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## GEOPOLITICAL AND SECURITY DILEMMAS IN THE EURO-ATLANTIC COMMUNITY

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*Since the United States under the Donald Trump administration took a new stand towards the main global issues, China has become a “global player” and the Russian Federation has developed into a significant power again under President Putin’s leadership, while NATO, the European Union (EU) and all European countries have individually started to analyze their position and strategies in relation with those three powers. Also, since then, there have been some other significant events which contributed to the development of this analysis, such as: a very special and challenging foreign policy promoted by the White House; the Russian Federation’s intervention in Ukraine and the annexation of Crimea; the conflict in Syria with two components-entities and countries involved, and the flow of immigrants towards Europe; Great Britain’s Brexit policy, and, last but not least, the “special” policy promoted by Ankara in relation with the United States, the European Union and the Russian Federation. All those events, and many others, obliged the two organizations, NATO and the EU, and all European countries to react and to establish their specific policies. At this time, I would say that those reactions were often contradictory and somehow diverted, especially at the level of individual countries, rather than at organization level. However, these organizations are composed of many of the European states, most of them being part of both.*

**Key words:** NATO, EU, Euro-Atlantic versus Eurasian interests, complementarity, cohesion and solidarity.

### 1. INTRODUCTION

This paper focuses on identifying the main issues that NATO and especially the EU should respond to or find the right

answers for both the benefit of the Euro-Atlantic link, as well as for the advantage of each and every country involved. In order to ensure a better understanding of the viewpoints presented in this

paper, a general framework and some relevant assumptions need to be first introduced.

First of all, it is worth noting that the topic of this paper needs to be approached from the perspective of the main geopolitical and security issues specific to the Alliance and the EU, as well as political decisions that should be made connected with those issues. The aim is not to find answers, but rather to make comments on the respective issue, and not going into details.

Second, even though NATO and the EU are composed of countries with similar values, principles and strategic objectives related to democracy, freedom, free market economy, they are also very different in terms of responsibilities, functioning mechanisms, structure and organization, and, last but not least, the purpose for which they were created. In other words, if NATO was created in order to provide security for its members while respecting a comprehensive common package of principles and values, the EU has a different purpose. The original European Union was founded on a purely economic basis, under the name of European Coal and Steel Community, which later became

the European Economic Community. With the Maastricht Treaty in 1993, the organization became the European Union, further integrating the financial issues in 1999 and ending up in the present format after the Lisbon Treaty in 2009. At this moment the area of responsibilities in the EU is comprehensive and multidimensional, dealing with almost all functional domains of a state administration. Until recently, the security issue was not among the leading priorities because it had always been a NATO responsibility. In my view, that is the reason why the complementarity issue on defense matters has always been necessary.

Third, in 1999, the European Security and Defense Policy (ESDP) was designed, and since then there have been many attempts to create an EU military structure and capability. Recently, those discussions took a stronger path and center on the “strategic autonomy” for the EU, which implies that the EU needs to create an EU Defense Organization (EUDO) and EU Defense Forces (EUDF). This intent generated a large scale of debates in NATO and the EU and even more in each member country. In this context, there are EU member states which

sustain this endeavor and others which like to leave the security issue mainly to NATO and keep the complementarity of the EU with NATO.

All of the above considered, the assumption underlying this paper is that in the future, at global, regional, organizational (NATO and the EU) and individual member state level, all must address and respond firmly and successfully to the same threats, especially those on security and defense domains.

Hence, the goal of the paper is to identify the main questions and dilemmas that NATO and the EU leadership or each individual member country which is part of these organizations should answer. Responses are required in order to be prepared to face the new geopolitical context in a globalized world dominated by the USA, in the first place, and China, assisted by a reborn and increasingly assertive Russia, at least under President Putin's leadership. I will approach this analysis by differentiating among the main issues on three levels: global, regional and internal.

## 2. GLOBAL CONUNDRUMS

*At global level* the first question might be: Are NATO and the EU global or regional players?

In the NATO environment this question was asked long ago, but there is no clear answer yet. Taking into consideration just the NATO members means that this organization may be seen as a regional player. Counting on NATO partnerships involves that the Alliance looks to be more than that. Moreover, if the global partners (Japan, South Korea, Australia, Colombia, etc) are added into the equation then NATO can be called global – even though the partnership status does not impose the same responsibilities as that of a member state.

Personally, I do not know if “A global NATO” is better than a “NATO with global partners”, as it is today, but what I am sure of is that NATO can solve, if necessary, any issue even at global level using the three doctrinal concepts (collective defense, collective security and cooperative security), and in one day, one country, of the global partners group, will make an official request to be a NATO member. If such a situation shows up it will be necessary, at least, to add elements to the Washington Treaty, to change the level of

ambition and the structure of the organization. The Alliance needs to think now of this possible hypothesis.

In the EU environment things are more complicated, because we are not speaking just about values and security, but mainly about economy, finance, social health care, education, regional development, and other areas. If we are looking at the future BREXIT, then the situation is even more complicated, because the EU will need some time to “digest” this event. Leaving this situation aside, I sincerely think that the EU, as it is now, has the economic and financial power to play a global role, but most of the time it is not acting as an organization for many reasons. One of the reasons would be that the most powerful economies from the EU prefer to act in the global arena alone in order to achieve first their national interests and then address the respective issue at the organization level. There are some examples of such actions in relation to the Russian Federation, China, India and the USA.

In my view, as long as the EU is not acting as a coherent organization when dealing with the other global players it will not be perceived as a global player, but

rather as a regional one. On the other hand, the global powers prefer to deal and negotiate things with a designated country rather than with an organization where the constraints and limits are more complicated.

Leaving aside the economic and financial domains and going to defense and security issues, in my view the EU cannot pretend to have a global importance, but rather a continental one, and sometimes regional, such as when the EU forces conduct operations in Africa.

The second question at *global level* is: Are NATO and the EU struggling between Euro-Atlantic and Eurasian interests?

A short answer to this question is YES. There are many arguments to demonstrate this reality and I will present some of the most significant ones, connected with the three main players' (The USA, China and the Russian Federation) attitude and actions.

The USA moved its top priorities from the Euro-Atlantic community to the Asian-Pacific community. China stopped remaining safe and quiet inside its borders and became a global player mainly on the economic and financial markets, in strategic resources management and,

secondary, in regional security issues. The Russian Federation plays a more significant and sometimes assertive role in Asian, European and Middle East spaces. At the same time, Russia and China try to connect more and more states with the Shanghai Cooperation Organization, one of the latest achievements being the participation of Turkey. Also, both powers are working hard to connect themselves with some countries from the EU rather than with the organization itself. The purpose is not an issue of security, but rather it is about trade, finance, strategic resource management and technology. So, yes! The EU and NATO are struggling between Euro-Atlantic and Eurasian interests in many domains, including in security issues.

As far as NATO is concerned, the Alliance does not have a specific adversary in the Eurasian space, but threats are rather coming from this geographical area. Here I would mention nuclear vectors, terrorism, immigration on a large scale (some of those immigrants being religious fundamentalists), and, last but not least, cyber threat. However, there are many friends and partners too. According to this, in my opinion

NATO is prepared to face any threat from whatever direction it may come and it connects the threat with a specific state rather than with a geographical area or a continent.

If we consider NATO's relation with the Russian Federation, there are mechanisms created for consultations and dialogue. The NATO view, after the involvement of Russia in Ukraine, is clearly presented in the last three Summits declarations.

Looking at China, I think that NATO, as an organization, does not have a clear view yet, but if we consider the USA, the top NATO power, as an individual player, the relation with China is more fluid and complex. However, I think that, at this moment, it is only a bilateral issue, because the two giants share different views on some important issues specific for the Asian-Pacific community, while for NATO this situation is a subject to be observed rather than to interfere with.

From the EU perspective, again, things are fairly complicated, not as much for the organization itself as for individual member countries acting alone. In my view, there are two main approaches to this connectivity, mainly concerning their bilateral

relations with the Russian Federation. There are some countries which want to promote stronger and closer relations with Moscow, mostly dominated by economic, finance and strategic resource management interests, while other countries see the Russian Federation's interests as clashing with their own national interests. This leads to increasing fear and uncertainty, especially after the evolution of the Ukrainian conflict, the sudden annexation of Crimea and, some would say, the soft/weak response of the Euro-Atlantic community to these actions.

In this context, these different opinions at individual level are leading to different points of view at organization level, and that goes for both organizations.

The same situation, with different viewpoints, is related to China, though not yet in the security domain as much as in economic and trade issues. When China wanted to connect itself with the EU space, they used the initiatives of some smaller EU countries, and this situation generated a series of critical comments from some other EU members. When we look back, however, in the last three years all those with a critical voice and

some others, have made a long queue to be received by the Beijing leader, and nobody objected openly.

All that considered, I think that the economic, financial and strategic resource management interests are top priorities when we are speaking about the relations between the EU and the Eurasian space. Moreover, when we refer to individual member states this relation could be, on a case-by-case basis, more complicated, even though that means sometimes to forget or neglect some of the principles which govern the organization itself, principles which are normally applied to other nations from the same space, which means applying a double standard. We should not forget that many of the countries on the Asian space have different values and leading principles than those applied in NATO and the EU.

In my opinion, it is important for both organizations to keep an eye on the evolution of the Shanghai Cooperation Organization. This fairly new organization, is growing up year by year in two directions: in the number of the countries involved and more importantly, in the area of common interests, security being day by day an increasingly

debated issue. It is not impossible, that at some future point, this organization should develop into an Alliance which will connect all the countries from the Eurasian and the Pacific Ocean spaces that, one way or another, are not in the group of the Euro-Atlantic community. This situation can generate in this way a real balance in all domains, including defense and security, for NATO and the EU. Even though the highest technologies and most powerful economies are not in these countries, I will take into consideration that half of the Earth's population is there, and probably half of this planet's future strategic resources.

### 3. THE REGIONAL CONTEXT

Concerning the *regional context*, the *first question* is: Do NATO and the EU have the capacity to successfully manage specific issues and threats faced on the three seas?

When speaking about that, I am referring to the Baltic, the Mediterranean and the Black Sea, all of them with their regional extensions. They all have different problems referring to the security domain as well as to all the other important domains, such as:

political, economic, financial, social etc.

NATO has the necessary mechanisms and capabilities to take appropriate measures in the Baltic Sea and in the Mediterranean Sea and to a lesser extent in the Black Sea. The difficulties in the Black Sea are related to its geography, being an internal sea, and especially because of the Montreux Convention provisions over the straits, established in 1936.

After the events in Ukraine and in Syria, special measures were taken at NATO level in order to provide the required capabilities in all these three areas and they are called "reassurance measures". Anybody can find more details about those measures just reading the last three Summits' declarations. I would appreciate that the conceptual phase is almost finished and NATO forces have already started to train in each specific area, and this training phase will continue in the future.

At EU level this issue was seen slightly different, in my view, according to the specific event which was happening in each region. I would say that at EU level the reactions and measures taken were connected more with political, diplomatic, economic and

financial areas rather than defense or military issues.

We have seen those measures taken during the development of events in Ukraine and Syria. It is not my intent to discuss here if they were the best possible measures or the most efficient ones. Yet, it is necessary to say that, comparing to NATO's similar steps, the EU measures prove that, in the defense posture, the EU does not have the required capabilities or the political determination to address such big scale conflicts.

It is also worth mentioning that the measures taken in the Ukrainian conflict do not show many positive results, the situation being, at least in the Donbas and Crimea provinces, almost the same as four years ago. The issue of Syrian immigrants was handled mainly by the EU and that created a serious debate and contradictory points of view in various member countries. These situations affected a lot the cohesion and solidarity of the EU itself. In this context, taking into consideration the importance of these three regions I would recommend that complementary various measures to those taken at NATO level must be established, in advance, in case of any other crisis situation which might appear. We should be aware

that, for the European space, a crisis situation might emerge mainly in one or in the worst-case scenario in all of these three regions, of course having different roots and actors.

*The second question at regional level* is: Do NATO and the EU have the desire and the political determination to continue the enlargement process?

I consider this question of top importance because I think that one of the best solutions to provide a better security for our nations on the European continent is to allow for these organizations to increase their number of members, within at least continental borders. Of course, in order to do that, many criteria, specific for each organization, are required to be accomplished. As a Romanian soldier, born in 1964, I have witnessed and contributed throughout my military career to Romania's efforts to fulfill those criteria in order to be admitted in both organizations. Consequently, I know this is not an easy process, but it is by far safer to be a member rather than being on the outside of these organizations, at least concerning the security and defense domains. Some would say that enlargement is an internal process specific to each

organization rather than a regional one. I agree with this comment, it is an internal issue, but on the other hand the effects of the enlargement are at least regional for the EU and NATO as well.

To answer the above question, I think both organizations have almost the same capacity and desire level, with a plus for NATO, which proves more politically determined to continue the enlargement process. The best example is Northern Macedonia which has just joined NATO, but not the EU, yet. In the EU the political determination to continue the process looks to be at a very low level.

There are two categories of possible candidates which are determined to join one or both organizations, some of them being already members of one of them, some others not being members of any. In my view, those possible candidates might be split in two categories according with their geographical position. The first category is composed of countries located inside of the geographical borders of both organizations, including Turkey and Finland, and the others being towards the East of this border, namely Ukraine, Moldova and Georgia, to nominate just those which really applied and

make efforts to be a member of at least one of the organizations.

If we are taking into consideration the first group of countries, there are the Western Balkan group and the others. Speaking about the Western Balkan countries, I think it is just a matter of time until they join both organizations. It is mainly about fulfilling the EU and NATO criteria and standards. Probably Serbia will need more time to decide if NATO is the right option. The other countries of this group might be analyzed according to their national interest, because for most of them the problem is to reach an internal political decision rather than to reach criteria and standards. Here we can nominate Austria, Sweden, Norway, Finland, which, for different national reasons, decided not to join one or another of the organizations. Last but not least, a special status and set of discussions might be developed when speaking about Turkey's possibility to join the EU, this possibility having failed in 2016 when accession talks between Turkey and the EU were suspended.

With reference to the group located outside NATO and EU borders, namely Ukraine, the Republic of Moldova and Georgia,

there are three sets of issues which need to be addressed. First, it is about the requirement to accomplish the entire spectrum of NATO and EU criteria. The second issue is about, more or less, the “frozen conflicts” that unfortunately still exist in the Republic of Moldova and Georgia, and the ongoing one in the case of Ukraine. Last, but probably the most important issue is how to overcome the Russian Federation’s opposition to any attempt of enlargement of NATO and the EU to the East of their present limits. Who can open another “Pandora’s box” with the Russian Federation?

In conclusion, in future both organizations must keep the doors open for all the candidates who desire to be part of at least one of them. Special attention must be paid to those which, for whatever reason, at this moment, do not have such an option. Indeed, this approach could be very useful in future, and more than that, dialogue and connectivity with neighboring countries are “part of the game” in our days.

#### 4. INTERNAL ORGANIZATIONAL DILEMMAS

As for the *internal context* of both organizations, there are two dilemmas, and in this respect *the first question* is: Are cohesion and solidarity the key words and main principles in NATO and the EU?

For me this is “the Gordian knot” for both organizations. As a matter of fact, this is the main issue for any other organization in order to be successful. Moreover, it is not about the two organizations, but rather it is about maintaining a strong Transatlantic link as a fundamental principle in the future.

In NATO, cohesion and solidarity are at the top of the Alliance’s principles, starting with the Washington Treaty. After the events in Ukraine those principles were strongly emphasized in all NATO Summit declarations. We can say that in this period of time the political strength of the Alliance is mainly based on these two principles.

During the post-Cold War period there were many situations when NATO had difficulties reaching consensus. I would remind you just a few: the first Gulf War, the disintegration of

former Yugoslavia, Afghanistan, Iraq, the cyber attack on Estonia, the Russian Federation's intervention in Georgia, and lately the Ukrainian and Syrian crises. Sometimes the Alliance reached consensus in its decisions and initiated NATO operations, and in other situations it was preferred a "coalition of the willing" type of operation under a US hat (as it was in the second Iraqi war) or French hat (as was the case with Libya). There were situations when the Alliance decided not to get involved militarily and acted only on the political and diplomatic arena (as was the case with Georgia in the summer of 2008).

In one way or another, in my view, the Alliance has found most of the time the power to move forward and to achieve a compromise in order to maintain the credibility of NATO while not getting involved in a military way.

Another difficult issue has emerged lately, which consists of a strange relationship between Turkey and the Russian Federation. This situation looks strange because it seems to be too close for a NATO member, at least in the weapons acquisition area. Because of that and some other particular bilateral issues, the dialogue between Ankara and

Washington has become more contradictory rather than productive. Moreover, it is worth mentioning that Turkey has become, since 2012, a special dialog partner in the Shanghai Cooperation Organization (SCO), and in 2017 it chaired the Energy Committee of this organization, even though it is not a member of it. Hopefully, NATO as an organization will find the wisdom to move forward while maintaining unity of the Alliance. For a thousand reasons Turkey is of too much importance for NATO, and even more for the European security, than we can imagine, especially in a broad future perspective.

Speaking about the EU cohesion and solidarity, this subject looks rather more complicated in our days.

First of all, because of the BREXIT issue, which in a few weeks might be concluded and become history. This event is highly important for the future of the EU, for many reasons, some of which are: it represents a failure of the organization; it creates a precedent; the weight of the EU will be affected on the international arena; the event could lead to an internal dispute on who is taking Great Britain's place, the

possible construction of EUDF will be affected, and many others.

As an EU citizen, I was a supporter of the United States of Europe type of organization, seeing Lisbon Summit as a first step, but this option looks quite remote now. In this case, if the EU is not going there, the question is: Where is the EU going to? I do not have an answer to this question, but in order to maintain and promote the EU values we ought to remain strong and united, especially when the future looks very unpredictable and challenging.

The next issue concerns how the EU, as an organization, and various member countries reacted to the immigrants' issue, when the contradictions at all levels were strong enough to produce more negative impact than we thought.

Another issue is the Schengen Accord, where there were also a lot of contradictory discussions around the admission process of Romania and Bulgaria.

A similarly important issue would be the way different member states, rather than the organization itself, are approaching the relations with the Russian Federation, especially after the events in Ukraine. Here, I would say that we have a real different

perspective between member states located on the Eastern side of the organization and those located in the central or in the Western side.

All those issues and many others make me have a pessimistic view on the strength of the cohesion and solidarity principles at the EU level. Looking for reasons why different member states of the organization have different points of view on various important issues, some of them mentioned above, I find out two more questions which need to be answered at organizational and member state level.

The first one is: Are we, the EU member states, still prisoners of our history? The second is: Are the size and geographical position of a country, as well as its economic and financial power, more important than the cohesion and solidarity within the organization? Of course, we can have a strong debate on this, but, in my view, the key is how the member states will respond to those questions. Moreover, if we do not learn from our, more or less, common history, and we are not looking seriously at the future, in all aspects of it, the EU organization risks to remain stuck at the present level instead of moving forward, while the other

players, at global and regional level, are moving forward faster than us. This risk should be avoided, and the organization must find the resources to remain united and cohesive.

The *second important dilemma* at internal level might be: Is complementarity with NATO enough for the EU security?

NATO has a strong partnership with the EU, in peace time or crisis situations. This partnership was based on complementarity and it was proved during operations conducted in Afghanistan or the Western Balkans. The success of this cooperation was mainly observed in accordance with the comprehensive approach environment principle, often applied during those missions.

In my view, the complex different capabilities of these two organizations are very well suited to the principle of complementarity. If NATO represents a political military alliance where defense of its members and the military “tool box” are at the core of the organization, the EU has a lot of capabilities outside of the military ones, such as: political power, diplomacy, economic and financial resources, civilian structures and mechanisms able to restore and

rebuild governments or/and failed states. Those capabilities were demonstrated during all missions where the EU participated along with NATO or alone under UN or EU mandate. This principle of complementarity between NATO and the EU is often mentioned in the last Summits’ declarations, where the NATO-EU strategic partnership has always been a special subject.

Lately, on the EU side, there have been a series of discussions and initiatives which ask for an independent EU military structure called the EU Defense Forces. This structure must provide the necessary military tools designed to grant a high level of a “strategic autonomy” with respect to the defense and security domains at the EU level. There are some EU member states which are questioning this initiative and recommending that NATO should remain the organization tasked to deal with the security and defense domains, at the Euro-Atlantic community level. I am also a supporter of this way of thinking, but in order to find arguments to sustain this approach, I would comment on two questions.

The first question is: Can we afford to create the EUDF? Analyzing the military capabilities

and the financial resources required to create this structure, I believe that some member states of both organizations will be reluctant. In the entire EU space, many governments have a hard time finding the necessary resources to accomplish just NATO commitments, not mentioning the EU ones. Most governments face problems when it comes to providing resources for education, health and social care systems, which are considered top priorities ahead of military issues. So, especially in some of those countries, which are members of both organizations, it will be very difficult to reach an agreement on this subject.

The second question is: Against which adversary must the EUDF be able to react? Or, in other words, which level of ambition must this structure have?

To respond to this, in my view two ideas should be taken into consideration. The first one refers to the hybrid warfare type of operations. Considering the special characteristics of this type of warfare, I think that out of the national military capability of each member state of the EU, a supplementary defense force structure at the organization level is not required. I am saying that

because, in most cases, hybrid warfare mechanisms are addressed not by military structures, but rather using diplomatic, economic, financial, political and internal security forces in conjunction with information and intelligence structures. But what would happen if, from a hybrid type of warfare, the situation would evolve into a military conflict? Then the question goes to: Which country or entity can be a threat for the EU? Some would say that the Russian Federation might be a threat. But if so, can the EU fight alone against this powerful adversary? According to the Russian Federation's conventional and nuclear forces capabilities, it will be very hard for the EUDF to be successful and then the EU will be forced to ask for a NATO support.

If we are going to discuss about any other possible adversary in the proximity of the EU space, except for nuclear and/or CBRN vectors, nobody can be considered powerful enough to initiate a conventional conflict with the EU. In the case of nuclear and/or CBRN vectors the issue is quite simple: only NATO has the required capacity to address successfully these threats using Ballistic Missile Defense Capabilities.

In these circumstances, I hope that the EU leaders will take into consideration the necessity, the costs, the required human and financial resources and the effectiveness of this endeavor. That means to calculate how much we need to pay for this, and put the result in balance with what military capabilities we will achieve and when. Moreover, I think that this endeavor should not minimize the transatlantic link unity and cohesion, the strength of this link being essential in order to preserve Euro-Atlantic values, liberties and achievements.

## **5. CONCLUSIONS**

It is necessary, first of all, to admit that in both organizations we have certain dilemmas and we need appropriate answers for all those questions and many others as we go into more detail. Once admitting that, it is our task as scientists, researchers, analysts or specific structures in both organizations to find the best options in the political and defense domains to be recommended to our leadership, who are entitled to take the most efficient decisions and actions.

Of course, “politics drives everything” is a very actual and

powerful reason why each and every country, member of either one or both organizations, will take the best organizational decisions in support of their own national interest. However, we must not forget that nobody is strong enough to face alone the future threats and trends. Moreover, the values established on the forefront of our organizations will remain valid in whatever the future has in stock for us – and, with that in view, the Euro-Atlantic community must remain united, and that should be an unquestionable objective. We do not need to reinvent the transatlantic link, it is necessary just to preserve it while adapting the two organizations and all common mechanisms in place to the new geopolitical context, future threats and common interests.

At the end of the day, it is all about what we are leaving to the next generations. To sustain this, I will close by quoting a special thought addressed by the late king of Romania, H.M. Michael I, in a speech delivered before the Romanian Parliament in 2011: “I do not see today’s Romania as a heritage from our parents, but as a country which we have borrowed from our children.” It is with this

thought in mind that we, as member states and our organizations, must proceed to reduce and minimize the internal issues and to maintain and develop the transatlantic link.

#### **REFERENCES**

- [1] Wales Summit declaration, 2014.
- [2] Warsaw Summit declaration, 2016.
- [3] Brussels Summit declaration, 2018.
- [4] Press release of EURODEFENCE Romania, after EURODEFENCE Conference, Bucharest, 3-5 October, 2019.

## IS SCIENTIFIC REASONING THE KEY TO LEAN SIX SIGMA'S SUCCESS?

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*The Lean Six Sigma (LSS) process continue to be used throughout the public and private sectors to map processes seeking to make them lean and, thereby, more efficient and effective. We make the argument that the LSS process (i.e. Define, Measure, Analyze, Improve, and Control (DMAIC)) is inherently scientific. In Ronald N. Giere's (1979) book entitled Scientific Reasoning, he develops a scientific reasoning methodology and then applies the methodology to describe the process used to discover deoxyribonucleic acid (DNA). The article will overlay real-world LSS project conducted by an element of the United States Office of the Secretary of Defense (OSD) between 2006 and 2008 and its DMAIC process atop Giere's Scientific Reasoning Methodology. Ultimately, this article uses the scientific reasoning methodology to bound the evidence necessary to form the scientific explanation that the DMAIC process is indeed – scientific and the key to Lean Six Sigma's success.*

**Key words:** Lean Six Sigma (LSS), Science, and Six Sigma

### 1. INTRODUCTION

Lean Six Sigma (LSS) is a process that seems to weld the proven lean and six sigma methodologies together, taking the best from each and leaving any non-value added steps behind. Many highly successful corporations have used LSS to improve their internal processes, which seems to have enhanced their profitability. Why? Perhaps, as cross-functional teams of engineers, accountants, and salesmen worked together on difficult internal organization issues, they began to apply their specialized educational backgrounds - backgrounds rooted in scientific methods. Ultimately, this interaction may have led to the operationalization (as defined below) (1) of LSS and the robust methodology we see today.

This paper will first describe LSS, showing how it evolved from discrete process/product improvement methodologies into its current form. Next, it will introduce Ron Giere's approach for scientific reasoning, with slight modifications made to improve clarity of explanation. Then, each phase of the LSS methodology will be laid atop the scientific

method to demonstrate similarities between the two. Giere validated his methodology using the discovery of the structure of DNA by Watson and Crick as a scientific episode (Giere, 1979, pp. 32-37). Similarly, a LSS episode will be presented with comparisons made to the Watson and Crick episode to explain the overlap between the two methodologies. Finally, the conclusion will provide a summary of the adapted scientific reasoning/LSS methodology providing the explanation that supports the theory that the scientific reasoning is indeed the key to the success of LSS in both the public and private sectors.

### 2. LEAN SIX SIGMA (LSS)

Lean concentrates on controlling resources, reducing waste, and meeting the needs of the customer (Andersson, Eriksson, & Torstensson, 2006, p. 288). Lean's roots as a management improvement technique can be traced back to the Toyota production system developed in the 1950s (Arnheiter & Maleyeff, 2005, p. 9; Andersson, Eriksson, & Torstensson, 2006, p. 288). Lean's goal is to

eliminate waste (i.e. muda in Japanese) so that any and all steps in the value stream for the product or service add value, thereby, reducing process time and increasing the velocity of the entire system (Arnheiter & Maleyeff, 2005, p. 9). The focus of these efforts is continuous or radical improvement events, known as kaizen and kaikaku in Japanese, respectively (Arnheiter & Maleyeff, 2005, pp. 9-10). Both kaizen and kaikaku are events set about to reduce waste or muda. These three elements are used together to place the organization, using lean, on an inexorable path to perfection. For example, US Army Recruiting and Accessions Command chartered a Subject Matter Expert (SME) team to look into their process for recruiting new soldiers and found that their As Is process had 32 steps. Through this lean process, they were able to reduce the steps to 11 in the To Be process, a 66% reduction (Reece, 2006). Lean seeks to remove non-value added steps keeping only those that add value and reduce cycle time within, or between, steps in a given process (Naslund, 2008, pp. 271-276; Stamm, Neitzert, & Singh, 2009).

Six Sigma began as elements of Total Quality Management (TQM). In the mid-1980s both Motorola and General Electric drew the Six Sigma elements out of TQM (Arnheiter & Maleyeff, 2005, p. 6; Stamm, Neitzert, & Singh, 2009). In due course, practitioners used the statistical elements of process/product improvement and an organized hierarchy of Six Sigma certified experts (i.e. Champions, Sponsors, Master Black Belts, Black Belts, Green Belts, and White Belts) to implement improvement efforts (Andersson, Eriksson, & Torstensson, 2006, pp. 286-287; Arnheiter & Maleyeff, 2005; Stamm, Neitzert, & Singh, 2009). Through this social structure, Six Sigma's certified expert hierarchy builds organizational buy-in into the product or process improvement efforts (Stamm, Neitzert, & Singh, 2009; Schroeder, Linderman, Liedtke, & Choo, 2008). This disciplined, socially

structured, statistically based approach seems to have created value for both organizations.

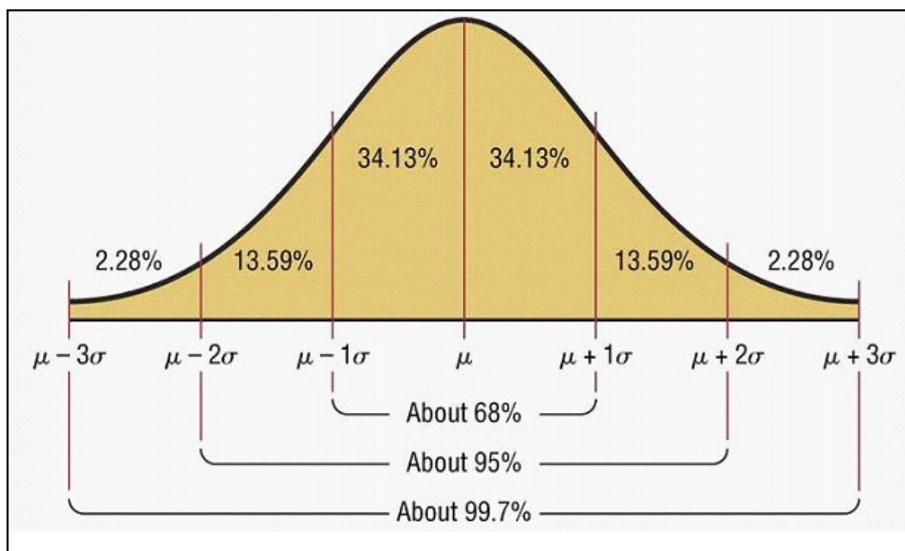
When Six Sigma started with the Motorola Corporation in the 1987, the metric chosen to be measured and analyzed was defect rates, specifically, Defects Per Million Opportunities (DPMO). Motorola developed a Six Sigma program to reduce their DPMO to 3.4 defects per million, greater than  $6\sigma$  (i.e.  $+3\sigma$  and  $-3\sigma$ ), or the extreme end of one-tail in a normal distribution of sample products produced (Klefsjo, Wiklund, & Edgeman, 2001, p. 32; General Electric Company, 1999). Six Sigma represented the statistical variable of standard deviation (e.g.  $\text{Sigma} = \sigma$ ) in Motorola's case DPMO became the focus of their improvement effort. Using a normal distribution in statistics, plus and minus  $1\sigma$  away from the mean will encompass  $\sim 68\%$  of the sample measure of the population, plus and minus  $2\sigma$  away from the mean will encompass  $\sim 95\%$ , and plus and minus  $3\sigma$  will encompass  $\sim 99\%$ , as shown in Figure 1 below. As such, plus and minus  $3\sigma$  away from the population mean ( $\mu$ ) or  $6\sigma$  outside of one-tail in the bell curve in Figure 1 will include approximately ( $\sim$ ) 99% as a sample measure of population captured, assuming the data follows a normal distribution. In this case, the 3.4 defects per million of the sample products produced, the six sigma measure that Motorola achieved. Hence, this statistical measure of  $6\sigma$  or Six Sigma became an integral part of the LSS name for this product or process improvement methodology.

Some authors like Andersson et al state that Six Sigma provides nothing new from what is contained in TQM (Andersson, Eriksson, & Torstensson, 2006, p. 283). Indeed, it provides less than TQM following the law of parsimony. It leaves only those essential elements that provide value, as one would expect. As LSS was operationalized over time into a process/product improvement methodology, only those value added elements remained. Elements that did not add value were culled or leaned out of the process as the law of parsimony (2) would dictate.

Early on, the parsimonious combining of Lean and Six Sigma began to show great promise in process improvement and product

development starting in the 1990s.

The merger of Lean and Six Sigma first began at Allied Signal in the early 1990s.



**Fig. 1.** Normal Distribution depicting the Population Mean (i.e.  $\mu$ ), Standard Deviations (i.e.  $\sigma$ ), and percentage of the population encompassed by +/-  $\sigma$  away from the  $\mu$  (Bowman, 2009).

The company had started two process improvement methodologies separately. Lean was used to improve their process speeds and reduce their lead times on product delivery. Simultaneously, Allied adopted Six Sigma as a company-wide initiative. Initially, they were deployed separately, but they were eventually brought together under a single Vice President. As the initiatives were executed, it became apparent that leveraging the best in each would achieve greater gains for Allied (DeCarlo, 2005, pp. 57-59). During the same time frame, The Maytag Corporation leveraged the kaizen event methodology used by Lean, coupled with the stronger Six Sigma statistical analysis tools, to gain a competitive advantage. In a single quarter, Maytag executed 800 kaizen events that resulted in a 55 percent drop in production costs, saving more than \$25 million dollars (DeCarlo, 2005, pp. 57-59). Both organizations achieved impressive gains in

costs savings and efficiency. The operationalization of LSS had begun. (DeCarlo, 2005, pp. 57-59).

Put simply, Lean did not have the rigorous statistical control procedures of Six Sigma. Furthermore, Six Sigma did not possess the dramatic product improvement approach of lean, which focused on improving process speed and reducing waste (Michael, 2002, p. xxi). Consequently, the two methodologies merged into what is now known as LSS, capitalizing on the strengths of each to create a powerful process and product improvement methodology (Arnheiter & Maleyeff, 2005, pp. 16-17; DeCarlo, 2005). The LSS methodological process is shown in Figure 2. This approach is broken into five phases: Define, Measure, Analyze, Improve, and Control, commonly known as the DMAIC process amongst practitioners.

**Lean Six Sigma, Process Improvement Model**

- 1. Define.** Define which process or product that needs improvement. Define the most suitable team members to work with the improvement. Define the customers of the process, their needs and requirements, and create a map of the process that should be improved.
- 2. Measure.** Identify the key factors that have the most influence on the process, and decide upon how to measure them.
- 3. Analyze.** Analyze the factors that need improvements.
- 4. Improve.** Design and implement the most effective solution. Cost-benefit analyses should be used to identify the best solution.
- 5. Control.** Verify if the implementation was successful and ensure that the improvement sustains over time.

Acronym used in common lexicon: DMAIC

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**Fig. 2.** LSS Process Improvement Model (Andersson, Eriksson, & Torstensson, 2006, p. 287; Magnusson, 2003)

This merger of Lean and Six Sigma is strikingly similar to the progress made between the late 1800s and the early 1900s in scientific philosophy when empiricist thought helped science progress and provided the fundamental ground work that enabled the logical positivists to take the next steps in the formulation of scientific thought (Godfrey-Smith, 2009, pp. 19-37). The logical positivists left behind what was flawed in empiricist thought but kept what aided them in advancing scientific thought and philosophy. Further, the logical empiricists built on the philosophy of the logical positivists, which enabled some of the great scientific discoveries of the last century. Just as science progressed and elements were operationalized to allow scientists to do their work, Lean and Six Sigma were operationalized to create a powerful, useful product/process improvement methodology, which appear to be scientifically based (Bogen, 2014; DeCarlo, 2005, pp. 57-58). The LSS phases is discussed in the next section overlaid atop Giere's scientific reasoning methodology to reveal the similarities between the two.

