in implementing strategic communication, it will definitely notice a positive effect on the efficiency and effectiveness of the business process. On the contrary, if a company either does not implement a strategic communication system, or implements it in a way that leaves it to be desired, it will have a negative effect on the business process.

This model supports the existence of an intangible value, associated with the strategic communication system. The basic idea is that within companies there is an intangible value resulting from the communication systems that cannot be caught in the classic accounting, but which influence in a large way the internal and external agents of the company. Trust, loyalty, willingness cannot be measured or counted up however, their intangible value will affect the tangible results. Therefore, it is difficult to obtain positive results in the business process without being aware of the existence and necessity of developing the relational aspects of organizational life.

The creation and maintenance of the relationship between the strategy of the organization and the image of the company on the one hand, and the management of the feedback needed for the organization, on the other are in close relation.

3. CONCLUSION

To conclude, strategic communication refers to the manner communication is used in different situations and how the activities get organized, planned, and performed to gain expected results and to promote the image of the organization. These attempts rest on an ambition to identify and develop a general approach to communication and the assumption that there is a way to best practice it based on the abilities of organizations to create and obtain control over their activities. No organization can attain success and progress along their organizational life without good communication strategy.

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LEADERSHIP APPROACHES IN HEALTH ORGANIZATIONS

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Abstract: *The management of human resources in the field of health deals with aspects such as: planning, development, performance, retention, information and research. In recent years, raising awareness of the essential role of human resources in health in enhancing health system performance and improving outcomes in the health of the population has included health personnel as a priority on the global agenda. An essential element for professional environments that provide high quality services, where nurses can provide top-level healthcare is leadership.*

Keywords: *leadership, management, human resources, public health strategic planning.*

1. INTRODUCTION

Learning from case studies is not enough, it is necessary to use your own experience, as self-awareness and emotional intelligence come with it. The most effective leaders evaluate their accumulated experiences to learn more about their own emotions, as well as trends and prejudices about leadership.

The intrinsic capacity to be a leader can not be taught, but it can only develop naturally over time. A manager can be very good when he has to supervise a certain activity and a small workforce, a situation he is happy with. If that manager does not aspire to a greater responsibility but is still promoted, it is possible to climb to the new top position.

2. LEADER VS MANAGER

When a person is intrinsically motivated to become a leader, his or her path to success is much clearer. This person is more malleable and motivated. This fact is transferred to the rest of the organization, another important criterion for leaders being emotional intelligence, that is the ability to accurately perceive their own and others' emotions, to understand the signals that emotions convey about interpersonal relationships and to manage their own emotions. and others. Emotional intelligence does not necessarily include personal qualities. Thus, the emotional intelligence or optimism or self-confidence is not always found in emotional intelligence. The constant

evolution of technology, the need to adhere to ever-changing regulations and policies, and the growing presence of millennials within staff, are changing the requirements of leaders. The pace of change in all industries requires managers to make quick decisions and facilitate the creation of environments where innovation evolves. Even if they do not specialize in innovation, managers need to be able to build relationships and collaborate.

People, who have top leadership functions need to be agile, flexible, malleable, and customer-centered, need to know how to use their new technology tools. In today's environment, with access to large-scale database systems, there is an important level of analytical knowledge whose use can predict and prevent possible errors. This active information is used to improve the decision-making process. However, some sets of skills are critical for strong leadership. Managers need to have a strategic mentality, a strong financial vision, and inspire their subordinates.

According to the researcher Marian Nastase, a manager is not necessarily a leader, which is to be met in practice. Position and influence in the organization are the manager's own, which has a formal place in the hierarchy, instead the leader is recommended by his own qualities and relationships, with the employees, through which he gains their support and sympathy. Nastase considered that "leadership is the process through which a person, a leader, determines, through the use of interpersonal relationships, one or more persons to act in order to achieve well-established goals, based on a strong and attractive vision" [10].

3. LEADERSHIP STYLES

In the opinion of Al-Mahayreh, Mahmoud Kilani and Abdullah Harahsheh, a leadership style is the method used by a leader to provide directions, implement plans, and motivate people [1]. Several leadership styles have been identified, inspired by the work of leaders in the political, business or other fields. Studies on leadership styles in military organizations have expressed an approach that highlighted a holistic vision of leadership, including how the physical presence of a leader determines how to perceive it.

Studies conducted at the level of the US Army's leadership in 2006 highlighted that physical presence factors in this context include military behavior, physical fitness, confidence and resilience. These studies have shown that, through its intellectual capacity, the leader helps to conceptualize solutions and acquire knowledge in order to accomplish tasks. The conceptual abilities of a leader are

based on his agility, judgment and innovation, as well as interpersonal tact and knowledge of the field, including tactical and technical knowledge, together with cultural and geopolitical consciousness [18].

Researcher Daniel Goleman talks about six leadership styles. Thus, Goleman believes that one can speak of the following leadership styles: authoritarian, paternalistic, democratic, Laissez-faire, transactional and transformational.

The authoritative leadership style emphasizes, in particular, the distinction between authoritarian leaders and their followers. This kind of leader only has to create a distinct professional relationship, considering direct supervision as fundamental in maintaining a successful environment and followership. Authoritarian leadership styles follow the leaders' vision and are not necessarily compatible with those of the leaders.

Authoritarian leaders focus on efficiency, perhaps seeing other styles, such as a democratic style, as an obstacle to progress. In the year 2016, Robert Chira mentioned in his study the characteristics of the authoritarian leadership style, which include setting goals individually, engaging in unidirectional communication downward, controlling discussion with followers and interacting in a dominant position [4].

Several studies have confirmed the existence of a relationship between bullying and authoritarian leadership styles. Thus, the presence of an autocratic way was found to solve the conflicts or to deal with the disagreements. Researchers Salin and Helge argued in 2010 that an authoritative leadership style can induce a climate of fear, leaving little or no space for dialogue, where subordinates may consider the claim to be useless [12]. Thus, Forsyth noted that authoritarian leadership styles sometimes associated with low team members' satisfaction with more democratic leadership styles [6].

The paternalist leadership style is characterized by the leader's action, as a parent figure, who cares for his subordinates as a parent, and receives total trust and loyalty from them. The relationship between the leader and the subordinates is extremely solid, which is why they remain in the organization for a longer period of time because of loyalty and trust. Researchers Erben, Guneser, Gul and Ayse highlighted in 2008 that this relationship is maintained outside of the organization, and these people are addressing each other, with any problems they have with something, because they think they will be really help [5].

In the view of Cheng, Chou, Wu, Huang, and Farh, the paternalist leadership style is practiced in most places, such as India, Southeast

Asia, the Middle East and Africa. The paternalist leadership style is quite efficient and successful in non-Western cultures that are collectivist in nature, because in these societies, subordinates look at their leader as a parent figure and rely on it for guidance and protection. This leadership style is practiced in emerging economies [3].

The democratic leadership style, according to Foster, is that the leader shares the decision-making skills with team members by promoting the interests of group members and by practicing social equality. In the democratic leadership style, all members should play a role in group decision making [7]. However, Woods argued that democratic leadership requires leadership and control by a particular leader. It has to make decisions about who is to be summoned in the group and who has the right to participate, execute and vote on decisions [15].

Martindale has found that this style of leadership is one of the most effective, creating higher productivity, better contributions from group members, and increasing morale of the group [9]. Democratic leadership style can lead to better ideas and more creative solutions, as group members are encouraged to share their thoughts and ideas, but it has some potential disadvantages.

In situations where roles are unclear or time is essential, democratic leadership style can lead to incomplete communication and incomplete projects. Democratic leadership is best applied in situations where group members are skilled and willing to share their knowledge. It is important that enough time is available to allow people to contribute, develop a plan, and then cast the most effective way in which to act.

Leadership style Laissez-faire is defined by Kevin Wren as the style in which all rights and decision-making power are fully given to followers, allowing the adepts to self-regulate in their work, with guidance and support from the leader, when they need it [16]. Leader Laissez-faire offers followers all the necessary materials to reach their goals but does not participate directly in decision-making, unless the followers ask for their assistance.

This style is effective when the followers are highly skilled, experienced and educated, leaders are proud of their work and the effort to do so successfully on their own. Leadership style Laissez-faire should not be used when the leader can not or will not provide periodic feedback to followers. Forsyth believes that this style of leadership has been associated with lower productivity than in autocratic and democratic leadership styles, the satisfaction of group members being inferior to

democratic leadership. Bono and Judge researchers have suggested that the Laissez-faire leadership style may in fact be considered to be a style of non-leadership or leadership avoidance [2].

The transactional leadership style is a leadership style that, according to Odumeru and Ogbonna, focuses on supervision, organization and performance [11], being an integral part of the Full Leadership Range Model (FRLM) leadership focused on behavioral attitudes of leaders towards staff employed in different working situations and correlating transactional and transformational leadership styles with Laissez-faire [8]. Transactional leaders set and standardize practices that will help the organization mature, focusing on goal setting, operating efficiency, and productivity gains.