### 3. OVERLAY METHODOLOGY

Ronald N. Giere lays out a discrete technique for scientific reasoning as shown in the upper left of Figure 3 below. This paper's author chose to adapt Giere's methodology slightly, creating logical linkages shown in the lower right of Figure 3 in red, for the purpose of explanation and comparison with the LSS methodology. These linkages seem to be implied by Giere, but not specifically illustrated. As such, the Overlay methodology clearly depicts the steps necessary for explanation, comparison, and understanding.

Giere's method depicts four ingredients necessary to support a scientific methodology. These include: what the researcher is studying in the real world; the working model is meant to emulate the real world phenomenon; the data gathered through interaction with the real world; and finally, once the data is put into the model, a prediction is derived from the model. This prediction is compared with the data and the hypothesis to see if there is agreement. If there is, the hypothesis is supported by the model: the model fits accurately, predicting the real world phenomenon.

The first three phases of the LSS methodology (i.e. define, measure, analyze) cover all of Giere’s ingredients of scientific reasoning, as depicted in Figure 3. In these phases, many of the same processes occur as the LSS team seeks to understand the real world phenomenon that may be preventing

either efficient operations or effective product development. Initially, the LSS approach will be laid atop the adapted scientific reasoning method for purposes of comparison. The comparison begins with a discussion of the define phase of the LSS methodology.

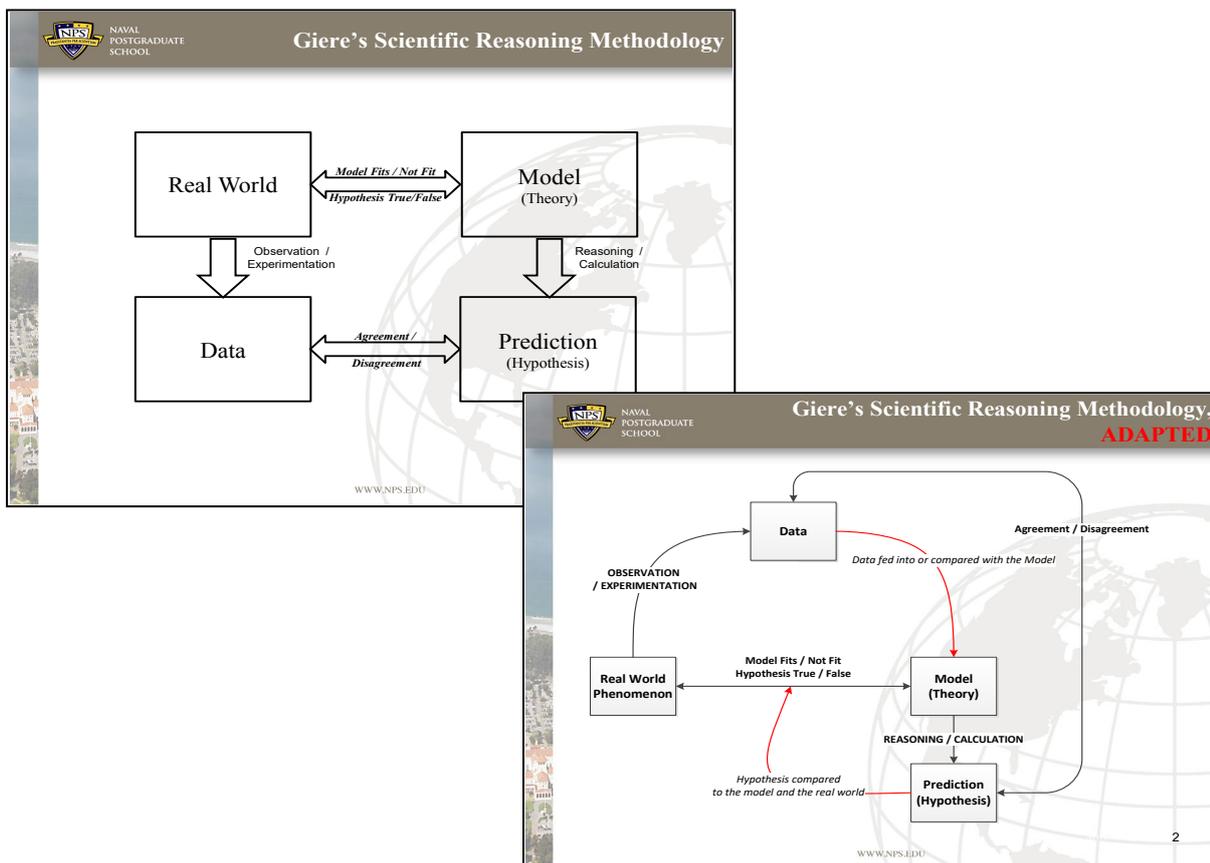


Fig. 3. Giere’s Scientific Reasoning Methodology Original to ADAPTED (Giere, 1979, p. 32)

During the Define phase, a cross-functional team of SMEs is formed around the focus area (i.e. process or product) to be improved, seeking to delineate the current “As Is” process. At times, the “As Is” process or product may resemble an inefficient ad hoc process or quickly developed product. Most likely, the process put in place or product developed was put together by a group of people who were trying to find an expedient solution that would work temporarily or to develop a product quickly to get it to market.

In most cases, the process has not been reviewed since or conditions in the marketplace necessitate a need to improve the product or process by which it was made. It is critical to define the As Is; this is when the team begins to understand where to look, scientifically in the real environment, for the data or information required by the subsequent steps.

As such, in the Define phase, the team examines the real world and seeks to develop an “As Is” model to emulate what is currently

being observed. This encompasses the real world and model ingredients of scientific reasoning, circled in red below, because all of the same actions occur in the LSS methodology. For example, during the Define phase, the team is observing the real world phenomenon and begins to develop a theoretical model that closely approximates what is being observed. Initially, the team will collectively decide whether the model developed fits what is being seen in the real world, or not, and make the necessary adjustments to ensure that it does. Similarly, scientific reasoning begins with the observance of a phenomenon in the real (i.e.; empirical, tangible) world. Based on that observation, a theoretical model is developed that depicts how the real world phenomenon occurs in its environment.

Then, the team seeks to derive Measures that indicate the length of time used or the amount of resources expended to execute the “As Is” process used or product created. The Measure phase, circled in blue below, encompasses the data collected through observation/experimentation and then that data is fed into the previously developed model to determine whether it adequately fits the focus area or real world occurrence. Essentially, the LSS team gathers data from the focus area in its real surroundings. This is analogous to how a scientist gathers data about a given phenomenon in the real world environment knowing that two very specific characteristics must be met. First, the data must be acquired through a process of physical interaction with the real world, where that phenomenon being studied takes place. Second, both scientists and LSS team members should obtain this data

through observation or experimentation of the phenomenon, while adhering to these two characteristics. These two characteristics remain necessary throughout the explanation and will be integral in the comparison of scientific reasoning to LSS.

Once the team ensures those prerequisites are met, they would input the data into the model and monitor its output through reasoning/calculation. The Measure phase is intended to scientifically breakdown the process or product concern into a discrete, quantifiable metric or set of metrics to ensure that the team is focused on the right area to eventually analyze, improve, and control – the subsequent LSS phases.

The analyze phase, circled in green above, covers all of the scientific reasoning ingredients because the interaction between these LSS phases becomes iterative until a working As Is model is developed that accurately reflects the focus area. First, it is necessary to discern if the data entered into the model during the Measure phase through reasoning/calculation results in the prediction the team expected and that the data and prediction are found to be in agreement. If this is true, then the team can safely say that the model seems to fit, emulating the actual environment - supporting the hypothesis. If not, the team will need to engage in an iterative process to ensure the data was gathered correctly, to check the model’s goodness of fit, or to determine if some pertinent element was left out of the model, preventing it from closely matching the real world phenomenon. Eventually, the prediction and the data agree.

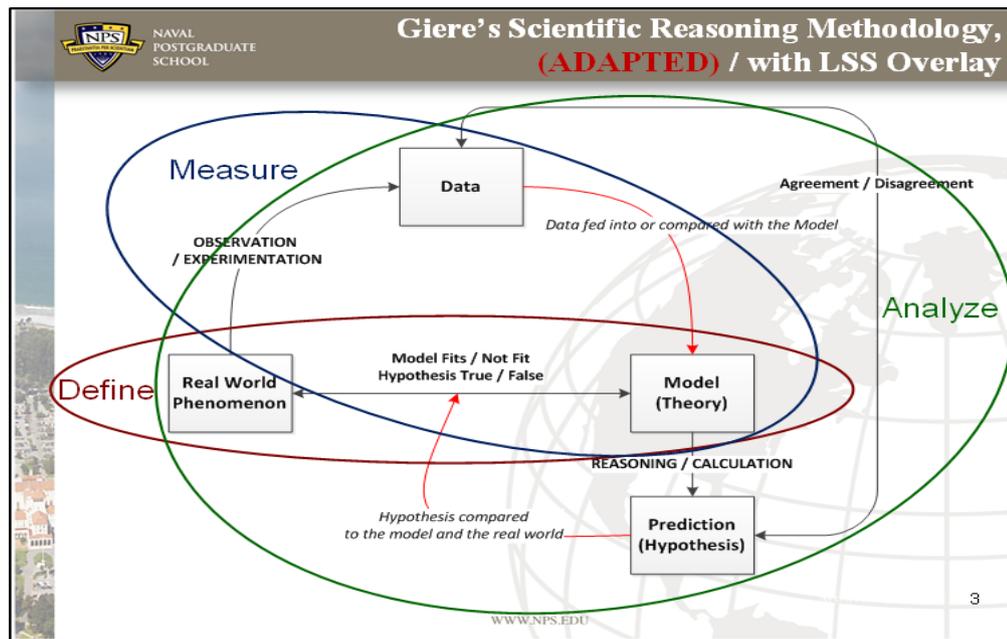


Fig. 4. Methodology (ADAPTED) with LSS Overlay (Overlay Methodology)

Similarly, in the adapted Giere model, if the data and the resulting prediction agree, depicted by the double arrow between data and prediction in Figure 4 above, then the theoretical model is believed to be sound and the hypothesis supported. The prediction results, depicted by the red line, are linked into the double arrow between the real world and the model allowing for comparison between the model and the real world. If the model fits or closely approximates the occurrence in the real world, then the scientist or the LSS team may safely say, again, that their hypothesis is supported. However, if the data and prediction do not agree, the theoretical model's fit comes into question. The theoretical model may contain a pertinent flaw that prevents it from imitating the real world phenomenon in some relevant aspect. This may send the team back to the model and the data to discern what relevant aspect is missing between the model and the real world, or was the calculation or reasoning used incorrect, or was the data somehow corrupted. In each methodology, the scientist and the LSS team will continue to seek agreement between the data and the

prediction, which will lead to a determination of goodness of fit between the real environment and the model.

The LSS methodology deliberately identifies the problem area then moves through a process deciding on a metric or set of metrics, then data is collected to analyze those measures. Essentially through these steps a model is developed that will be tested to see if it matches what is happening in the actual environment. As will be seen, once the Define, Measure, and Analyze steps are completed, a model is created that supports the hypothesis of what is occurring in the real world, described here as the As Is model. These LSS phases form the foundational steps of overlay method tying it to the ingredients of scientific reasoning as a basis of explanation, understanding, and formulation.

At this point, the LSS team has a stable "As Is" model, the overlay methodology has proven its worth, they chose the right data to statistically measure and analyze (i.e. derive a sigma), and they can now begin to find what can be improved upon and eventually can be controlled in the two final phases of the LSS

process. The overlay model largely serves to provide a stabilized, supported “As Is” hypothesis and to provide important clues for the team to use as they begin to envision a “To Be” process or product. Progressing into the next phases of the LSS methodology, the model scientifically becomes iterative going through all of Giere’s ingredients afresh. The Improve and Control phases cover the same elements as Define, Measure, and Analyze but with different data and perhaps a slightly different model. As the team enters the Improve phase, the team begins to visualize the To Be process or product borne out of the As Is analysis.

The Improve phase encompasses the red and blue circles in our overlay methodology, shown in gray above. This is where the team will seek to make improvements to the process through the model. These improvements must be measurable in the model of the real world. Then fresh data will have to be collected after the improvements have been made to learn whether the process or product improvements are having the right effect. Again, the data collected from the actual environment will need to be compared to the model, which would ensure the model adequately fits or does not fit the real world.

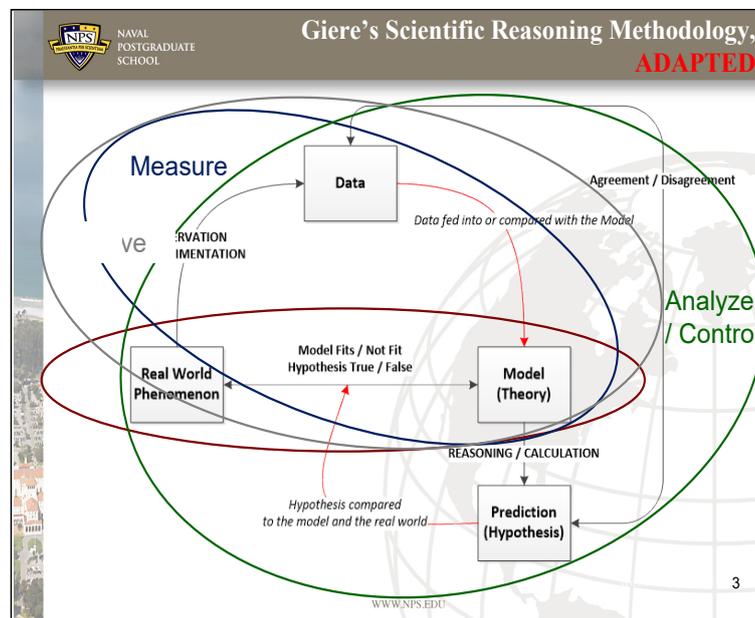


Fig. 5.Overlay Methodology

The LSS Control phase exactly mirrors the Analyze phase of the overlay model, circled in green. The model uses the same statistical calculation with the fresh data and putting the data into the model will determine if it still supports the hypothesis. If it does, then the team focuses on those elements that changed during the improve phase to ensure that those changes become institutionalized, monitored over time, and thereby, controlled. If not, the same procedure would have to be executed to determine if our fresh data was somehow

corrupted. Or did the improvements made change the model causing it to no longer fit and reflect the real world. Or were the improvement changes not adequately reflected in the model of the real world process or product. Next an episode will be used to apply the Overlay Methodology to an LSS episode making comparisons to Watson and Crick’s scientific episode. This will provide a real world comparison of how the overlay methodology can be operationalized.

#### 4. LEAN SIX SIGMA (LSS) EPISODE

The author had the opportunity to spearhead a LSS project in the Office of the Secretary of Defense (OSD). The project focused on delays in signature package processing either from outside the organization or generated within the organization. Each signature package needed to be routed for signature to the Deputy Assistant Secretary. On average the signature package cycle time took 38 days from beginning to end and did not meet the required due date 72% of the time. This resulted in signature package owners consistently attempting to work outside of the process to get their package completed in a timely manner. This led to the emergence of multiple ad hoc processes that were patently inefficient and unfortunately caused considerable damage to the organizations reputation within the Department of Defense (DoD). This adequately defined the problem at hand.

The author brought together a multi-disciplined team of experts, who had considerable experience with the current As Is process. Next, the team proceeded to document the As Is process. This essentially documented a model of how the process currently worked in the real world of the Pentagon, which had never been done before. At this point, the Define phase was complete, as shown in our overlay methodology in Figure 5 above, depicted by the red circle. Also, the LSS team and Champion for this project believed that a reasonable cycle time for signature packages to traverse the process, from beginning to end, should be 21 days, which became the established benchmark.

This precisely parallels how Jim Watson and Francis Crick, in this case the scientific team, developed their initial model that described Deoxyribonucleic acid (DNA) as a triple polynucleotide chain (Giere, 1979, p. 33). Watson and Crick developed a working model in an attempt to understand what DNA actually looked like in reality. This seems to fit the Define phase of LSS quite nicely. A model was developed by Watson and Crick, which

seemed to fit and support their initial hypothesis. But they needed to collect data from real DNA. However, since DNA is infinitesimally small and instrumentation was not quite as sophisticated as it is today, they chose to leverage Crick's theory of x-ray scattering (Giere, 1979, p. 16; Watson, 1998). Gathering data in this LSS episode was much easier; nevertheless, one can see the parallels.

Next, the team entered into the measure phase depicted by the blue circle in the overlay methodology. It became clear from the outset that cycle time of the signature packages was the appropriate measure (i.e. metric) to use, measuring the interval between the arrival of a signature package and its delivery to the tasking organization. The office had collected data for three years on the cycle time data on 3508 signature packages that were processed within the Office between 2006 and 2008. By simply subtracting the signature package arrival date from the delivery date, the team derived the cycle times, in days, for each of the 3508 packages. This constituted a sample of the cycle times of the entire signature package population ever completed by the organization. The data was compared with the model to initially determine whether the model fit the real world phenomenon. At this point, the cycle time measure seemed to fit what was being observed in the real world, which supported the As Is model.

Similarly in the early stages of model development, Jim Watson and Francis Crick presented their DNA model to Rosalind Franklin, a scientific colleague who was engaged in real world observation and experimentation of DNA using the simple x-ray technology of the time. Rosalind Franklin's research found that DNA in the real world contained water molecules at a volume ten times greater than Watson and Crick's current triple chain DNA model could possibly accommodate (Giere, 1979, pp. 33-37; Watson, 1998, pp. 75-87). As such, Watson and Crick's model did not match the data Franklin had gleaned from her x-ray research. This caused Watson and Crick to question the fit of their model. This parallels the LSS

episode accurately; the LSS team must feed the data into the model to ascertain if the model fits. In Watson and Crick’s case they had to continue their journey to discover DNA, tinkering with their emerging model. In the LSS episode, the team’s model was a fit, now they needed to perform the analysis.

Subsequently, the team embarked upon the analyze phase depicted by the green circle above in our overlay methodology. The team used the sample of 3508 signature packages. Calculating the cycle time for each package, using the statistical software employed within DoD. Ultimately, deriving a sample mean cycle time of 38.4 days, with wide variation in

the cycle times as shown in Figure 6 below. As expected, the cycle time exceeded the 21 day established benchmark. Most significant was that the sigma score or Z bench derived from the statistical model was a negative 1.89, which in the LSS methodology indicated an extremely poor process. Also, as shown in the top right hand corner of Figure 6, an attempt was made to fit the cycle time data to a statistical distribution. The statistical software could only fit it into a largest extreme value distribution; further, supporting our hypothesis that the process was ineffective and unable to meet the organization’s signature package cycle time goal of 21 days.

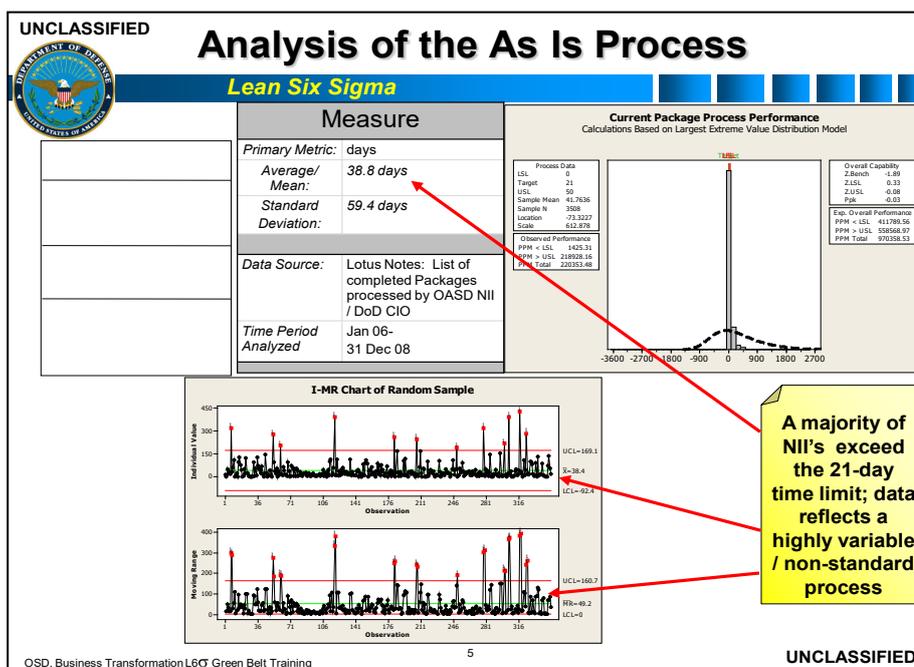


Fig. 6. Analysis of the As Is Process

In the same way upon receiving the data from Rosalind Franklin, Watson and Crick had to consider ways to fit their model of DNA. Believing that Franklin’s analyzed data was correct; they modified their model to the now widely accepted DNA formulation – the double helix of polynucleotides. This is where the comparison between the scientific and LSS episode ends, because Watson and Crick were

seeking the “As Is” state of DNA, they were not in pursuit of some “To Be” model. However, the LSS team continued in an iterative manner through the improve and control phases seeking to achieve the goal of LSS.

Immediately following, the team entered the improvement phase of our overlay methodology, depicted by the gray circle in

Figure 5. The team scrutinized the model to find any wasteful steps that might be eliminated or improved upon; thereby, creating a To Be model. Further, the team explored policy changes that could be employed to make the real world process more efficient. Ultimately, the team was able to eliminate one step, employ a policy standard to establish priorities on certain signature packages, and put a policy in place to prohibit ad hoc workarounds outside of the established process. The team conjectured that making these improvements might sufficiently reduce the cycle time average in our To Be Model. These changes were put into place and immediately the team began gathering fresh data on the signature packages that flowed through the improved process. The Improvement phase leveraged what the team had learned through this LSS methodology, relying heavily on deliberate scientific methods to make decisions.

After collecting data on signature package cycle times over several months, the team was able to compare the fresh data to the To Be

model. The data seemed to verify that the model was still performing and was a fit with what was happening in the real world. Thus, the team transitioned to the final phase of Control, which is exactly the same as the analyze phase before, but now using the To Be model.

Thus through statistical calculation, the team was able to Control signature package cycle times and then to compare the prediction with the cycle time data captured from the To Be process. They appeared to be in agreement. Next, the team sought to see if the prediction supported the hypothesis of what was happening in the real world - it did. The current To Be model was coming into control and serving the organizations goals very well. Figure 7 shows a side by side comparison of the statistical calculation results between the As Is and To Be models. Through this LSS methodology the team was able to reduce the process cycle time by 9.4 days, the sigma score improved to a positive .84 - a long way from  $6\sigma$  but improving in the right direction.

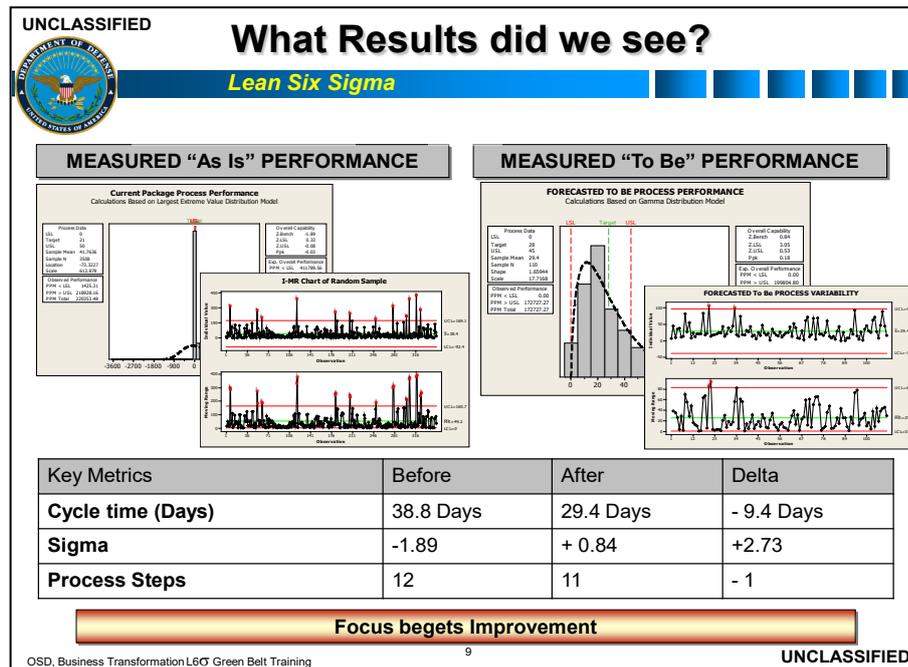


Fig. 7. Statistical calculations of the performance differences between the As Is and To Be Models

The number of steps had been reduced by one, the variability in the process had been reduced, and the To Be process seemed under better control as shown in the data fitting a gamma statistical distribution. Also, the calculated means between the gamma distribution and the process variability chart matched, again indicating that the process was now stable and under control. Thus, the prediction seemed to support our hypothesis that the process improved through the use of the overlay of LSS atop the Scientific Reasoning methodology discussed earlier and depicted in Figure 5. This supported the hypothesis that LSS was successful due to its foundational roots in scientific reasoning.

### 5. CONCLUSION

This paper began by introducing LSS as a process/product improvement method. Next, Giere’s scientific reasoning methodology was briefly introduced, explored, and adapted; this created adaptive linkages that were used to

make comparisons to the LSS methodology. These linkages specifically tied Giere’s scientific reasoning ingredients to the LSS phases of Define, Measure, and Analyze. The phases specifically covered all of Giere’s ingredients and connections, which he felt was necessary to support a hypothesis or theory. The subsequent steps of the LSS process of Improve and Control were shown to be executed over the scientific ingredients and connections in the proposed overlay model. Essentially, in these last two phases the LSS team executes the scientific reasoning model for a second time, the first time to discover and ensure the fit of the As Is model and the second time to validate the fit of the To Be model. In both cases, this process ensures that the prediction supports the accurate fit of the model - thereby, supporting the hypothesis. Then, leveraging the author’s experience, an LSS episode was summarized to support the hypothesis that LSS does leverage the scientific method. By comparing the two throughout the LSS episode in the Define,

Measure, and Analyze phases, linkages were made to the discovery of DNA the scientific episode used by Giere. Ultimately, it seems that LSS does employ sturdy scientific reasoning, demonstrating scientific reasoning is indeed the key to the success of LSS.

### ENDNOTES

(1) Operationalizations are defeasible rules of the application of a concept such that both the rules and their applications are subject to revision on the basis of new empirical or theoretical developments. As such, to operationalize is to adopt verbal and related practices for the purpose of enabling scientists to do their work (Bogen, 2014).

(2) Law of Parsimony often referred to as Ockham's Razor. The Razor is attributed to an English Franciscan Friar named William of Ockham and is expressed simply as "Don't multiply entities beyond necessity." Or stated another way, when comparing hypothesis that have the same predictive value, the one with the fewest assumptions is better (Spade, 2015).

### REFERENCES

- [1] Andersson, R., Eriksson, H., & Torstensson, H. (2006). *Similarities and Differences between TQM, Six Sigma, and Lean*. The TQM Magazine, 282-296.
- [2] Arnheiter, E. D., & Maleyeff, J. (2005). *The integration of lean management and Six Sigma*. The TQM Magazine, 5-18.
- [3] Bogen, J. (2014, Summer). *The Stanford Encyclopedia of Philosophy*. Retrieved from The Stanford Encyclopedia of Philosophy: <http://plato.stanford.edu/archives/sum2014/entries/science-theory-observation/>
- [4] Bowman. (2009, November 29). Bowman's Website. Retrieved from Statistics Notes – *Properties of Normal Distribution 2*: <http://rchsbowman.wordpress.com/2009/11/29/statistics-notes-%E2%80%93-properties-of-normal-distribution-2/>
- [5] DeCarlo, N. (2005). *The Complete Idiot's Guide to Lean Six Sigma*. New York: Penguin.
- [6] \*\*\* General Electric Company. (1999). *General Electric Company, 1999 Annual Report*. Fairfield, CT: General Electric Company.
- [7] Giere, R. N. (1979). *Understanding Scientific Reasoning*. Fort Worth: Holt, Rinehart, and Winston Inc.
- [8] Godfrey-Smith, P. (2009). *Theory and reality: An introduction to the philosophy of science*. Chicago: University of Chicago Press.
- [9] Klefsjo, B., Wiklund, H., & Edgeman, R. L. (2001). *Six Sigma Seen As A Methodology For Total Quality Management*. *Measuring Business Excellence*, 31-35.
- [10] Kuhn, T. (2012). *The Structure of Scientific Revolutions*. Chicago: Chicago University Press.
- [11] Michael, L. (2002). *Lean Six Sigma: Combining Lean Six Sigma with Lean Speed*. New York, Chicago, San Francisco: McGraw-Hill.
- [12] Naslund, D. (2008). *Lean, Six Sigma, and Lean Six Sigma: Fads or Real Process Improvement Methods?* *Business Process Management Journal*, 269-278.
- [13] Reece, B. (2006, November-December). *Lean Six Sigma eases fiscal constraint Challenges*. Defense AT&L. USA.
- [14] Russell, K. C. (2006, November/December). *Letterkenny Gets Lean for War*. *Army Logician*, pp. 12-13.
- [15] Schroeder, R., Linderman, K., Liedtke, C., & Choo, A. (2008). *Six Sigma: Definition and underlying theory*. *Journal of Operations Management*, 536-554.
- [16] Spade, P. V. (2015, June 25). *William of Ockham*. Retrieved from Stanford Encyclopedia of Philosophy: <http://plato.stanford.edu/entries/ockham/#4.1>
- [17] Stamm, M. L., Neitzert, T., & Singh, D. P. (2009). *TQM, TPM, TOC, Lean and Six Sigma-Evolution of manufacturing methodologies under the paradigm shift from Taylorism/Fordism to Toyotism*. Retrieved from Research Gateway, Auckland, New Zealand: <http://aut.researchgateway.ac.nz/bitstream/handle/10292/3858/Stamm%20Evolution%20of%20manufacturing%20paradigms.pdf?sequence=2>
- [18] Watson, J. &. (1998). *Double Helix*. Simon and Schuster.

## THE MOTIVATION TO SERVE IN THE MILITARY AMONG SWEDISH AND NORWEGIAN SOLDIERS. A COMPARATIVE STUDY

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*The geographic location of Sweden and Norway, combined with a deteriorated security situation in the Nordic Region and a renewed focus on national defense, makes the development of their armed forces a hot topic. In Sweden, after years of downsizing, the Armed Forces are now building up again, and the NATO member Norway has the strategic location bordering the Barents Sea in the North. These circumstances underline the importance of the motivation to serve among enlisted personnel in order to ensure a sufficient manning of the armed forces. A qualitative interview study was conducted with enlisted soldiers in Sweden and Norway with the aim of studying the motivation to serve among this population. A thematic analysis was used and results show that the motivation to serve could be understood from the following three themes: The Military as a Stepping Stone, International Mission, and Geographical Location and Benefits.*

**Key words:** *Enlisted soldiers, motivation, serving, individualization.*

### 1. INTRODUCTION

The Nordic countries have a long tradition of compulsory military service. Sweden was one of the last countries in Western Europe to abolish general conscription after the end of the Cold War. Despite the general conscription, in the mid-2000s, less than 20 percent of the population of 18-year-old males began basic military training. So, in 2010, conscription was replaced with an AVF, after more than 100 years of male conscription (women were able to apply on a voluntary basis from 1980). The reasons for the transformation of the SAF was the new security situation in Europe after the Cold War, which led the SAF to focus more on participation in multinational missions abroad (Österberg & Jonsson, 2012; Strand & Berndtsson, 2015). However, the SAF faced severe recruitment problems during the 9 years of AVF, hence the decision to re-instate conscription in 2018, but now making it gender-neutral. The shift back to territorial

defense and a deteriorated security situation around the Baltic Sea also contributed to the return of conscription. With the changing security situation in the Nordic region, for example increased Russian presence, there is a larger pressure on the SAF, as well as the Norwegian Armed Forces (NAF) to grow. This comes after decades characterized by downsizing, mainly in the SAF. Several countries, such as Germany, Bulgaria, and Slovenia, have raised issues on the agenda regarding the call for a reinstatement of conscription, and there are ongoing political discussions on the subject of recruitment and retention issues after armed forces conversion to AFVs (Österberg, 2018). There is a long tradition of military cooperation between Sweden and Norway, and the proximity makes joint military training expedient and practical. The aim of this study is to explore the motivation to serve among employed soldiers in the armed forces in Sweden and Norway.

## 2. LITERATURE REVIEW

The motivation to serve in the military has been studied thoroughly since the U.S. military's transformation from an army built on conscription, to an all-volunteer force (AVF). Herzberg's two-factor theory suggests that motivators, e.g. recognition for own achievement, meaningful works tasks and involvement in decision-making, contribute to positive job satisfaction. Hygiene factors (e.g. salary, job security and work conditions) on the other hand, do not give positive satisfaction or lead to higher motivation, and dissatisfaction results from their nonexistence (Herzberg, 1959; 1967). It should be noted that as per the two-factor theory, above stated factors of satisfaction and dissatisfaction act independently and absence of one does not lead to the presence of another. For instance, the absence of meaningful work tasks does not automatically lead to dissatisfaction; it is just not a state of satisfaction. Likewise, the absence of job security does not automatically lead to satisfaction. Need theories of motivation (e.g. Herzberg, 1968; Maslow, 1970; McClelland, 1976) try to explain what motivates persons in the workplace. Expectancy theory (Vroom, 1964) focuses more on the cognitive antecedents that relate to motivation and the way they relate to each other (Lunenburg, 2011). Furthermore, Herzberg (1968) highlighted that the performance at work will not be improved only by eliminating dissatisfying job factors. The assumption is that even with the best requirements of hygienic factors employees will be neither satisfied nor dissatisfied. (Herzberg, 1968).

The most common model applied to analyze work motivation is the Job Characteristics Model (JCM) (Hackman & Oldham, 1975; 1976). The JCM identifies five core characteristics thought to cause work motivation: 1) Skill variety defines the extent to which an individual must use different skills to perform his or her job. 2) Task identity refers to the extent to which an individual can complete a whole piece of work, while 3) Task

significance concerns the extent to which a job impacts the lives of others. Taken together, these three job dimensions are referred to as "job content". Furthermore, 4) Autonomy refers to the freedom an individual has in carrying out work and finally, 5) Feedback from the job concerns the extent to which a job conveys information about, and to the degree which the worker is provided with specific information about the effectiveness of his/her job performance. Researchers suggest that the motives for serving in an AVF are slightly different from the motives for serving in a draft army (Woodruff, Kelty & Segal, 2006). Ivztan et al (2013) come to the conclusion that the need for self-actualization was low in a group of younger individuals, as in a conscription system, when older individuals, 30 years plus seem to have more need for this, (e.g. in a voluntary system). Österberg and Rydstedt (2013) found that Swedish conscripts volunteering for international military service assessed themselves better for desirable values (altruism and family-oriented values), than those not wanting to do international military service. Other studies of military organizations, (see e.g. Österberg & Rydstedt 2017, Österberg et al, 2017) show that job characteristics and experienced meaningfulness are of importance for motivating and retaining personnel. However, studies (see Navarro et al 2013 & Navarro, Arrieta & Ballén 2007) show that work motivation acts nonlinearly and that work motivation seems to act instable in a dynamic nature, and Kanfer et al (2008) stress the need for exploring how motivation changes over time.

Moskos (1977) suggested a theoretical framework in order to define motivation to serve in the military. This framework describes on the one hand institutional orientation; distinct military norms and values, which create a sense of obligation, duty and loyalty. The institutional orientation suggests that difficult conditions such as long working hours and harsh training could be compensated by a solid sense of commitment (Moskos, 1977; Griffith, 2008). On the other hand, the

occupational orientation means that the military job is a job among others, like any civilian job. According to the occupational orientation, long working hours and similar sacrifices should be compensated with increased salary or compensatory time off. Accordingly, the incentives to stay in the organization are extrinsic for the occupational orientation, and intrinsic for the institutional orientation. Moskos (1977, 1986, and 2001) argues that the traditional conscripted military was mainly institutional, and that the introduction of all-volunteer forces repositioned the armed forces into a more occupational orientation. Furthermore, Battistelli (1997) made a typology based on the alleged change in modern society where he identified three types of motivational reasons for Italian soldiers to participate in peacekeeping operations. Firstly, *the post-*

*modern* - to do something for its own sake and for their own personal development. Secondly, *the paleo modern* - to do something for others, patriotism, for a higher purpose or ideology and, finally *the modern* - to do something for yourself). Studies suggest that there are different reasons for the motivation to serve. Ben-Dor and Pedhazur (2007) show how terrorism affects the motivation to serve in Israel while Massie (2016) shows how economic incentives relate to military engagement. Furthermore, Wong (2006) depicts contemporary soldier's motivation for combat, and Jelusic (2007) gives an overview of the mechanisms behind motivation to participate in peacekeeping operations. Caforio (2007) argues that interdisciplinary and cross-national studies of the military are crucial due to the complexity of issues at play for modern military forces.

### 3. THE CASE OF SWEDEN AND NORWAY

After the introduction of an AVF, the SAF faced severe recruitment problems, as described by Eighmey (2006) and Manigart (2005) who demonstrate a link between the situation in the labor market and the ability of armed forces to recruit personnel. Their conclusion is that when jobs are scarce, the armed forces have an easier time recruiting people than in times of economic growth. Sweden has had a very low youth unemployment rate since the end of the 2000s. The consequences of the low recruitment figures, and the renewed focus on national defense, made a return to conscription inevitable and in 2018, a gender-neutral conscription was introduced. The SAF demand for conscripts in 2019 is around 5000 out of cohort of 95 000, meaning that the organization to a great extent can select those motivated for service.

In 2014, the Norwegian Parliament changed the law and introduced gender-neutral conscription, and all men and women from the 1997 cohort and after could be enrolled as

conscripts (Viten, 2017). Norway was the first NATO country to implement gender-neutral conscription (Forsvaret, 2015). Several European countries are now debating both general conscription and gender-neutral conscription. The conscription period in Norway normally lasts 12 months, and in general, the soldiers are conscripted when they are about 18–19 years old. The Norwegian Armed Forces (NAF) draft about 7 000 conscripts each year (Forsvaret, 2019) out of a cohort of approximately 60000. After a recent reorganization of personnel structures in the Norwegian military, the different branches select their personnel in various ways. To become an enlisted soldier, one must first complete conscript service. Enlisting in the NAF has become increasingly popular over the last decade and the number of applicants has risen (Hellum, 2018). Since the Cold War, the NAF has focused on national defense, although changing in the mid-2000s, when the focus shifted to multinational missions. Eriksson (2004) describes this as shifting the identity of the armed forces from idealism to professionalism. Furthermore, in 2010 the NAF introduced a new enlistment and selection system for conscripts. This is a two-

step process, where step one is an online questionnaire and step two includes medical and physical examinations as well as cognitive tests and an interview with a selection officer (Køber et al, 2018).

#### **4. CHANGES IN THE WESTERN SOCIETY**

The demographic change of the European society is a major factor when it comes to the recruitment of military personnel. Many of the western democracies face the same challenge of an ageing population, hence diminishing the potential pool of applicants to the armed forces (Munz, 2011; Manigart et al, 2018). Furthermore, the alleged change of values in society, where postmodern society, emphasizing individualism, influences the way the armed forces are acknowledged by the people (Manigart et al, 2018). A positive attitude towards the armed forces seems to be the key precondition for young people to be interested in the military (Buhlmann & Wieninger 2010). Eighmey (2006) distinguished between tangible occupational goals such as job benefits or education, and intrinsic and intangible institutional goals – such as loyalty. When analyzing the motives behind enlistment decisions among American high-school pupils, Griffith (2008) found that soldiers motivated by intrinsic, institutional goals reported a higher willingness both to serve in international missions, to remain in the army, and to serve their country, in contrast to those with motives that are more instrumental. Österberg and Rydstedt (2013) found that conscripts who volunteered for international military service had significantly higher family-orientated and altruistic values than those not volunteering. Bicksler and Nolan (2009) argue that higher qualified youngsters eligible for a university or college degree are less interested in pursuing a military career. Inglehart and Welzel (2010) show how the values of the younger population are also changing from materialist to post-materialist priorities. Young people

tend to put more emphasis on self-fulfillment, individual freedom and quality of life. These values often lead towards a refusal of obedience or subordination to institutional authorities such as the military.

The contemporary security situation in the Nordic Region and the political climate in both Sweden and Norway contribute to the importance of retaining competence within the armed forces. As stated, in Sweden the recruitment to the AVF was surprisingly low, which implies that the organization is much more reliant on those already employed. Hence, it is of great importance to retain them within the organization.

#### **5. METHOD**

##### **5.1. Participants**

The inclusion criterion for selecting participants was the number of enlisted soldiers in the Swedish and Norwegian armed forces. The Swedish study consisted of semi-structured interviews with 24 participants, 19 male and five female soldiers that were carried out at two units in 2018. One unit was located in central Sweden and the other in the northern part of the country. Interviews were conducted using convenient sampling, and consisted of employed soldiers with varying work experience (stretching from one to nine years of employment), with most of the participants having somewhere between two to four years of employment in the Armed Forces. The Norwegian study consists of 13 semi-structured interviews with enlisted/employed soldiers in 2017 and 2018. The Norwegian participants were employed in an army unit in the northern part of Norway. The interviews were conducted through convenient sampling with 10 male and three female soldiers, all between the ages of 21-25.

##### **5.2. Comparing Swedish and Norwegian soldiers**

The Swedish and Norwegian comparative onset has a common interest in the same social group, namely employed soldiers operating in a military context. The data in both countries

consist of qualitative interviews. Due to these common research interests and data, we chose to conduct a comparative study with a focus on seeking similarities and differences among cases that are clearly specified or defined (Stake, 2006). The aim of this study is to explore the motivation to serve among employed soldiers in the armed forces.

### 5.3. Data analysis

All interviews were recorded and thereafter transcribed verbatim. Thematic analysis (TA) was used for analyzing the qualitative data. The thematic analysis represents a flexible method directed towards identifying themes, e.g., patterns in empirical materials that are either essential or interesting. In the analysis, open coding was used, where the codes were developed and adjusted during coding processes. Firstly, the Swedish and Norwegian material was analyzed separately. Secondly, the data set was analyzed as a whole, focusing on similarities and differences. In this process, the data was reduced and structured into a smaller number of categories, and after additional analysis work, three main findings were identified.

The first theme related to the soldier's motivation to serve, was the participants' tendency to refer to the armed forces as a mean to achieve an additional goal, a stepping-stone. Consequently, the analyses were consequently directed towards understanding the participant's tendency to regard the military as a stepping-stone. The second theme, international missions, was related to the importance of international missions as a work-related motivator. The third theme, geographical location and benefits, the participants' views concerning the geographical locations were two-folded. For some of the participants, the remoteness was seen as a motivator and a necessity for maintaining unit cohesion. For others, it was regarded as a demotivating element, in terms of isolation and limited opportunities for social life. The combination of the remoteness and the sense of having insufficient benefits, constituted the central part of the third theme,

focusing on aspects that many participants regarded as reasons for considering leaving the armed forces. Put together; the themes captured essential elements of the soldier's motivation to serve in the armed forces.

### 5.4. Validity and reliability

This comparative study consists of interviews with 37 participants. When evaluating validity in qualitative research, there has been a tendency, almost mechanistically (and in comparison to quantitative research), to comment on the often small sample size as a self-explanatory argument to establish low validity of qualitative research (Crouch & MacKenzie, 2006). Instead of discussing the possibility to generalize, the concept of transferability might be more of relevance for this comparative study. For transferability to be conceivable, it is of importance to clarify how the different steps in the analysis process were executed, from selection of participants and data collection to the analysis process (Johannessen & Tufte, 2003). In the previous section, we have described the various steps of the analysis. Additionally, we argue that the choice of methodology, semi-structured qualitative interviews, not only was the appropriate method for answering our research question, but also useful in exploring unforeseen areas. It also gave the participants the opportunity to provide comprehensive and deeper insights.

### 5.5. Ethics

All participants were treated in accordance with the ethical principles of human research formulated by the Swedish and Norwegian research council (Vetenskapsrådet, 2017; Forskningsrådet, 2017). Informed consent was obtained before conducting the interviews, and participants were able to opt out at any time. The recorded interviews and the transcripts were kept in a safe and no one except the researchers and the interview transcribers had access to the material during this process. All the empirical data was, and is, treated according to the GDPR rules.

## 6. RESULTS

Results show that motivation to serve could be understood from the following three themes: *Military as a Stepping Stone*, *International Missions* and *Geographical Location and benefits*. Consequently, in the first two themes, the presentation starts out with the Swedish sample, while the third begins with depicting the Norwegian sample.

### 6.1. Theme 1: The Military as fun or as a stepping-stone?

When it comes to military training, the main initial motivators among the Swedish participants appeared to be the chance to try something new, developing themselves as individuals and to be part of a community. After basic military training, a variety of elements were reflected during the interviews as decisive factors in wanting to take employment (besides international service as a strong motivator, which we discuss later on in the article). However, a large number of the Swedish participants established that their interest in undergoing basic military training should not be regarded as a well thought through or even as a planned decision. One of the participants described his experiences in the following way:

*I don't know, it wasn't so much of a decision but more a simple question of which of us who were interested in continuing after basic military training, and I was thinking to myself "yeah, sure why not?" and raised my hand. Afterwards, I had to go to a shorter interview, which was over rather quickly, and I didn't think much about it. I just thought it was fun and I saw no reason not to continue.*

Prior to enrollment, a majority of the participants lacked basic knowledge of the SAF, and the interest in volunteering was described as an epiphany that came to them during the recruitment process. In sum, our analysis showed that many of the soldiers' decisions to continue in the SAF after military training could be labelled as rather spontaneous.

Turning to the issue of continuing to serve, a key motivational element seemed to be obtaining new professional skills during military training, which again motivated them to take the step from recruit or conscript to becoming a professional soldier. It seemed that many of the participants viewed military education as a challenge, while also seeing it as an opportunity to try out whether the SAF would suit them. In many ways, they regarded the motivation to serve as a way of continuing doing what they considered fun and developing during basic military training. The soldiers seemed to regard the armed forces as one of many career opportunities. Finally, it is remarkable that a large number of the Swedish participants stated how the encouragement and subsequent offer of employment were given in the final stage of basic military training, when the majority of recruits already had decided to end their military commitment.

In comparison to the Norwegian sample, several similarities were identified. Relatively few soldiers pictured themselves having a long career in the military. However, some of the Norwegian soldiers regarded the military as a stepping-stone to other future career paths. One example of such a stepping-stone mentioned in the interviews was an opportunity to do something different and having a "gap year" as part of a plan for a future university education. In one of the interviews, a soldier described that his goal was to become a police officer, and that taking employment in the army was merely a step on the way to achieving that goal. One of the platoon commanders reflected upon this phenomenon in relation to recruitment:

*I: The new structure, does it affect how you select and recruit?*

*P: Yeah, it kinda does. Earlier we've had a supplement from the Officer Candidate's School every year. So those sergeants are to rotate positions every year. Now, to a further extent, we have to provide these ourselves. And you always want to recruit "the best". Which the NAF also has been doing. But "the best" often have other plans. So we're looking into that. During the three or four years I've*

*been working here – all my sergeants and grenadiers have plans of studying – NTNU (Norwegian University of Science and Technology), Norwegian Business School, Medicine, Law.*

In sum, we identified one interesting tendency that indicates differences in motivation between the Swedish and Norwegian sample. The Swedish soldiers described their decision to undergo basic military training and later take employment as a spontaneous decision. Instead, several of the Norwegian soldiers regarded basic military training as a stepping-stone, indicating that there are plenty of possible career paths outside of the military.

### **6.2. Theme 2: International Mission**

A major motivator expressed by the majority of the participants in the Swedish sample for continuing in the military, was the opportunity to go on an international mission. Some regarded it as the only reason for taking employment and for staying in the SAF. The participants pictured this as an attitude shared among several colleagues. Here, one of the interviewees used the analogy that after months or years of training with the unit, it transcends into a “feeling of being out playing and throwing rocks in the forest”. To be selected to go on an international mission was described as going out in the world and being able to spread your wings and fulfilling your purpose as a soldier. Participation in an international mission was described in the following way by one of the participants:

*Above all, what you want to do is almost like being a scout, you want to go out and try everything possible and see how it really is. This spring, we went to Mali and it was fun. It was a completely different experience. Suddenly, you were given more responsibility and it is like ... you felt more important. Which made it all more fun.*

Our analysis showed that the participants perceive, from an organizational level, the opportunity of going on a mission as an encouragement to soldiers and thereby a way of motivating individuals to continue in the

SAF. From platoon level to management level, going on a mission is understood by the participants as having been used as an incentive during periods of low intensity, when work entailed a great deal of repetition and monotonous activities. This could be interpreted as a way of maintaining high morale at group level. One of the Swedish participants describes a situation when two of the platoons went on an international mission while the third platoon, for various reasons, did not get the same opportunity. As a consequence of the perception of a broken promise, the majority of the employed soldiers in the third platoon decided to terminate their employment with immediate effect.

### **6.3. Theme 3: Geographical location and benefits**

When it comes to motivation, the location of the military unit was also an important aspect in both countries. The Norwegian Army has its main facilities in Northern Norway and many of the soldiers state that the remoteness has a positive impact on the social environment. Not being able to go home to visit family or friends every weekend, because it is too far away and too expensive, could generally be regarded as something negative. However, many of the participants emphasized its positive effects leading to a strong sense of social cohesion across squadrons and battalions, also outside the work environment. One of the participants illustrated this in the following manner:

*The reason I think people are much happier here than in the south for the last couple of years is that the feeling of unity here is simply fantastic. [...] For most of them down there, they come from the south, or at least they can travel home more easily. Here it's much more unfeasible with only three flights a day. And it's expensive. So that's why we stay here during the weekends and hang out... [...] It's such a great unity! All the squadrons and battalions together.*

Still, it is noteworthy that despite the participants' focus on the positive effects, the location also has negative implications, for the

same reasons as mentioned above; the camps are remotely located from family and friends. There are few means of transportation, harsh weather, limited job opportunities for non-military partners, and announced cuts in incentives like housing support and commuter benefits. Due to the reasons listed, this soldier who originated from the southern part of Norway did not intend to stay in the North for too long:

*P: I could never imagine living up here in Northern Norway for the rest of my life. That's a pretty large factor.*

*I: Why not?*

*P: Because it's a big, black hole! It's so dark and snowy and cold! And I... those are the things I don't like. I miss the south of Norway, and all the camps here, they are so desolate. And I love cities, don't I? And kind of just be able to 'oh, I'd like to go bowling now' or 'I'd like to lend a book'. And then I can just do that, because I'll have the freedom to do things like that.*

The Swedish sample consisted of similar contradictory statements, at least from the interviews conducted at a unit located in the northern part of Sweden. On the one hand, the beneficial conditions for social cohesion were mirrored in the interviews, and the well-suited conditions for training are highlighted as great advantages and are described as motivating elements in the work. On the other hand, the location also entails the same negative implications as in the Norwegian interviews, such as fewer job opportunities for non-military partners and a inconvenient distance to family and friends. A common theme in the two samples was the salary, which is described as being at an insufficient level. This is mirrored in the following quote:

*I have my background as a pipe welder and I was still an apprentice when I joined the armed forces. Still, it reduced my salary with roughly 10 000 Swedish Crowns (approximately 1200 USD) after tax when taking employment. Which means we are not talking about a smaller pay gap if you have an education to fall back on, which makes it hard. [...] This line of work cannot be equated with*

*something else because it so narrowed and specialized and as I said earlier, you either like it or you don't. But money is a competing factor, especially when you. [...] It can be fun to work a couple of extra years when you are 20 or 24, because you still have the opportunity to start on academic studies if you find that interesting, but once you are closer to thirty and you still have a relatively limited salary, it becomes a big factor!*

All the participants demonstrated an awareness of the prioritization that is required for pursuing an early career in the armed forces, which entails accepting a lower salary for other benefits. Here, a parallel can be drawn to the first theme (the Military as a stepping stone), where several of the employed soldiers regard the military as either a stepping stone to other career paths or as a relative short-term commitment. Over time, the limited salary level and perceived limited future opportunities for wage development seem to develop into demotivating factors and potential reasons for the employed soldiers to consider other career paths.

## 7. DISCUSSION

The aim of this study is to gain a deeper understanding of the motivation to serve among employed soldiers in the armed forces. Results show that the motivation to serve could be understood from the following three themes, *The Military as fun or as a stepping-stone?*, *International missions*, and *Geographical location and benefits*.

### 7.1. Individualization

In the empirical analysis, the Swedish soldiers depicted their motivation to serve in the armed forces after basic military training as characterized by spontaneity and not a deliberate decision. The Norwegian soldiers regarded basic military training as a stepping-stone towards their next career move, and the majority did not see themselves employed in a foreseeable future. Both the Swedish and Norwegian soldiers accentuated an awareness of other career opportunities. A parallel can be

drawn to Kelty, Kleykamp and Segals' (2010) article where they outlined changes since World War II and considered an altering approach to the role the military plays in the lives of young adults. Furthermore, they describe how young adults who volunteer for military service may not view the military as a duty or consider it as a future career path. Instead, they may enlist to be able to enhance their physical abilities, obtaining practical skills or educational benefits to use when applying to college. Military service could therefore represent a mean to achieve future goals. They describe it as "less a hiatus in the transition to adulthood and more an experience through which youth become adults" (Kelty et al, 2010:182). Despite Kelty et al (2010) focus on the American transition from conscription to an all voluntary-system, our results still corroborated with their portrayal of a changing attitude towards the military among young adults. As stated in the first theme, the participants described the need to challenge themselves (both psychically and mentally), the opportunity to try something new and different and a curiosity about the Armed Forces as motivators, rather than viewing the military as an impending occupation when entering. Further, the tendencies found in the participant's statements can be regarded as an utterance of individualization, meaning the process in which people to a lesser extent identify themselves with collective organizations and liberate themselves from various forms of social structures (Bauman, 2007). Changing attitudes and motivation towards undergoing military service and subsequently taking employment in military organizations is a phenomenon that needs further studies. Not only to gain greater knowledge about broader societal changes in attitudes and values, but also for military organizations to be able to adapt to societal and demographical alterations.

### **7.2. International missions**

International missions seem to have two functions concerning group dynamics. Firstly, they work as an incitement in terms of keeping

the spirits up in the group. Secondly, they function as a foundation for cohesion between the soldiers as they as a group prepare themselves for the mission. Still, regarded as an incitement, international missions seem to be limited to a shorter period. However, results showed that using international missions as a motivator to keep soldiers from leaving the armed forces may have a paradoxical effect. In the Swedish sample, the participants describe how several soldiers decide to leave shortly after they have been away on an international mission. Consequently, in portraying international missions as a big adventure lies the risk that it gradually takes the form of "the final destination" for the soldiers, and after they might choose to end their employment.

The Norwegian participants highlight the significance of the organization keeping their promises, i.e. being trustworthy and dependable as an employer. As shown in result with the Swedish example, the third platoon was promised to go on international mission, but was then denied deployment. We see examples like this; of expectations not being met, in both countries, and believe they will rather demotivate soldiers into leaving the military than motivate them towards a further and long-term military career. At the same time, it should be underscored that the SAF is undergoing a restructuring in regards to operational capacity with an increased focus on national defense contrary to a previous focus on international missions. Hence the capacity and changed directions of the armed forces are concentrated towards extending exercise activities (SOU 2018:7), but with a more outlined national focus. This fact affects to which extent Sweden's participation in international operations with a longer perspective.

### **7.3. Geographical location and benefits**

The geographical location has the impact of a double-edged sword. On the one hand, a remote location enhances the institutional military identity; on the other hand, it diminishes the occupational military identity. As described by the participants, an isolated

unit creates excellent training opportunities and likewise the opportunity to maintain useful military facilities, as well as creating a tight cohesion across battalions as shown in the Norwegian sample. The negative aspects can at the same time be difficulties in having a social life outside of work, and meager possibilities for a partner to work in the same region. The soldiers perceive the salary as low, but at the same time, they stated that other positive aspects of work could compensate. However, the remoteness of their working place in combination with the proportionately low salary makes it even harder to visit friends and family, making the geographical location sometimes a demotivating factor. From one perspective, a relatively low salary could be accepted, as some of the participants regarded their employment as a short-term commitment. For retaining soldiers in a long-term perspective, a higher salary or fringe benefits as travel grants or similar is required. Furthermore, the participants addressed the fact that benefits have declined since they joined the armed forces.

#### 7.4. Limitations

There are limitations to the study that should be addressed. Firstly, our study has a relatively small sample from specific units, and should not be regarded as representative groups for the Swedish or the Norwegian Armed Forces on the whole. Secondly, the gender distribution was skewed as 26 men and 11 female participants were interviewed. However, the Armed Forces consists of 80-85 % men and has been described as a male-dominated organization (Persson, 2011). Furthermore, the newly introduced conscription system in Sweden is an area that needs further research attention, especially when it comes to motivation to serve. Depending on future strategic decisions and the pace of the restructuring shift towards a national defense, we might see drastic changes shortly to what extent Sweden and Norway participate in international missions.

Another limitation that should be stated is how the thematic analysis displayed an

inclination towards what Braun and Clarke (2012) regard as representing prevalence. Meaning, the emphasis was put on what the majority of participants expressed. The aim, and subsequently the structure of the analysis framework, was aligned with a comparative approach, with the main interest directed at identifying similarities and differences between the Swedish and Norwegian cases. Comparative military studies, at least in the Nordic Region, are rare, and knowledge is limited. Research exchange between the armed forces is a stated goal. In the study, motivators which united but also which distinguished between Swedish and Norwegian soldiers, were identified. The analysis also provided insights on what soldiers perceived as essential for them to continue in the armed forces, and at the same time showcased challenges that can make them consider quitting. The recommendation for future researchers, who intend to apply a comparative design aiming at comparing data from different studies carried through in different countries, is to take better advantage of the flexibility of the thematic analysis (Braun & Clarke, 2012). Thereby structure the analysis in a way that enables a more deepened understanding of the phenomena at hand, and not such predetermined focus on similarities and differences.

Furthermore, this comparative study shows how this study design can be utilised in the context of recruitment and retention. Through comparison we find recognisable patterns and settings which will be resourceful in studying motivations to serve in other contexts as well. Researchers and decision makers can for example raise the question whether local recruitment enhances retention. Future research could involve several countries in a larger comparative study where other aspects of motivation could be highlighted. Furthermore, studies addressing work-life balance should be conducted in order to study the impact of mobility and the geographical location of units.

## 8. CONCLUSION

The motivation to serve could be understood from three overriding themes. Firstly, the military as a stepping stone, which can be related to the changes in values among young people, as some described as an increased individualization. Statements from some of our informants clearly underline that they went in to the military with a distinct goal of not completing a long career within the organization, but instead benefit from military experiences in their future employments. International missions also have an impact on the motivation to serve, and a challenge for the armed forces now when the focus is shifted to national defense, is to find other motivators for enlisted soldiers. Finally, depending on an institutional or occupational orientation, a remote geographical location and benefits will attract and retain certain categories of soldiers. In order to maintain and increase military capacity in Sweden and Norway, our findings about what motivates enlisted soldiers to serve, should be taken into consideration regarding attraction, recruitment and retention of soldiers.

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## REFERENCES

- [1] Battistelli, F. (1997). *Peacekeeping and the postmodern soldier*. *Armed Forces & Society*, 23(3), 467-484. <https://doi.org/10.1177/0095327x9702300308>.
- [2] Bauman, Z. (2007). *Liquid times: living in an age of uncertainty*. Cambridge: Polity Press.
- [3] Ben-Dor, G., & Pedhazur, A. (2007). *Under the Threat of Terrorism: A Reassessment of the Factors Influencing the Motivation to Serve in the Israeli Reserves*. *Israel Affairs*, 12(3). <https://doi.org/10.1080/13537120600744719>.
- [4] Braun, V. & Clarke, V. (2012). *Thematic analysis*. In Cooper, H. (Ed.), *The Handbook of Research Methods in Psychology*. Washington, DC: American Psychological Association.
- [5] Brundtland Steder, F. Stornaes, A., & Stubberud, K. (2015). *Military Women – The Achilles Heel in Defence Politics*. In *Military Women – The Achilles Heel in Defence Politics?* Brundtland Steder, F. (ed.). Oslo: Abstrakt, 2015.
- [6] Buhmann, T. & Wieninger, V. (2010). *The Process of Vocational Choice and Young Germans' Awareness of the Bundeswehr as a Potential Employer*. In T. Szvircsev Tresch & C. Leuprecht, (Eds.), *Europe without soldiers? Recruitment and retention across the armed forces of Europe* (pp. 85-108). Montreal and Kingston: Queen's Policy Studies Series, McGill-Queen's University Press.
- [7] Caforio, G. (2007). *Social sciences and the military: an interdisciplinary overview*. London: Routledge.
- [8] Carter, S. M., & Little, M. (2007). *Justifying knowledge, justifying method, taking action: Epistemologies, methodologies, and methods in qualitative research*. *Qualitative Health Research*, 17(10), 1316–1328. <https://doi.org/10.1177/1049732307306927>.
- [9] Crouch, M. & McKenzie, H. (2006). *The logic of small samples in interview-based qualitative research*. *Social Science Information*. 45(4):483–499. <https://doi.org/10.1177/0539018406069584>.
- [10] Eighmey, J. (2006). *Why do youth enlist? Identification of underlying themes*. *Armed Forces & Society*, 32(2), 307-328. <https://doi.org/10.1177/0095327x05281017>.
- [11] Eriksson, M. (2004). *Idealism eller professionalism? Militärt Tidskrift for Etisk og Teologisk Reflektion*, 7, 75-90.
- [12] Forsvaret (2015). *Universal Conscription*. Retrieved from: <https://forsvaret.no/en/newsroom/news-stories/female-conscription>.
- [13] Forsvaret (2019). *Verneplikt*. Retrieved from: <https://forsvaret.no/verneplikt>.
- [14] Gibson, J. L., Griepentrog, B. K., & Marsh, M. (2007). *Parental influence on youth propensity to join the military*. *Journal of Vocational Behavior*, 70(3), 525-541. <https://doi.org/10.1016/j.jvb.2007.03.002>.
- [15] Griffith, J. (2008). *Institutional Motives for Serving in the U.S. Army National Guard - Implications for Recruitment, Retention, and Readiness*. *Armed Forces and Society*, (34), 2,

230-258.

<https://doi.org/10.1177/0095327x06293864>.

[16] Hackman, J. R., & Oldham, G. R. (1975). *Development of the job diagnostic survey*. Journal of Applied Psychology, 60(2), 159-170.

[17] Hackman, J. R., & Oldham, G. R. (1976). *Motivation through the design of work: Test of a theory*. Organizational Behavior and Human Performance, 16, (2) 250-279.

[18] Hellum, N. (2018). «Faen, jeg skulle blitt grenader, vært litt «Johnny Enkeltmann» før jeg tok det videre» -motivasjonsfaktorer, rekruttering, seleksjon og bibeholdelse av grenaderer og befal i Hæren. FFI-Rapport, 18/02189.

[19] Inglehart, R. & Welzel, C. (2010). *Changing mass priorities: the link between modernization and democracy*. Perspectives on Politics 8, 551-567. <https://doi.org/10.1017/s1537592710001258>

[20] Ivtzan, I., Chan, C. P. L., Gardner, H. E., & Prashar, K. (2013). *Linking religion and spirituality with psychological well-being: Examining self-actualisation, meaning in life, and personal growth initiative*. Journal of Religion & Health. DOI: 10.1007/s10943-011-9540-2.

[21] Janowitz, M. & Moskos, C. C. (1979). *Five Years of the All-Volunteer Force: 1973-1978*. Armed Forces and Society 5,171-228. <https://doi.org/10.1177/0095327X7900500201>.

[22] Jelusic, L. (2007). Motivation for peace operations. *International Review of Sociology*, 17(1), 35-42. <https://doi.org/10.1080/03906700601129632>

[23] Johannessen, A. & Tufte, P.A. (2003). *Introduktion till samhällsvetenskaplig metod*. Malmö: Liber.

[24] Kanfer, R., Chen, G., & Pritchard, R. D. (Eds.). (2008). *The organizational frontiers series: Vol. 27. Work motivation: Past, present, and future*. Routledge/Taylor & Francis Group.

[25] Kelty, R., Kleykamp, M., & Segal, D. R. (2010). *The military and the transition to adulthood*. Future of Children, 20(1), 181–207. <https://doi.org/http://dx.doi.org/10.1353/foc.0.0045>

[26] Kučera, T. (2018). *The military and liberal society: societal-military relations in Western Europe*. London: Routledge/Taylor & Francis Group.

[27] Køber, P. K., Lang-ree, O. C., Stubberud, K. V, Kristian, P., Lang-ree, O. C., Stubberud, K. V, Martinussen, M. (2018). *Predicting Basic Military Performance for Conscripts in the Military Psychology*, 29(6), 560–569. <https://doi.org/10.1037/mil0000192>

[28] Legree, P. J., Gade, P. A., Martin, D. E, Fischl, M. A., Wilson, M. J., Nieva, V. F., McCloy, R., & Laurence, J. (2000). *Military Enlistment and Family Dynamics: Youth and Parental Perspectives*. Military Psychology, 12(1), 31-49. [https://doi.org/10.1207/s15327876mp1201\\_2](https://doi.org/10.1207/s15327876mp1201_2)

[29] Lunenburg, F., C. (2011). *Expectancy Theory of motivation: Motivating by altering Expectations*. International Journal of Management, Business, And Administration, 15(1).

[30] Manigart, P. (2005). *Risks and recruitment in postmodern armed forces: The case of Belgium*. Armed Forces and Society, 31(4), 559–582. <https://doi.org/10.1177/0095327X0503100406>

[31] Manigart, P., op den Buijs, T., van Doorn, E., Jonsson, E., Lecoq, V., Moelker, R., Österberg, J., Otis, N., Brundtland Steder, F., & Szvircev Tresch, T. (2018). *The Impact of Demographic Change on Recruitment and Retention of Personnel in European Armed Forces Opinions of Young Prospects and International Experts*. European Defence Agency, 2018.

[32] Maslow, A. (1970). *Motivation and Personality*. 3<sup>rd</sup> edition. Longman. Massie, M. H. (2016). Active duty military students ‘perceptions of factors related to academic persistence at the collegiate level within the U.S. (Doctor of education).

[33] McClelland, D. C. (1976). *The achieving society*. New York, NY: Irvington Publishers.

Mikelson, J. D., & Saunders, K. P. (2013). *Enrollment transfers and degree completion for veterans*. In F. A. Hamrick & C. B. Rumann (Eds.) *Called to serve: A handbook on student veterans and higher education*.

[34] Moskos, C. C. (1977). *From Institution to Occupation: Trends in Military Organization*. Armed Forces and Society 4(1), 41-50. <https://doi.org/10.1177/0095327x7700400103>

[35] Moskos, C. C. (1986). *Institutional/Occupational trends in Armed Forces: An update*. Armed Forces and Society, 12(3), 377-382. <https://doi.org/10.1177/0095327x8601200303>

[36] Moskos, C. C. (2001). *What ails the all-volunteer force: An institutional perspective*. Parameters, 31(2), 29-47.

[37] Munz, R. (2011). *The future of Europe’s labour force – with and without international migration*”, pp. 15-26 in J.O. Karlsson and L. Pelling (eds), *Moving Beyond Demographics: Perspectives for a Common European Migration Policy*. Stockholm: Global Utmaning.

- [38] Navarro, J., Arrieta, C., & Ballen, C. (2007). *An approach to the study of dynamics of work motivation using the diary method*. *Nonlinear Dynamics Psychology and Life Sciences*, 11(4), 473-98.
- [39] Navarro, J., Curioso, D., Gomes, D., Arrieta, C., & Cortés, M. (2013). *Fluctuations in work motivation: Tasks do not matter!* *Nonlinear Dynamics, Psychology and Life Sciences*, 17 pp. 3-22
- [40] Österberg, J., & Jonsson, E. (2012). *Recruitment to international military service: The officers' view*. In G. Kümmel & J. Soeters (Eds.), *New wars, new militaries, new soldiers? Conflicts, the Armed Forces and the soldierly subject*, 233-245. Bingley, UK: Emerald.
- [41] Österberg, J. & Rydstedt, L. (2013). *Core values and attitudes among Swedish conscripts volunteering for international missions: an exploratory study*. *Journal of values based leadership* (6), 65-73.
- [42] Österberg, J., Rydstedt, L. W., Kleiven, J. & Fors Brandebo, M. (2018). *The Path to Job Satisfaction - Applying the Theory of Purposeful Behavior to Military Conditions*. *Journal of Defense Resources Management*, 8(1): 27-42.
- [43] Österberg, J. & Rydstedt, L. W. (2018). *Job satisfaction among Swedish soldiers- Applying the Job Characteristics Model to newly recruited military personnel*. *Military Psychology*, 30(4). . <https://doi.org/10.1080/08995605.2018.1425585>
- [44] Patton, M.Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks: Sage.
- [45] Persson, A. (2011). *Changing boundaries, defending boundaries: gender relations in the Swedish Armed Forces*. Diss. Linköping: Linköpings universitet, 2011.
- [46] Rydstedt, L. W., & Österberg, J. (2013). *Psychological characteristics of Swedish mandatory enlisted soldiers volunteering and not volunteering for international missions: an exploratory study*. *Psychological reports*, 112(2), 678-688. <https://doi.org/10.2466/17.02.PR0.112.2.678-688>
- [47] SOU 2018:7. *Försvarsmaktens långsiktiga materielbehov*. Försvarsdepartementet, Regeringskansliet. Stockholm.
- [48] Stake, R.E. (2006). *Multiple case study analysis*. New York: The Guilford Press.
- [49] Strand, S., & Berndtsson, J. (2015). *Recruiting the enterprising soldier: military recruitment discourses in Sweden and the United Kingdom*. *Journal of Critical Military Studies*, 1(3), 233-248. <https://doi.org/10.1080/23337486.2015.1090676>
- [50] Taylor, J., & Taylor, R. (2011). *Working hard for more money or working hard to make a difference? Efficiency wages, public service motivation, and effort*. *Review of Public Personnel Administration*, 31, 67 –86. <https://doi.org/10.1177/0734371x10394401>
- [51] Viten (2017). *Slikt får försvaret flere kvinner*. Forskningsfaglig Rapport, 1 2017, Forsvarets Forskningsinstitutt.
- [52] Vroom, V.H. (1964). *Work and motivation*. New York: Wiley. Wong, L. (2006). *Combat motivation in today's soldiers*. *Armed forces and Society*, 32(4), 659-663. <https://doi.org/10.1177/0095327X06287884>
- [53] Woodruff, T., Kelty, R., & Segal, D., R. (2006). *Propensity to Serve and Motivation to Enlist among American Combat Soldiers*. *Armed Forces and Society*, 32(3), 353-366. <https://doi.org/10.1177/0095327x05283040>.