Through the transactional leadership style, researchers Vera and Crossan believe that explicit goals and agreements are set out on what the leader expects from the organization's members and how to reward their efforts and commitment by providing constructive feedback to keep each member in action [14]. Transactional leaders focus on increasing the efficiency of established routines and procedures, being more concerned with complying with existing rules than with modifying the structure of the organization. Thus, the transactional leadership style works most effectively in organizations that have evolved beyond the chaotic stage, a stage without entrepreneurial development rules that characterize many new companies.

The transformational leadership style has as its main objective the change or transformation of the needs of the followers, as well as the redirection of their thinking [13]. The transformational leader is a type of person who is not limited by the perception of the followers. He pursues the style of transformation of leadership and provokes and inspires followers. Transformational leaders create a vision of what they aspire to, and communicate this idea to others, that is, to the followers. Such leaders stimulate intellectual followers, give consideration to them, and apply a charismatic leadership with a wide range of knowledge and self-promoted personality. With a high level of energy, the transformational leader is willing to take risks, using strategies without pre-established rules, stimulating the followers to think independently.

4. LEADERSHIP IN HEALTH

In the opinion of Yafang, Shih-Wang and Hsien-Jui researchers, several leadership styles are best displayed at the level of health

organizations, depending on their relationship with organizational culture [17]. Managers are valuable, being seen as capable leaders who have guided their organization's teams to success. Sometimes they are considered indispensable. When things are not going well, the manager is not always the problem. Sometimes it can be a mismatch of style. The position and the influence in the organization are own to the manager, who has a formal place in the hierarchy, instead the leader is recommended by his own qualities and relations with the employees, by which he gains their support and sympathy.

Leadership and management skills are not mutually exclusive. At the executive level the leader is more demanding than the manager, who is really responsible for leading the organization's update according to his vision. The realization of this vision can be maximized by the manager by creating a strategic plan, which will link all the assets of the organization, the intellectual assets, the technology, the facilities, the relational and human resources.

People who are top leaders must be agile, flexible, malleable and customer centric, they must know how to use the new technological tools available to them. In today's environment, benefiting from access to large database systems, there is an important level of analytical knowledge, whose use can anticipate and prevent possible errors. This active information is used to improve the decision-making process.

Managers must have a strategic mindset, a strong financial vision and inspire their workforce. The results show that in public health organizations, organizational cultures influence the leadership style. There are positive correlations between ideological culture and transformational leadership style, between hierarchical culture and charismatic leadership style, as well as between rational culture and transactional leadership style.

5. CONCLUSIONS

Leadership has a significant, positive and direct effect on professional satisfaction and can affect organizational commitment and professional performance indirectly through professional satisfaction.

The results show that in organizational public health organizations organizational cultures influence leadership style. There are positive correlations between ideological culture and the transformational leadership style, between hierarchical culture and the charismatic leadership style, as well as between rational culture and transactional leadership.

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THEORETICAL CONSIDERATIONS CONCERNING THE SETTING OF THE CAPABILITY REQUIREMENTS SPECIFIC TO COMBAT ENGINEERS STRUCTURES SUPPORTING MANAGEMENT ACTIVITIES FROM AN AIRFIELD

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***Abstract**: Combat engineers structures are responsible for support missions in battlefields, which determines their involvement in the four specific domains: mobility, countermobility, survivability and general support. Inevitably, all these missions lead to ensuring the viability of the roads for land vehicles and the runway for aircraft. Air Force combat engineers must ensure the maintenance of the necessary infrastructure for take-off, landing or even parking of aircraft by carrying out the asphalting missions. The Air Force combat engineers capabilities are highlighted by the multitude of missions carried out which are constantly being diversified. Based on the idea that the combat engineers intervention in an emergency situation regarding the infrastructure of a runway or a platform must be efficient, this paper aim to highligh this fact through a study of the equipment used and their characteristics.*

***Keywords:** combat engineers structures, capabilities, aerodrom, support missions*

1. ANALYSIS CONTEXT

It is unanimously accepted by specialists the assertion that the current battle framework is based on continuous modernization, the classic laws and principles of the war having other valences related to the way the military actions unfold. The North Atlantic Treaty Organization is the main coordinator of military activities, and the Member States contribute to the collective effort, one of the main problems to be solved within this framework is the achievement of interoperability. Currently, different types of military structures carry out stability and support operations, but also intermediate operations in the affected areas.

Risks, threats and vulnerabilities in the security spectrum are increasingly diverse, and subsequently, the emergency management and civil emergency planning becomes extremely important. A classic but topical threat is blocking or destroying

communication routes (like roads or runway). Starting from the idea that currently blocked traffic manages to create cascade deficiencies in different areas of activity, it may be a hypothesis that the scenario according to which the aerodrome runways, landing or take-off routes would be blocked.

This work brings to our attention presentation of some benchmarks for combat engineers capabilities involved in solving a situation in the context mentioned in the title. The initial scenario concerns the impossibility of using an aerodrome runway or a platform. Thus, a realistic framework for highlighting the support provided by the combat engineers structures in solving this situation is constructed, by asphalting such a track or platform.

The combat engineers structures missions became more and more important with the reorganization of the specific combat missions and a narrower specialization of the units and subunits of the combat engineer brench, which included: the support of the forces directly engaged in the battle and the combat engineer general support (Vladu, 2006). Given that one of the main missions of the combat engineers is to ensure viability and the maintenance of roads, it is easy to notice that they can intervene when an aerodrome is facing an emergency.

Asphalting is a relatively new mission assigned to the combat engineers and has appeared as a necessity for the maintenance of military aerodromes, for which there is a specialized structure that executes these missions, within the air forces.

2. THE COMBAT ENGINEERS STRUCTURES FROM AIR FORCES AND THEIR CAPABILITIES

According to the Law no. 346/2006, generically, at national level, the air forces have a special role in defending the national airspace with air-air and ground-air means, the support of the other categories of forces and of the local authorities in emergencies.

In the air forces there are several structures, including combat engineers structures, responsible for executing combat engineer support missions for all other structures subordinate to the Air Force.

The judicious use of the combat engineers capabilities in the actions of prevention, limitation and elimination the effects of the disasters is most often determinant for avoiding the loss of human lives or the material damages (Vladu, 2006). In the national context, the air forces combat engineers structures were noted by the arrangement of some aerodromes but also by the execution

of mining works - demining, bomb neutralization, the restoration of the hit runways and the release of the aviation technique destroyed on the ground, the arrangement of the command points, ammunition, fuel and aviation warehouses. Currently, these structures are continuously participating in the combat engineers support missions in all air bases by arranging the necessary fortifications, maintaining and repairing the landing-take-off runways.

As previously stated, within NATO, the national commitment to achieve a certain level of interoperability with the member countries armies is vital. Subsequent objectives also concern the development of military capabilities that are essential at national level, as well as of missions aimed at collective defense and multinational exercises. The constitution and development of these capabilities is based on a rational policy of allocating resources on objectives, programs and projects developed in accordance with the provisions of the normative acts specific to the planning, programming, budgeting and evaluation (Vladu, 2006).

The capabilities of the combat engineers structures are noted for their important role in supporting the battlefield by providing mobility, countermobility, survivability and general support, which is why it is necessary to equip them with modern equipment that helps to carry out specific missions (Vladu, 2006).

Specific to the combat engineers structures subordinated to the air forces, their general capacity as a result can be appreciated by providing the necessary infrastructure. We use the term capability by explaining the ability to plan, design, execute a necessary process to achieve an objective, using the necessary technologies (Atanasiu, 2014). Of course, we have in mind also newer approaches to the concept, such an example being the one provided by Correia J. (2019, p.45) : *Finally, after an understanding on "how were we planning (?)" and "what will we need to plan for (?)", we were in the condition to answer the question "were we in a new normal (?)". Despite the identified gap between what we have and what we need, one concludes that there is no other paradigm regarding the strategic planning. Capabilities will continue to be the core element and output of that process* (Correia, 2019).

Returning to its own framework of analysis, in relation to a key element of defining the capability, we emphasize that, in order to ensure the specific missions within the air bases, the combat engineers structures use the appropriate technologies and the military technique. Also, to create a military capability a force structure is required, a level of performance correlated with the equipment

used, promptness in execution and maintenance of operational capacity. Air forces combat engineers structures manage to achieve a high level of performance in each mission, whether they involve fortification, route clearance, maintenance and repair of runways and platforms. These performances are determined by the capability when a structure is endowed with efficient technique and personnel, being able to fulfill any mission requested by the upper echelon. As for their endowment, depending on the group or platoon, there are special equipment and techniques. Considering that the combat engineers structures are the main ones that ensure the mobility of the troops, their missions are correlated with the equipment, which leads to a strict necessity of equipping and training the military personnel according to the established standards. Specifically, in case of military aerodromes, it is necessary to provide adequate infrastructure for landing and take-off an aircraft and the transport of special equipment platforms.