## CONSIDERATIONS REGARDING THE EXPORT OF MILITARY EQUIPMENT DEVELOPED IN COOPERATION

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*The problems and the possible schemes of organization between industries and the relations of this organization with European Union member states for optimization of the export of military equipment developed in cooperation generate wide discussions. As a consequence, this article highlights some of these debates and export advantages to ensure the economic viability of the cooperation programs.*

**Key words:** *military equipment, cooperation, development, export.*

### 1. INTRODUCTION

The dimensions of the European defense market and the cost of the materials force countries, as well as the industries to agree to an improved cooperation in the European framework. Opposite to the US partners, which held a vast internal market and associated economies of scale, the economic viability of the biggest European programs of armaments is conditioned by their exportation perspective, in an environment of defense budgetary constraints. This problematic is integrating the specificity of armaments export, which needs a dispositive of rigorous control in order to confront the risk of proliferation and the change in the final usage of the materials delivered.

Taking into consideration this need for the European industrial cooperation, it is possible to propose a concentration of the programs between the cooperative states and their industries, with the goal to identify and solve the potential difficulties, without affecting the potential for export.

### 2. COOPERATION DESIGN

International armaments cooperation is the *“cooperative research, development, testing, and evaluation of defense technologies, systems, or equipment; joint production and*

*follow-on support of defense articles or equipment; and procurement of foreign technology, equipment, systems or logistics support”* (Handbook, p.13).

The export capacity is an important variable that is considered during the program development. Thus, formal rules and arrangements should be implemented to not hamper the further improvements of the cooperative programs.

Starting from 2003, many debates were focused on the need of a European policy addressing the fragmentation of armaments cooperation and to establish a single framework for this. As admiral Giampaolo di Paola highlighted *“Europe could not have an effective defence technological and industrial base without all efficient and open internal market”* (Business, 2003).

#### 2.1. Cooperation between states and their industries

In order to promote an upstream consultation between the states and their industries, from the design stage of each type of program, the main points of cooperation shall consider the following:

- the size of the program, including the evaluation of the export production;
- the target countries, by pooling the information held by the public sector and industry on the renewal of fleets and the future needs of countries where the program could be exportable.

The participating states to the relevant programs shall convene in advance on the export policy and may adopt authorization procedures to quickly address the specific simple cases. These programs would benefit from being covered by this type of preagreement and from such common rules of export authorization, like is used by France, United Kingdom, Germany, Italy, Spain and Sweden, that already formalized such an accord under the procedure of the Letter of Intent (LoI). Signed by the participant states to the program, such a procedure is opening a veto right for each of the member states.

But agreements on procedures and destinations will not be enough to guarantee the export potential of a program, because the use of components subject to the export rules of third countries may significantly affect it. As a result, all the cooperating European industries should have a supply program, so that the participating countries can control their exports. The practical difficulty of implementing this provision, which presupposes a thorough knowledge of subcontracting networks, must not be underestimated.

## **2.2. Technical and operational assistance improvement**

The export potential of a specific cooperative program depends also on the economic conditions which can be proposed to a customer. Inside a market in which the defense means and services are depending on the budgetary plan, the global cost of possession of goods or the defense capabilities constitutes a strong argument for sale. The export of programs developed in cooperation must be based on an efficient and reactive after-sales service, in coherence with the improvement of the authorization procedures referred to above. Also third-party customers must be guaranteed an overall cost of ownership that is sufficiently attractive not to undermine its competitiveness.

The procurement of new defense systems or defense services could be facilitated by a narrow cooperation with the buying nations, in the area of formation, as of operational organization. In this framework, *the feedback*

of the user armies is an indispensable complement to the contribution of the industries. More forms of organization may be planned, as example: a division specialized in a specific industry or a joint-venture of the organization's members, supported by a partnership between the companies and the state. The set up structure will allow an equitable distribution of the operational expenses on the stakeholders.

## **2.3. Methods of financing associated with exporting programs**

The existence of the US procedure known as "*foreign military sales (FMS)*" and the facilities allowed to the client-states play a main role to improve the competitiveness of the US offers. The effectiveness of this mechanism is counterbalanced by its cost, poorly known and therefore poorly distributed among the actors. Through the Organization for Economic Cooperation and Development (OECD), European countries could raise the question of derogations from the generally accepted rules of export, which include the FMS.

The financial support of the exports is a major stake for the European cooperative programs. The envisaged organization should be able, depending on the specific program, to propose several financial terms to customer states.

Cash sales may include manufacturing warranties. The sales receiving export credits could be the subject of prior agreements with insurers to guarantee competitive rates.

Drawing on current project financing techniques in the commercial sector, the European cooperating states could encourage their industries and partners to put together attractive offers, in the form of leasing or public-private partnerships. The cooperative states could also propose the provision of their surplus operational capacities in favorable conditions. The usage of these capacities by the third parties would maintain a margin of capacity in the event of a crisis, while reducing its cost of ownership.

The export potential of the cooperative programs depends also on the economic advantages that are bringing the sales to the

client country. In the meantime, offset agreements should be considered in advance of cooperative programs, instead of being considered on a case-by-case basis, at the discretion of selling opportunities on the market.

This upstream reflexion should allow offset proposals to the client states that create solidarity between their defense industries, a method used to unfold the US F-16 program on the European market. The bulk of potential client states not necessary interested in the industrial offset in the defense area, may benefit of proposals developed to determine actions that would more generally favor their economic development.

### 3. EXTENDED ANALYSIS

The exports became a vital condition for the viability of the European defense programs. The length of the series manufactured for the internal markets of the cooperative countries are not enough to ensure the sustainability of the European Defence Technological and Industrial (EDTIB), and this trend has increased since the mid-1970s. The US is an offensive actor in the export area, cumulating their traditional advantage of the national orders, without negotiating common measures with groups of European states, with the gain of important export contracts, like that of the F-35 fighter.

The cooperation is the single compulsory solution to allow the EU to remedy the short length of the national series. Even this addition of European national orders is hardly viable without an export perspective.

This double observation has prompted the European Commission to develop cooperative defense programs under the Permanent Structured Cooperation (PESCO) initiative and European Defense Fund (EDF) mechanism.

Starting 2017, when the PESCO was established, a number of 47 defence cooperative programs [6] have been approved. The programs are intending to develop the European defense systems, independently from the ones developed in cooperation with the US within NATO framework.

#### 3.1. Balance of cooperation

The programs in cooperation are a traditional method in the defense industry and represent an important percent of the European industry turnover.

The export of these programs constitutes a mean of extending the manufacturing series and realizing additional economies of scale. Although the development and production costs of cooperation are broken down across the participating countries, the cooperative programs limit the unit cost of the apparatus since they remain higher than those of a national program. The export opportunities were rarely highlighted during the elaboration of cooperative armaments programs.

The challenge was against the expectations of the countries concerned and their orders. It has not prevented certain successes (missiles in particular), which are more due to market conditions than to a deliberate policy.

The integration of the export approach is resulting from the national orders base, which is affecting in the meantime, the programs of cooperation. The non-respect of the number of command devices calls into question the economic equilibrium of the program, with a risk of opportunistic behavior of the partners (the reduction of the orders of one country is determining the others to diminish their orders too). The export makes it possible to mitigate this risk, contributing to the preservation of industrial profitability and the cost objectives of states.

Table no. 1 describes some European programs in cooperation, developed before the new PESCO mechanism come into force. As an example, the program for the manufacture in cooperation of the fighter-bomber aircraft IAR-93 was based on the agreement regarding the establishment of Romanian-Yugoslav Joint Commission for collaboration and cooperation in the field of military technology, signed on 30 September 1969.

The first official act of the YUROM program was the agreement signed by the governments of the two states regarding "*joint design, execution, testing of prototypes and serial manufacturing of the fighter aircraft*". The Romanian authorities wanted to make 200 pcs. IAR-93 B, as follows: 35 pre-series

fighters (1977-1980), 165 series fighters (1980-1987) and 470 engines, manufactured from 1978 to 1986 (385 engines „Rolls-Royce Viper Mk 632-41” type, with post-combustion). In July 1977, the first IAR-93 was officially presented. (Opris: 2016)

**Table 1.** European programs in cooperation

	Name	Initial date	Type	Member states
<b>Outdated</b>	Puma	1965	Medium Transport Helicopter	FR/UK
	Gazelle	1967	Attack and Transport Helicopter	FR/UK
	IAR 93B	1969	Light attack fighter	ROU/YUG
<b>Current program</b>	ATL	1966	Maritime patrol aircraft	FR/GE/IT/BE/SP
	Eurofighter	1985	Fighter	UK/GE/IT/SP
	A400M	1994	Transport airplane	FR/GE/UK/SP/BE/LUX/TUR
	Galileo	2003	Navigation satellites	EU

Source: Author

Another cooperative program of A400M was commissioned in 2003 to give Europe an independent airlift capacity to support military or humanitarian missions, rather than relying on the Lockheed Martin C-130 or the now out-of-production Boeing C-17.

A 3.5-billion-euro bailout from Belgium, Britain, France, Germany, Luxembourg, Spain and Turkey rescued the A400M programme from cancellation in 2010 after delays and cost overruns. (Martin: 2019)

The analysis of cooperation programs reveals some lines of force:

- Cooperation, originally, was limited to two, even three countries, basically for reasons of industrial competency and „culture”. In time, cooperation has expanded to several countries.
- Cooperation was generally found in well-identified and relatively limited areas: aircraft,

helicopters and missiles. Today, the domain has been enlarged to the naval construction, space, the information and communication technologies, for reasons of competency and control of development and implementation costs.

- As a rule, the programs in cooperation have known some success. The fact of being able to rely on a strong national demand created the basis (critical size) to face the external market in good conditions. It is no longer quite the case today. Beside the important success with missiles (Milan) and helicopters (Gazelle, Puma) the European cooperation has known a partial failure in the area of combat aircrafts, first in the 1980s, the tremendous breakthrough of the F-16 at the expense of a European fighter. This tendency is a new confirmation with the F-35 program (Joint Strike Fighter), which profits of the intra-European concurrence, highlighted by the development of three types of fighters (Rafale, Eurofighter, Gripen). This transatlantic program has so far drawn more than 4 billion Euro of development credits from five European countries (UK, Denmark, Netherlands, Norway and Italy) to the US market (Capaccio, A., 2017).

There is an awareness of the European countries for the development of multinational cooperation which represents a credible alternative to safeguard the European defense industries. The cooperation becomes compulsory taking into consideration the new sophisticated arms systems which are using new technologies and higher development costs, that can't be assumed by a single country and being necessary to be payed off over an appropriate series. It is also necessary that these cooperation programs be studied upstream so that the needs are harmonized in operational and calendar specifications, to avoid surcharges.

### 3.2. Operational and technological support

The risks of technological dependence in exporting cooperative programs are higher and difficult to deal with. The defense materials consist of many sub-systems and therefore industries. The blockage of export due to the

impossibility to export one of its components is real.

This problem is particularly with the Atlantic Maritime Patrol Aircraft (ATL). Originally, this program was the result of a European-US cooperation program, under the NATO framework. The US continued on a national route (P-3 Orion of Lockheed Martin), but their initial participation in the program allowed them to control a number of key aircraft systems. This American origin conditioned the choice of the client countries.

The assurance of supply control is difficult to maintain until the lowest levels of the subcontracting chain. A reflection would undoubtedly have to lead to the ready acquisition plans in order to propose a generic procedure for the selection of suppliers by the project managers. It could be envisaged to draw up an acquisition plan for cooperative programs applicable to all stakeholder enterprises.

The programs in cooperation are sensitive to the quality of their technical assistance. Taking into account the framework of the cooperative programs at the level of operational assistance and more particularly at the level of training and instruction represents a strong asset for export.

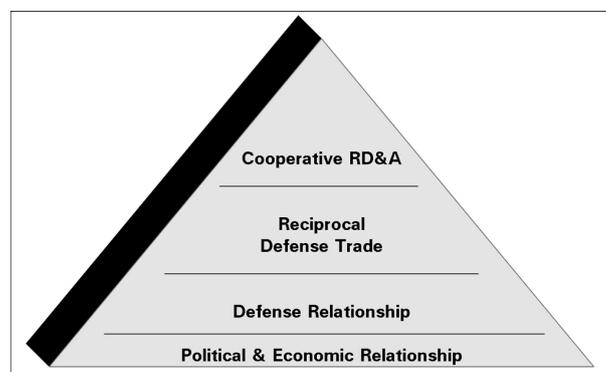
The cost, the quality and the endurance of the after-sales support for the materials constitutes a major element of satisfaction for the buying country and it is therefore his fidelity as well as the image that he will be able to give to other potential customers of the quality of the acquired products.

From this perspective, the gross possession cost of programs has to be taken into consideration, including those of spare parts and technical documentation. It seems indispensable to know how this procedure is applied in the context of the cooperative programs and whether cooperative partnerships in which Romania is not a party, are benefiting from similar methods.

As long as the buying countries could belong to different geographic areas, the share of the after-sale activities and the maintenance should be the subject of consultation prior the start of the program. A solution is to design a

framework country by geographical area or by linguistic area.

In **Figure 1**, below, the hierarchy of relationships in Acquisition, Technology and Logistics (AT&L) is highlighted as a pyramid. Even though International Cooperation (IC) in AT&L programs form the capstone, it does not imply that cooperative Research, Development and Acquisition (RD&A) is the ultimate form of cooperation. It does, however, illustrate that effective IC in AT&L normally rests on a broad foundation of other prerequisite relationships and conditions. It should be noted that IC in AT&L can also complement, lead to, or emerge from defense sales activities (Handbook, p.18).



**Fig. no. 1** Hierarchy of Relationships Leading to International Cooperation in Acquisition, Technology and Logistics

### 3.3. Insurance and export financing of cooperative programs

States allowed the national programs of armaments to benefit from the insurance-credit mechanisms to support the exports. The gradual establishment of European cooperation programs under the PESCO mechanism implies a change of approach by credit insurers, even if already developed techniques make it possible to respond in most cases to the induced changes. Remains that this balance between EU and the US will not be achieved as long as the guarantee and financing of arms exports fall outside the regulatory standards of OECD agreements and that direct or indirect financial support for exports will not be equivalent.

The integration of sales of military material in the OECD's list of operations would be an important step to a competitive balance.

Besides cash sales, in the field of military equipment, new *innovative financing* formulas are being developed. These techniques, commonly used by industrialists in their financial operations, enable states to finance heavy investment programs with a different impact in terms of debt and deficit, as well as greater flexibility with respect to the military programming law (or their equivalents).

The relatively low quality of the credit risk of the suppliers, which measures their ability to borrow on the capital markets, and their balance sheet characteristics represent an additional constraint which ultimately results in additional cost to the State.

Therefore, it's about finding solutions that allow:

- the state, to reduce its costs and enforce as late as possible an impact on its budget, debt and deficit;
- the supplier, to obtain the necessary cash as soon as possible for the construction of the equipment without impacting their balance sheet.

The US example shows that the strong guarantees provided to the buyer inscribe the relationship with the customer in a long-term perspective.

The payment terms play a main role in the quality of offers. Starting from the simple financial facility to the more complex of public-private partnership mechanism, there are plenty of financial formulas on which the states and industries should take into consideration in order to adapt the offer to the client needs.

#### 4. CONCLUSION

The export of military equipment developed in cooperation ensures the economic viability of the cooperation programs, bringing economies of scale and high margins. In order to succeed, the member states in such projects shall negotiate extensive agreements prior to the development of joint cooperative programs. Thus, under the European industrial cooperation, it is possible to be developed a concentration of the programs between the cooperative states and their industries.

In conclusion, the quality of the financial support of the exports is an important issue for the European cooperative programs that should be further investigated.

Hence the importance of European awareness around ambitious technological projects such as the PESCO programs, as far as the greatest number of countries will be associated, each bringing their technologies of excellence.

#### REFERENCES

- [1] Call for the creation of a European cooperation, In: *NATO's Nations and Partners for Peace*, Research Library: Business, 2003, pg.165.
- [2] Capaccio, A., "F-35 Program Costs Jump to \$406.5 Billion in Latest Estimate", July 10, 2017, available online at <https://www.bloomberg.com/news/articles/2017-07-10/f-35-program-costs-jump-to-406-billion-in-new-pentagon-estimate>.
- [3] *International cooperation in acquisition, technology and logistics (IC in AT&L)*, Handbook, 7th Edition, 2012, pp. 13; 18, available online at <https://www.acq.osd.mil/ic/Links/Chandbook.pdf>.
- [4] Martin, M., *German military refuses to take delivery of two Airbus A400M planes*, 2019, available online at <https://www.cnn.com/2019/11/13/reuters-america-update-2-german-military-refuses-to-take-delivery-of-two-airbus-a400m-planes.html>.
- [5] Opris, P., *Câteva repere istorice ale proiectului avionului de vânatoare-bombardament IAR-93 (1969-1977)*, 2016, available online at <http://www.contributors.ro/societatelife/cateva-repere-istorice-ale-proiectului-avionului-de-vanatoare-bombardament-iar-93-1969-1977>.
- [6] <https://www.caleaeuropeana.ro/aparare-europeana-tarile-ue-au-aprobat-13-noi-proiecte-dintre-care-doua-sunt-ale-romaniei-tara-noastra-va-coordona-proiectul-in-domeniul-apararii-chimice-biologice-radiologice-si-nucleare>.

## CALCULATION METHOD FOR DETERMINING INFORMATION CRITERIA IN RECONNAISSANCE DATA PROCESSING

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*In this paper, the methods of determination of various information criteria in reconnaissance data processing have been considered. The methods of determination of a reliability of the reconnaissance information source, of quantitative assessment and analysis of properties of a reconnaissance source have been offered. These methods can be applied in combat front zone for reconnaissance data gathering and processing, for assessment of data accuracy. The method of quantitative assessment and analysis of reconnaissance data accuracy and assemble has been offered in consideration of the entropy of reconnaissance data. This method can be applied for reconnaissance data processing. The problem of information value loss in reconnaissance data processing has been considered. The calculation method of reconnaissance information accuracy has been considered in one example. These methods will increase the effectiveness and rationality of using of the reconnaissance forces and means.*

**Key words:** military reconnaissance, data processing, information source reliability, data truthfulness accuracy, information entropy, information significance, information accuracy.

### 1. INTRODUCTION

The planning of combat activities and reconnaissance data gathering is the intelligence division duty. Therefore, it is important that these obtained reconnaissance data should be accurate. In the same time, the obtained reconnaissance data from troops should be accurate, too. Because, based on these data the commanders will make a decision. In consideration of information value, during processing of obtained data from the intelligence divisions, the source reliability, data accuracy and information value should be taken into account and evaluated. In addition, during determination of information value it is important to evaluate the information accuracy. This evaluation should be carried out by quantitatively, it will be useful for reconnaissance data processing and will increase the effectiveness, and provide a rational use of reconnaissance forces and means. Thus, a problem of determination of the information accuracy method and keeping control has been formed.

For a long time many experts in reconnaissance field have investigated this problem [Mamedov V., Bayramov A., 2019; Platt W., 1997; Bayramov A., Mamedov V., 2019, p.71]. There are very few published articles concerning these investigations in the public sources. On the other hand, the analysis of these articles shows that these evaluations are mainly theoretical. Thus, the goal of this paper is development of the methods of quantitative evaluation of a reliability of reconnaissance information source, data accuracy, and an information accuracy based on the information value.

### 2. DETERMINING THE RELIABILITY OF RECONNAISSANCE INFORMATION SOURCE

Reliability determination of reconnaissance information source can be conducted by the evaluation of its properties [Mammadov V., Bayramov A., 2019, p.43]. There are several

possible properties of the information sources ( $m_x$ ):

- experience (0.9 – full level; 0.5 – sufficient level; 0.1 – low level);
- data presentation with details (0.9 - full; 0.5 - middle; 0.1 - poor);
- completeness of presented data (0.9 - full; 0.5 - middle; 0.1 - poor);
- presented data lag (0.9 – in time presented; 0.5 – it is impossible to determine; 0.1 - data lag);
- comprehensiveness of the range of subject (0.9 – full involved; 0.5 – not full involved; 0.1 – not involved);
- fullness of the text of data (0.9 – full text; 0.5 - it is impossible to determine; 0.1 – not full text);
- quality of the text (carelessness in the text can held to loss of understanding) (0.9 – full clear; 0.5- not full clear; 0.1 – not clear);
- itself personal interests of the source and impact on data (0.9 – itself interested; 0.5 – it is neutral; 0.1 – not itself interested).

As indicated above, the quantitatively evaluation and consequent summation of the properties of reconnaissance information source have been offered:

$$m_x = \sum_i g_i \quad (1)$$

Here,  $g_i$  – are indications of the source properties.

An experience – is an expertise level in some field of knowledge. An experience can be calculated as below:

$$K_i = \frac{N_i^u}{N_i^c} K_t \quad (2),$$

Here:  $i$  – is a source,  $N_i^u$ - is a number of successful results of the reconnaissance tasks,  $N_i^c$ - is a number of total reconnaissance tasks,  $K_t$  – is a factor of length of the reconnaissance service.

The length of a reconnaissance service of the reconnaissance source is:

$$K_t = \frac{T_i}{T_o} \quad (3),$$

Here:  $T_i$  – is a sum of the reconnaissance source service,  $T_o$  – is a total military service (as a rule 20 years).

An information source reliability ( $M_e$ ) can be calculated as below:

$$M_e = \frac{m_x}{x} \quad (4),$$

Here:  $m_x$ - is a sum of indications of the source properties,  $x$  – is a number of properties.

Washington Platt had offered to divide an information source reliability ( $M_e$ ) into categories [6]. In addition, For the purpose of use of an information source reliability in calculations, the quantitatively evaluation is offered: the full reliability source – 0.9; the usually reliability source – 0.8; the enough reliability source – 0.6÷0.7; every time not reliability source – 0.4÷0.5; not reliability source – 0.2÷0.3; impossible to determine a reliability of source – 0.1.

Thus, it is reasonable to take into account of the determination of reliability of reconnaissance source for evaluation of data truthfulness accuracy during gathering and processing of reconnaissance data in the front zone [Mammadov V., Sabziev E., Bayramov A., 2019, p.42].

### 3. DETERMINATION OF RECONNAISSANCE DATA ACCURACY

Sherman Kent constructed a diagram that demonstrates a dependence of the probability of reconnaissance data accuracy on accuracy degree, from pro to con [Jack Davis, 2002]. Let us represent this idea by analytical methods. Let P be a probability of reconnaissance data accuracy in percentage.

Let us represent pro and con by analytical methods as below

$$pro = 10 \cdot \frac{P}{100\%}$$

and

$$con = 10 \left( 1 - \frac{P}{100\%} \right)$$

Then, the next conditions can be represented:

$P \in (80 \div 100)\% \Rightarrow \text{pro} \in (0.8 \div 1) \wedge \text{con} \in (0 \div 0.2)$  - reconnaissance data is an absolutely truth;

$P \in (60 \div 80)\% \Rightarrow \text{pro} \in (0.6 \div 0.8) \wedge \text{con} \in (0.2 \div 0.4)$  - reconnaissance data have a large chance to be a truth;

$P \in (40 \div 60)\% \Rightarrow \text{pro} \in (0.4 \div 0.6) \wedge \text{con} \in (0.4 \div 0.6)$  - reconnaissance data have a fifty-fifty chance to be a truth;

$P \in (20 \div 40)\% \Rightarrow \text{pro} \in (0.2 \div 0.4) \wedge \text{con} \in (0.6 \div 0.8)$  - reconnaissance data have a large chance not to be a truth;

$P \in (0 \div 20)\% \Rightarrow \text{pro} \in (0 \div 0.2) \wedge \text{con} \in (0.8 \div 1)$  - reconnaissance data is not a truth.

In [Mammadov V., Bayramov A., 2019, p.71] the evaluation of reconnaissance experts' data accuracy had been offered by taking into account of the comparison of other data connected with the same theme, of the correspondence with the same field experts' evaluations (opinions) and source reliability [Mammadov V., Bayramov A., 2019, p.71]. The data are compared by indicated method and the quantitative evaluation ( $m_s$ ) is offered:

- the correspondence of other data with the same theme: it is ~~corresponded~~ coincident (0.9), it is not full corresponded (0.5), there are no other data (0.3), it is not corresponded (0.1);

- the correspondence of common conceptions of the same theme to given one: it is corresponded (0.9), it is not full corresponded (0.5), it is not corresponded (0.1).

For the purpose of the classification of reliability of information source ( $M_e$ ) in accordance with the above-indicated categories and use in calculations, the quantitative evaluation of source properties ( $m_x$ ) is offered (4). It should note, that such properties as the much data likeness or contradictions among various reconnaissance sources, also the inadequacy of data to source possibilities create a base for ~~misgivings~~ incorrect results.

In addition, the taking into account of information entropy and calculation is reasonable. The determination of

reconnaissance data entropy is offered calculating by in accordance with Claude Elwood Shannon theory [Mammadov V., 2019]:

$$I_A = H(A) = -p_1 \log_2 p_1 - p_n \log_2 p_n \quad (6),$$

Here:  $H$  – is a Shannons' entropy,  $A$  – is an event (state),  $p_n$  – is a event (state) probability.

The Shannons' entropy defines quantitatively the reliability of transferred information and it is used for calculation of the value of data uncertainty. The much-gathered data the much extensive information about event (state), thus data uncertainty is decreased. It is naturally enough. By determining an information entropy about any event (state), it can be concluded about data accuracy. When entropy calculating, it should ~~take~~ take into account other data and possibilities (probabilities). The much close given data entropy to zero the higher data accuracy [Mammadov V., 2019].

In accordance with above indicated comparisons, the quantitative evaluation, summing and taking into account of entropy of the obtained reconnaissance information, the calculation of data accuracy ( $M_d$ ) is offered:

$$M_d = \frac{\sum m_s}{s} - I_A \quad (5),$$

Here,  $s$  – is a number of comparisons,  $I_A$  – is data entropy.

W. Platt had offered to divide an information source reliability ( $M_e$ ) into categories [6]. In addition, for the purpose of use of an information source reliability in calculations, the quantitatively evaluation is offered: the full reliability source – 0.9; the usually reliability source – 0.8; the enough reliability source – 0.6÷0.7; every time not reliability source – 0.4÷0.5; not reliability source – 0.2÷0.3; impossible to determine a reliability of source – 0.1.

As it is mentioned above, W. Platt had offered to divide data accuracy by categories [Platt W., 1997]. In accordance with the above-indicated rule (1), calculations have been carried out. Obtained results are offered as follows: (0.9) - data accuracy are approved by other sources data; (0.8) - data are truth

with much probability; (0.7) - perhaps data are truth; (0.5÷0.6) - data are shady; (0.3÷0.4) - data are not truth; (0.1÷0.2) - it is impossible to determine data accuracy.

Thus, it is advisable to apply the method of quantitative evaluation of reconnaissance data accuracy in processing of reconnaissance data and taking into account during determination of information accuracy.

#### 4. THE SIGNIFICANCE OF INFORMATION

The significance of information ( $I_d$ ) is evaluated by taking into account of the level of reconnaissance information and its variation with time. The reconnaissance information is divided into below categories: operational-tactical; strategic, information about relatively invariable objects (terrain). The

signification of reconnaissance data of operational-tactical and strategical categories is various in periods of war, cease-fire and peacetime. For many cases, the information gets old and losses a—significance. For example, the operational-tactical information losses a half signification during 6 hours after obtaining. The strategical reconnaissance information in war period losses 10% of signification in one month. On the other hand, the reconnaissance information about roads, bridges, etc., losses half of signification during 6 years after obtaining [Platt W., 1997].

Let us suppose that even in cease-fire period, the indicators can be changed: the operational-tactical reconnaissance information can loss 5% of signification per one day, the strategical reconnaissance information can loss 5% of signification per one month (table 1).

**Table 1.** The loss of information signification.

Information category	Periods	The norms of information loss
<i>Operational-tactical information</i>	<i>War</i>	10% of signification losses per one day
	<i>Cease-fire</i>	10% of signification losses per one day
	<i>Peacetime</i>	10% of signification losses per one month
<i>Strategical information</i>	<i>War</i>	10% of signification losses per one month
	<i>Cease-fire</i>	5% of signification losses per one month
	<i>Peacetime</i>	20% of signification losses per one year
<i>Relatively invariable objects information</i>	<i>All periods</i>	10% of signification losses per one year

Taking into account the above indicated, the significance of information has been offered to calculate as next:

$$I_d = D_g - \left( \frac{D_g \times n}{100} \right) \quad (7),$$

Here:  $D_g$  – is a percentage of the information significance for the given day, month or year,  $n$  – is the norm of information significance loss.

It is important to calculate and to control an information significance, because corresponding norm its loss directly to impact on the information accuracy. Therefore, it is

mandatory taking into account of the information significance during determination of the information accuracy.

#### 5. DETERMINATION OF INFORMATION ACCURACY

Quantitative calculation and control of information accuracy, repeated determination of the tasks for improving this accuracy (if the accuracy decreases) lead to rationality use of reconnaissance power and means [Mammadov V., Bayramov A., 2019, p.66]. If taking into account of above indicated factors, it is

possible the determination of information accuracy in real time. The information accuracy ( $I_{dq}$ ) can be calculated taking into account a source reliability, data accuracy and loss of information signification:

$$I_{dq} = M_e \times M_d \times \dot{I}_d. \quad (8)$$

The information accuracy, as the result of calculations, is offered classified as below:

- 1) 85% ÷ 100% - definitive exact information;
- 2) 65% ÷ 85% - exact information;
- 3) 50% ÷ 65% - doubtful information accuracy;
- 4) 25% ÷ 50% - imprecise information;
- 5) 0% ÷ 25% - definitive imprecise information.

If the accuracy of gathered and stored information reach to critical 50% ÷ 65% level, then a more precise definition have to carry out.

Example. In war period from the reliable source at the yesterday evening "In 18.00 at the evening one enemy's rifle battalion was contacted near the Garadash mountain" current operational-tactical reconnaissance information is truth with very high probability. Let us calculate the obtained information accuracy at the 18.00 today evening.

First of all, let us determine initial indications corresponding to obtained data:

- there is the enough reliable source -  $M_e = 0,7$ ;
- there are reliable data with high probability -  $M_d = 0,9$ ;
- there is operational-tactical reconnaissance information (war period, 1 day last) -  $\dot{I}_d = 90\%$ .

Then, based on the (8) formula the next result has been obtained:

$$I_{dq} = 0,7 \times 0,9 \times 90\% = 56,7 \%$$

The obtained information accuracy at the 18.00 today evening is 56,7 %.

Thus, at the present, this information accuracy is doubtful. It is necessary iteratively to check this information or to get a confirmation from other sources. There is one

more conclusion from this example: in war period, each day the reconnaissance data must be get renewed.

By applying this method and keeping the accuracy of gathered, used and kept information under control, at decision-making time the tasks for reconnaissance power and means can be determined for these data elaboration and checking, As a result, the reconnaissance power and means will be rationality used.

## 6. CONCLUSION

Thus, during the reconnaissance data processing, the calculation method of reconnaissance information accuracy has been offered taking into account of the source reliability, determination of the reconnaissance data accuracy and the loss of information signification. In the combat region, obtained from reconnaissance groups and other sources, used and kept information accuracy the determination method based the reconnaissance power and means can be more rationality used. It increases an effectiveness of reconnaissance data processing. It is advisable to create a special software for automatization of reconnaissance data processing.

## REFERENCES

- [1] Bayramov A., Mamedov V., Application of expert evaluation for processing of reconnaissance data. In: *Modern Information Technologies in the Sphere of Security and Defense*. Vol. 35, No 2, 2019. pp. 71-76.
- [2] Jack Davis. The Sherman Kent and the Profession of Intelligence Analysis. In: *Occasional Papers*: Vol. 1, No 5, 2002.
- [3] Mammadov V.M. The expert evaluation and informational entropy in reconnaissance data processing. In: *Advanced Information Systems*. Kharkov. Vol. 3, No 4. 2019. pp.137-139.
- [4] Mammadov V.M., Bayramov A.A. Determination information accuracy in reconnaissance data processing. In: *National security and military sciences*. Baku. Vol. 5, №3., 2019. pp. 66-70.
- [5] Mamedov V.M., Bayramov A.A. Expert system in reconnaissance data processing. In: *Proc. International Scientific Conference Long-term*

*security environment challenges and armed forces capability development*, National Defense College after Rakovski, November 12-14, 2019, Sofia.

[6] Mammadov V.M., Bayramov A.A. Determination of the reliability of reconnaissance information source. In: *I-st International Conference "Modern information, measurement and control systems: problems and perspectives"*. Azerbaijan Oil Industry University, July 01-02, 2019, Baku, Azerbaijan. pp. 43-44.

[7] Mammadov V.M., Bayramov A.A. Application expert evaluation for reconnaissance

data processing. In: *Modern Information Technologies in the Sphere of Security and Defense* Vol. 35, No 2, 2019. pp.71-76.

[8] Mammadov V.M., Sabziev E.N., Bayramov A.A. The system of data gathering and processing in military reconnaissance. In: *National security and military sciences*. Vol. 5, No 2, Baku, 2019. pp.42-52.

[9] Platt W. (1997) *Strategical reconnaissance. Main principles*. Publishing House "Forum", Moscow. 376 p.

## MODEL DEVELOPMENT OF NAVAL BASE DETERMINATION. A SYSTEM DYNAMICS AND INTERPRETATIVE STRUCTURAL MODELING (ISM) APPROACH

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*The Navy Base as an integral component of the SSAT is the spearhead of the force in carrying out support for naval combat operations, especially as a support for the movement of KRI operations. During this time we have determined the location of the Navy Base only based on the results of the workgroup team's decision.??? (verb) This study aims to design and build a model of the selection of the Navy Base location with a dynamic System and Interpretative Structural Modeling (ISM) approach. This research is expected to contribute to the development of the Indonesian Navy base to support national maritime security. Based on the results of the research analysis as many as 4 main criteria and 15 sub-criteria that have interactions with base sustainability can be established. The sub-criterion of changing the value of sea security is influenced by 6 sub-criteria with Output, namely the value of national security. Aspects of the rate of base defense strength are influenced by 6 (six) sub-criteria with Output, namely the value of maritime potential development. The aspect rate of the number of SSATs is influenced by 5 (five) sub-criteria with outputs namely the development value of maritime potential. Base defense value, Marine Territorial Development value, sea security value.*

**Key Words:** Naval Base, Indonesia Navy (TNI AL), Causal Loop Diagram (CLD), Interpretative Structural Modeling (ISM), System Dynamics, Integrated Weapon System (SSAT).

### 1. INTRODUCTION

As a component of national defense at sea, the Indonesia Navy is tasked with carrying out national defense policies namely maintaining national sovereignty and territorial integrity, protecting the honor and safety of the nation, carrying out military operations other than war and actively participating in the task of maintaining regional and international peace (Susilo, et al., 2019). In an effort to carry out national defense at sea, the Navy carries out tasks that constitute the manifestation of the three universal roles of the Navy, namely the

military role, the role of the police and the role of diplomacy (Ministry of Defence, 2015).

The Indonesian Navy base as an integral component of the SSAT is the spearhead of the force in carrying out support for naval combat operations, especially as a support for the movement of KRI operations. The role of the Navy as a place to develop sea power into the area of operation or "deployment forces position" will have an important meaning in supporting the operational tasks of the Navy as an operational unit for internal security at sea (Susilo, et al., 2018). In addition, the Navy Base as a "Home Base" has a criterion of function in accordance with the 5Rs, namely: Rest, Refresh,

Refuel, Repair and Replacement so that the Navy Base will provide a very meaningful role for the successful support of the Navy's operations (Suharyo, et al., 2017).

The Indonesian Navy has divided its command work area into 3 (three) Main Command areas, namely the Indonesian Fleet Command I in Jakarta, the Indonesian Fleet Command II in Surabaya, and the Indonesian Fleet Command III in Sorong. During this time in the determination of the location of the Navy Base is only based on the decision of the Navy Headquarters workgroup team (Yogi, et al., 2017).

This study aims to design and build a model of the selection of the Navy Base location with a dynamic System and Interpretative Structural Modeling (ISM) approach. The System Dynamic method is used to analyze the sustainability of the base. The ISM method is used to identify the relationship between the criteria in determining the location of the Base. This research is expected to contribute to the development of the Indonesian Navy base to support national maritime security.

There are several previous studies that are used as references. Research about naval bases with the title Solution Approaches For Facility Location Of Medical Supplies For Large-Scale Emergencies (Ordonez & Dessouky, 2007). A Linear Fuzzy Goal Programming Method For Solving Optimal Power Generation And Dispatch Problem Method A Linear Fuzzy Goal Program (Pal & Kumar, 2013). Fuzzy Goal Programming Method for Solving Multi-Objective Transportation Problem (Venkatasubbalah & Mouli, 2011).

Research about System Dynamics and interpretative structural modeling (ISM) with the title Combining Soft System Methodology with Interpretative Structural Modeling and System Dynamics for Network Orchestration: Case Study of the Formal Science and Technology Collaborative Network in Iran (Shahabi, et al., 2019). Navy Ability Development Strategy

using SWOT Analysis – Interpretative Structural Modeling (ISM) (Susilo, et al., 2019). Strategies to Accelerate Manufacturing Growth in India: A System Dynamics-Interpretative Structural Modeling Analysis (Ojha & Vrat, 2016). Development Causal Relationships for CPFR index: a System Dynamics Simulation Approach (Panahifar, et al., 2016). Simulation of Dynamics Behaviors for Shipping Equipment Support with System Dynamics Analysis Approach (Song & Yang, 2015). Modeling Dynamic Systems with Efficient Ensembles of Process-Based Models (Simidjievski, et al., 2016). System Dynamics Modeling And Simulating The Effects Of Intellectual Capital On Economic Growth (Beran, 2015). A System Dynamics Model for Simulating the Logistics Demand Dynamics of Metropolitans: A Case Study of Beijing, China (Qiu, et al., 2015).

This paper consists of several sections. Section 2 explains the naval base theory, dynamic system theory, Interpretative Structural modeling theory, data analysis, flow diagrams. Section 3 explains the results and discussion of the base model sustainability research. Section 4 explains the conclusions of the study.

## 2. MATERIAL/METHODS

### 2.1 Indonesia Naval Base.

The Navy Base as an integral part and the Integrated Armed Weapon System (SSAT) are the spearheads in supporting the success of the Navy's operational unit tasks both in peacetime and in times of war/critical. Thus, the main tasks and functions of the Navy Base are as follows (Susilo, et al., 2019):

#### a. Main Duty.

Organizing administrative and logistical support for elements of the Indonesian Navy (Ships, Pesuds and Marines) and implementing maritime potential development by utilizing the facilities and infrastructure owned by the Base itself and related facilities and infrastructure.

#### b. Additional tasks.

Organizing support for non-Indonesian Navy units according to their functions and needs.

**c. Function.**

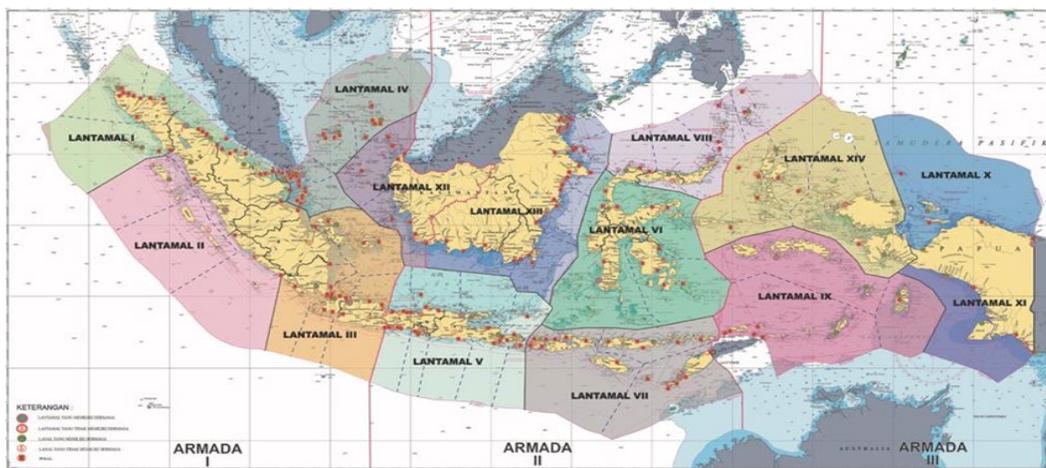
The Navy Base has the following functions :

- 1) Supporting functions of the operating unit, which cover:
  - a) Functions of anchored facilities.
  - b) Function of maintenance and repair facilities.
  - c) The supply facility function.
  - d) Function of personnel maintenance facilities.
  - e) Function of base guidance facilities.
- 2) Maritime Security Function.
- 3) Maritime Potential Development Function.
- 4) Function of Territorial Development of the Sea.

In accordance with the main task, The Navy base must be able to guarantee the implementation of combat support, logistical

support, administrative support and special support for the Navy's operational units in maritime control and support for the implementation of Maritime Potential Development, Territorial Development of the Navy, and TNI social communication. (Suharyo, et al., 2017).

The role of the Navy base in general in the SSAT has the same position, both with components of ships, aircraft and Marines. While the difference is only in the position of the base itself which is permanent/stationary. Because of these fixed characteristics, in supporting sea defense forces, bases must be in strategic positions. Starting with the Navy's strength and strength developed in the SSAT, the power is translated into an Integrated Marine Weapon System, which consists of Ships, Aircraft and Marines as a strategic force and Integrated Operations Support System (Yogi, et al., 2017).



**Fig. no. 1.** Deployment of Indonesian Navy Base.

**2.2 Interpretative Structural Modeling (ISM)**

Interpretive structural modeling (ISM) was first introduced by J. Warfield in 1975 to analyze systems with high complexity and find solutions to complex problems or involve many factors in them and interact with each other (Mohammed, et al., 2008). Interpretative Structural Modeling is a group review process

in which structural models are produced in order to photograph the complex issues of a system, through carefully designed patterns using graphics and sentences (Gorvett & Liu, 2007).

ISM analyzes system elements and solves them in the form of graphs of direct relationships between elements and hierarchical levels. The elements can be policy

objectives, organizational targets, assessment factors and others. Direct relationships can be in diverse contexts (Susilo, et al., 2019). This ISM technique can be used to carry out program analysis in accordance with the vision and mission. Broadly speaking, the ISM technique is divided into two parts, namely: classification of elements and arrangement of the hierarchy. The first step that needs to be done in the ISM analysis is to determine the elements that are in accordance with the existing problem (Pfohl, et al., 2011).

Subsequently we arranged sub-elements on each element selected. The selection of elements and the preparation of sub-elements is done from the results of discussions with experts. The results of the assessment are arranged in a Structural Self Interaction Matrix (SSIM) which is made in the form of a Reachability Matrix (RM) table by replacing V, A, X, O with numbers 1 and 0. The classification of elements is based on the Structural Self Matrix (SSM) which is based on VAXO system (Shahabadkar & Hebbal, 2012), likely :

**Table 1.** Reachability Matrix Role for ISM.

If the (i, j) entry in the SSIM is	Entry in the initial reachability matrix	
	(i, j)	(j, i)
V	1	0
A	0	1
X	1	1
O	0	0

Sources: (Shahabi, et al., 2019).

The matrix is then changed to a closed matrix. This is done to correct the matrix to meet the transitivity rules i.e. if A affects B and B affects C, then A must affect C (Gorvett & Liu, 2007).

### 2.3 Simulation Modeling

Modeling is a way to solve problems that occur in the real world. Modeling is done if direct implementation or experimentation is too expensive to do or difficult to do. Modeling allows the system to be optimized before it is implemented in the real world. Modeling includes the process of mapping problems from the real world to be modeled in the world model (abstraction process) to then be analyzed and optimized in order to obtain solutions that can be implemented in the real world (Sterman, 2000). Simulation is the operation of a system model. Simulations are used before changing something about an existing system, to reduce the impact of failure, to eliminate unexpected bottlenecks, to prevent excessive use of resources, and to optimize system performance (Forrester, 1994).

### 2.4 System Dynamics (SD)

The System Dynamics Society offers an updated definition by stating that SD is "a methodology for learning and managing complex feedback systems". System dynamics was first introduced by Jay W. Forrester in the 1950s, is a method of solving complex problems that arise due to the tendency of cause and effect of various variables in the system. The system dynamics method was first applied to management problems such as inventory fluctuations, labor instability, and a decline in a company's market share. From the system dynamics model in the form of a centralized diagram Flow, Diagrams are built to illustrate simulation and parameterization variables and the model formulation is ready to be simulated (Forrester, 1971). Variables in dynamic systems are described in **Table 2**.

**Table 2.** Symbol of system dynamics.

Variable	Symbol	Explanation
Level		Presenting the accumulated quantity that accumulates over time, its value can change in line with changes in the rate
Rate		Presenting a flow rate that can change the level value
Auxiliary		Presenting auxiliary variables containing formulations that can be input to the rate.

The form of the System Dynamics model that represents the structure of the feedback diagram is a causal diagram or commonly known as a Causal Loop Diagram (CLD). This diagram shows the direction of the variable's flow change and its polarity. The flow polarity as expressed above is divided into positive and negative. Another form of a diagram that also illustrates the structure of the system dynamics model is the Flow Diagram. Flow diagrams represent the relationships between variables that have been made in a cause and effect diagram more clearly, using certain symbols for the various variables involved (Sushil, 1993).

Causal Loop Diagram (CLD) is in the form of a drawing language that connects various variables in a loop diagram. The use of arrows will indicate the variables that are cause and/or effect. The upstream of the arrow will show the cause, while the tip of the arrow shows the effect. Each modeler must first understand the processes that occur in the real

world so that a logical model can resemble reality. The process of understanding can be done by distinguishing between cause and effect variables and/or by distinguishing between dependent and independent variables (Sterman, et al., 2007).

**2.5 Method and Steps**

Based on the focus and purpose of the study, the type of research used in this study uses a quantitative analysis approach. The quantitative analysis approach is used with the aim of being able to understand what is happening to the object of research by providing quantitative descriptions and explanations in the form of measurable and clear numbers. Broadly speaking, the formulation of the model in this study is to develop the theory and concept of the ISM method, which is integrated with the development of the System Dynamics method into a Model of Choosing the Location of the Navy Base on Sustainability.

**Table 3.** Expert Choice for Research.

No	Research Respondents	Location	Number	Code
1	Operation Assistant for Fleet Command II	Surabaya	1	E1
2	Personnel Assistant for Fleet Command II	Surabaya	1	E2
3	Intelligence Assistant for Fleet Command II	Surabaya	1	E3
4	Maritime Potential Assistant for Fleet Command II	Surabaya	1	E4
5	Former Commander in Navy Base Command II	Surabaya	5	E5-E9

In this study, the research subjects as expert peoples consisted of nine people.-The personnel included all stakeholders related to the allocation of baselines based on sustainability. The instrument in this study was the result of a

questionnaire which was the result of the process of collecting data. Furthermore, after the data collected is processed and analyzed we have the results of data processing. The results of the

questionnaire are then processed by the ISM method through the Microsoft Excel program.

The results of the analysis are then carried out modeling System Dynamics to see the sustainability of the Base. Furthermore, it is conducted deepening and interpretation of results and conclusions that provide results and conclusions that make a real contribution to the development of science and technology, especially in the field of national defense at sea.

In determining research variables, it must consider all information and criteria that can

affect performance. Characteristics and criteria for selection of problems and data can all be referred to as research variables. This activity is carried out through interviews with relevant officials/staff who have competence with base development issues. It was also carried out by studying references in the form of appreciation and conception about the development of bases as well as references about the Standardization of the Indonesian Navy Base.

The flowchart below shows the logical model for the sustainability of Naval Base Model.

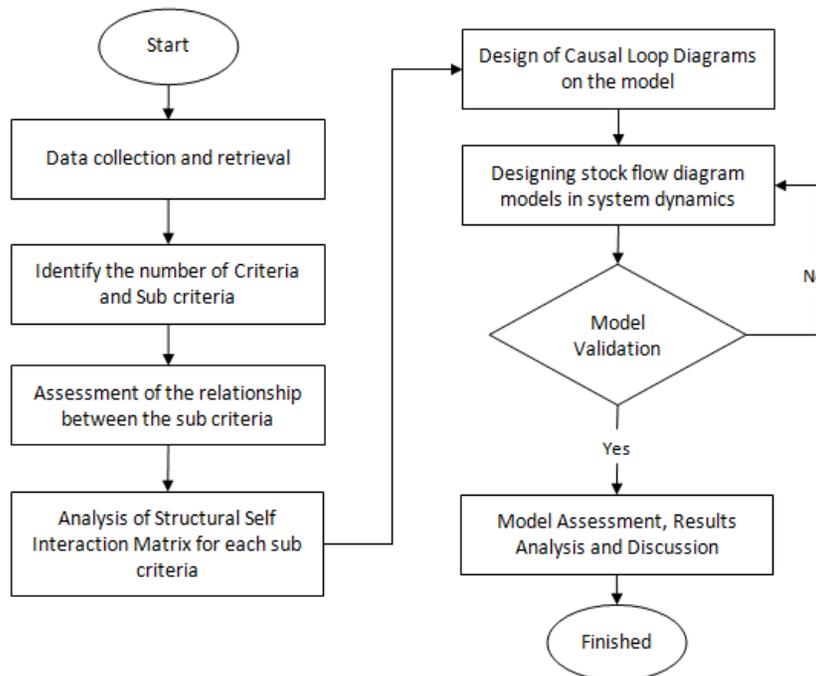


Fig. no. 2. Flowchart for the sustainability of Naval Base Model.

### 3. RESULT AND DISCUSSION

After brainstorming and conducting in-depth interviews supported by several previous research references, various criteria and sub-criteria for the sustainability model of the bases are determined as in **Table 4**. System identification aims to provide an overview of the system studied in the form of Causal Loop Diagrams. Based on the CLD description, then poured into the input-output diagram. Stock-

flow diagrams illustrate the relationship between input and system output through a transformation process that is described as a box. A stock-flow diagram of the base sustainability system is presented in **Figure 4**.

**Table 4.** Result of Criteria and Sub Criteria for Naval Base Model.

Criteria	Sub Criteria	Code
Unit Operations Support (C-1)	Anchored Facilities	C-11
	Maintenance And Repair Facilities	C-12
	Supply Facilities	C-13
	Personnel Care Facilities	C-14
	Base Coaching Facilities	C-15
Support coaching Operations (C-2)	Sea Security	C-21
	Marine Territorial Development	C-22
	Fostering Of Maritime Potential	C-23
Environmental Aspects (C-3)	Geographical	C-31
	Resource	C-32
	Socio-cultural	C-33
	Climate & Weather	C-34
Defense Aspects (C-4)	SSAT Readiness	C-41
	Base Defense	C-42
	SSAT Dispersion	C-43

Based on the results of expert studies, 4 main criteria and 15 sub-criteria were established that have interactions with base sustainability. Then the interaction is carried out

using the ISM method. The first step is to study the contextual relationship in the form of SSIM-VAXO matrix. The condition is explained in **Table 5.**

**Table 5.** Results of SSIM for Naval Base Model.

No	Code	Sub Criteria														
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1	C-11	O	V	V	O	O	A	A	O	O	O	V	V	V	V	
2	C-12	V	O	A	O	O	A	O	O	O	O	V	O	X		
3	C-13	V	V	V	O	O	V	O	O	O	O	O	V			
4	C-14	O	V	V	O	O	O	O	O	O	O	A				
5	C-15	V	V	V	A	O	A	A	V	V	V					
6	C-21	A	A	X	A	A	A	A	A	X						
7	C-22	A	V	A	A	A	A	A	X							
8	C-23	A	A	A	A	A	A	A								
9	C-31	O	V	O	X	X	X									
10	C-32	V	V	V	O	O										
11	C-33	O	V	O	A											
12	C-34	O	O	O												
13	C-41	V	V													
14	C-42	A														
15	C-43															

The relationship between elements of the Naval base sustainability system is obtained from expert opinion. Structural Self Interaction Matrix (SSIM) is arranged based on the relationship between the elements of the goal. The Reachability Matrix was obtained from SSIM which was subsequently revised

according to the transitivity rules. The essence of the reachability matrix is answering the question "Yes" or "No", is there a direct relationship between variables *i* and variable *j*. Interpretations of the Reachability Matrix elements associated with the Naval base sustainability criteria are presented in **Table 6**.

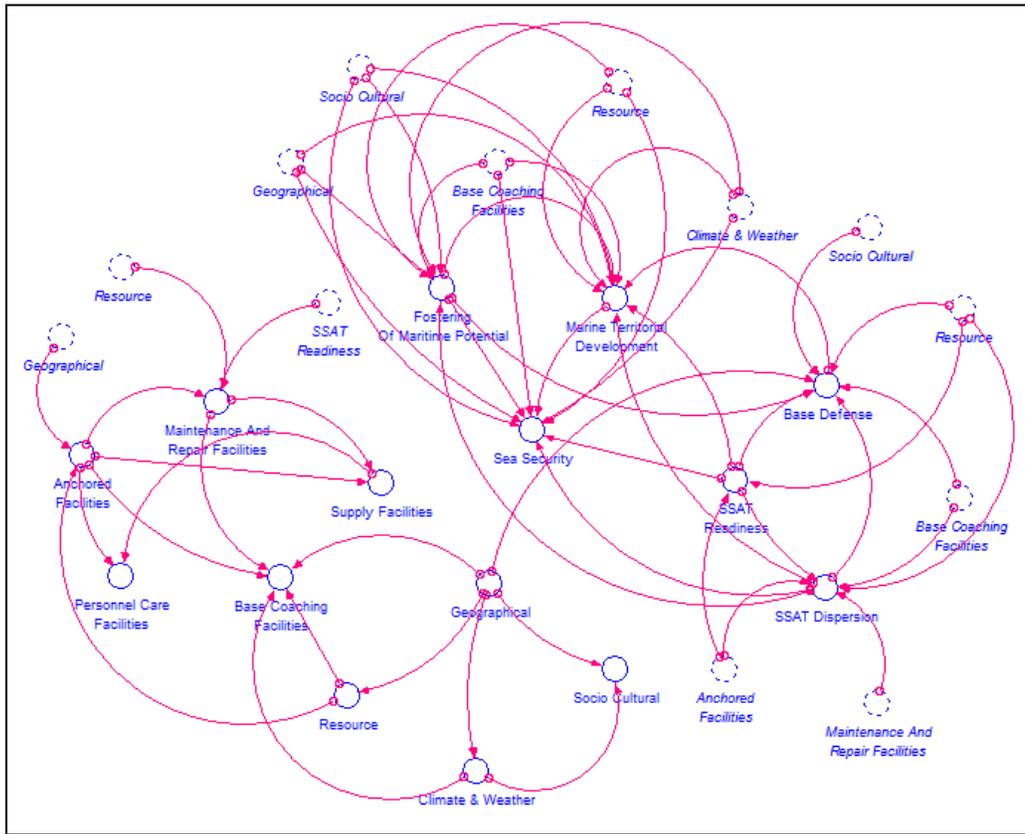
**Table 6.** Result of Reachability Matrix for Naval Base Model.

No	Code	Sub Criteria															DP	Rank
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
1	C-11	1	1	1	1	1	0	0	0	0	0	0	0	1	1	0	7	4
2	C-12	0	1	1	0	1	0	0	0	0	0	0	0	0	0	1	4	10
3	C-13	0	1	1	1	0	0	0	0	0	1	0	0	1	1	1	7	4
4	C-14	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	3	12
5	C-15	0	0	0	1	1	1	1	1	0	0	0	0	1	1	1	8	3
6	C-21	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	3	12
7	C-22	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	4	10
8	C-23	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	3	12
9	C-31	1	0	0	0	1	1	1	1	1	1	1	1	0	1	0	10	2
10	C-32	1	1	0	0	1	1	1	1	1	1	0	0	1	1	1	11	1
11	C-33	0	0	0	0	0	1	1	1	1	0	1	0	0	1	0	6	8
12	C-34	0	0	0	0	1	1	1	1	1	0	1	1	0	0	0	7	4
13	C-41	0	1	0	0	0	1	1	1	0	0	0	0	1	1	1	7	4
14	C-42	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	3	12
15	C-43	0	0	0	0	0	1	1	1	0	0	0	0	0	1	1	5	9

The next step is to isolate the reachability matrix, but before that it is necessary to make further corrections until it becomes a closed matrix that meets the transitivity rules. The transitivity principle is the completeness of the causal loop, for example A affects B and B affects C, so it can be said that A must affect C. From Table 6 above it can be seen that the highest power driver or key element which is a sub-criterion that has a very big role to encourage the operation of the Navy base sustainability system is a resource. The sub-

criteria that have the second biggest thrust is geographical.

The modeling in this research is used to model the sustainability system of the Indonesian Navy base in Surabaya. The results of the modeling are expected to be helpful in making decisions regarding the reduction of land for the Navy base due to economic growth and population. The implementation of data modeling can be seen in the following Figure 3 Causal Loop Diagram.



**Fig. no. 3.** Result of Causal Loop Diagram for Naval Base Model.

For the causal loop diagram the current base sustainability diagram can be seen in Figure 3 above. Causal loop diagram illustrates the relationship between Unit Operations Support, Support coaching Operations, Environmental Aspects, Defense Aspects. These four aspects are the main criteria in the model. Each main criterion has supporting sub-criteria

which have their respective interrelations. This diagram shows the causes and effects of the system structure. Existing variables are variables based on modeling that has been done using expert opinion through the ISM method to identify the relationship between related criteria and sub-criteria.

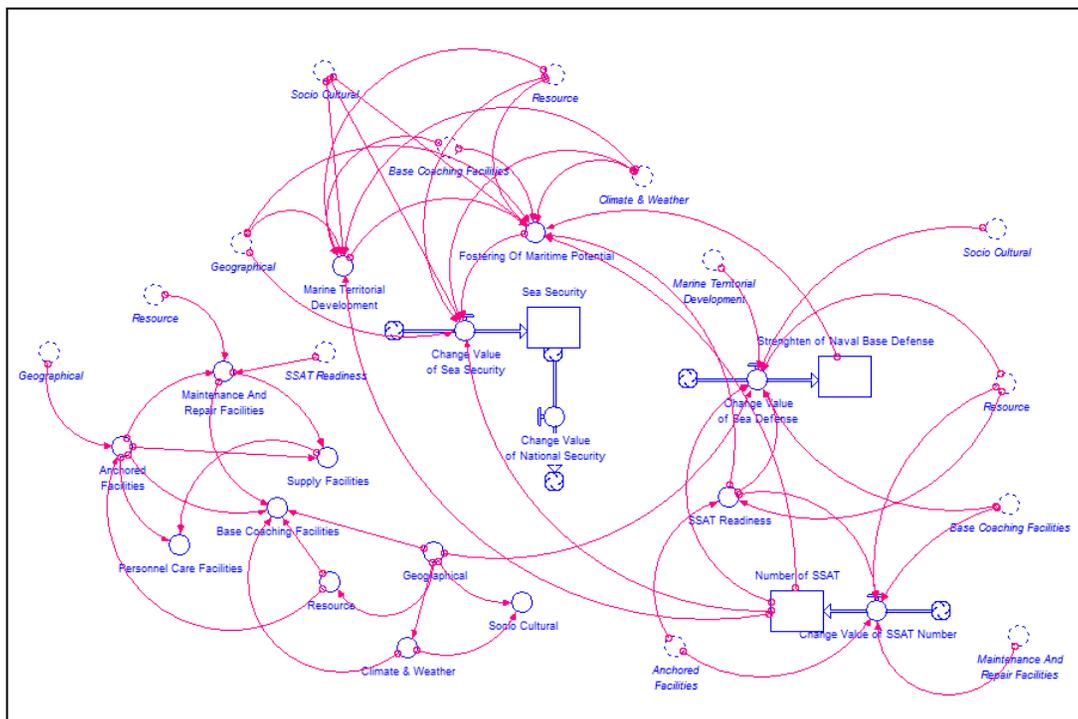


Fig. no. 4. Result of Stock Flow Diagram for Naval Base Model.

Figure 4 above shows the base sustainability stock-flow diagram. The model was made with observations for 3 months. Sea Security, Base Defense, and number of SSATs are described as a level about changes in the value of the number of SSAT. The sub-criteria aspects of the change in the value of sea security are influenced by 6 sub-criteria, including Geographical, the number of SSAT, resources, climate and weather, fostering of maritime potential, and socio-culture. The output of the sea security rate is the value of national security.

Aspects of base defense strength are influenced by 6 (six) sub-criteria, among others, Socio-culture, Base Coaching Facilities, Resources, Number of SSAT's, Marine Territorial Development, SSAT Readiness. The output from the aspect of the base defense force rate is the development value of maritime potential. The aspect rate of the number of SSAT is influenced by 5 (five) sub-criteria including Maintenance And Repair Facilities, Anchored Facilities, Base Coaching Facilities, resources, SSAT readiness. The output aspect

rate of the number of SSAT's is the value of fostering maritime potential.

#### 4. CONCLUSION AND FUTURE WORK

The Navy Base is one component in the SSAT that has the task of carrying out support for the KRI's operational tasks. Based on the results of research analysis in designing and building a base location selection model using the System dynamics and Interpretative Structural Modeling (ISM) approach, there are 4 (four) main criteria and 15 sub-criteria that have interactions with base sustainability.

The sub-criterion of changing the value of sea security is influenced by 6 (six) sub-criteria with Output, namely the value of national security. Aspects of the rate of base defense strength are influenced by 6 (six) sub-criteria with Output, namely the value of maritime potential development. The aspect rate of the number of SSATs is influenced by 5 (five) sub-

criteria with outputs namely the development value of maritime potential, Base defense value, Marine Territorial Development value, sea security value.

In this study several additional criteria and sub-criteria as well as aspects of economic and geostrategic growth need to be continued. In future studies quantitative values from several related criteria can be drawn up to determine the extent of the overall base sustainability value. In further research, it can be suggested to add the defense industry development factor in the sub-criteria to increase the number of SSAT.

### ACKNOWLEDGEMENT

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### REFERENCES

[1] A. K. Susilo, U. Ciptomulyono, I Nengah Putra, Ahmadi, and Okol S. Suharyo, "Navy Ability Development Strategy using SWOT Analysis-Interpretative Structural Modeling (ISM)," *Strategic Management*, vol. 24, no. 1, pp. 30-40, 2019. [Online]. <http://www.ef.uns.ac.rs/sm/archive/2019-1/04-SM2019-1.pdf>

[2] The Republic of Indonesia Ministry of Defence, *Indonesian Defence White Paper*. Jakarta: Ministry of Defence of the Republic of Indonesia, 2015.

[3] A. K. Susilo, U. Ciptomulyono, I Nengah Putra, Ahmadi, and Sutrisno, "Maritime Strategy Development to Encounter the Threat of National Sea Security in Indonesia Territory ," *Journal of Defense Resources Management*, vol. 9, no. 2, pp. 147-169, 2018.

[4] Okol S. Suharyo, Djauhar Manfaat, and Haryo D. Armono, "Establishing the Location of Naval Base Using Fuzzy MCDM and Covering Technique Methods : A Case Study," *International Journal of Quantitative Management*, vol. 23, no. 1, March 2017.

[5] P. Yogi, O. Rizal, Ahmadi, and O. S. Suharyo, "Feasibility Analysis of Naval Base Relocation Using SWOT and AHP Method to Support Main

Duties Operation," *Journal of Defense Management*, vol. 7, no. 1, pp. 1-8, 2017.

[6] Hongzhong: Ordonez and Dessouky, "Solution Approaches For Facility Location Of Medical Supplies For Large-Scale Emergencies ," *Science Direct*, 2007.

[7] Baran Pal and Mousomi Kumar, "A Linear Fuzzy Goal Programming Method For Solving Optimal Power Generation And Dispatch Problem Method A Linear Fuzzy Goal Program ," *International Journal of Advanced Computer Research*, 2013.

[8] Archaryulu Venkatasubbalah and Mouli, "Fuzzy Goal Programming Methode for Solving Multi Objective Transportation Problem ," *Global Journal of Research Engineering*, 2011.

[9] Ali Shahabi, Adel Azar, Reza Radfar, and Reza Asadi Asadifard, "Combining Soft System Methodology with Interpretive Structural Modeling and System Dynamics for Network Orchestration: Case Study of the Formal Science and Technology Collaborative Network in Iran," *Systemic Practice and Action Research*, 2019.

[10] Ravindra Ojha and Prem Vrat, "Strategies to Accelerate Manufacturing Growth in India: A System Dynamics-Interpretative Structural Modeling Analysis," *Vision*, vol. 20, no. 2, pp. 85-100, 2016.

[11] Farhad Panahifar, Cathal Heavey, Phongpat Sontamino, and P. J. Byrne, "Development Causal Relationships for CPFIR index: a System Dynamics Simulation Approach," *Journal of Advanced Management Science*, vol. 4, no. 1, pp. 1-8, 2016.

[12] Yang Song and Jian-hua Yang, "Simulation of Dynamics Behaviors for Shipping Equipment Support with System Dynamics Analysis Approach", *Journal of Industrial Engineering and Management*, vol. 8, no. 3, pp. 636-657, 2015.

[13] Nikola Simidjievski, Ljupčo Todorovski, and Sašo Džeroski, "Modeling Dynamic Systems with Efficient Ensembles of Process-Based Models ," *PLoS ONE*, vol. 11, no. 4, pp. 1-27, 2016.

[14] Ivona Milić Beran, "System Dynamics Modelling And Simulating The Effects Of Intellectual Capital On Economic Growth," *Croatian Operational Research Review*, vol. 6, pp. 445-457, 2015.

[15] Ying Qiu, Xianliang Shi, and Chunhua Shi, "A System Dynamics Model for Simulating the Logistics Demand Dynamics of Metropolitans: A Case Study of Beijing, China," *Journal of Industrial*

- Engineering and Management, vol. 8, no. 3, pp. 783-803, 2015.
- [16] I.R. Mohammed, R. Shankar, and D.K. Banwet, "Creating flex-lean-agile value bhain by outsourcing," Business Process Management Jornal, vol. 14, no. 3, pp. 338-389, 2008.
- [17] R. Gorvett and N. Liu, "Using interpretative structural modeling to identify and quantify interactive risks," , 2007.
- [18] H.C. Pfohl, P. Gallus, and D. Thomas, "Interpretive structural modeling of supply chain risks," International Journal of Physical Distribution & Logistics Management, vol. 41, no. 9, pp. 839 – 859, 2011.
- [19] P. Shahabadkar and S.S. Hebbal, "Deployment of Interpretive Structural Modeling Methodology in Supply Chain Management – An overview," International Journal of Industrial Engineering & Production Research, vol. 23, no. 3, pp. 195-205, 2012.
- [20] J. D. Sterman, usiness Dynamics: System Thinking and Modelling for a Complex World. Chicago: Irwin-McGraw-Hill, 2000.
- [21] J. W. Forrester, "Sistem Dynamics, Sistesms Thinking, and Soft OR," Sistem Dynamics Review Summer, vol. 10, no. 2, p. 3, 1994.
- [22] J. W. Forrester, System Dynamics : the Foundation Under Systems Thinking.: System Dynamic D-402., 1971.
- [23] [1] Sushil, System Dynamics : A Practical Approach for Managerial Problems.: Wiley Eastern Limited, 1993.
- [24] J. D. Sterman, R. Henderson, E. Beinhooker, and L. Newman, "Getting big too fast:strategic dynamics with increasing returns and bounded rationally ," Management Science, vol. 53, no. 4, pp. 683-696, 2007.

## INTERNATIONAL TERRORISM: CAUSES AND CHALLENGES A GEORGIAN CASE STUDY

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*The purpose of this research topic is to analyze the global challenges of terrorism that pose a threat to national security, identify the interaction between the globalization process and terrorism whether globalization is a major contributing factor to the spread of terrorism or it is caused by the weakening of state security institutions and the domestic challenges.*

*In the framework of this study, we will discuss the Islamic State's policy regarding Georgia. Special attention will be paid to the causes that facilitate the recruitment and radicalization of Georgian citizens to join ISIS, and describe the region in Georgia which is the most vulnerable to radicalization. The article provides also some statistics and main tendencies about the spread of terrorism all over the world.*

**Key words:** Georgia, terrorism, "Islamic State", security system, fighters.

### 1. INTRODUCTION

In recent decades, international terrorism remains one of the major challenges in the world. According to some scholars the particularly acute forms of terrorism have taken place under globalization, liberal border policies, access to information, the global economy and other factors have contributed to the spread of terrorism. Even though terrorism has its effect on developing countries, especially on the continent of Asia and Africa, recent developments have shown that terrorism has no borders and that the security systems of developed countries such as the United States, Great Britain, Germany and France may face the real challenges.

The threat of international terrorism is rapidly changing, growing, and unpredictable. The recent conflicts in the Middle East - the collapse of the Islamic State in Syria and Iraq, have significantly changed Georgia's security environment. At present, the threats and challenges facing the country are significantly linked to the spread of international terrorism in the region, and in particular in Georgia. Nowadays, the main threat, along with other terrorist organizations, is the defeated "Islamic

State" in Syria and Iraq and its fighters scattered in various countries.

For years, Georgia remains one of the secure countries regarding the terrorism even though it was observed an outflow of some Georgian citizens from one of the regions of Georgia, namely the Pankisi Gorge to different kind of terrorist organizations. The emergence of the "Islamic State" and the intensification of their organization's activities are linked to the largest outflow of youth from the Pankisi Gorge to Syria and Iraq.

In this regard, it is important to identify and analyze exactly the reasons and conditions which contribute to the recruitment of Georgian citizens from these region by ISIS.