Combat engineers structures technique endowment and especially the procurement process are components of defense procurement management that contain unit instructions, standards and procedures. This process is carried out in several stages, hierarchically and aimed at several interdependent decision centers to ensure the best (Stanciu, Badea, & Fodor, 2009). Thus, air force combat engineers have the necessary equipment for asphalting roads and related platforms. The acquisition of military technique also aims to increase interoperability by bringing the technical capacity of the combat engineers structures to a level close to the modern armies of the allies.

The asphalting mission carried out by the combat engineers is based on specific orders, provisions and norms, both military and civilian. Order no. 42/2009 regarding the modification of the Technical Norms for maintenance works and current repairs to the special buildings and constructions of the real estate patrimony of the Ministry of National Defense, approved by the Order of the Minister of Defense no. M.44 / 2008 covers both maintenance and repair work, which does not imply the need for an investment as stipulated in Order no. 151/2017 for the approval of the Instructions regarding the achievement of the investment objectives, the reception of the constructions and the determination of the final value of the construction works, included in the investment program of the Ministry of National Defense.

In order to create a new infrastructure, a much larger quantity of materials is required and also an investment, involving a longer period

of time. The investment involves the application of the order mentioned above. Asphalt investments involve the preparation of technical-economic documentation and an authorization for the works performed. To ensure efficiency and to avoid long-term missions, combat engineers choose to carry out current repairs where possible. The current repairs are „the works determined by the wear or normal degradation of the constructions and installations related to the operation or the action of the environmental agents have the purpose of maintaining the technical state of the constructions, they do not require technical expertise and consist of replacing elements, details or parts of constructions and installations elements, without altering the value or technical characteristics of the constructions" (Annex no. 1 to Order no. 42/2009). Due to the scale of the work, there are also special norms for roads current repairs, which helps to establish the necessary materials and procedures to successfully complete the missions. The most representative norms used by the combat engineers are:

- AND 529- Normative regarding the use of geosynthetics when reinforcing road structures with asphalt layers
- AND 605- Normative for asphalt mixtures. Technical conditions regarding the design, preparation and commissioning
- Technical norms regarding the design, construction and modernization of roads
- AND 552/2002- Normative regarding the maintenance and repair of public roads

The specific equipments have the role of ensuring the quality of the works by their mechanized realization and at the same time, protection and efficiency for the personnel who serves them. The main equipment and machinery that can be used by the combat engineering structure responsible for asphalting are:

- Asphalt pavers BOMAG BF 300 C;
- Rolled asphalt compactor BOMAG BW 100 ADM-5;
- Cold asphalt milling machine WIRTGEN W 100 Ri;

The BOMAG BF 300C asphalt paver is an extremely efficient machine, having advantageous characteristics for the accomplishment of the mission, some of its advantages being

- the small dimensions that ensure easy transport;
- opening the cup with a capacity of 4.8 m^3;
- opening the rear beam to a width of 3.6 m, ensuring the release of a traffic lane;
- simultaneous use of the two lateral sensors to modify the slope of the terrain.

The BOMAG BW100 ADM-5 asphalt roller uses water to ensure

proper grip of the molded material. It is characterized by two rotary drums and has a hydraulic rolling system. The disadvantage of this machine is the small size, having a width of 1m, ensuring three passes for a traffic lane.

The WIRTGEN W 100 Ri cold asphalt mill is essential for removing the aged wear layer and operates on a 1m wide strip. The running speed for maximum efficiency gravitates around the values of 5-8 m / min. It can be used both in the asphalt mixing layer and in the concrete layers, being extremely efficient for roads, runways and concrete platforms.

In addition to these specific equipments, there are endowed structures of genius and others that help in the accomplishment of the mission, among which must be mentioned dumpers, machines for brushing and aspiration, bitumen smelting for clogging of joints and cracks and other specific materials and tools. Also, the asphalting procedure involves the use of special materials such as asphalt mixtures or asphalt concretes, geosynthetics (geotextile or geogrid), bituminous emulsion (according to the Technical Norms regarding the design, construction and modernization of roads).

The management of material resources is an extremely important indicator in the fulfillment of the mission, because it aims to request the necessary materials based on specific types of documents and it must be taken into account that all these are established according to the norms in force, based on regulation and provisions such as those for current repairs. on roads (Order no. 42/2009). The requirement is calculated on the basis of the surface calculated in square meters and of the specific rules for each mix or concrete used, depending on the molded height (3,4,5 or 6 cm) (AND 605/2014).

As part of the operations for asphalting, as a managerial tool is used a graph of execution of the works where the activities and the time allocated are foreseen. The beginning is difficult, because the milling procedure can take longer due to the slow speed of the machine, but as the operations progress, it gets faster. After milling, the surface is cleaned, the joints clogged and the preparation for pouring the first layer, considered the base layer (AND 605/2014 - Normally hot asphalt mixtures). Above the base layer is used a bituminous emulsion heated to 80-900 C and one of the two types of geosynthetics to prepare the release of the bonding layer. Between the connection layer and the wear layer (final) emulsion is used with or without geosynthetics depending on the nature of the material used (AND 605/2014 - Normally hot asphalt mixtures).

The runways for airports and parking platforms for airplanes and land vehicles require the repair, completion or replacement of the

wear layer and joints (Order no. 42/2009), which is why most often the three layers are not used, but only two of these, considering that the base layer already exists. The genius structures continued to participate in the management of civil emergencies whenever it was needed, especially in floods, snowfalls and landslides, carrying out works for landscaping or temporary crossing points on bridges or on bridges. bridges made from the complete metal low bridge on fixed supports. Combat engineer brench is, in most modern armies, a component of great importance due to the genistic works realized for the use of the fighting forces, the diversity of the works and the support provided by the combat engineers units. (Vladu, 2006). The post-war conflicts demonstrate the importance of the contribution of the actions of the combat engineers units to the success of the military actions carried out both within the genistic protection and within the combat engineers general support. A good example in this direction is the conflicts in Iraq (Persian Gulf) and Yugoslavia (Grecu, 2005). The response of the two states to the air attack, executed by the US and its allies, was the use of reinforced gene protection, which sought to limit the effects of the blows from large heights. Iraq has invested significant amounts in communications, fortifications and especially in models that mimic the technique, have built their military objectives so as to imitate civilian targets, thus putting them in shelter, they have given importance to the dams to reduce enemy mobility and create losses in the armor (Grecu, 2005).

In order to gain the experience necessary to build a platform or runways necessary for aerodromes, the combat engineers carry out missions such as: making logistic routes from the air bases, making the platforms for parking or those for the radiolocation stations. These elements within the aerodromes are critical points in achieving the capability of the aviation structure. Their importance is manifested by limiting, slowing down or even blocking the daily activities specific to the air forces, which ultimately affects the fighting power. The lack of a runway for an aircraft at an aerodrome leads to a military operation being blocked or even to an emergency or emergency. Also, the logistical roads used for aircraft supply and the transport of logistics materials are vital for logistical support.

Within the framework of the missions to ensure mobility, the combat engineers structures contribute to the achievement of the viability of the roads and the logistical transport or the circulation within the normal parameters for the smooth conduct of the military actions.

Given that the technique used for asphalting is a modern technique and adapted to the current working conditions, providing both operators comfort and precision in execution, the work of the engineers becomes much easier and thus they perform a work that is resistant in time and with a bearing corresponding to.

To point out the contribution of a combat engineers structure in the integrated framework of the activities of an aerodrome, it can be exemplified by the arrangement and restoration of a logistical road that provides the connection to a landing-take-off runway.

According to the Romanian Air Code, in which civil and military flight activities are stipulated, in order to ensure the aeronautical operations from a military air base, the presence of a logistical route is required. This logistic road has the role of allowing the transport of materials and equipment necessary for a flight or for an intervention in case of emergencies. Specific non-conformities in this case are those aimed at the malfunction of the lighting system, malfunctions at the runway infrastructure or at the level of the flight apparatus. Specifically, the lack of a logistical route is an impediment to the conduct of military aeronautical operations.

The logistics road must have the specific characteristics to ensure the safe movement of vehicles and tehnique in a short time. A damaged logistic road hinders the achievement of these objectives and thus slows down the process of aeronautical operations. Thus, in order to restore a logistical route from a military air base, the presence of a combat engineer structure is necessary to fulfill this mission. For the restoration of the logistical road, a measure is required that establishes the initial technical data and the quantities of materials. Also, depending on the base layer that holds the road, the number of layers of asphalt mixes cast is determined. The procedure of casting asphalt mixing layers involves milling 3 cm from the base layer, cleaning, casting an equalizing layer with fiberglass reinforcement (geotextile) and pouring a wear layer. The aforementioned equipment is sufficient as a typology for restoring a logistic road from a military air base. It should be noted that according to AND 605/2014, the waiting time for casting the wear layer is at least 12 hours after casting the equalizing layer.

3. CONCLUSIONS

Military aerodromes require adequate infrastructure for landing, take-off, aircraft transport and special platforms. The lack of such infrastructure leads to poor performance of missions within the air forces, but it can also be considered an emergency situation.

Therefore, the combat engineer structures are the ones that have the mission to intervene in solving the problems.

Complementary to the operational component comes the economic aspect, the cost-effectiveness analyzes being necessary to substantiate the decisions to assign peace missions.

Clogging joints, repairing roads or paved or paved platforms, as well as carrying out a work from scratch are some of the tasks of air force combat engineers.

The ability of a combat engineer structure in this case is primarily dependent on the technical component through the characteristics regarding the necessary, the existing and the functioning state. In particular, in emergency situations, the intervention time is the parameter of appreciation the capacity.

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METHODS FOR MONITORING AND ESTIMATION ATMOSPHERIC PRECIPITATIONS

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Abstract: *The monitoring and estimation of atmospheric precipitations are extremely important in the analysis of rainfall risks. The present article presents three methods of precipitation monitoring and estimation, being the most frequently used today, namely, the weather radar, the rain gauge and the satellite. The main objective of this article is to present these three types of instruments and to highlight the errors and limitations that can occur in estimating and determining atmospheric precipitation. Each technique is limited by certain disadvantages and therefore the methods need to be complemented to some extent. This has led to the interconnection of different sensors that combine the strengths of each sensor.*

Keywords: *satellite, rain gauges, microwaves, weather radars, precipitations.*

1. INTRODUCTION

Precipitation-wise, observations are used in several ways in the process of analyzing rainfall risks (rain, ice, pole, hoar-frost, snow, hail, etc.), including the generation of alerts, and the determination of precipitation levels is a necessary factor. The most used precipitation monitoring techniques are: meteorological radars, rain gauges and satellites. The main objective of this article is to present these three types of instruments and highlight which errors may occur in estimating and determining atmospheric levels of precipitation.

All three types of tools are used both on a network and individually due to temporal and spatial resolutions. The limitations of each instrument are reduced by combining all of the methods. Satellites offer a great advantage in researching meteorological phenomena because they cover areas which would be either impossible for the other instruments to reach, or too expensive.

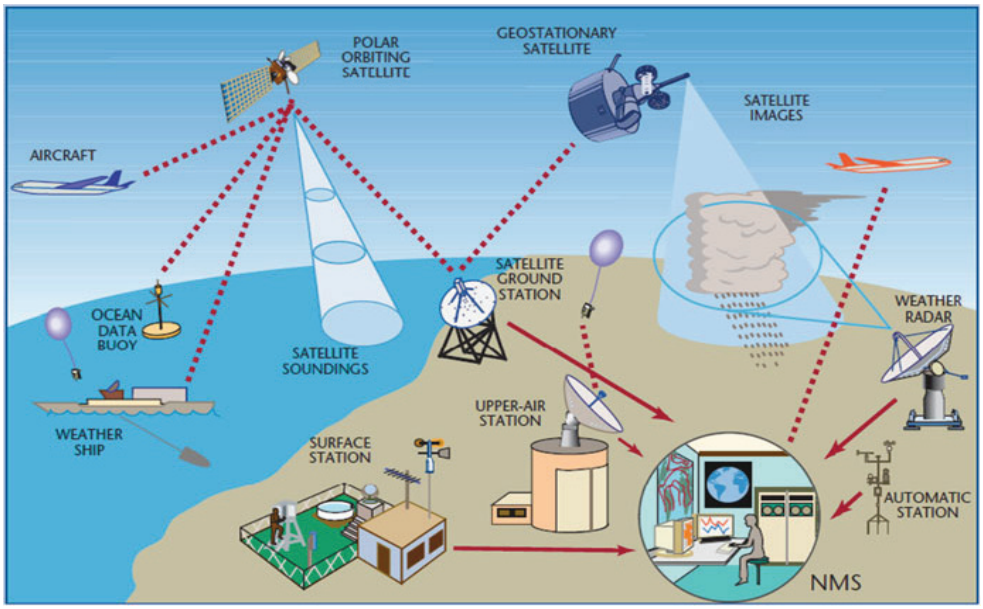

Fig. 1 Global system for observation and measurement of precipitation [16]

2. METHODS

2.1. WEATHER RADAR

The first operational radar was used for the first time in 1930, with the purpose of detecting and tracking not only the enemy aircraft, but also friendly aircraft, and the first meteorological-wise use was made by England in 1942 [31]. The name of RADAR (Radio Detection and Ranging) was conceived by the US Naval Forces in November 1940. [26]

Experimental research in the field of meteorology began immediately after the end of World War II as a result of the problems caused by meteorological phenomena in the identification and detection of bombers. At that time, it was found that radars could be a useful tool for remote atmospheric research and observation. The first weather radars were built with surplus war equipment (AN / TPS-2, SCR-717C, AN / APQ-13, etc.), and then new radars were designed. Among the first specially built meteorological radars for this purpose, were: CPS-9, CPS-18, WSR-88D, or WSR-98D

Conventional radars developed after the end of World War II were replaced in 1990 with Doppler radars. Using the Doppler frequency, the radars can measure the intensity and speed of precipitation movement. Generally, a weather radar has a transmitter, receiver, antenna, display system and auxiliary systems, (see figure 2).

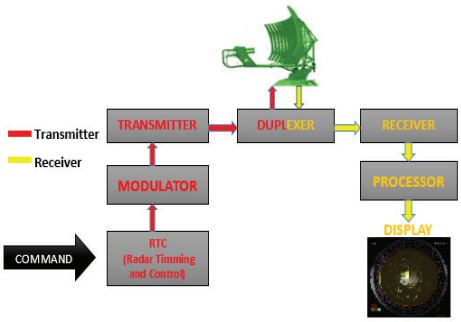

Fig. 2 Block diagram of a weather radar

The operating principle is based upon the emition of electromagnetic energy in the atmosphere in the form of short bursts, high power and very high frequency (see figure 3). When the electromagnetic impulses encounter an object (trees, mountains, atmospheric precipitation, aircraft, etc.), a fraction of the energy is reflected back to the radar. The received signals are amplified, processed and displayed on the indicator depending on the intensity of each received signal [23].

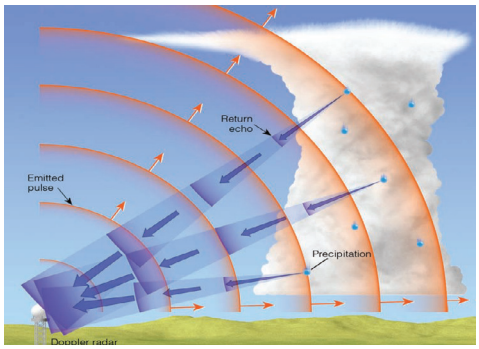

Fig. 3 Emission and reception of electromagnetic waves when the impulse is reflected by rain drops. Red symbolizes the impulses emitted by the radar, and blue represents the reflected waves or the echo signals [25].

When the radars are included in a network, they have the ability to provide qualitative information. The information also offers support in carrying out the data acquisition process for the development of forecast models at convective and mesoscale levels.

To cover as much airspace as possible, the radar has the ability to use multiple scanning angles, providing with the opportunity of having an overview of precipitation variations. The scanning angles can be changed either by adjusting the height of the antenna or by moving the beam horizontally or vertically, which is electronically controlled. Depending on the weather or relief conditions, the scanning strategy can be adjusted by increasing or decreasing the rotation speed of the antenna. The most commonly used frequency bands chosen for weather radars are those in the C or S bands. Radars in S-bands are more expensive and less attenuated due to higher wavelengths, and those in C-band are less sensitive to lighter rainfall.

Radar detection capability depends on a number of factors including altitude, local topography, impulse power, dead cone radius, polarization, etc. On average, the maximum detection radar of a weather radar is between 200 and 300 km. Even if the distance were much larger, the spatial resolution would

be affected by the curvature of the earth and the size of the directionality characteristic proportional to the length. Usually, the directivity feature is aimed at low heights to estimate the amount of precipitation on the ground. The reflected power is given by the reflection ratio and the intensity of the reflection. The parameters are calibrated based on comparisons between rainfall, radar and other precipitation estimation tools.

After upgrading the Doppler-capable radars, they allowed analysis of pulses in frequency, phase or amplitude, which allowed for an estimation of the speed of hydrometeors. The types of precipitation and false signals from other objects (birds, aircraft, land or sea clutter, etc.) can be recognized due to the implementation of Doppler frequency in radar systems.

Recently, new radar technologies have also been implemented with different hydrometeor identification techniques, such as polarimetry. During a period of pulse repetition, each pulse is transmitted with both linear (vertical or horizontal) and circular polarization (with left or right rotation), and the differences on each polarization are recorded and compared. Polarimetry provides additional information on received signals and helps improve data quality. This technique is found in national meteorological networks, including: Great Britain, Japan, France and the USA.

Recently, X-band radars (3 cm) have also been developed. This type of radar is limited by the attenuation of the signal over longer distances, therefore the maximum distance of action is 60 km, but it ensures a higher sensitivity and lower costs. Also, because of its small size, the radar can be arranged on multiple platforms, even airborne. The data provided by the radars are implemented in different applications for generating weather warnings.