In the scientific literature, there is no common understanding related to this topic. Some researchers believe that the globalization process is driving the spread of terrorism but there are also different approaches, according to which main factors are not globalization and its impact, but existing challenges inside the country, such as: the weak state institutions, internal conflicts, and poor economic situation, social and ethnic problems.

Identifying the treats and analyzing the conditions contributing to the Georgian citizens'

recruitment to ISIS, we came to the conclusion that globalization is not a major factor for spreading terrorism in Georgia, and this is mainly due to the domestic challenges: politics, economic and socio-ethnic problems. However, it is also no debatable that globalization creates certain conditions facilitating the spread of terrorism.

## 2. CURRENT TERRORISM DYNAMICS AND ISIS

Today, international terrorism is one of the global problems. In recent years it has increased and spread over the world. As a result of the ongoing globalization, it has become easier than before for terrorist organizations operating in different countries to share information, cooperate with other organizations and conduct terrorist attacks. It is almost impossible to find state, government and population, which can consider itself immune to terrorist acts.

Terrorism is not a new phenomenon, and has a long history. As a weapon of politics the use of terrorism by group can be traced back to ancient time and as noted by Falk *“in various forms terrorism is as old as government and armed struggle and pervasive”*. [1]

What is terrorism? And why is so difficult to come up with a single common definition? There is often a definition overlap between terrorism and other forms of crime and political violence. Its subjective nature and constant evolution makes it difficult to develop one single understanding of the term. It should be noted that there are different kinds of factors that characterized the process by evolution of terrorism such as: historical events, socio-political evolutions and movements as well as technological developments.

There are numerous variations of definitions so we tried to single out some of them that are more or less accepted in scientific literature. According to the definition given by Sandler *“Terrorism is the premeditated use or threat to*

*use violence by individuals or subnational groups to obtain a political or social objective through the intimidation of a large audience beyond that of the immediate victims”* [2]. It is also interesting how GTD defines terrorism – *“act of violence by non-state actors, perpetrated against civilian population, intended to cause fear, in order to achieve a political objective”* [3]. It should be noted that violence is not as important for terrorism as feeling of horror and helplessness that appear in society after another terrorist attack. And in this context, terrorism may be considered a blackmail aimed at the government of democratic countries. [4]

Terrorism has its great impact on developing countries, and especially on the continent of Asia and Africa. Terrorist organizations are conducting acts of terrorism mainly in countries and regions where the political situation is unstable and governance is weak. However, recent developments have shown that terrorism has no borders and that the security systems of developed countries such as the United States, Great Britain, Germany and France may face the real challenges. It is said also that the objective of activities and the capabilities differ from organization to organization

According to The Global Terrorism Index 2018 (GTI- a comprehensive study analyzing the impact of terrorism in 163 countries and covers 997% of the world’s population) worldwide, some positive trends have been identified - terrorism-related deaths in Iran and Syria dropped by 22 % compared to 2016, and overall - by 44%.

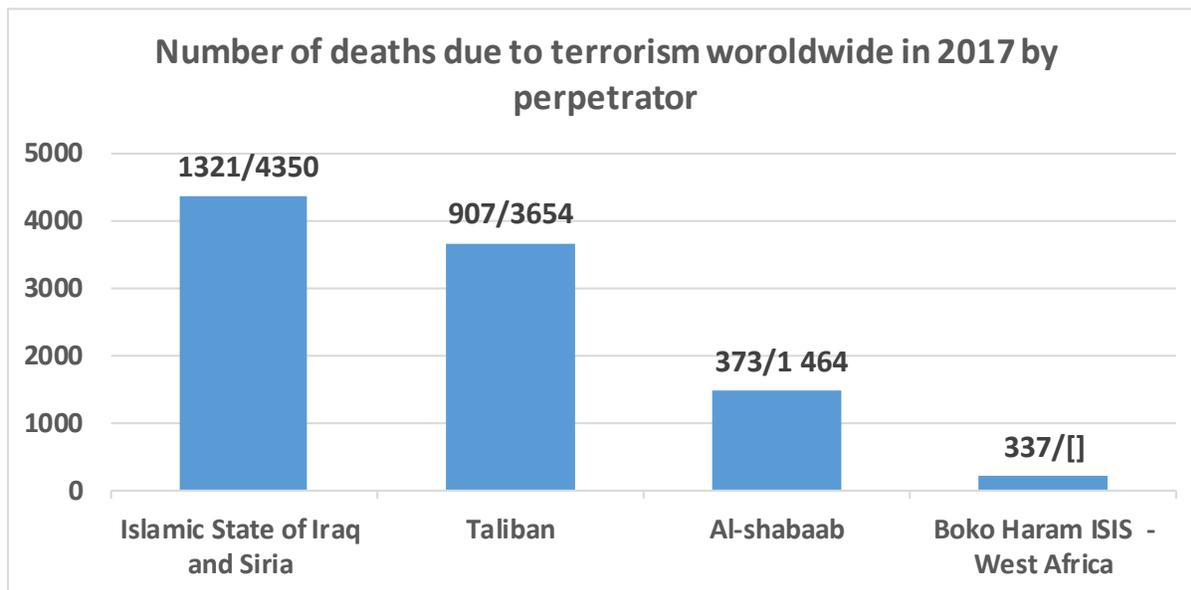
The prevalence of terrorist acts has also decreased compared to 2016, when the peak of the spread of terrorist activities was recorded. In 2017, the number of countries where the terrorist attacks were carried out dropped from 79 to 67. [5]

According to the number of deaths and the number of terrorist acts carried out among the various terrorist organizations operating in the

region, so-called Islamic State has been distinguished.

From the 18,814 deaths caused by terrorists around the world in 2017 over half were due to actions of just four groups: Islamic state, the

Taliban, Al-Shabaab and Boko Haram. From these organizations Islamic state was responsible of 4,350 deaths in that year [6]. So, Islamic state has been the deadliest group in the world for several years.



**Fig. 1** Number of attacks and deaths due to terrorism worldwide in 2017 by perpetrator (Source: <https://www.statista.com/statistics/937553/terrorism-most-active-perpetrator-groups-worldwide>)

In 2014, the leader of the Islamic State, (also known in Arab world Daesh, by the acronyms ISIS and ISIL) Abu Bakr al-Baghdadi, announced the establishment of world jihad and Khalifa. According to the leaders of the organization, the invasion of Iraq by George W. Bush in 2003 led them to jihad against the Americans and pushed them to regain control over the Arab states. The Islamic State controlled the territories of Iraq and Syria, part of Lebanon, as well as certain areas in Libya, Nigeria, Afghanistan and North Africa.

As of 2014, the largest terrorist casualties in the Daesh terrorist organization were in 2016 (9557 people), most of them were killed in their areas of control - Iraq and Syria. Daesh also increased the number of countries with terrorist activities from 11 to 29.

In 2017 the number of deaths caused by the Islamic State were reduced in Syria and Iraq by

52% and overall 22%. However, it should be noted that the "Islamic State" was not only responsible for terrorist acts, but was also involved in armed conflicts and civil wars with the governments of various countries (Afghanistan, Lebanon, Yemen) and non-state groups, so the total number of casualties are much higher as a result of terrorist attacks. During 2017, Islamic State carried out terrorist attacks in 286 cities in four different regions. [7] The declining tendency of ISIS was remaining the same way in the following years: in 2018 Daesh was responsible for 465 attacks and 3218 fatalities and in 2019 - 23 attacks and 603 fatalities. [8]

There are different factors that contribute to strengthen security and peace in the world. Firstly, as a result of anti-terrorist operations carried out by international coalition troops, ISIS was defeated and members of the

organization were forced to migrate into various countries, especially in Southeast Asia and North Africa. So, they no longer have the resources and capacity to plan large-scale successful terrorist attacks. Another reason that have actually narrowed their scope could be the tightening of border policies and security measures around the world, as well as the cooperation between different countries in this regard.

Despite the positive trends identified by "Global Terrorism Index 2018", there are still serious challenges in the direction of peace and security. Even though Islamic State lost military power, finances, and the state has literally fallen apart, it still remains as a real threat to the world. Now, the main challenge for Western countries is about up to 30,000 foreigners who travelled to the "caliphate" to fight. *"Their future prospects will be of international concern - Some may join al-Qaida or other terrorist organizations that may emerge. Some will become leaders or radicalizers and some will return back home"*. [9]

"Islamic State" may have been destroyed and territories have been lost, but the ideology is not destroyed. Their fighters are now focused not only on ideology but also on revenge. Despite the destruction of the Islamic State's physical stronghold ISIS wants to show that they are still in the fight, and their followers remain as fanatic as ever. Therefore, most of the researchers suggest that due to the lack of resources, they will be less able to carry out well-organized operations, but the frequency of terrorist attacks will likely to increase.

Some experts believe that the fighters of "Islamic State" may have joined any more radical movement for instance Al-Qaeda terrorist organization and continue to carry out terrorist attacks with more atrocities in order to demonstrate strength and spread terror. There is also another viewpoint according to which "now it's time to forget the Middle East and to prepare for attacks from the former Soviet Union. By

2017, at least 8,500 fighters from former Soviet republics had flocked to Syria and Iraq to join the Islamic State. In the coming years, the terrorist threat from Russia and beyond will only increase. With the fall of the Islamic State, Russian-speaking terrorists were mostly able to flee Iraq and Syria with more ease than Middle Eastern foreign fighters and are now back in hiding in the former Soviet sphere or in Europe.

Government neglect and outright repression have made religious Muslims in Kazakhstan, Tajikistan, and Uzbekistan attractive targets for radicals looking for new recruits. [10]

### 3. MAIN REASONS FOR GEORGIAN CITIZENS' TO JOIN-ISIS

Over the years, Georgia does not belong to the high-risk countries in terms of terrorism and has never faced the real threat from Islamic State, but the recent conflicts in the Middle East - the collapse of the Islamic State in Syria and Iraq, their scattered fighters around the world caused serious problems for the country security.

The defeated "Islamic State" may not be a direct threat to Georgia, but the country has been faced the real threat of terrorism as a result of counterterrorist operations in Syria and Iraq in 2017. For the Islamic State has become clear that the defeat was inevitable and began to scatter their fighters into different countries. To restore their reputation, they planned to carry out terrorist acts and import new radical ideas. Presumably, this was the purpose of Akhmed Chataev's, (Russia citizen of Chechen origin), one of the leaders of "Islamic State", and his comrade's arrival in Georgia, especially to consider the quantity and variety of weapons taken as a result of counter-terrorist operations on November 22, in 2017.

After almost a day-long fire fight, one member of the terrorist group was detained, two were killed, and a fourth suspect detonated an explosive, killing himself. The Georgian

government later identified one of the dead as international terrorist Akhmet Chataev, fighting in the ISIS. [11] (Turkish authorities have suspected him of masterminding the June 2016 terrorist attack on Istanbul's Ataturk Airport which saw the death of 45 people.) According to the investigatory body's official version, Chatayev returned to Georgia from Syria, having illegally crossed over the Georgian-Turkish border via forest footpaths in the Ajara mountains.

Follow-up was another operation which took place in December. There were identified some residents of Pankisi Gorge that were suspected to support Ahmad Chatayev and his friends. During the operation, Pankisi resident Temirlan Machalikashvili was shot by a special taskforce officer in his house and did not recovered. [12] Five more residents of the Pankisi Gorge were arrested at the time on the suspicion of aiding terrorists.

As a result of the counter-terrorist operations conducted by the State Security Service, the threat was avoided, but the country's security system faced a real challenge.

The existence of such facts negatively affects not only the security of the country, but also damages the image that directly reflects the development of the economy. Additionally, the feeling of panic and fear among the citizens itself worsens the image of the government.

Therefore, it is necessary to analyze the threats facing the country and to develop preventive measures in order to mitigate challenges associated with terrorism.

One of the main problems is the existence of a certain number of supporters of the idea of Daesh in the country. Nobody can tell for sure the precise number of young people who left the region to fight in Syria. Their number ranges from several dozens to 150. According to the report of the Georgian State Security Service (2015), up to 50 Georgian citizens were fighting for "Islamic State" from certain regions,

with predominantly Muslim population, such as Pankisi Gorge (located in the north-east of Georgia, border with Russia), Adjara (an autonomous republic located in south-west of Georgia, near Turkey) and Curia region. [13]

The report of the United States Department on Terrorism says a relatively increased number of Georgian nationals, around 50-100, who were fighting in Syria and Iraq. [14] Most of them are Muslims from Pankisi and Adjara regions. They used to travel in Syria and Iraq through Turkey. Today, most of them are on the list of Most Wanted Terrorists worldwide. Nowadays, based on Georgian State Security Service annual report (2018) number of people fighting for ISIS decreased up to 20. (According to reliable sources so far there are - 26 casualties, which is a striking figure for such a small community). [15]



Fig. 2: Map of Georgia.  
(Source: news.bbc.co.uk)

In order to go deeper to the root of the problem we should have clear picture of the Pankisi Gorge, where ISIS had most of their supporters. It is one of the most northern regions of Georgia. An ethnic group called Kists of Chechen root (75%). The Kist community remains quite small but in the past decade the number of residents in the Pankisi area has at least doubled due to migration of refugees (1200) during the second Chechen war.

At the end of 1990s and into the 2000s, the region was virtually beyond the Georgian government's control and it was notorious for being a major hub for crime, drug trafficking

and human kidnapping. It was associated with a potential threat at a global scale. It was then that Russia blamed Georgia for supporting Chechen insurgents, and even bombed Pankisi region on a number of occasions.

After the change of power in Georgia in 2003, the government managed to stabilize the situation and establish control over the Gorge without using any force. For a long period of time the situation has remained the same but from 2014 when the idea of ISIS has become popular in Pankisi it has changed. Khaso Khangoshvili, a member of the Pankisi Council of Elders believes that the main reason young Kists started leaving for Syria was the ‘euphoria’ from the ‘Caliphate’s first victories as well as the campaigns carried out by ISIS supporters, which the young people easily succumbed to. In addition, the Kists are Vainakhs, and the fighting spirit is in their blood. Russia’s interference in the

conflict in Syria also played its part, because many Kists were willing to fight against Russia. [15]

In this regard, it is important to identify and analyze exactly what are the reasons and conditions which encourage the spread of terrorism and facilitate recruitment of Georgian citizens from these region to ISIS.

It should be analyzed whether globalization is a major contributing factor for this or it is caused by the weakening of state security institutions and the domestic challenges. No doubt, that liberal border policy, access to information, the global economy and other factors have affected the spread of terrorism but from my point of view, based on the analysis of scientific literature and revealed tendency, it is caused mainly due to the domestic challenges, internal political, economic and socio-ethnical problems.

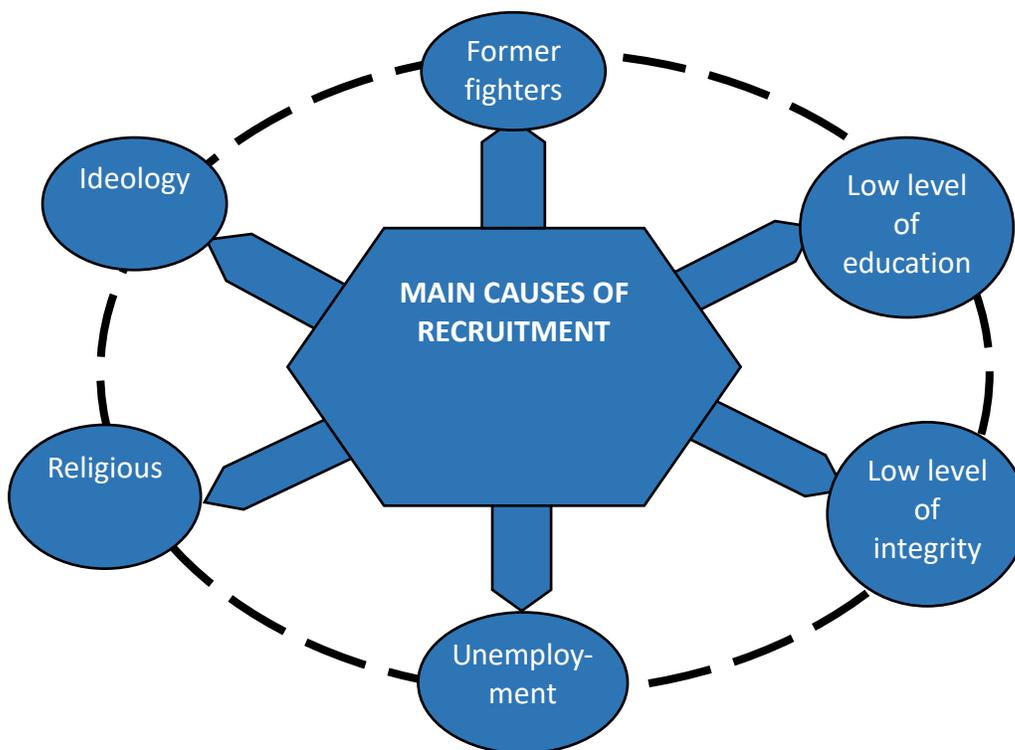


Fig. 3. Problems inside Pankisi Gorge.

The outflow of young people from Georgia to "Islamic State" is mainly related to the ideological factor. The main task of the "Islamic state" was restoration of old caliphate with the composition of Georgia on the ideological and nostalgic level and their activity was aimed at disseminating these ideas. Ideology is particularly easy to use among young population in the 14-25 age group characterized by special radicalism and aggression. If we look at the statistics, the most of the fighters left Georgia are the representatives of this age group.

The formation and dissemination of this ideology is generally associated with ideology of Wahhabism (Salafi). The activity of ISIS is based on Wahhabism one of the directions of Islam, which emerged in Saudi Arabia in the 18th century and confronts traditional Islam. Their main idea is the islamization of the world. Jihad holds a leading place in the doctrine of Wahhabism and the main requirements from practitioners of Wahhabism is obedience of faith and military readiness.

In Georgia and particularly in Pankisi, the Wahhabism movement has been established in the 1990s and now plays an important role in the ideological formation of young population. The majority of the Pankisi youth are adherents of the Salafi movement. Nearly all Pankisi natives fighting for ISIS in Syria are Salafis. There is a new Salafi mosque being built in the center of Duisi village. [15]

This factor plays significant role in splitting local population and also causes confrontation between generations. There is a big disagreement between the traditional and radical-fundamental Islamists. It should be noted that the attitude of young and elderly people is radically different in connection with joining population of Pankisi Gorge to terrorist organizations.

Talking about the factors, from my point of view, main attention should be paid to socio-economic situation of the region. One of the most significant factors in the outflow of Pankisi

youth is the high rate of unemployment and the low level of integration of young population to society. Luisa Mutoshvili, a teacher and a civil activist believes that this situation was triggered by the lack of a clear-cut national policy aimed at engaging the local youth at least in some activities. There is practically nothing the young people can do here. [15] Most of the young people do not manage to get job after their secondary education (even earlier), so they are not involved in the community life.

That's why they use to move to "Islamic state" in order to find "proper" job. According to various reports, there are dozens of cases when young Muslims from Adjara and Pankisi Gorge travelled to various Muslim educational institutions in Iran, Saudi Arabia, Turkey, or Syria, for the purpose of broadening their religious knowledge. As usual they are easily to radicalize.

The low level of education of some local populations contributes to the dissemination of radical-fundamental ideas. Wahhabis use these factors and their economic interest in their favor. The locals that don't pay attention to school and have no bright prospects are easily influenced by radical ideas. There are frequent cases when Arabic states finance various programs in the regions of Georgia (Pankisi, Adjara, Guria) to spread the Koran and Wahhabis' ideas. Most of supporters of the terrorist organization had illusions that if they joined the "Islamic State" in Syria and Iraq, they would have a successful social and economic welfare that was not real.

After the defeat of the Islamic State, one of the most important issues in terms of security of the country is represented by the fighters who left Syria and returned back to their homeland. They are the source of dissemination of radical ideology and serve as a "role model" for Pankisi youth and thus, in some ways facilitate young people to be recruited in terrorist organizations.

It is known that Tarkhan Batirashvili resident of Pankisi was very popular in the Pankisi

Gorge, known as the "Islamic State" "Defense Minister".[16] His name is linked to the massive membership of the Pankisi community in the terrorist organization (Tarkhan Batirashvili died in July of 2016).

Considering all the above mentioned, it is important to identify what is exactly the "Islamic state" policy in Georgia and how we can address these challenges.

It should be noted that former fighters create a real possibility of terrorist acts inside the country. They may not be themselves participants of terrorist attacks, but they can create the ideology and based on this terrorist attacks it might be conducted, not directly toward Georgian citizens, but, in this case, the most vulnerable target groups may be diplomats and embassies of partner countries in the territory of Georgia or even tourists. [17] They will try to intimidate the public, cause panic and chaos among people.

In addition, after the collapse of Islamic State, major challenge for Georgia is using the countries territory as transit by terrorists in general. ISIS fighters were scattered all over the world. Because of territorial proximity, they easily access the Turkish territory and then they are moving in different countries. One of the most accessible directions is Georgia, especially for those citizens who do not need a visa. There is a high possibility that Georgia to be used as a transit country. Especially considering the existence of a corridor through Turkey, where terrorists used to move in Syria and Iraq. On the same route these people will try to get back with another name or with much more organized documents.

Using the territory of Georgia as a transit and a temporary shelter by terrorists is a main threat not only in terms of mass rioting and terror acts inside the country but this factor may also be used by the neighboring countries, namely, the Russian Federation. Especially after the ongoing conflict in the Middle East where Russia's foreign policy was directed to creating an image

of a state fighting against terrorists. Russia's declared policy of fighting terrorists at their creation, makes Pankisi and the entire Georgia vulnerable to an intervention. This may seem like an exaggeration, but the Russian Federation will undoubtedly use this in order to intervene in Pankisi whenever it feels suitable.

So, from the security perspective, it is important to analyze all abovementioned factors and threat facing the country in order to mitigate these problems. Not only The State Security Service but also central and local authorities are working in close cooperation with each other in order to develop the holistic approach on that.

Georgian government made several initiatives in education, civil and political participation, and conducted different kind of trainings in order to raise awareness among vulnerable population on terrorism-related topics. It has been developed several initiatives aimed at implementation of small grants program, under which Georgia issued seven grants in Pankisi.

Another direction are the effective measures carried out by the State Security Service in 2018. The Service has been actively conducting its activities in the direction of detection of terrorism-related threats in Georgia. Some individuals who have been disseminating ideas of terrorist organizations via internet, including the social media have been detected.

The Service also continues to work on the threat of the possible return of the individuals and their family members to the country, and will carry out activities prescribed by the legislation.

As a result of relevant measures carried out by the Service, facts of attempted transit movement through the territory of Georgia by terrorism-affiliated individuals have been considerably reduced. Movements at the state customs and border-crossing points are strictly controlled, as well as constant monitoring of crossings at the state borders is carried out.

It is worth noting, that as a result of effort taken by the State Security Service and other relevant state authorities, not a single fact of travel to Syria and Iraq by the citizens of Georgia has been observed in 2018. [18]

In 2018, as a result of effective measures carried out by the government threats stemming from terrorism have been considerably reduced in the country. This is positively reflected in the report of "GTI 2018" which is measuring the impact of terrorism on different countries. According to the report Georgia took 89th place to compare with 2017 (77th place), the situation has been improved and Georgia moved into a very low impacted group of countries in terms of terrorism.

#### 4. CONCLUSIONS

Over the years Georgia has maintained the image of a safe country in terms of terrorism. Even though several dozen fighters from some regions of the country joined the "Islamic State" and their ideology was spread within the country, Georgia has never faced the real threat of terrorism. However, after the emergence of the "Islamic State" and the intensification of their activities Georgia is facing serious challenges for the security perspective.

Identifying the treats and analyzing the conditions contributing to the Georgian citizens' recruitment to ISIS, we came to the conclusion that globalization is not a major factor for spreading terrorism in Georgia, and this is mainly due to the domestic challenges: internal politics, economic and socio-ethnic problems. However, it is also no debatable that globalization creates certain conditions facilitating the spread of terrorism.

#### 5. RECOMMENDATIONS

Accordingly, we believe that it is important to study and analyze the problems facing Pankisi Gorge, in order to develop and implement a state

policy focusing on the elimination of problems. Implementation of these measures will help integrate Pankisi's Muslim community into Georgian society and mitigate the key factors that promotes their recruitment into various terrorist organizations.

On top of that, it is vital to involve actively law enforcement agencies in this process, also to strengthen the control and prevention mechanisms at the borders of Georgia in order to overcome the challenges facing the country.

#### REFERENCES

- [1] Introduction to international terrorism; education for justice module series; 2018  
[https://www.unodc.org/documents/e4j/18-04932\\_CT\\_Mod\\_01\\_ebook\\_FINALpdf.pdf](https://www.unodc.org/documents/e4j/18-04932_CT_Mod_01_ebook_FINALpdf.pdf)
- [2] Todd Sandler, The analytical study of terrorism: Taking stock, Journal of Peace Research, 2014,  
<https://journals.sagepub.com/doi/pdf/10.1177/0022343313491277>
- [3] Global terrorism Data  
<https://ourworldindata.org/terrorism>
- [4] Sergey Anatolievich Vavrenyuk, International terrorism and the basic ways to deal with it at the present stage, p.215,  
[http://www.ceswp.uaic.ro/articles/CESWP2018\\_X2\\_VAV.pdf](http://www.ceswp.uaic.ro/articles/CESWP2018_X2_VAV.pdf)
- [5] Global terrorism Index 2018;  
<https://reliefweb.int/sites/reliefweb.int/files/resources/Global-Terrorism-Index-2018-1.pdf>
- [6] <https://www.statista.com/topics/2267/terrorism/>
- [7] Global terrorism Index 2018,  
<https://reliefweb.int/sites/reliefweb.int/files/resources/Global-Terrorism-Index-2018-1.pdf>
- [8] <https://storymaps.esri.com/stories/terrorist-attacks/>
- [9] New wave of terrorist attacks possible before end of year,  
<https://www.theguardian.com/world/2019/aug/03/new-wave-of-terrorist-attacks-possible-before-end-of-year-un-says>
- [10] "The New Face of Terrorism in 2019",  
<https://foreignpolicy.com/2019/01/01/the-new-face-of-terrorism-in-2019/>
- [11] <https://www.state.gov/reports/country-reports-on-terrorism-2017/>

[12] <https://www.state.gov/reports/country-reports-on-terrorism-2017/>

[13] The Report of the State Security Service of Georgia 2015

[14] Bureau of Counterterrorism, Country Reports on Terrorism 2014, Released June 2015, <https://www.state.gov/country-reports-on-terrorism/>

[15] Alarm bells ring for Pankisi gorge – the echo of the Syrian war reaches Georgia, <https://jam-news.net/alarm-bells-ring-for-pankisi-gorge-the-echo-of-the-syrian-war-reaches-georgia/>

[16] How a Chechen from Georgia became a feared leader of ISIS, <https://theintercept.com/2015/07/13/chechen-georgia-became-feared-leader-isis/>

[17] The New Face of Terrorism in 2019”, <https://foreignpolicy.com/2019/01/01/the-new-face-of-terrorism-in-2019/>

[18] The Report of the State Security Service of Georgia 2018

# THE THREATS ANALYSIS OF THE ISLAMIC STATE NETWORK DEVELOPMENT IN SOUTHEAST ASIA REGION : Case Study of the Border of Indonesia, Malaysia, Thailand and the Philippines

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*Development of Islam in Southeast Asia in the beginning comes from Gujarat Arab and Persia in a peaceful way; it never uses violence or war. Harry J. Benda states that Indianized Southeast Asia area, namely Indonesia and Malaysia frequently called as Islam Melayu-Indonesia. In addition, Vietnam is Sinicized Southeast Asia that influences Muslim area of South Thailand. The situation at this time, almost all countries face the threat of terrorism, either separatism of Islam area or anarchy activity of International terror network - for example the cases of Al-Qaeda in the form of first Bali bombing in Indonesia, Islamic State Iraqi and Suriah (ISIS) in Suriah, middle east and Islamic State (IS) in the form of Insurgency of Moro in Philippines. Based on these problems, this study aims to provide a threat analysis of the development of the Islamic state network in the Southeast Asia region. This research takes case studies in the border regions of Southeast Asia in 4 (four) major countries, namely Indonesia, Malaysia, Thailand and the Philippines. The threat of terror in Southeast Asia is currently divided into three generations of terror, namely the first Al-Qaeda terror network threat, the second ISIS terror network threat and the third IS terror network threat. These three threats become the problem of the threat of national development and the life of society, nation and state for the countries of Southeast Asia.*

**Key Words:** *Islamic State, threat analysis, network development, southeast Asia.*

## 1. INTRODUCTION

The Islam in Southeast Asia in the beginning comes from Gujarat Arab and Persia in a peacefully way; it never uses violence or war. Harry J. Benda states that *Indianized Southeast Asia* area namely Indonesia and Malaysia, frequently called as Islam Melayu-Indonesia. Besides, Vietnam is Sinicized Southeast Asia that influences Muslim area of South Thailand. However, after the arrival of the Colonial nation, Philippines is also a *Hispanized Southeast Asia*. This arrival causes conflict of religion that develop the Islam in Southeast Asia at this time [1].

Prevention of terrorism threat of networks of Al-Qaeda, ISIS, and IS from UN such as creating the organizations namely Terrorism Prevention Branch- United Nations Offices on Drugs and Crimes (TPB-UNODC), United Nations Counterterrorism Executive Directorate (UNCTED), Global Counter Terrorism Forum (GCTF), Counter-Terrorism Implementation Task Force (CTITF), International Special Operations Forces (ISOF). This organization has hundreds until thousands of networks of *Non-Government Organization* (NGO) of local people as foreign spies which report every activity of terror network in Southeast Asia. State equipment such as military and police of ASEAN countries upon the basis of objective of state have

different ways in overcoming that terrorism act. It makes partnerships, coordination and communication in overcoming the terrorism act. Difference of interest and support of United States and China as the cause of model to handle it, even partnerships of bilateral and multilateral have been done.

The condition today, almost all countries face the case of terrorism threat, either separatism of Islam area or anarchy activity of International terror network - for example the cases of *Al-Qaeda* in the form of first Bali bombing in Indonesia, *Islamic State Iraqi and Suriah* (ISIS) in Suriah, middle east and *Islamic State* (IS) in the form of Insurgency of Moro in the Philippines. The terror in Southeast Asia at this time is divided into three generations of terror namely first, threat of terror network of Al-Qaeda, second, threat of terror network of ISIS and the three threats of terror network of IS. These three threats become a problem of threat of national development and social, national and state life for Southeast Asia countries.

Based on these problems, this study aims to provide a threat analysis of the development of the Islamic state network in the Southeast Asia region. This research takes case studies in the border regions of Southeast Asia in 4 (four) major countries, namely Indonesia, Malaysia, Thailand and the Philippines. This research is based on the development of the threat of the Islamic States (IS) in Southeast Asia. This research is needed as a basis for developing a cooperative strategy among ASEAN countries in dealing with returnees of the Islamic State of Iraq and Syria (ISIS) returning to their respective countries to become lone wolf. In this study, a qualitative method approach was used by carrying out the questionnaire on the opinion of related experts.

There are some previous references to support this research (such as [2], [3], [4], [5], [6], [7], [8], [9], [10] and [11]).

This paper consists of 4 (four) sections. Section 2 describes the development of the Islamic state network, South East Asia Regional, the methods used, related experiences. Section 3 explains the results of the analysis of the development of Islamic state networks in the region. Section 4 explains the conclusions in the study.

## 2. MATERIAL/METHODS

### 2.1. ASEAN (Indonesia, Malaysia, Thailand, The Philippines).

Indonesia is the biggest archipelago country in the world. It has 17,499 islands with sea area of 5.8 million km<sup>2</sup>, on other hand 2/3 of its territory is sea. It has a coastline extending for 81,900 Km<sup>2</sup>. Thousands of islands spread almost all-over Indonesian waters. Indonesia is bordered by 10 (ten) other countries, namely Singapore, Malaysia, the Philippines, India, Vietnam, Thailand, Cambodia, the Republic of Palau, Papua New Guinea (PNG) and Australia [12].

Malaysia is located in the Southeast Asian region. It has two main regions separated by the South China Sea, West Malaysia which is referred to as Peninsular Malaysia and East Malaysia. Astronomically, Malaysia is close to the equator with coordinates of 1° N Latitude - 7° S Latitude and 100° E Longitude - 119° E Longitude [13].

Thailand is a country located in Southeast Asia. Culturally, from its religion, language and culture, the Muangthai Muslim minority of Thailand, which is the highest in Patani (Southern Thailand), is part of the Malay, especially due to their geographical area bordering the Malaysian Malay States. However, in terms of culture, the Malay-Muslims in southern Thailand are part of the Malay people. Regarding its political perspective, Malay-Muslims are part of the Muangthai whose religion is Buddhist, since Malay-Muslims were directly incorporated into the Thai kingdom, under the rule of Chulalongkorn (King V) in 1902. Besides

the geographical location of four provinces (Patani, Yala, Naratiwat and Satun), their cultural ties have helped to foster a sense of alienation among Malay-Muslims towards Thai social, cultural and political institutions [14].

The Philippines is astronomically located between 4 ° N - 21 ° N and 116 ° East - 228 ° East. The Philippines is directly bordered by the Pacific Ocean to the north, the Sulawesi Sea to

the south, the South China Sea to the west, and the Pacific Ocean to the east. Based on its latitude, the Philippines is a country prone to natural disasters such as hurricanes, floods, volcanic eruptions, tsunamis and landslides. This is due to its position which is heavily influenced by monsoons blowing from the Pacific Ocean towards the South China Sea [15].

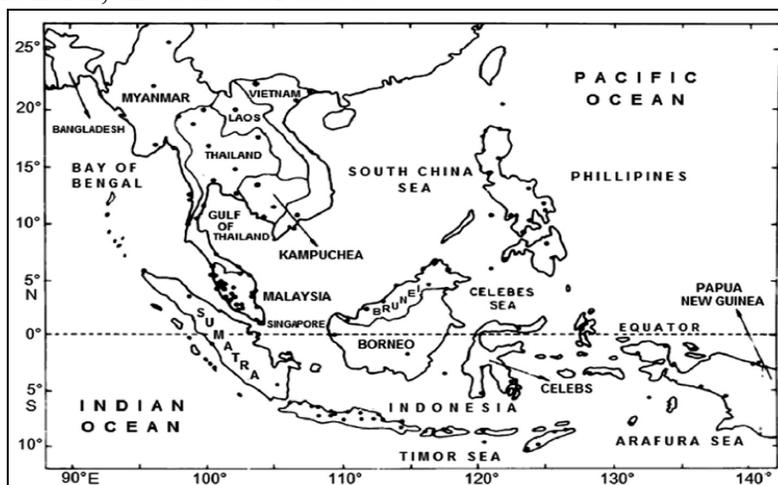


Fig. 1. Southeast Asia map [16], [17].

## 2.2. Development Theory

Development is a change in behavior structured and orderly in achieving a maturity process that is different from the past. Moreover, development can be defined as changes in the structure, opinions, and behavior of individuals. This development was born from the function of biology, meaning, and the influence of the natural surroundings. Therefore, the development is qualitative which can be seen by comparing the old nature with the current nature. In other words, development is an individual process in achieving maturity, confirmation, and stability [18]. This development includes the characteristics of a husband that allows influencing his wife and children in carrying out suicide bombings in the current era of Islamic State (IS) threats.

Crow argues that development is a change in a qualitative way that tends towards a better

direction in terms of thinking, spiritual, moral, and social [19]. Jean Piaget defines development as a concept of function and structure. The function is a biological innate system that applies equally to everyone. These functions are biologically inclined to think organizational knowledge into the structure of cognition, and to adapt to face environmental threats. Piaget made the stages of child development into adulthood influenced by the environment as follows [20]:

- a. Sensorimotor from 0 to 2 years old
- b. Preoperational from 2 to 7 years old
- c. Concrete operational ranged from 7 to 11 years old
- d. Formal operational from adolescence to adulthood.

## 2.3. Network Theory

A network is a series of relationships that have objects and mappings known as

descriptions between one object and another object in a network [21]. This network is very simple consisting of two objects (objects 'A' and 'B'). A network provides a picture of the interaction between these objects. Relationships and interactions that occur might be grouped into:

- a. One-way relationship (non-directional).
- b. Bidirectional relationship (directional).
- c. A balanced relationship (transitive).

The Terror Network in Southeast Asia is mostly located in the periphery, outermost small islands, and national borders. The fraternal relationship between Country A and Country B is a one-way or two-way relationship as well as a balanced relationship. Meanwhile, Agusyanto divides the components of networks as follows:

- a. A group of people, objects, and events. There are at least three groups as terminals. These groups are connected using dots called actors or nodes into networks.
- b. The groups form an integrated bond. This bond is connected from one point to another in forming interconnected networks.
- c. The relationship between these points has a clear direction with the Flow symbolized by arrows.

#### 2.4. State Border Theory

In general, borders are a demarcation line between two sovereign states. Initially, a border was formed along with the independence of a state. Previously, residents who lived in the border region did not feel the difference. They were not uncommon from the same ethnic group. However, with the independence of a state, they are separated. Moreover, due to the regulations of each country, they have different citizenship [22].

The strength of the influence of one region on another region depends on the level of economic development of the state, the nation's culture, and the system of government adopted by the country

concerned. Whereas, in the subsequent explanation that the border region has its characteristics consisting of lower population density compared to the surrounding area, two languages used by residents where the universal language, and two types of currency apply.

According to political geography experts, the border can be divided into 2 (two), namely boundaries, and frontier. Both of these have different meanings even though they are complementary and have strategic values for the territorial sovereignty of a country. The border is called the frontier for its position is in front of a country. Therefore, the frontier can also be referred to as foreland, borderland, or march. Meanwhile, the term boundary is used due to its binding or limiting functions (bound or limit) to a political unit. In this case, all states contained in it are bound to be a unified whole and integrated (Hadiwijoyo, 2011)

#### 2.5. Terrorism

Terror and terrorism are two almost similar words that have recently become popular topics. The term terrorism is related to the word terror and terrorists, which in general do not yet have a standard or universal definition. However, international countries agree that the term has a negative connotation of a class or equivalent consequence to the term "genocide." Terror is a phenomenon that has quite a long life in history. This is evidenced by the root of the word terror, namely the phrase: *terror cimbricus*. The Roman phrase means "to frighten: which describes the panic that occurs when the opposing soldier acts fiercely and violently [23].

Then this word developed first for the first time during the French Revolution to be *le terreur* or *terrere* which was used when the violence was brutal by beheading many people who were accused of carrying out anti-government activities. Thus, terrorism could be interpreted as fond of intimidation and brutal acts against civil society by certain reasons. The meaning of terrorism then experienced a shift

which was originally an act carried out by authoritarian rulers on political grounds as a category of crime against state and crime against humanity which resulted in victims of the government. Therefore, the political and religious ideals of the perpetrators of terror were achieved [24].

Terrorism is used with the intention of (i) intimidating to influence the civilian population, (ii) influencing regulations and policies issued by the government, or (iii) influencing the implementation of areas in governance by kidnapping and killing. Meanwhile, in Webster's New World Dictionary, the political reason for terrorism is defined as "the act of terrorizing, using force or threatening to demoralize, intimidate, and subjugate especially as use as a political weapon or policy" [25].

From some of the definitions of terrorism stated above, there is an expression where the act of terrorism was once one of the methods of government controlling the political situation in its territory to become a crime against state and humanity. Sometimes, these recent acts of terrorism also attract the conscience of individuals (crime against conscience) due to the random and erratic selection of attacks that cause public unrest. Nowadays, terrorism can be categorized as asymmetric warfare. Unlike traditional warfare where military power and resources are the main focus, asymmetric warfare prefers psychological pressure [3].

**2.6. Subject of the Research**

Interviewees as research subjects are officials who are directly related to the issue of the title of

this research, both the problem of the development of the threat of Islamic State (IS) and the problem of terror networks in the border regions of Thailand, Malaysia, the Philippines, and Indonesia, to realize cooperation to anticipate the threat of third-generation terror in the Southeast Asian border region, which is described as follows:

- a. Directorate General of ASEAN Cooperation of the Ministry of Foreign Affairs
- b. Directorate General of International Cooperation of the Defense Strategy of the Ministry of Defense.
- c. Directorate General of Strategy Analysis of the Defense Strategy of the Ministry of Defense.
- d. Directorate General Defense Territory of Defense Strategy of the Ministry of Defense
- e. Deputy for Foreign Policy of the Coordinating Minister for Politics and Security.
- f. Ambassadors/Defense Attaches of Thailand, Malaysia, and the Philippines
- g. Indonesian Ambassador/Defense Attaché for Thailand, Malaysia, and the Philippines
- h. BNPT (English: National Agency for Combating Terrorism).
- i. Border Communities of Thailand, Malaysia, the Philippines, and Indonesia.

**Table 1.** Expert Respondents and Questionnaires.

No	Subject	Code	Total
1	Directorate General of ASEAN Cooperation of the Ministry of Foreign Affairs	E1	1
2	Directorate General of International Cooperation of the Defense Strategy of the Ministry of Defense.	E2	1
3	Directorate General of Strategy Analysis of the Defense Strategy of the Ministry of Defense.	E3	1
4	Directorate General Defense Territory of Defense Strategy of the Ministry of Defense	E4	1

No	Subject	Code	Total
5	Deputy for Foreign Policy of the Coordinating Minister for Politics and Security.	E5	1
6	Ambassadors/Defense Attaches of Thailand, Malaysia, and the Philippines	E6-E8	3
7	Indonesian Ambassador/Defense Attaché for Thailand, Malaysia, and the Philippines	E9-E11	3
8	BNPT	E12-E15	4
9	Border Communities of Thailand, Malaysia, the Philippines, and Indonesia.	E16-E35	20

### 3. RESULTS AND DISCUSSION

#### 3.1. Analysis of IS terrorism threats in Indonesia and Thailand.

Thailand is a monarchy country in Southeast Asia which has a population of around 65 million. In 1939 the so-called Siam State annexed the Patani Sultanate in the Southern Thailand region, thus creating a separatist movement with the Islamic nuances. The researcher argued that linguistic and cultural assimilation policy carried out by Thailand government had failed. The discrimination was experienced by the Patani people, who are predominantly Muslim Malay, which contrasts with Thai culture, Thai Buddhist. Various Prohibitions such as the use of Malay, the teaching of Islam in schools and other prohibitions have led to protests by Muslim Malay communities in the border area between Thailand and Malaysia. This caused violations of human rights. Eventually there was a forced manslaughter with violence and murder which might be called as State Terrorism.

Research argued that since this insurgency happened, the Thai government had declared that BNPP was considered as a terrorist group that wants to bring down a legitimate government. In 1970, the BNPP group was eradicated by the Thailand Government. This terrorist organization triggered the emergence of other resistance organizations such as *Barisan Revolusi Nasional* (BRN), *Pertumbuhan Perpaduan Pembebasan Patani* (PPPP) or Pattani United Liberation Organization (PULO) which made Southern

Thailand to be divided into four regions namely Pattani, Yala, Songkhla, and Narathiwat.

The researcher believed that the *Gerakan Aceh Merdeka* in Indonesia has agreed to accept special autonomy and is similar to the current condition of Southern Thailand. During this time, weapons originating from Southern Thailand were sold by Patani insurgents to Aceh via the Malaysian and Indonesian sea borders. If Indonesian security forces catch up, the weapon is stored in Malaysia. Likewise, Southern Thailand got weapons from the Liberation Tigers of Tamil Eelam (LTTE) of Sri Lanka and the Cambodian Khmer Rouge. These two countries obtained these weapons from China. Eventually this arms race became a circle of smuggling of firearms, ammunition and explosives (*Sapi Muhandak*). Where the weapons originated has never been discussed at the ASEAN level, so ADMM level cooperation in ASEAN needs to discuss the smuggling of the *Sapi Muhandak* in the Border Areas of Southeast Asian Countries.

#### 3.2. Analysis of IS terrorism threats in Indonesia and Malaysia.

The terrorism network in Malaysia and Indonesia linked through less closely guarded border routes, especially the land border between Malaysia and Indonesia in North Kalimantan. This border is only guarded by 5 Malaysian posts and is guarded by 1 Battalion *TNI* border security task force on the border of West Kalimantan (*Kalbar*) and 1 Battalion on the border of North Kalimantan (*Kaltara*). The researcher believed that this terrorism network was initiated by the

formation of *Jemaah Islamiyah*, led by Abdullah Sungkar from Indonesia, who fled to Malaysia during the Soeharto's era. JI's deputy, Abu Bakar Baasyir, later formed the Indonesian *Majlis Mujahidin* which was associated with *Jemaah Islamiyah* and a group of Malaysian militants. The interconnected Terrorism Networks between Indonesia and Malaysia are moving into both countries' territory by sea and land routes without being noticed by the security forces of the two countries.

The researcher believed that the ISIS terrorism network that later became Lone Wolf Returnees returned to their respective countries to establish the Islamic State (IS) of Southeast Asia under the name *Katibah Nusantara* or *Daulah Islamiyah Raya*. This is more dangerous and bigger based on Islamic State (IS) operations in the Southern Philippines, in Mindanao island. They argued that the Sri Lankan terrorism network was driven out by the Sri Lankan majority Buddhist government. This terrorism network fled through Southern Thailand, which then entered Malaysia to declare its goal for Malaysia to recognize that this terrorism network existed to establish an Islamic state in Southeast Asia in general and Sri Lankan Islamic state in particular.

It concluded that the current prominent Malaysian terrorism network is the Islamic State (IS) network which will declare themselves on December 4, 2019 in Malaysia. This was initially influenced by *Jemaah Islamiyah* and *Mujahidin*, but now is currently influenced by Aceh, Sri Lanka, Southern Thailand separatists through sea and land border routes headed for Malaysia to pledge to support Islamic State (IS) in Southeast Asia.

### 3.3. Analysis of IS terrorism threats in Indonesia and the Philippines

The Terrorism Network in the Philippines and Indonesia has kinship ties. The results of interviews with community leader, Tahuna Martinus, stated that the Indonesian terrorism

network has family ties due to a wedlock with Islamic separatists on the Mindanao island. (Martinus, 2019). The proof of this marriage is that the wife of the Maute rebel is an Indonesian citizen from Bekasi, Minhati Madrais.

Brotherhood of residents who have two state citizenships based on the 1973 MoU on cross-border agreements until now has not been rectified and amended. The rebellion that eventually occurred in Marawi city leading to the conflict of the Mindanao independence fighters with the Philippine government influenced the formation of the Kodam VIII / Merdeka and made safeguards on the border increased to anticipate illegal migrants who support the terrorist movement.

Based on general description documents, the ISIS leader as a representative of Southeast Asia living in the Philippines, Isnilon Hapilon, was killed in the Marawi battle. However, the Abu Sayyaf Group still dominated the insurgent groups and was increasingly active in abducting and taking hostages to fishermen and foreign vessels that cross the maritime border between Indonesia and the Philippines.

The researcher believed that the *hijrah* here is to search for an Islamic area as a basic operation training ground and a gathering place for Islamic leaders in the Philippines as a base of insurgency. These leaders then searched for some sleeping cells as their followers, supporters and sympathizers secretly supported the founder of the Islamic State (IS) in the Philippines. These groups included sleeping cells in Tahuna in Sangir Talaut Island in Indonesia and 8 other sleeping cells such as Hisbul Tahir and East Indonesian Mujahideen. Thus, all of this raised problem that occurred due to the lack of security guarding on the sea and land border between Indonesia and the Philippines.

The rampant theft of fish using *rumpons* (fish aggregating devices) and various kidnapping and hostage actions had so far been difficult to dismantle because the residents of North Sulawesi, especially the Sangir Philippines and

the Filipino Sangir (Sapi Pisang) were the sleeping cells that fight the Indonesian government all the time as happened in the Marawi Philippines. The demand for settlement of Bitung and Minahasa people for this population was the threat of secession from the Indonesian Republic. This group also wanted to separate from Indonesia and they called themselves as Minahasa Separatists.

The researcher concludes that the problem of the Philippines-Indonesia border is the lack of an integrated security guard between the Philippines and Indonesia and the lack of information exchange due to limited information systems and technology. This has caused the terrorism network organization / groups to be more flexible in coming in and out of the border without being noticed by the security forces of the two countries.

### **3.4. Analysis of IS terrorism threats in Thailand and Malaysia**

The terror network in the Thai border area between Malaysia is related to kinship relations between the two countries. The border area is a goal for Thailand, to unite it as their national territory. However, the border areas still raise problems based on the history of the Siam Kingdom during British and French colonial era. Southern Thailand is bordered by East Malaysia which has a weak capability and border guard equipment owned by Thai security forces is so weak that this is the most likely as a place of transit and escape used by international terrorists.

Researcher argued that the Islamic separatist group in Patani wanted to establish an Islamic State in Southern Thailand, however it

apparently had different perspectives from those of BRN, PULO, GMIP and other separatist groups. The accusation addressed to these separatists was that they were a group of lawbreakers who did such things as criminal acts so that the Thai government can arrest and imprison them. This is a form of hard power. In contrast, the international terrorism network considered this model as a weakness because they were not dealing with the military but with the police, since they think that if they dealt with the military, their activities will be eradicated as they are considered as international terrorists.

The results of interview with Col. Pakom Suttikul, Captain Rachada Suengthanom dan Mr. Kongfa Mangkonsateean as military delegation from Thailand in Universitas Pertahanan Indonesia revealed that Thailand will also open the similar Defense University in Thailand. They said that they would open an Asymmetric study program that will analyze Islamic State (IS) in Southern Thailand with a peace approach to separatist groups such as BRN, PULO, GMIP, and other groups through the MARA organization.

The researcher believes that the terrorism network in southern Thailand is linked to the international terrorism network, as proven by the arrest of Hambali, a member of the Jemaah Islamiyah network in Southern Thailand. This terrorism network began to be studied and discussed by the Thai government by establishing the Thai Defense University in the process of resolving border conflicts with Malaysia and the conflict between the Malay-Thai community and the majority Buddhist government of Thailand.

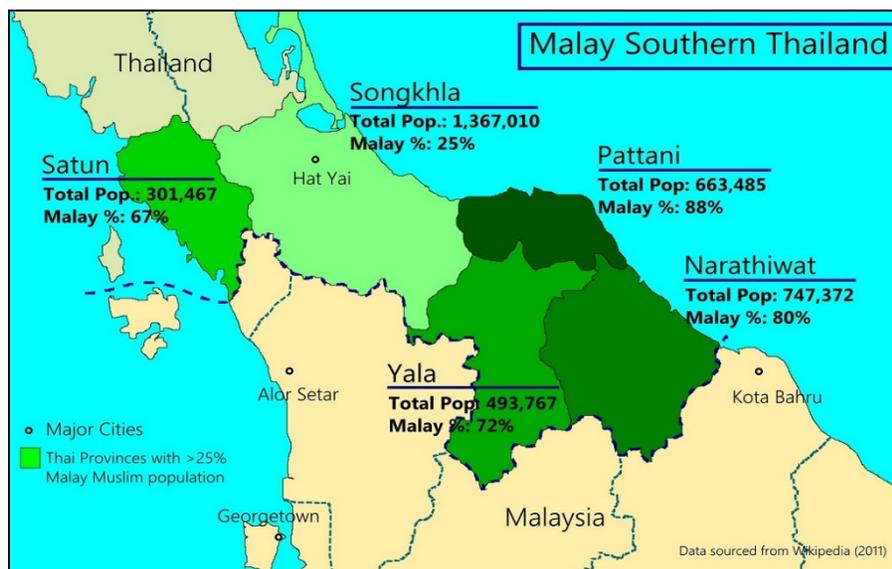


Fig. 2. Islam communities in Separatism area in Sothern Thailand.

Based on the picture above the terrorism network in Thailand is closely related to the insurgence that occurred in Southern Thailand. This insurgence was very active in Narathiwat, Pattani and Yala Province, but was less active in Songkhla province, especially in areas with large Muslim populations, such as in Hat Yai, and Hub commercial areas. This separatist movement is not interconnected with BRN, PULO, GMIP, Gempar and other Islamic separatist groups.

This separatist group is not so well known by the international community that it becomes a hiding place for international terrorism networks such as Hussein Artis from the Hizbullah International terrorism network who was arrested on 12 January 2012, Saeid Moradi, an Iranian national using a tourist visa, who was arrested in Thailand and Hambali the leader of JI Southeast Asia. Eventually, the resolution of the border conflict and terrorism network in Southern Thailand was solved by offering special autonomy by negotiating with the help of the OIC (Organization of Islamic Conference) and Malaysian facilitators. Thailand should have solved the problem by asking help from ASEAN countries.

### 3.5. Analysis of IS terrorism threats in Malaysia and the Philippines

The Terrorism Network in the border areas was dominated by the Abu Sayyaf Group (ASG), which often pirated ships and kidnapped Malaysian and Indonesian fishermen who crossed the border between Malaysia and the Philippines. The researcher believes that the Custom, Immigration, Quarantine, and Security (CIQS) duties of each country are similar to anticipate threats on the borders of the State. The difficulty of this security apparatus lies in the equipment to detect the terrorism network of returnees who return from the Iraq and Syria wars to their respective countries. The target groups such as FTF, FF and families supporting terrorism from Malaysia, Indonesia and the Philippines are predicted to enter the Philippines as their training centers for the terrorism network in Hudaibiyah Camp Mindanao.

The researcher views that Sultan Kudarat region alluded to the Sulu Sultanate region led by Datu Raju Abgimuddin, Sulu Sultan Jamalul Kiram's younger sibling who had attacked Lahad Datu on 5 March 2013. The British left the time bomb by renting Sabah from the Sulu sultanate but surrendered the territory to Malaysia in 1963 when Malaysian federation was formed. This

unresolved maritime border dispute between Malaysia and the Philippines had caused Sulu people living in Malaysia to flee to Indonesia to become residents of Indonesia because Malaysia and the Philippines do not recognize them as their citizens.

#### 4. CONCLUSION

The threat of terror in Southeast Asia is currently divided into three generations of terror, namely the first Al-Qaeda terror network threat, the second ISIS terror network threat and the third IS terror network threat. These three threats become the problem of the threat of national development and the life of society, nation and state for the countries of Southeast Asia. Based on the results of the study we found that:

- a. IS network threats in the territory of Indonesia and Thailand describe that since this insurgency happened, the Thai government had declared that BNPP was considered as a terrorist group that wants to bring down a legitimate government. In 1970, the BNPP group was eradicated by the Thailand Government. Eventually, arms race became a circle of smuggling of firearms, ammunition, and explosives (*Sapi Muhandak*). Where the weapons originated has never been discussed at the ASEAN level, so ADMM level cooperation in ASEAN needs to discuss the smuggling of the *Sapi Muhandak* in the Border Areas of Southeast Asian Countries.
- b. IS network threats in the territory of Indonesia and Malaysia illustrate that The terrorism network in Malaysia and Indonesia is linked through less closely guarded border routes, especially the land border between Malaysian and Indonesian in North Kalimantan. This border is only guarded by 5 Malaysian posts and is guarded by 1 Battalion TNI border security task force on the border of West Kalimantan (Kalbar) and 1 Battalion on the border of North Kalimantan (Kaltara).
- c. IS network threats in the territory of Indonesia and Malaysia explain that the problem of the Philippines-Indonesia border is the lack of an integrated security guard between the Philippines and Indonesia and the lack of information exchange due to limited information systems and technology. This has caused the terrorism network organization/groups to be more flexible in coming in and out of the border without being noticed by the security forces of the two countries.
- d. IS network threats in Thailand and Malaysia explain that the terror network in the Thai border area between Malaysia is related to kinship relations between the two countries. The border area is a goal for Thailand, to unite it as their national territory. However, the border areas still raise problems based on the history of the Siam Kingdom during British and French colonial era. Southern Thailand is bordered by East Malaysia which has a weak capability and border guard equipment owned by Thai security forces is so weak that this is the most likely as place of transit and escape used by international terrorists.
- e. IS network threats in Malaysia and the Philippines explain that The Terrorism Network in the border areas was dominated by the Abu Sayyaf Group (ASG), which often pirated ships and kidnapped Malaysian and Indonesian fishermen who crossed the border between Malaysia and the Philippines. The target groups such as FTF, FF and families supporting terrorism from Malaysia, Indonesia and the Philippines are predicted to enter the Philippines as their training centers for the terrorism

network in Hudaibiyah Camp Mindanao. This unresolved maritime border dispute between Malaysia and the Philippines had caused Sulu people living in Malaysia to flee to Indonesia to become residents of Indonesia because Malaysia and the Philippines do not recognize them as their citizens.

#### Future Work

- This research can be continued to analyze the risk of the Islamic state network development in the ASEAN region.
- This research can be developed as a cooperation strategy for controlling the Islamic state network development in ASEAN.

#### 5. ACKNOWLEDGEMENT

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#### REFERENCES

- [1] Ahmad Jumal, *Islam Asia Tenggara Dinamika Historis dan Distingi*. Jakarta: Sekolah Pasca Sarjana UIN Syarif Hidayatullah, 2017.
- [2] Husam Lamato, Sumarnob, and Nurul Umamah, "The Role Of Haji Sulong In Fighting Special Autonomy For Patani Southern Thailand (1947-1954)," *Jurnal Historica*, vol. 1, no. 1, pp. 47-64, 2017.
- [3] Clara Pellerin, *Communicating Terror: an analysis of ISIS Communication Strategy*, Spring ed.: Science Po, 2016.
- [4] Fredy B. L. Tobing and Erwin Indradjaja, "Islamic State In Iraq And Syria (ISIS) And Its Impact In Indonesia," *Global: Jurnal Politik Internasional*, vol. 21, no. 1, pp. 101-125, 2019.
- [5] Tuba Kalçık and Ümmü Altan Bayraktar, "Terror Propaganda on Social Media: Daesh Terrorist Organisation," *International Journal of Business and Social Science*, vol. 8, no. 9, pp. 128-137, 2017.
- [6] Aureo de Toledo Gomes and Michelle Mitri Mikhael, "Terror or Terrorism? Al-Qaeda and the Islamic State in Comparative Perspective ," *A Journal of the Brazilian Political Science Association* , vol. 12, no. 1, pp. 1-27, 2018.
- [7] Timothy Sands, "Strategies for Combating Islamic State ," *Social Science*, vol. 5, no. 39, pp. 1-9, 2016.
- [8] A. Muzakki, "The Roots, Strategies, and Popular Perception Of Islamic Radicalism In Indonesia," *Journal of Indonesian Islam*, vol. 8, no. 1, pp. 1-22, 2014.
- [9] Luís Tome, "The "Islamic State": Trajectory and Reach A Year After Its Self-Proclamation As A "Caliphate"," *e-journal of International Relations*, vol. 6, no. 1, pp. 116-139, 2015.
- [10] Célia Belim and Helena Garcia, "'To Be, or Not To Be a Cyberterrorist', That Is the Question! The Political Communication of al-Qaeda and Islamic State on Social Networks ," *Tripodos*, vol. 39, pp. 13-33, 2016.
- [11] Abdolssamad Khosravi and Ali Mohammad Haghighi, "New Science and Technology in Line with Terrorist Groups in the Middle East," *International Journal of Political Science*, vol. 8, no. 4, pp. 79-87, 2018.
- [12] A. K. Susilo, I. Nengah Putra, Ahmadi, and Okol S. Suharyo, "Analysis of National Maritime Security Strategy as an Effect of Regional Development using SWOT- Fuzzy Multi Criteria Decision Making (FMCDM)-Borda," *International Journal of Operations and Quantitative Management*, vol. 25, no. 3, 2019, <http://www.ijqom.org/forthcoming.asp>
- [13] Chee Loong Wong et al., "Rainfall Characteristics and Regionalization in Peninsular Malaysia Based on a High Resolution Gridded Data Set," *Water*, vol. 8, pp. 1-16, 2016.
- [14] Arismunandar, Afriantoni, and Asmuni, "Melayu Pattani Thailand: Muslim Minority Religion Expression In The Middle Of Non Muslim Majority," *Journal of Malay Islamic Studies*, vol. 3, no. 1, pp. 63-74, 2019.
- [15] Augusto V. de Viana, "The Philippines' Typhoon Alley: The Historic Bagyos of the

- Philippines and Their Impact," *Jurnal Kajian Wilayah*, vol. 5, no. 2, pp. 184-216, 2014.
- [16] R.H. Kripalani and A. Kulkarni, "Rainfall Variability Over South-East Asia-Connections with Indian Monsoon and Enso Extremes: New Perspective," *International Journal of Climatology*, vol. 17, pp. 1155-1168, 1997.
- [17] Yen Yi Loo, Lawal Billa, and Ajit Singh, "Effect of climate change on seasonal monsoon in Asia and its impact on the variability of monsoon rainfall in Southeast Asia," *Geoscience Frontiers*, vol. 6, pp. 817-823, 2015.
- [18] Zainuddin Abubakar, *Teori-Teori Perkembangan*. Jakarta, 2001.
- [19] Jeremy Carpendale and C. Lewis, "Constructing an Understanding of Mind: the Development of Children's Social Understanding within Social Interaction," *Behavioral and Brain Sciences*, vol. 27, no. 1, pp. 96-151, 2004.
- [20] Orlando M. Lourenço, "Developmental stages, Piagetian stages in particular: A critical review," *New Ideas in Psychology*, vol. 40, pp. 123-137, 2016.
- [21] Zhen Cui, Chunyan Xu, Wenming Zheng, and Jian Yang, "Context-Dependent Diffusion Network for Visual Relationship Detection," , Seoul, 2018.
- [22] Sabino Cassese, "Territories, Peoples, Sovereignty," *Glocalism: Journal of Culture, Politics and Innovation*, vol. 3, pp. 1-14, 2016.
- [23] Barry Charles Ezell, Steven P. Bennett, Detlof von Winterfeldt, John Sokolowski, and Andrew J. Collins, "Probabilistic Risk Analysis and Terrorism Risk," *Risk Analysis*, vol. 30, no. 4, pp. 575-589, 2010.
- [24] Gordon Woo, "Terrorism Threat Assessment and Management," *Defence Against Terrorism Review*, vol. 2, no. 1, pp. 101-116, 2009.
- [25] David Mc.A Baker, "The Effects of Terrorism on the Travel and Tourism," *International Journal of Religious Tourism and Pilgrimage*, vol. 2, no. i, pp. 58-68, 2014.

## BUSINESS CONTINUITY MANAGEMENT IN THE BANKING AND FINANCE SECTOR. AN OVERVIEW OF SECTOR RELATED VARIABLES

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*The article highlights the main criteria and characteristics for analyzing the functionality of the banking and finance sector, both from the user’s perspective of the services and from the supplier’s perspective, an approach correlated with the main lines of effort mentioned by the specific standards for business continuity management. The research method is mostly exploratory, using predefined formats for investigating the problem (DESTEP analysis, CANVAS analysis), with the intention of identifying some existing benchmarks in the Romanian practice in the field. The main contribution of the study is aimed at the qualitative increase of the financial security culture of the population and institutions in the public and private environment, identified as the main beneficiaries of the banking and finance services and products.*

**Key words:** continuity, banking institutions, criticality, functionality

### 1. INTRODUCTION

Even if specialized literature dedicated to critical infrastructures addresses the financial-banking systems to a lesser extent, they are worth studying. An argument in this respect is provided by the simple and yet comprehensive statement of the Nobel laureate in economics Paul Samuelson according to which *money is the blood that irrigates the economic system*. When putting it in context, it is obvious that the activity of the other critical infrastructure systems would not be possible, without the financial-banking component. Figure 1 shows from this point of view the functional role of that in the global system of critical infrastructures. What is more, any institution activating in an economic market has, besides its own system of relations and specific rules, regulatory flows regarding overall functionality (especially for the private environment), some of which pertain to the the economic and financial stream. Moreover, people’s daily life is dependent on the financial-banking systems through the activities related to ensuring the needs of day-to-day life, as well as a result of

increasing use of electronic means of financial-banking transactions. All of the above provide enough benchmarks to argue the need for the continuity of these service systems (taxes and fees, insurance, banks, stock exchange, treasury and payment systems).

The concept of business continuity management was introduced by the British standard BS 25999-2 and updated by ISO 22301 to help organizations minimize the risk of interrupting their business. According to the description ([www.srac.ro](http://www.srac.ro)) of this standard, the concept “*specifies requirements to plan, establish, implement, operate, monitor, review, maintain and continuously improve a documented management system prepared to help organizations protect themselves against incidents, respond to them, and recover from their occurrence. Incidents can take various forms, from large-scale natural disasters and acts of terrorism to accidents involving technology or environmental incidents*”. Hence, aspects regarding criticality are deduced, and they are closely related to the definition of critical infrastructures as provided by the Emergency Ordinance no. 98/2010: “*an*



ecological and political factors that impact organizational or business operations.

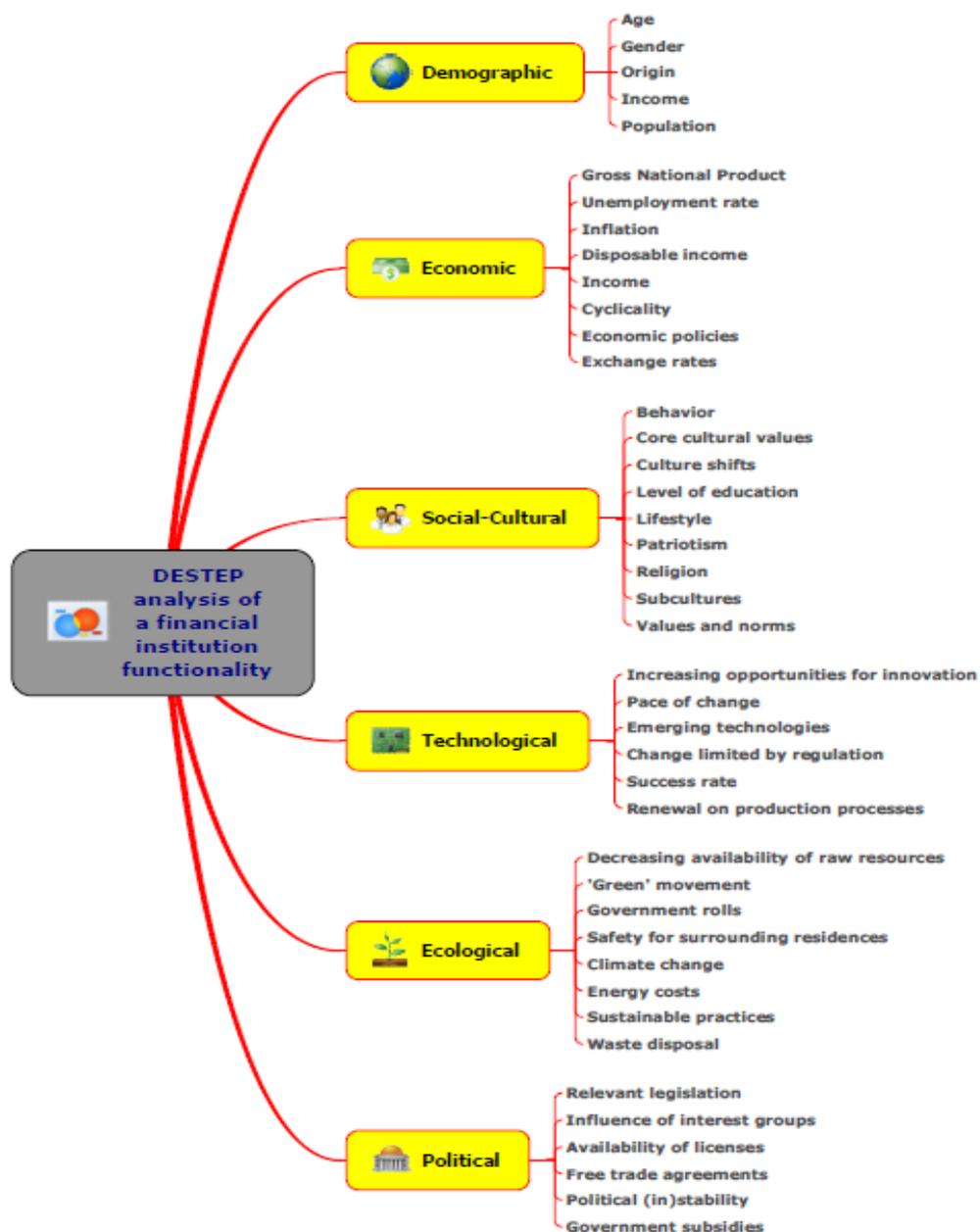


Fig. no. 2. Main and secondary factors addressed in the analysis of the functionality of the banking financial sector (generated by Mindjet MindManager)

Although the banking and financial system is perceived as powerful and invulnerable, it is permanently subject to threats caused by certain factors that have over time led to economic crises, bank failures, cyber attacks, etc.

Identifying and analyzing potential risks, certain extreme situations (which could seriously affect the optimal performance of the activity) could prevent or diminish possible effects, thus ensuring business continuity.

Based on the DESTEP analysis, six categories of factors that influence, although not to the same extent, the functionality and stability of financial and banking institutions were analyzed.

a) *Demographic factors*

Demographic factors impact the banking - financial system both from the perspective of its

customers and from the perspective of its own employees.

The analysis of customer's profile is essential from the first contact with them, from the opening of the first account, to the granting of the first credit and until the end of the business relationship. To facilitate the selection process of their customers, banks use a tool based on statistical analysis of demographic data and payment behavior, called scoring. This scoring is not the same for all banks (although it has the same objective of establishing the customer's creditworthiness) and is reviewed periodically to be updated.

In the analysis of customer's profile, **age** is one of the factors that alone can lead to the approval or rejection of the customer's credit application. Although most banks declare through the ~~promotion~~ advertising campaigns that the minimum accepted age for accessing bank loans is between 18 and 21 years, and the maximum is 65 years (even 70 years in certain situations), the age groups up to 25 years and over 60 years are considered very high risk and in most cases are not credited. Young people between the ages of 21 and 25 are listed as unstable, being able to leave their jobs, their families and even the country very easily. Customers over 60 years old are generally credited only with life insurance, that is, if they are granted loans.

Age is a factor that applies not only to customers, but also to bank employees. A fresh employee, recently graduated from school is also unstable and, most of the time, insufficiently experienced. An inexperienced employee, in whom you should invest in order to add value to the bank and who is not familiar with the term "loyalty", represents a risk for the employer. On the other hand, the employees aged between 30 and 40, who have expertise and experience in the field, have ~~greater~~ higher salary demands. Those over the age of 40 have even more difficulties in convincing banks to hire them, age being considered an impediment in this case. Due to the massive employment of young people in banks, we are witnessing the so-called "personnel trafficking", one of the problems that the banking system in Romania is currently facing.