2.1.1. Interpreting the results

The weather radar, like any instrument, comes with both advantages and disadvantages. One of the important advantages is the ability to detect rainfall over a fairly large distance (usually 15000 km2), as opposed to a rain gauge, which offers measurements at only one point.

The intensity of precipitation is given by the surface of reflection of the objects, and the uncertainty of conversion between the two is given by the variation of the dimensions, the reduced spectrum, the presence of snow and hail and also, the melted snow increases the surface of reflection and leads to overestimation of the rain intensity.

The quality of the data has been and is a main research objective since the first uses of the radar. The estimated precipitation of the radar is made difficult by a series of errors

from different sources. Some of them are also due to the complex process of measuring and processing atmospheric precipitation and they cannot be completely eliminated [29].

The main aspects of data quality depend on the elimination of errors, which may be of hardware, software, scanning strategies, terrestrial, maritime or aerial clutter. Hardware errors include: electronic stability, antenna accuracy, signal processing, along with software errors which include the obtained signal processing algorithms [6].

Other errors are determined by the interference of the electromagnetic energy with other emission sources, located in the near area, the abnormal propagation of the electromagnetic impulses due to the specific atmosphere, the reflection of the waves with different objects in the research space (birds, buildings, airplanes, etc.) [3], see figure 4. Another group of errors is associated with beam geometry, scanning strategy and data interpolation from sampling points [4].

To solve some of the problems listed above, the data provided by a radar network are combined to provide a composite or mosaic image. A series of measures to eliminate non-meteorological echoes can be found in Table 1. Sometimes raw or raw fragments of data from a single radar are also used to provide users with the possibility to obtain their own post-processing algorithms.

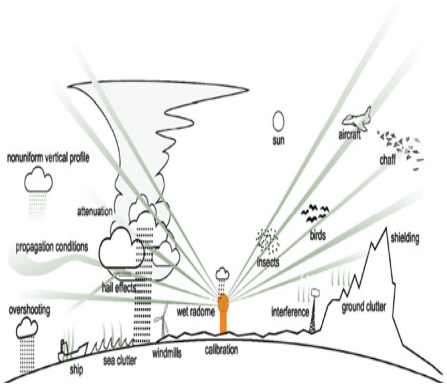

Fig. 4 Phenomena and objects which affects the quality of radar data [15]

However, in order to eliminate unwanted echoes, other than those from rainfall, measures must be taken to eliminate external interference signals, eliminate false echoes from heights greater than 20 km and to very low heights [27].

Table 1. Methods of eliminating the non-meteorological echoes

Nr. crt	Methods
1	**Spatial interpolation (Kiring,)** - Necessary for eliminating external interference signals.
2	**Jam protection filters** - Signals reflected by objects at low heights.
3	**Meteosat filter**. Provides a preliminary method of removing unwanted echoes. Meteosat distinguishes 20 classes of clouds with classes 1 to 4 assigned to areas that are not covered with clouds. The other unknown areas are treated as false signals and are not taken into account.
4	**Artificial intelligence algorithms.** For example, neural algorithms are based on the analysis of the reflection structure.
5	**Polarimetry.** The method involves analyzing the signals emitted with circular and linear polarization. A combination method is the logic fuzzy scheme.

Source: [11], [12]

More high definition Doppler clutter maps are used. They offer a unique analysis of the digital terrain model, taking into account the obstacles, the topography, the power distribution of the directivity feature for the standard conditions. Part of the potential problems related to the accuracy of observations and coverage are illustrated in Fig. 4. In some cases, they also represent opportunities for study, for example, in the field of emerging aeroecology.

In most cases, the data provided by the rain gauges are used for radar calibration, but there are errors in the data provided by the rain gauges, and in the adjustment schemes an allocation is made for these uncertainties expressed as functions of the ratio between the values of the rain gauges and the radar.

2.2. RAIN GAUGE

The rain gauge is the simplest instrument for measuring the atmospheric precipitation that reaches the surface of the soil. According to the study organized by the World Meteorological Organization, between 2008-2009, regarding the techniques of measuring solid precipitation at the weather stations, it turned out that the most used instrument is the rain gauge [13].

Most rain gauges used today originate from the invention of Korean scientist Jang Yeong Sil, who, in 1441 designed this device to measure precipitation for agricultural purposes. In Europe, only in 1662, Christopher Wren succeeded in inventing the tilting rain gauge [16].

Rain gauges fall into two broad categories: manual and automatic. The manual ones are called SRG (Standard Rain Gauge), and the operating principle is relatively simple and involves collecting rainfall in a cylindrical container with a fixed diameter, see figure 5. It measures the volume or weight of precipitation dropped to the ground according to the type of rain gauge. The manifold hole can be arranged at different heights above the ground or at the same level depending on the maximum expected depth of the snow layer or water level.

For example, the most used height in over 100 countries, for the measurement of solid precipitation, varies between 0.5 ÷ 1.5m [32]. Usually, measurements are made every 24 hours. The diversity of rain gauges (the height or shape of the hole) in most countries makes the measurements made with these devices not strictly comparable [32].

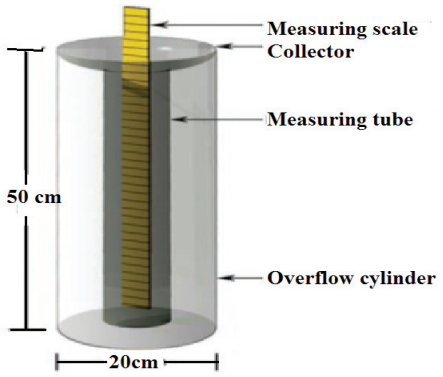

Fig. 5 The components of a standard rain gauge standard [1]

Among the most widespread automatic rainfall meters there are rainfall meters based on tilting and weighing, optical and capacitive. In figure 6, a type of tilting rain gauge can be observed, which includes a funnel that leads to two metal movable collectors attached on a pivot. Collectors accumulate precipitation, and when a certain amount accumulates, the weight of water causes the metal collector to tip over. As the first collector empties, the second collects rainfall. Each time a collector releases the accumulated precipitation, it makes an electrical contact, which is recorded and allows automatic measurement.

In order to verify the data regarding the amount of precipitation estimated by the meteorological or satellite radars, most of the weather stations have at least one rain gauge. This helps calibrate atmospheric precipitation estimation techniques. When choosing the type of rain gauge, it is necessary to take into account a number of factors, including: performance, reliability, cost, maintenance, standards and purpose.

Fig. 6 Example of tilting rain gauge [1]

In 2016, globally, the total area measured with the help of rain gauges was approximately half of the total area of a football field (7140 m2) or 0.000000000593% of the total surface of the Earth [9]. The number of existing rainfall meters cited in the literature varies. For example, Sevruk and Klemm (1989b) mention that the total number of existing rainfall globally is over 150,000, while Groisman and Legates (1995) have estimated 250,000.

2.2.1. Interpreting the results

As with other types of instruments, the rain gauge has certain limitations regarding the accuracy of the observations. The inaccuracy of the data comes from both calibration and electromechanical problems as well as from other factors, which are presented in table 2. Errors can be caused by wind, buildings, trees, collector size, etc. To reduce such errors, different techniques are used and certain measures are taken. For example, to reduce the effect of the winds, so-called shields are used. In most cases, for the calibration of instruments, the reference rainfall values are used. In areas with lower temperatures, snow may block the instrument or prevent reading. The instrument may also be affected by the vegetation around the instrument, insects or animals. In order to eliminate or limit these problems, many countries have set standards

for the installation, operation and evaluation of the uncertainty of the results [20], [30]. Measurements serve as the primary source of data for area analysis.

Even if rainfall is well measured, it is only for a certain area limited by the physiographic homogeneity of the region, the local topography or the accumulation period. Other sources of precipitation measurement, such as radars or satellites, are used to quantify and define the spatial distribution of precipitation. In most cases, the three data sources are integrated to provide accurate estimates.

Changing the position of the rain gauge, the installation height or the choice of another type of instrument can cause temporal or spatial inhomogeneities [19]. Calibration techniques based on statistics help to eliminate inhomogeneities and to correct measurements, to eliminate the errors induced by the wind or other parameters. The initial records and correction formulas must be kept because these corrections have uncertainties, and any changes in observation methods must be documented.

Knowing the position and number of each instrument is important because it determines how well the measurements are made and represents the actual amount of rainfall in the area. Corrections for precipitation calculation by area and topography can be found in WMO (1992a).

Table 2. Errors that may appear during the measurements of atmospheric precipitations

Nr. crt	Errors
1	**Leveling**. If the rain gauge is not installed at a 90° angle then the instrument will have an error of about 1% at each inclination level. [10]
2	**Evaporation of water**. The water can be retained by the funnel residue, which will then evaporate. The material from which the funnel is made must be carefully chosen, to allow for the best flow of water.
3	**Collector size**. For example, in the case of manual measurements, if the collector is too large and the water too little, the measurements will be inaccurate.
4	**Positioning.** The location of the instruments must be chosen to represent the surrounding area. Positioning in an area near trees, buildings or other objects influences rainfall accumulation. Ideally, a rain gauge should be installed at least 4 times the height of the instrument.
5	**The effects of the wind**. The wind prevents the capture of precipitation in the proportion of 5-50%. One of the methods of protection against this effect is “the shield” or shield of the instrument. The rain gauge should be arranged where the air currents are as horizontal as possible

Nr. crt	Errors
6	**Splashing**. The surface around the instrument must be covered with gravel or turf to prevent the raindrops from spreading inside the rainfall accumulation cylinder.
7	**Exposure**. The instrument should be placed as close to the ground as possible if the wind speed increases with the height, but it should also be taken into account that if a position that's too low is chosen, then there is a possibility that the water will enter the instrument after it reaches the ground.

From a technological point of view, the rain gauges with mechanical or manual recording and the development of those with electric recording have led to the emergence of automatic rain gauges that can record, measure and transmit the measurements in real time to users. The availability of near real-time measurements greatly increases the utility for hydrological or meteorological applications.

Usually, in areas with low or smooth terrain where precipitation is more homogeneous, simpler measuring tools are used, and in more complex areas where different factors occur in accurately measuring data, more complex instruments are used. Geostatic approaches are also used to adjust the meteorological radars, but the key factor in determining the accuracy of the results is the density of the rainfall networks [17].

2.3. Satellites

Unlike the estimation methods presented above, satellites provide rainfall estimates on a global scale and fill in areas that are not visible, which cannot be covered by rainfall or radar. To achieve this, the satellites are equipped with instruments to determine the precipitation, the temperature of the clouds or the characteristics of the specific atmosphere. These instruments have an antenna or telescope, visible radiation detector, microwave or infrared and a scan mechanism. The measurements are in the form of electrical voltages, which are digitized and transmitted to the reception stations on the ground.

The use of satellites has made it possible to know the distribution of precipitation in all areas of the globe, including over the oceans and in other areas where the use of other instruments would have been impossible or very expensive. The numerical weather prediction models depend on satellite measurements, which are generally three quarters of the data; for example, in France, the satellites provide 93% of the data used in the Météo-France's Arpège model [14].

The first use of satellites for meteorological purposes was carried out by NASA with the TIROS-1 experimental spacecraft, on April 1, 1960 (see figure 7). The satellite operated for a period of 78 days, during which time it provided 23,000 images, where air masses, wind fields and frontal systems could be observed [28].

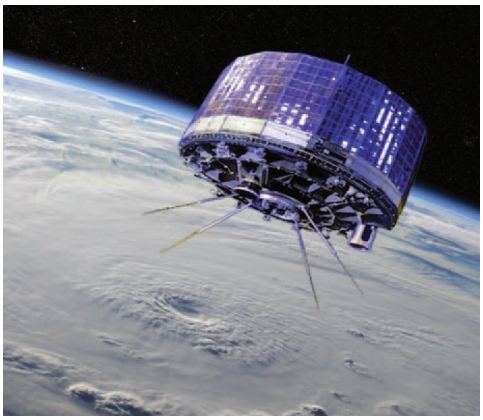

Fig. 7 TIROS-1-The first satellite used for meteorological purposes, launched on April 1, 1960(source:https://eospso.gsfc.nasa.gov/missions/television-infrared-observation-satellite-program)

In general, there are two types of meteorological satellites, which are defined by orbit classes, namely polar and geostationary. Both kinds produce different types of data, and a method of combining and integrating the pieces of information is achieved through the implementation of data fusion techniques.

The geostationary satellites orbit at an altitude of 36,000 km above the equator and are synchronized with the rotation of the Earth around its own axis. As a result, geostationary satellites ensure high temporal resolution through continuous surveillance of Earth and space. However, spatial resolution is limited compared to polar satellites due to the arrangement height. Unlike geostationary satellites, polar ones are arranged at lower altitudes, between 800 and 1200 km and provide data beyond the observation of geostationary satellites. The satellites orbit synchronously with the Sun and can observe almost any area of the Earth. It also offers much higher spatial resolution data than geostationary ones due to the altitude at which they are arranged, and data collection is done periodically, providing useful information for long-term comparisons. Table 3 shows the number of existing meteorological satellites, as well as the orbital position of each. Also, some satellites include additional sensors for monitoring carbon dioxide, ozone, for observing space and other components.

2.3.1. Interpretation of results

The interpretation of the observations offered by the satellite requires the application of certain atmospheric corrections on the instruments on board. Limitations due to accuracy, coverage and resolution require the combination of products from several sensors.

The concept of precipitation measurement, by combining passive sensors and microwave radars from a single satellite, was born in the early 1980s in the form of TRMM (Tropical Rainfall Measuring Mission). The TRMM project was developed by NASA and the Japanese Aerospace Exploration Agency, and the goals are to map and understand the role and structure of latent heat, to obtain monthly average rainfall across the

tropics and to examine the tropical rain cycle [8], [16]. The resulting data are used to quantify contributions to stratiform and convective rainfall, study how rainfall influences and to improve prediction. Although meteorological satellites contribute to improving knowledge about the global distribution of rainfall, many issues remain uncertain and invalidated, such as the daily cycle of rainfall, amount of rainfall or rain rate.

In general, in addition to the TRMM concept, the main types of technique include microwave and infrared based assessments. Of the two types, those with microwaves provide more accurate estimates of precipitation, but have a lower spatial resolution and are less frequent. Performance depends on a number of factors, including signal processing algorithms, sensor choice and atmospheric conditions. A variety of techniques have been developed for signal processing, among which are those based on physical, conceptual or data.

Each new generation of built satellites also includes advanced techniques to improve accuracy and resolution, and also some priorities for research includes: algorithm optimizations, calibration of sensor uncertainty and development of performance measurements. Also, products that combine satellite data and other tools that provide real-time data have also been developed. The radar used by the TRMM proved to be an important tool for real-time calibration and evaluation.

Table 3. Current geostationary and polar satellites

Actors	Geostationary weather satellites		Polar weather satellites	
	Name	Satelites orbital position	Name	Satelites orbital position
SUA	GOES-15	East Pacific	DMSP-F13[1], DMSP-F16, DMSP-F17, DMSP-F19[2]	Early Morning Orbit
			DMSP-F18	Morning Orbit
	GOES-13, GOES-14[2]	West Atlantic	Suomi-NPP, DMSP-F14[1], DMSP-F15[1], NOAA-15[1], NOAA-18, NOAA-19	Afternoon Orbit
Europa	Meteosat-9, Meteosat-11[2]	East Atlantic	Metop-A, Metop-B	Morning Orbit
	Meteosat-7	Indian Ocean		
India	INSAT-3C, Kalpana-1, INSAT-3D, INSAT-3A	Indian Ocean	-	-
Russia	Electro-L N1[1]	Indian Ocean	Meteor-M N1[1]	Morning Orbit
China	Feng-Yun-2D, FY-2E	Indian Ocean	FY-3C, FY-3A[1]	Morning Orbit
	FY-2F[2]	West Major Atlantic	FY-3B	Afternoon Orbit
Koreea	COMS-1	West Major Atlantic	-	-
Japonia	Himawari-6, Himawari-7	West Major Atlantic	-	-

Source: Adapted from OECD, 2014 [14]

3. CONCLUSIONS

Most weather radars are implemented in networks to improve data accuracy and cover missing areas. As for signal processing, compared to the use of the Doppler frequency, complex signal modulation techniques, solid state transmitters, polarimetry and pulse compression are also being used. If NEXRAD radars are limited by the mechanical scanning of the airspace, the newer radars have the possibility of using the networks phased by antennas which can be electronically moved both horizontally and vertically. This reduces the data processing time. An example of a radar that combines these methods is CPPAR (Cylindrical Polarized Phased Array Radar) [33].

The satellites are managed by agencies from India, Japan, Korea, Russia, USA, China and Europe under the coordination of the World Meteorological Organization (WMO). Currently, there are 18 geostationary and 17 polar satellites (see table 3).

The conversion of each radar component from analog to digital is one of the radar development trends, as well as the fact that more emphasis is placed on engineering. The information provided by the radar complements the observations made with rainfall meters and compensates for certain sources of error.

The rain gauge provides direct measurements on only one location at a time. The most commonly used types of rain gauges are those wich operate by tilting and weighing. The accuracy of the estimates increases proportionally with the density of the rainfall network and makes a major contribution to the calibration of the radar. The data provided by the satellites has a lower spatial resolution and smaller intervals than the weather radar. A variety of techniques and sources are available in real time, combining microwave observations from polar satellites with visible and infrared observations from geostationary ones, managing to eliminate some of the errors.

In recent years, several sensors have begun to be used, some of which are not only linked to a certain observation system. Their role is to provide a more accurate estimation of precipitation from a wider range of sources. For individual measurement systems (radars, rain gauges or satellites), there are international intercomparison studies, which allow users to compare data and algorithms.

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REFERENCES FOR CREATING A SCENARIO FOR MANAGEMENT OF EMERGENCY SITUATIONS

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Abstract: *Emergency situations are those events which, by their appearance and development, prevent the maintenance of a security environment conductive to daily activities and their removal is a complex process that involves the use of various quantitative and qualitative resources in a coherent managerial framework. Emergency management provides for certain stages starting from the identification of the situation, planning, organizing and coordinating the mode of action, training of the resources and personnel involved and the final evaluation of the event. In order to solve these emergencies, there are specialized structures that intervene and restore the state of normality. When the recorded situation or event exceeds a certain magnitude and the structures fail to cope with the negative effects, they request the support of the army. The main military structures required in the case of natural disasters are the combat engineers structures, which have the necessary equipment and training. Carrying out risk scenarios and action plans in such situations are essential in the article, emphasizing the usefulness of creating variants of framework scenarios that will be fully or partially replicated in the specific training exercises.*

Keywords: *combat engineer structures, emergency situations, scenario, remove snow, plan of action, intervention team*

1. GENERAL CONSIDERATIONS

Emergency situations are those events which, by their appearance and development, prevent the maintenance of an environment of safety and security of the population (Crăciun, 2006). These situations inevitably occur, having small or complex sources of initiation, but which lead to disastrous effects if their occurrence is not eliminated or diminished, in terms of the possibility of manifestation. Also, these events involve dysfunctions in several areas and on several levels, among which those that concern the daily activity of the population, but also affections on the environment.

In order to prevent these situations, it is necessary to have this special category of human activity domain management, emergency management, which has the role of identifying, planning, organizing, coordinating, training and evaluating the entire activity (Crăciun, 2006).

This essential procedure in maintaining the state of normality requires specialized structures that will act efficiently to carry out the mission successfully and to eliminate the risk of population exposure. These structures must be permanently prepared, available for any intervention and with a high level of operability, desired to be accomplished by using the practical-application methodologies specific to the scenarios.

Given that combat engineer structures have missions such as force protection, road sustainability, fortifications, but also that they have specific equipment for support missions, their role extends to population support in case of emergency. Therefore, combat engineer structures are required for natural disasters such as floods, snowfall, bridge construction or road rehabilitation.

2. EMERGENCY MANAGEMENT AND INVOLVEMENT OF SPECIALIZED STRUCTURES

Emergency management represents, a set of activities and procedures that plan, organize, coordinate, train and evaluate the intervention in the event of a natural or artificial factor, which affects the smooth running of daily life(Tabără, 2014). The involvement of decision-makers, institutions and public structures empowered to identify and monitor the sources of risk is essential in resolving the emergency situation. Also, the evaluation of the information and the situation, the elaboration of forecasts, the establishment of the action plan and its implementation in order to restore the situation is an extremely important factor The supervision process is necessary to evaluate the dynamics of the situation. Monitoring also includes the knowledge of the type, magnitude and intensity of the event, in order to have the correct image of the evolution and social involvement, but also to determine how to impose measures to resolve the event Crăciun, 2006). The management of these events requires the implementation of a procedure for identification, registration, organization and evaluation. In order to avoid the impact of these emergencies, communication and civil assistance is an essential factor.

Most human activities, regardless of their nature, are accompanied by risks that can with some probability produce a disastrous effect. Also, a number of natural phenomena such as floods, fires, earthquakes, landslides, avalanches, tornadoes, lightning strikes, contribute to the creation of negative effects on the normal state of society.

At national level, the terms and conditions regarding the management of emergency situations appear in the Government Emergency Ordinance. 21/2004 regarding the National Emergency Management System, approved with the subsequent modifications and completions, here finding the legal basis for identifying, managing and resolving emergency situations.

In addition to the emergency response structures, which are subordinated to the General Inspectorate for Emergency Situations, there are structures within the Ministry of National Defense that participate, especially the combat engineer structures.

Since the establishment of the combat engineer branch, it has intervened in numerous missions that targeted natural disasters (floods, snowfalls, fires, etc.).

3. MATERIALIZATION OF A FRAMEWORK SCENARIO FOR THE COMBAT ENGINEER STRUCTURES IN A EMERGENCY SITUATIONS INTERVENTION

Generally speaking, the scenario represents the means that provides the forecasting, planning and organizing of the integrative training, necessary to achieve the performance standards specific to the management systems and subordinate structures, destined to exclude the possibilities of manifesting destabilizing vectors for the Romanian society: dangers, threats, armed aggression or of a different nature(Udeanu, 2011). From the typological point of view, the scenarios and especially those applied in the military field can be classified according to the spatial and temporal area of the hypothetical actions, amount of forces and means involved, the hierarchical level of the leadership and the objectives of the training process (Udeanu, 2011).

Also, particularly for the military field but with many elements that can be taken for conceptualization in other fields of activity from the field of security and public order, the scenario represents a hypothetical institutional-operational framework conceived on the basis of an action-contraction situation and plays a role in checking the training level of the troops.

A strategic scenario is broad and has several operational scenarios, which in turn have several tactical scenarios. The complexity of a tactical scenario also shows the complexity and numerous options for verifying the capabilities of forces. A tactical scenario is based on several hypotheses, and the hypotheses are followed by several variants. A tactical scenario is made for a peace situation and aims at training or for a war situation and aims at the commander’s conception for

carrying out missions as efficiently as possible(Udeanu, 2011).

To highlight that combat engineer structures are best suited for emergency intervention, we discuss the significance of the concepts of combat engineer support defined as a set of measures, works and missions performed by the specialized troops of this branch and combat engineer protection, designating a set of measures, works, and missions carried out by the other categories of branches or structures to carry out their missions under normal conditions (Grecu, 2005).

Much closer in terms of the ideational content of the subject analyzed in the present article, is the opinion (Vladu, 2006) according to which the scenarios are designed to provide the necessary operational framework for preparing the forces structures and to provide the analytical foundation necessary to evaluate the commander's conception, through simulation, in the context of possible real situations.

There are two components based on which the tactical scenarios are realized (Vladu, 2006): the first component is made in text form and includes information or data regarding the general situation, the special situation, the logistical support of the actions, the order of operation (operation plan), timely framing of the events and materials needed to perform the script and the second component is the graphic one, where the actions that will take place in the tactical field are materialized taking into account the enemy's structure and its own forces.

Developing an appropriate scenario that can be used in the intervention of combat engineer troops in emergency situations is a factor that contributes to the successful accomplishment of the future mission.

A civil emergency situation often encountered in Romania in recent years and especially in the South East is the abundant snow followed by the manifestation or at the same time with other weather phenomena such as strong wind, low temperatures, etc. In the middle of winter, such extreme phenomena cause an imbalance in the population and institutions, threatening and hindering the smooth running of the current activities. Starting from the obligations assigned to the military structures, to intervene in such emergencies, the combat engineers are part of the main intervention force (Popa, 2014). They intervene both with specific machines and with specific tools, one of the missions of the combat engineer structures being to ensure the viability of the roads.

The emergency situation is identified by the structures in the

respective locality (Tabără, 2014). Initially the structures within the General Inspectorate for Emergency Situations intervene and when the situation exceeds the capacity of this type of intervention force, the army's support is requested. The military units receive the request, and from this moment the action plan for the intervention is triggered.

In order to materialize a scenario that includes the two components (text and graph), the premise mentioned above was taken into consideration: the efficiency of the intervention of the combat engineer troops in emergency situations, more precisely in the situation of the presence of a large volume of snow blocking access to a locality affected. This scenario should answer five questions, which are meant to facilitate the action base, these questions being: What, What, Where, When, Who, Why, How. Specifically, the question „What" represents what should be done. The question „Where" refers to where to take action to resolve the situation, and „When" represents the moment when action will be taken and „Who" establishes the responsible structure. „Why" is the reason for acting, and „How" is the mode of action according to the plan developed. The scenario developed using the working method described above is presented in table no.1.

What	Snow removal intervention
Where	Ianca Town, Brăila county
When	Winter, forecast days or on request
Who	IGSU structures, Combat engineer structures from the Ministry of Defense
Why	Aid to the population; Request from local authorities
How	Action plans

Table no.1- 5W1H method for the proposed scenario

The request of the local authorities is sent to the responsible structures. The proposed scenario must be adapted to the real needs of the dimension of the emergency situation, and its construction must ensure that all the requirements are met as best as possible, so as to lead to the resolution of the situation. For this purpose, the scenario construction is combined with a scenario management component (decision-centered). The first step in emergency management is to identify the vulnerabilities and reduce the risk of unwanted events.

In this case, the vulnerabilities that may arise are related to the malfunctioning of the snow machines and the request for a higher volume of physical work or the negative effects of the wind, cold or snowfall on the effectiveness of the human action.

The proposed scenario is concretized as follows: the local authorities request the support of the specialized structures for clearing the roads covered with a dense layer of snow, which blocks the traffic and the daily activities in Ianca city (courses, school, shops, banks, administration).

According to the legal procedures, the structures involved are those within the IGSU, but the scope of the works also requires the structures within the MApN. Thus, the information is transmitted to a military unit nearby, with attributions for such interventions. With the start of the intervention plan, the assembled subunit is properly equipped, loads the materials in means of transport on wheels or on the tracks and prepares the necessary equipment for snow removal. Arrived at the event site the intervention team offers the support of the other structures and collaborates to solve the situation. In general, the team has a variable number of military personnel, which differs depending on the volume of work requested. In order to ensure the continuity of the intervention and the efficiency of the working team, there are scenarios for every possible situation in which the engineers can intervene to support the population, such as floods, the achievement of critical crossing points or the release of a road to ensure the circulation.

4. CONCLUSIONS

Emergency management consists of organizing all resources and procedures to track all aspects of an event that changes the state of normality and how it is resolved. In order to manage and solve such emergencies it is necessary to have specialized and efficient structures, which act regardless of the adverse conditions. These situations can be caused by nature or by man, which does not change the intensity or the magnitude of the event, because most of the times the effects are much greater than expected.

The specialized structures for resolving these emergencies act according to previously established action plans and based on scenarios created for each event. There are procedures and scenarios for each type of event such as: floods, snowfalls, landslides, tornadoes, blizzards or other attacks that threaten the normality of the population.

Starting from the extent of these risk events that may occur, the structures responsible for solving them need support, which is why in most situations, the intervention of the combat engineer structures is essential.

The preparation for the intervention is a factor of appreciation of the state of performance of these types of forces, the method of the scenarios facilitating the achievement of the designed operability level.

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ASPECTS REGARDING SOME OF THE E-GOVERNMENT ACTIVITIES IN ROMANIA

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Abstract: *This article presents some of the e-government activities of individuals via websites in Romania in the period 2015-2018, in accordance with the data available on Eurostat. We have focused on the aspects concerning the behavior of the individuals regarding the submission of the official forms to public authorities' websites.*

Keywords: *e-government, public authorities, official forms, internet use, information.*

1. INTRODUCTION

Today the Internet offers us the possibility not only to order goods or services for private use, but also to interact with public authorities via official websites, to obtain information from those sites, to download official forms, to submit completed forms, and in some countries to submit income tax declaration.

We analyzed in this paper some of the data available on Eurostat [1] concerning those aspects in Romania compared with the EU28 (European Union – 28 countries).

2. DATA ANALYSIS

We took into consideration the following indicators, as calculated by the Eurostat methodology [2]: Internet use: interaction with public authorities, Internet use: obtaining information from public authorities web sites, Internet use: downloading official forms and Internet use: submitting completed forms, divided into macroregions, cities, towns and suburbs and rural areas in Romania. We compared those with the data from the EU28.

Concerning the first indicator – Internet use: interaction with public authorities – calculated as percent of individuals aged 16 to 74 in Romania in 2015 the value was 11% and then decreased to 9% in 2016 and remained the same until 2018. In the EU28 the value of this indicator was 46% in 2015 and increased constantly up to 52% in 2018 [3]. This indicator was obtained as an average of the values registered in the 4 Macroregions of Romania (NUTS-I) [4]: Macroregion one – North-West and Center (NUTS-II) comprising the

following counties: Bihor, Bistrița-Năsăud, Cluj, Maramureș, Satu Mare, Sălaj, Alba, Brașov, Covasna, Harghita, Mureș and Sibiu (NUTS-III); Macroregion two – North-East and South-East comprising the following counties: Bacău, Botoșani, Iași, Neamț, Suceava, Vaslui, Brăila, Buzău, Constanța, Galați, Tulcea, Vrancea; Macroregion three – South-Muntenia and București-Ilfov comprising the following counties: Argeș, Călărași, Dâmbovița, Giurgiu, Ialomița, Prahova, Teleorman, București, Ilfov; Macroregion four – South-West Oltenia and West comprising the following counties: Dolj, Gorj, Mehedinți, Olt, Vâlcea, Arad, Caraș-Severin, Hunedoara, Timiș, as you can see in the picture below (Figure 1) and in Table 1.

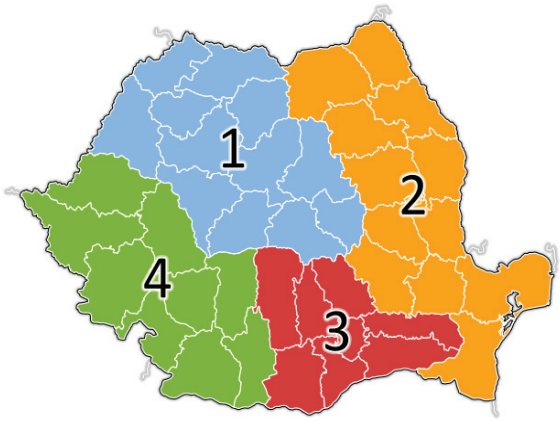

Figure 1. Macroregions of Romania

Table 1. Internet use: interaction with public authorities (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
Romania	11	9	9	9
Macroregion one	11	9	11	12
North-West	10	9	8	12
Center	13	10	14	11
Macroregion two	7	6	7	5
North-East	6	6	8	7
South-East	8	6	6	3
Macroregion three	14	12	9	12

South - Muntenia	7	7	6	11
Bucuresti - Ilfov	22	19	13	13
Macroregion four	11	8	8	9
South-West Oltenia	12	12	7	9
West	11	5	9	9

As you can see in the Table 1 above the minimum value registered for this indicator was in 2018 in South-East Region (3%) and the maximum value registered was in 2015 in Bucuresti-Ilfov (22%).

If we are dividing the indicator Internet use: interaction with public authorities in sub-indicators showing the individuals living in cities, towns and suburbs and in rural areas we obtain the 3 tables below.

Table 2. Internet use: interaction with public authorities (last 12 months). Individuals living in cities (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	52	54	55	58
Romania	16	16	14	13

Table 3. Internet use: interaction with public authorities (last 12 months). Individuals living in towns and suburbs (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	46	47	46	50
Romania	12	8	9	9

Table 4. Internet use: interaction with public authorities (last 12 months). Individuals living in rural areas (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	39	41	43	47
Romania	6	5	4	6

Analyzing the data showed in the tables above we draw the conclusion that the percentage of individuals using the Internet for interaction with public authorities is in direct correlation with the size of the place, meaning also with the degree of economic development. The maximum value is 16% in cities and 4% in rural areas.

Also the size of the gap between Romania and EU28 is increasing from cities to rural areas.

If we are talking about the second indicator – Internet use: obtaining information from public authorities web sites the data are showed in the next 3 tables.

Table 5. Internet use: obtaining information from public authorities' web sites (last 12 months). Individuals living in cities (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	45	47	46	49
Romania	14	14	10	11

Table 6. Internet use: obtaining information from public authorities' web sites (last 12 months). Individuals living in towns and suburbs (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	40	42	40	42
Romania	10	6	8	7

Table 7. Internet use: obtaining information from public authorities' web sites (last 12 months). Individuals living in rural areas (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	33	35	35	38
Romania	4	4	4	5

This second indicator shows similar values with the first one, meaning the same difference depending on the place of living and on the economic development. The maximum value is 14% in cities and 4% in rural areas. The gap between Romania and EU28 is also similar with the values of the first indicator, but in Romania we have a constant decrease and in EU28 we have an increase of the percent of individuals using the internet for obtaining information from public authorities' web sites.

We can see data for the third and the fourth indicator – Internet use: downloading official forms and Internet use: submitting completed forms on the next 6 tabes.

Table 8. Internet use: downloading official forms (last 12 months). Individuals living in cities (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	32	33	34	36
Romania	9	8	9	7

Table 9. Internet use: downloading official forms (last 12 months). Individuals living in towns and suburbs (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	27	28	28	30
Romania	6	4	4	4

Table 10. Internet use: downloading official forms (last 12 months). Individuals living in rural areas (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	23	24	26	27
Romania	2	2	2	3

Table 11. Internet use: submitting completed forms (last 12 months). Individuals living in cities (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	30	32	35	39
Romania	8	7	6	6

Table 12. Internet use: submitting completed forms (last 12 months). Individuals living in towns and suburbs (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	25	27	27	32
Romania	5	3	3	4

Table 13. Internet use: submitting completed forms (last 12 months). Individuals living in rural areas (percentage of individuals)

GEO/TIME	2015	2016	2017	2018
EU28	22	24	27	31
Romania	2	2	2	2

The use of Internet for downloading and submitting official forms has lower values than the first 2 indicators analyzed. Maximum value is 9% and minimum value is only 2%. The gap between Romania and EU28 stays the same.

4. CONCLUSIONS

Taking into consideration that in 2018 81% of the households in Romania had Internet access, the percent of the individuals aged 16 to 74 that are using the Internet for interaction with public authorities is very low.

More specialized courses or training could be necessary in order for this percent to grow. Also from the part of the public authorities more transparency is recommended and using on-line user friendly platforms.

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