If customers'/ employees' marital status denotes greater stability and responsibility, their **gender** does not influence the functionality of the system. It only indicates behavior in relation to banking services and products (for example, women prefer the use of cards, and men prefer "cash"). In terms of incomes, in Romania there is no major gap between the incomes of men and women occupying a similar position. Taking all these aspects into consideration, even for bank employees gender is not a relevant factor, although female employees are predominant.

**Income** is a decisive factor in making the decision to grant loans. When we talk about income, we also talk about its stability, its regularity, its source and the creditworthiness of the employer (an employee of the state system will have a higher score, the employer being a stable one, the income a certain one). Equally, the salary offered is a very important factor in making the decision of employment in the banking system.

**The** nationality of the customer also has a high impact on credit approval decision. The vast majority of banks do not credit foreign citizens, unless they have their residence in Romania, the risk of non-payment of the credit owned by them being very high. The same risk also applies to Romanian citizens who register incomes from abroad, from high risk countries, countries that are either at war or occupy top positions in the money laundering aspect (Iran, Afghanistan, and Tunisia). The employment of foreign citizens in Romanian banks is rarely encountered, for the same reasons presented above.

Another important factor that influences the functionality of the banking system is the **population**. This can impact the functionality of the system in several ways, including mobility (especially external), income statement, panic, confidence in the banking system. When the confidence of the population in the banking system decreases, massive withdrawals of money from deposits in banks take place. A conclusive example of the result of the loss of confidence is Argentina during the crisis of 2001, after which it declared bankruptcy. In Romania, as a result of the crisis in Greece (2009), the same scenario

happened, but on a much smaller scale, with withdrawals of funds from banks with majority Greek capital. At the opposite pole, as a result of the economic crises, in times of recession, the number of non-performing loans registered alarming increases.

*b) Economic factors*

**Gross Domestic Product (GDP)** is the indicator that reflects the economic activity. It is reported quarterly and indicates the entry into economic depression after two consecutive quarterly negative growth reports. An increase in GDP shows the economic development of the country, making it more attractive for investors, who in turn have easier access to credit products dedicated to them. The decrease in GDP reflects the economic downturn, which is correlated with the growth of non-performing loans and which have a result the tightening of the credit conditions of both the population and the investors.

In periods of recession and implicitly of the decrease of the GDP, **the unemployment rate** registers increases. During these periods, the economy is unable to fully utilize the labor force, creating a great imbalance between the demand and supply in the labor market. One of the solutions to reduce the unemployment rate is the professional reconversion, although in Romania this is difficult to achieve due to systemic educational syncopes. The effects of a high unemployment rate are reflected in the growth of non-performing loans.

**Inflation** is the general increase in prices caused by the depreciation of the national currency. Although low inflation is not a guarantee of financial stability (the 2007 economic crisis started when inflation was low), it is experiencing growth during economic crises. Population is affected by rising inflation through rising credits, due to rising interest rates.

In the economy, **the income** is the profit registered by a company and is the result of the difference between its receipts and payments. If taxes on profit are deducted from it, we are talking about a **net income** (net profit). Income is the factor that influences banks both from the perspective of their own

profit, which shows major decreases during the crisis periods, as well as from the perspective of the profit recorded by credit companies, the risk of having non-performing loans being very high.

Closely linked to inflation are the **economic policies**. If they are properly coordinated, inflation is reduced, with stable consumer prices. This stability is given by a rigorous monetary policy (which avoids the surplus of money in the economy), but also by a policy of the interest rates of the granted loans (not an artificial reduction of the interest rates of the loans).

In the economy it is possible to observe the alternance of the periods of growth (boom) with those of diminution of the economic activity, correlated with the variations of the GDP. This **cyclicality** has an effect on the functionality of the system, so that in periods of economic growth, lending is encouraged, and in periods of decline, banks are fighting for a “clean” loan portfolio, without bad loans. In general, during boom times, the behavior of economic agents is euphoric, while in crisis it is panicky.

**The exchange rate** also affects the banking system and, at the same time, the whole economy. The challenge of the NBR is to keep the exchange rate in line with the inflation targets. At the international level, the intervention of the states regarding the exchange rate was also felt in Romania. At the onset of the 2007 crisis, the share of foreign currency loans exceeded 50% of total loans, thus more than half of the population owing to banks was exposed to currency risk. The values of the loans and implicitly of the rates of the customers with foreign currency loans increased substantially, in some cases of loans in “exotic” currencies (CHF, JPY) the rates doubled and subsequently tripled. After the crisis of 2007, in order not to repeat the mistakes of the past, the conditions of foreign currency lending have been tightened, being accessible only to those customers who record incomes in that particular currency.

*c. Socio-cultural factors*

The behavior and lifestyle of bank customers / employees are factors that influence

the provision of products and services (especially lending) and the decision to hire. If there are indications of a disordered lifestyle, inclined towards excessive consumption of luxury goods and services, unjustified by the value of the income, or if there is a reliance on gambling or betting, the customer is considered of high risk and will not be credited, and the candidate for a job in the bank, will not be hired. There were quite many cases of insecurity in which the bank employees used the money from the bank's safes to pay the debts accumulated as a result of behavioral defects.

**Religion and patriotism** have had an insignificant impact on the functionality of certain credit institutions, customers of a particular religion or citizenship have been inclined to use the banking services and products promoted by certain banks from the mother countries.

The values, behaviors and attitudes of the population create its **culture**. **Cultural norms and values** are first acquired in the family and are settled with the help of institutions through education, religion or media. If the same values, behaviors and attitudes are shared by the members of an institution, the institutional culture is created. Both the cultural values and the institutional values are based on certain principles (integrity, professionalism, efficiency, independence, stability, etc.) whose respect leads to a positive interaction with everything related to the financial banking institutions.

**Subcultures** are often the opposite of promoters of cultural values and have a negative impact on banks. The members of the subcultures have little interest for work, they are adepts of the groups and not of the families, they are unattractive and do not represent the client/employee desired by the institutions

**The level of education** also has a great impact on establishing the customer's creditworthiness. Those with higher education have a higher degree of understanding of the functionality of financial systems and thus they have a good payment behavior. Also, banks only employ staff with a higher education degree.

#### *d. Technological factors*

If the factors presented above have a variable impact on the functionality of the banking financial system, the technological factors have a critical impact on it. **The rapid pace of technology development** and implicitly of **technological innovation** have helped to develop the system, digitization has reduced the processing time of banking operations and favored access to the products and services offered by them. Although the impact of technology on the banking system is a positive one, at the same time it leaves banks exposed to threats, the biggest security breach being related to cyber attacks.

The financial imbalances that have arisen over time have been ~~due~~ provoked by ~~to~~ the lack or inadequate application of internal **regulations** for monitoring and surveillance of the system. In order not to obstruct the applicability of advanced technology in the IT spectrum, a balance between prudence and innovation must be maintained.

About emerging technologies it can be stated that their presence has not yet been felt in the banking financial field, due to the restrictive regulations in the field and the fact that they have not reached an acceptable level of maturity.

#### *e. Ecological factors*

Nowadays, the ecological problems are very topical. As a result of the ecological crisis, due to environmental degradation and excessive use of **natural resources**, measures have been taken to combat **climate change** (reducing greenhouse gas emissions which cause the "greenhouse effect"), **reducing energy costs** (using renewable energy), **selective collection of waste**, applying **sustainability** strategies (use and development of new "green" technologies). Investments to ensure sustainable development and corporate sustainability have increased and are still in an upward trend with financial support from banks.

#### *f. Political factors*

Politics exerts its influence on the banking system primarily through the **legislative**

**regulations.** These regulations ensure the proper functioning of the banking financial system by monitoring, supervising and sanctioning it.

The **political instability** is “penalized” by the rating agencies by granting unfavorable ratings, which leads to lower investments. At the opposite end, investors gain confidence when there is **political stability**.

In times when certain sectors of the economy were in decline, the state intervened by offering subsidies, helping them to recover. The granting of these aids led to an increase in production, consumption, imports, exports, etc., all of which favoring economic growth.

The use of the CANVAS model (Osterwalder & Pigneur, 2017) was chosen to highlight some problematic aspects regarding the continuity and implicitly the criticality of the banking financial sector. It is, in fact, a map built on nine pillars of an organization (in the case of a bank) describing the reasoning behind which an organization creates and delivers value, under the influence of four macro-factors: the forces of industry (for example, competitors), key trends (for example, advanced IT technologies), market forces (for example, needs and demands), and macroeconomic forces (for example, capital markets).

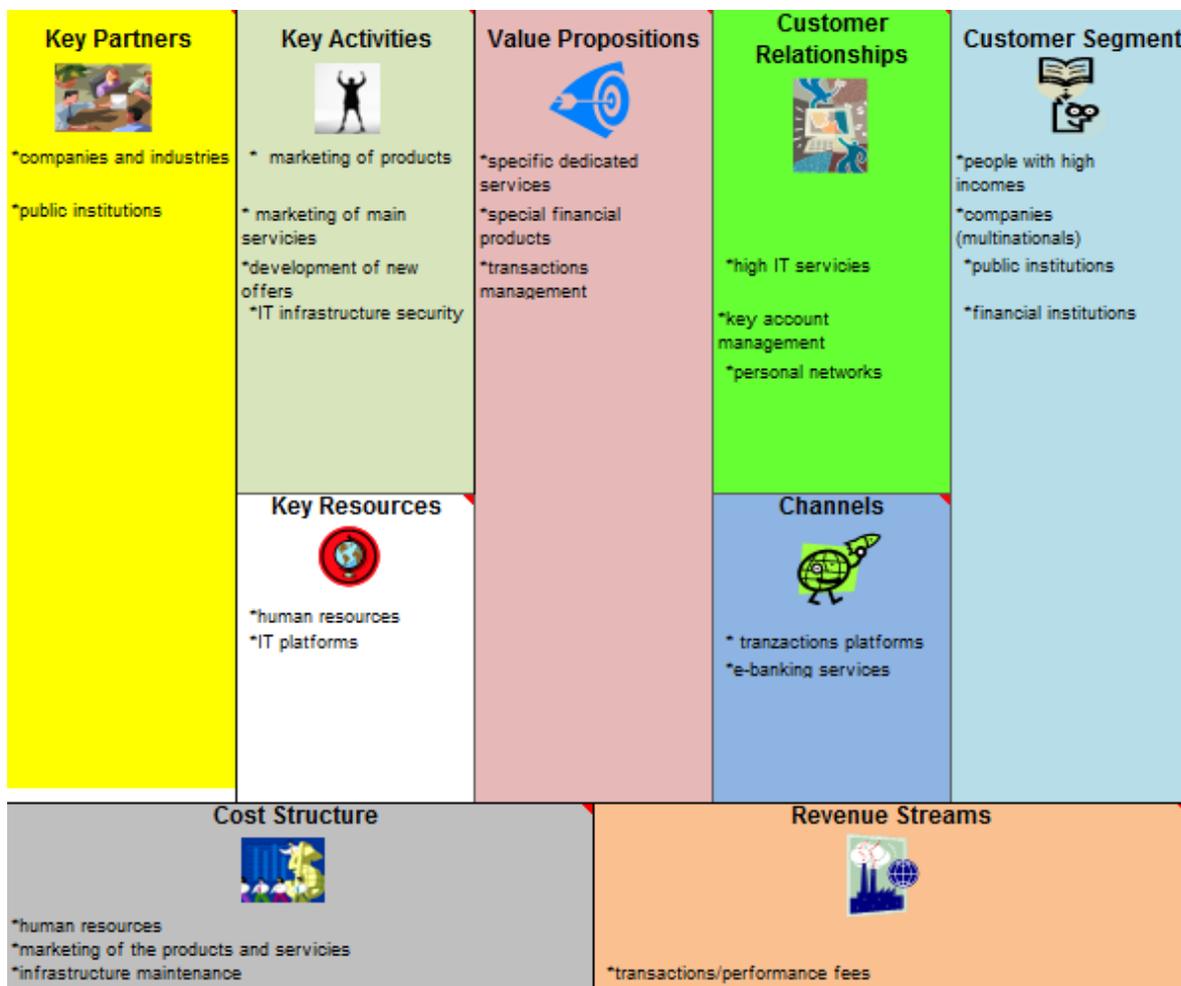


Fig. no. 3.The CANVAS model of a bank

Given the trends in the field of developing solutions for banking security (see approaches in the framework of FINSEC’19: International Workshop on Security for Critical Financial Infrastructures and Services), we note the

attention of the particular model, the data regarding the physical security of the banks, the transactions’ security management, integrated platforms for customer relations, security of personal data. Regarding the previous analysis,

but also in figure 1 it is useful to mention that consumers of banking services and financial products are both individuals and institutions, private or public, which in turn come and influence the continuity of financial banking business through the behavioral model specific to the culture of security formed up to that moment.

### 3. DISCUSSIONS AND CONCLUSIONS

Business continuity management in the banking and financial sector and its specific operational mechanisms must focus on harmonization as a priority. The latter contributes to securitization, a sine qua non condition of the functionality of the physical and cyber components of these types of infrastructure. Recent events (<http://innov-acts.com>) such as data breach at Equifax, one of the major consumer credit reporting agencies based in Atlanta, in 2017 when there were 140 million consumers affected by compromised sensitive information bring this challenge to the attention of specialist communities.

The form and severity of incidents are assessed in accordance with the specifications of the relevant standard. However, what is worth noting is that they affect the banking and finance sector and generate the domino effect in terms of the magnitude of the losses, the loss of reputation and consequently, change the perception of the population on the security of banking activities in general. The banking and financial environment as a critical infrastructure acquires even more complexity as result of the robust tendencies regarding cryptocurrency and blockchain which impose a new way in business practices based on the manner of how information is shared. That eventually leads to the need to change the paradigm of financial education for the population. A permanent challenge for the management of institutions

belonging to this type of critical infrastructures is the efficiency of an integrated risk management system. The latter should be multidimensional, including current provisions stipulated by the accepted standards regarding risk management / ISO 31000: 2019, information security / ISO 27001: 2013, personal data processing, etc. It is only thus that any critical infrastructure, as it is the case with the financial and banking sector in our case that all aspects of the organization are taken into account both in terms of organizational functions and management functions.

### REFERENCES

- [1] <https://www.srac.ro/ro/managementul-continuitatii-afacerii-iso-22301> accesed on 24.02.2020.
- [2] \*\*\*Emergency Ordinance no. 98/2010 on the identification, designation and protection of critical infrastructures.
- [3] \*\*\*Law no. 225/2018 for amending and supplementing the Government Emergency Ordinance no. 98/2010 on the identification, designation and protection of critical infrastructures
- [4] Duane, V., Petit, F., and Kim, K., *Incorporating Prioritization in Critical Infrastructure Security and Resilience Programs*, Homeland Security Affairs 13, Article 7 (October 2017) available at <https://www.hsaj.org/articles/14091>, accessed on 19.02.2020.
- [5] Osterwalder, A., Pigneur, Y., *Business model generation: un model pentru vizionari, reformatori și aspiranți*, (trad. Diana Dorobanțu), Editura Publica, București, 2017.
- [6] <https://images.template.net/wp-content/uploads/2016/10/06061018/Business-Model-Canvas-Template-Excel.zip> accesat la 21.02.2020
- [7] <http://innov-acts.com/2019/11/05/securing-critical-infrastructures-in-the-finance-sector-the-top-five-challenges/>, accessed on 24.02.2020.

## DROPBOX AS AN ENABLER OF LANGUAGE LEARNING

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*Traditional education is nowadays replaced by modern forms of teaching and learning tailored to suit a variety of needs and organized so that knowledge can be delivered and gained in a shorter time than before. Many businesses became interested in providing employees with courses tailored to meet their needs and developed computer networks; it became obvious these networks put a number of problems related to cost and feasibility. Therefore, learning began to use public or private services that had advantages related not only to their reduced cost, but also to their capacity to store and share information. ESP courses followed the trend and began to use services such as Google Apps, Google Cloud Platform and Amazon Web Services. This paper presents the advantages of cloud-computing for language learning, using the example of Dropbox as a method of personal cloud storage and a means to share course outlines, bibliography and academic requirements.*

**Key words:** e-learning, cloud-based learning, dropbox

### 1. INTRODUCTION

The increasing popularity of mobile devices and the need to have information available anyplace and anytime has led to changes in the way in which teaching and learning are performed. The change is driven on the one hand, by the trend to use such devices for personal fun, but also for research and business, and on the other, by the teachers' need to achieve better management of the time allocated for classes. The result is that teachers partially extract learners from everyday classes and expose them to activities that can be performed anywhere because they use information and materials provided via online services.

Using storage spaces outside those provided by the faculties and giving students more freedom in solving the activities will reduce not only the time spent by them in the classroom on certain activities, such as reading and listening, but also increasing the time for more productive activities like those related to

speaking. The possibility to store materials outside the classroom, in a place that can be easily accessible to students and teachers alike, drives communication to a new level thus improving the learning of a foreign language.

### 2. CLOUD-COMPUTING

Cloud-computing has become increasingly popular as it offered a multitude of opportunities: web storage, computation, memory etc. The term was coined in 2006 and promoted by the IT industry since then. It can be defined as: “*it has clusters of distributed computers (largely vast data centers and server farms) which provide on-demand resources and services over a networked medium (usually the Internet)*” [1]. It benefits from cyber-infrastructure and it is based on “*virtualization, distributed computing, grid computing, utility computing, networking, and Web and software services*”. [2]

Some of these platforms offer multiple tools that are available upon payment of a fee,

others are free of charge with less opportunities of storage or creation of content. It is an evolving paradigm so it offers rapid solutions to arising problems. [3]

The advantages of cloud computing are numerous:

- Accessibility,
- Low cost for the use of software,
- Scalability – ability to have seasonal access to some software if need be,
- Use of software also in the absence of extended faculty hardware,
- Expertise from those that provide the cloud services,
- Possibility of the cloud to be private, public, hybrid or community depending on the interest of the users,
- Less people used for maintenance,
- Easy to use by the end users.

Other important characteristics:

- Broad network access – the ability to be accessed through a multitude of platforms.
- Resource pooling – serving numerous customers with physical and virtual resources such as storage, memory, processing, etc.
- Rapid elasticity – the ability to scale on demand.
- Measured Service – the cloud system automatically controls the resources. [4]

Cloud computing comes with three models that exist separately or in combination:

- IaaS (infrastructure as a service), such as Amazon Web Services, which provides storage, networks, firewalls, etc.
- PaaS (platform as a service), permits application development. The most popular is Google AppEngine with its pre-built application platform.

- SaaS (software as a service), which provides already developed online software solutions.

Even if cloud-computing means much more, it is very popular among people as a storage and sharing place for files, music, documents, pictures, videos, thus becoming a very useful tool for foreign languages teachers.

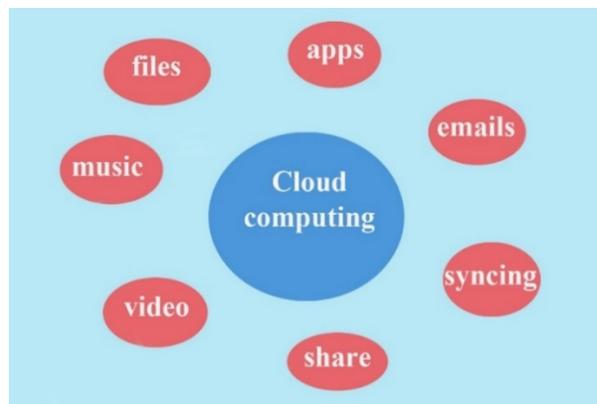


Fig. 1 – Cloud-computing and services.

Some of the cloud-services come in three variants, free, paid and business, offering different facilities for each type of plan according to the needs and the budget. Among the free versions some of the most popular are the following:

- Google Drive, which offers 15 GB free storage space together with Backup and Sync desktop app, but also with the tools for word processing and presentations. To those that already have a Google account, it gives the possibility to save the email from Gmail. [5]
- pCloud, offering 10 GB free storage space, but also sharing and desktop and mobile apps.
- Microsoft OneDrive, with only 5 GB free space, but with the possibility to modify files without downloading them.
- Dropbox with only 2 GB free space, but it is a very useful service

for those interested in collaborative working with its group workspace called Dropbox Paper. The same as Microsoft OneDrive, Dropbox allows users to modify files without downloading them.

### 3. DROPBOX FOR SPECIALIZED ENGLISH LANGUAGE LEARNING

Currently, there are many ways to store and share files. One of these ways is by using Dropbox, as a method for personal cloud storage. Because it gives teachers the tools to create files there, it can be considered an IaaS element, but it also connects users together and gives them the possibility to store files that can be accessed via desktop and mobile devices.

In what follows, we will look into some of the advantages of this method, as resulted from the personal experience we have had so far with successive groups of military and civilian students, taking the 12-week post-graduate course on Critical Infrastructure Protection (CIP) in “Carol I” National Defence University of Bucharest. There has been one session per year, between October-December; the number of students per group varies between 10-15. The data collected in this paper refer to the period 2016-2019. Moreover, some of the shortcomings of the method we have encountered will also be mentioned.

### 4. ADVANTAGES OF USING DROPBOX

The main usage of Dropbox is backing up one's files online, which means that – apart from storing the files (i.e., documents, videos, graphs, PPT presentations) – the teacher can share the latter with students and co-workers, as well as retrieve and manage these files. All the user needs is any Dropbox application for smart-phones, which one can download and utilize on any smartphone running Android, iOS, and even on Blackberry. In short,

Dropbox is very **accessible**, insofar as it can be used on the iPhone, the iPad, and on Android devices. It is thereby a great example of mobile learning.

Another main advantage of Dropbox is its cost: it is **completely free**. There are no upfront charges or any additional charges once you start using the service. When you register for a Dropbox account, you automatically get 2 gigabytes (GB) of storage space, which is a good amount of storage space. However, there are methods that you can use to increase the space without paying any money. These methods include sending fan mail about Dropbox, connecting your Dropbox to social media as well as inviting family, friends and other people to join Dropbox. [7]

One tip we used on how to **earn more space** [8]: the Dropbox referral program will give you 250Mb of additional space for every new user that takes up your invitation to download Dropbox. However, it also gives the new user an extra 250Mb of space. You could start a 'sign up and pass it on chain in your school so that all of your staff have at least 2.25Gb of storage space to use, while many will have more.

A very strongpoint to consider is that Dropbox is **user-friendly**. It takes a few minutes to learn how it works; additionally, it can be accessed by Internet connection, or by downloading the application on the smartphone or PC.

The design of Dropbox is a **versatile** one, in the sense that it allows the user's access the latest version of every file. Therefore, by using the application, you bypass the need for a browser.

In addition, we noticed that once we got Dropbox and started to use it on a regular basis, we soon got to love how easy and **convenient** a system it is to use. No more need to email ourselves files, buying CDs/DVDs, or trying to take the flash drive to the classroom, because all we needed to do was to save our file(s) on Dropbox. Another important aspect

which makes it worth the while is that even if we were away from our Dropbox computers, we could still logon to our account online and access the files on the computer, download them, and use them for our immediate purposes.

On the other hand, **sharing** files – as previously mentioned, is made very easy. All you have to do is place the files in a folder that is designated for sharing with specified users or the general public.

In addition to this, Dropbox is an ideal platform for **backing up information**. In the unpleasant situation that your computer crashes or your smart-phone is lost, you can easily use Dropbox to access all the files that were in, without losing any.



Fig. 2. Dropbox features.

## 5. ADVANTAGES OF USING DROPBOX, AS SEEN FROM OUR EXPERIENCE

Our common practice was to begin using Dropbox during the first week of each session of the course, in order to share the course outline, the bibliography and the academic requirements. Later on we stored there the students' performance records, the feedback on their projects, presentations and assignments, etc. By the end of the course, we could notice that all students were using Dropbox on their own for several purposes,

e.g. to store homework, assignments and projects there for easy access, both at their workplace and from home.

CIP Students also used Dropbox on their phones to review handouts and presentations sent by their teachers. Some also began to sync their files (all were unclassified) across multiple computers outside of the university. Students used Dropbox to submit assignments and store their e-portfolios. Once they finished an assignment, they could share the file with the teacher by sending her a link. The teacher could then read the file, highlight and leave comments on it, and save the annotations for the student to read later.

Another strong point in favor of this method – as we have experienced it – is that it fosters student-student interaction insofar as exchanging ideas or useful materials are concerned. In other words, uploading materials in the dropbox is a tool and enabler of cooperative learning, i.e., learning from each other.

Moreover, and derived from the above, it is our students' general opinion that Dropbox stimulated their creativity and initiative, because the teacher's role as sole provider of information fades off in this way. In addition, by allowing the students to recommend and upload useful materials, bibliography, etc., they feel empowered and responsible for the overall success of the course. Noteworthy is the fact that the papers and projects produced by each group member, as well as the feedback received are there for everyone to access and learn from them.

All in all, as some authors pointed out [6], Dropbox is more of a mega-utility than a simple tool. It grants you the invitation and freedom to think up new ways to use it, in and out of the classroom.

## 6. DISADVANTAGES OF DROPBOX, AS SEEN FROM OUR EXPERIENCE

One of the flaws of this service is that the administrators (or developers) who maintain the service have the **right to delete information** from free, inactive accounts. In other words, if you store information on Dropbox and abandon the account for a few months, it is unlikely that you will get it after you log back on. [9]

Also, there are serious **concerns about the security** of Dropbox. As hands-on experience shows, cases of servers being hacked and information stolen have been reported. Moreover, it is only natural to wish any sensitive information you have stored in Dropbox remained secure. Currently, the encryption used to secure user data on Dropbox is only known to the developers. Users are not allowed to perform encryption on their information before uploading it on Dropbox. [10]

## 7. CONCLUSION

Cloud-computing offers a multitude of services that can be used by both private users and businesses. By providing access to services that exist irrespective of hardware and by offering scalable solutions to several users, it has become increasingly popular in the years that have passed since its launch in 2006. Among its advantages are its accessibility, its low cost, the possibility to make it private, public, hybrid or community depending on users' interests, the access to a number of tools, the possibility to benefit from the expertise and experience of those providing the services, etc.

One of the most popular cloud-services is Dropbox. It is very user-friendly and accessible, providing users with a multitude of tools to use for editing, sharing and backing-up information. Being popular and used for storing and sharing personal files, it is also a proper choice to ESP teachers even if there may be concerns about the security. That is why, although Dropbox is an amazing and extremely useful method to store and share

files online, in practice we maintain it is for casual files and not very sensitive ones.

## REFERENCES

- [1] Nabil S., (2010) Cloud computing for education: A new dawn? International Journal of Information Management 30, pp. 109–116.
- [2] Vouk, M.A., (2008) Cloud Computing Issues, Research and Implementations, Journal of Computing and Information Technology (4), pp. 235–246.
- [3] Mell P., Grance T., Recommendations of the National Institute of Standards and Technology, <https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistpecialpublication800-145.pdf>
- [4] Mell, P., and T. Grance (2009) The NIST Definition of Cloud Computing, <http://csrc.nist.gov/groups/SNS/cloudcomputing/index.html>
- [5] <https://www.techradar.com/news/the-best-cloud-storage#best-free-cloud-storage>
- [6] Jennifer Carey, The How of 21st Century Teaching, Voices, Web Tools That Deepen Learning, Aug 10, 2012, <https://plpnetwork.com/2012/08/10/dropbox-a-superb-classroom-tool/>
- [7] Dominic Acito (2015), <https://it.toolbox.com/blogs/acitodg/advantages-and-disadvantages-of-using-dropbox-072215>
- [8] <https://www.brighthubeducation.com/teaching-methods-tips/86024-tips-for-using-dropbox-in-schools/2011>
- [9] Dominic Acito (2015), <https://it.toolbox.com/blogs/acitodg/advantages-and-disadvantages-of-using-dropbox-072215>
- [10] Dominic Acito (2015), <https://it.toolbox.com/blogs/acitodg/advantages-and-disadvantages-of-using-dropbox-072215>

## STRATEGIES FOR IMPLEMENTING THE TRANSFORMATION OF HUMAN RESOURCES MANAGEMENT IN HEALTH ORGANIZATIONS

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*The transformation of human resources management in health organizations is ongoing. An important role is held by transformation strategies, as well as by analysis of internal and external influence factors. The dynamics of these organizations' personnel is due to the competitiveness offer at national and international level. The human resources management must adapt to subsequent changes, the client being sensible to the medical personnel's structure. That is why strategies are needed to transform human resources management that will anticipate and to answer the requests related to workforce change.*

**Key words:** management, human resources, strategic planning, health organizations, performance.

### 1. INTRODUCTION

The transformation of human resource management can be approached in a variety of ways. This is because there is no effective strategy in every circumstance. The approach or combination of approaches will reflect one's own assessment of what best suits the particular change. In this context, it is useful to describe some of the different strategies we can use.

### 2. COMPETITIVE INTELLIGENCE

Transposed to the strategic and tactical needs of the interest of the organization, Competitive Intelligence is designed and coordinated on the monitoring of the competitors, anywhere and whatever they are, in a specific framework of action. Competitors are persons, organizations or entities, which an organization considers rival to its interests and objectives and with which it is in competition.

Competitive intelligence involves determining what competitors will do, before they act. From a strategic point of view, being able to predict the plans of a competitor, it will be possible to construct one's own strategy of counteracting his plans. This will involve several tactical methods, at the level of

information collection, but it requires integration into an information infrastructure.

The analysis and distribution of information, as well as the calculation of decisions will be made based on the information and analyzes obtained. As such, Competitive Intelligence is the indispensable ingredient of Competitive Strategy (Nate, 2007).

### 3. USUAL STRATEGIES

The elaboration of strategies, exercised in order to achieve the transformation of the human resources management and the organizational change, is the competence of the senior managers. From the point of view of the general principles, which underlie the process of transforming the management of human resources and organizational change, of the incentives used, but also of the means of attenuating the resistance to the transformation processes, general strategies can be used.

The strategy based on the rational approach of the transformation of human resources management consists in the elaboration of a plan, the communication of information to those involved and the use of incentives, according to the results obtained by the participants in the organizational transformation process. The promotion of this

strategy starts from the premise that people will behave rationally and that they will pursue their own interests, if this is sufficiently visible.

The normative strategy, with the role of reeducation, starts from the idea that the transformation of the human resources management and the organizational transformation are based on the redefinition and reinterpretation of the existing norms and values, as well as on the initiation of a set of activities. This will lead to the development of confidence in the existing norms and values. The promotion starts from the premise that people will adhere to the new norms and values.

The coercive strategy can be applied, based on exercise of power by managers and by applying sanctions for those who do not comply. The promotion of such a strategy starts from the premise that people are kind and generally do everything they are told or can do. The coercive strategy is inextricably linked to the promotion of the authoritarian style, the distrust of subordinates, but also the disregard of the staff's ability to contribute, in one form or another, to the shaping of the organizational transformation process. That is why it is the most convenient strategy for senior managers: they give provisions and demand that they must be applied exactly (Kogălniceanu, 2007).

Unexpressed resistance is very high and people do things not out of conviction, but only to avoid being punished. The simple change of the executive manager can cause everything to return to the previous situation. The strategy through adaptation to the environment is based on carrying out a succession of organizational transformations, in response to the changes that occur in the environment. It has a reactive character, the transformation of human resources management taking place only after these processes have become inevitable. This strategy does not imply a rigorous planning of activities, as it is not possible to take advantage of opportunities. It starts from the idea that, even if they are tempted to oppose, they will adapt to the new

circumstances when they see that they have no other solution (Nica, 2006b).

Management strategies involve the right of managers to manage the processes of transformation of human resources management. When using this approach, managers resort to authority to impose organizational change with very little involvement from other people. A management strategy has the advantage that it can be implemented very quickly.

The main disadvantage is that it does not take into account the opinions or feelings of those affected by the transformation processes, which is why, as a result, valuable information can be lost and the resistance level increases, which can reduce the transformation rate and sometimes it can even undermine it.

The negotiation strategy implies the willingness to negotiate with other groups and to accept the idea that some adjustments and concessions may prove necessary. The choice of this strategy does not absolve managers of the responsibility of directing and initiating the transformation of human resources management, but it is recognized that the people affected by the transformation processes have the right to speak in this regard or that they have the power to resist change, if they were not persuaded to voluntarily adhere to it.

The potential advantage is that the people affected by the transformation, given that they have a say, will be less likely to get resistance, but the disadvantage is that the implementation may take a little longer and the results cannot be predicted at kind of easy. Changing work practices in exchange for raising benefits is an example of a negotiation approach.

The educational strategy involves changing the system of values and beliefs, so that people support the transformation processes and adhere to a common set of organizational values. The emphasis is on affective and rational conquest through a combination of activities, such as persuasion, education, training and selection. Sometimes, consultants on organizational development issues (specialists in the behavior of individuals and groups) are called in to contribute with assistance. The disadvantage of such a strategy is that it will

usually require a much longer period of time and more resources than previous strategies.

Participatory strategies involve those who are subjects of the process of transforming the human resources management, in the context in which although this can be initiated by managers, the groups charged with carrying it out will be less dominated by the person with managerial authority and will include them to all those affected or their representatives. Consultants can be used to facilitate the process.

Participatory strategies have several potential advantages. The transformation process has more chances to be accepted at a general level and the fact that they are actively involved will cause them to adhere as a rule with more conviction and more enthusiasm. The organization has opportunity to learn from the experience and competence of a larger number of people, and people can learn from the process.

All strategies are not mutually exclusive and can be mixed. When changing work practices, educational strategies can be used to prepare the ground for transformation; certain details may need to be negotiated with employees' representatives, and participatory methods could be used to take into account the details of implementation, the style of thinking and the behavior of the members of the organization, sometimes representing key elements.

#### 4. SPECIFIC STRATEGIES

Transforming the human resources management produces unavoidable tensions and differences of opinion, which in modern organizations are resolved, but sometimes in organizations with a rigid culture can cause conflicts. In the opinion of Doval (2005, p. 33), this transformation causes the feeling of loss, of suffering, because an individual struggles hard to resist the conflict of contradictory impulses by denying the past experience and reconciling, reformulating and reintegrating the elements of the past, to which he was attached.

According to Marris (1964), the transformation process must foresee and even encourage the conflict, because people feel the need to react, to express their ambivalent feelings. The transformation process must respect the autonomy of the different experiences, so that each group can be organized without the intrusion of foreign concepts, but it takes time and patience, because the conflict does not only involve the accommodation of different interests, but also the ability to achieve an essential continuity in the structure of stress. In order to save energy and time, the managers seek to co-opt representatives approved by the members of the organization by the clever handling of the attempts of organized opposition, by fragmenting the critical elements and by wrapping them with qualified data and information in a cooperative framework.

The pace or speed of the transformation process of the human resources management must be adapted to the specific characteristics of the organization environment (external and internal). The so-called "strategic continuum" depicts a scale of transformation intensity, with two extremes: fast paced and slow paced.

Fast pace denotes clear planning, minimal involvement of others, attempt to minimize opposition and slow pace indicates unclear planning, considerable involvement of others, attempt to reduce opposition. Five types of transformation strategies can be mentioned, namely directive, normative, analytical, negotiation and action oriented. At the directive strategy the transformation is imposed by the top management and at the normative one, attitudes, global values are sought, using specialized external agents for change (Ford, 2001).

The analytical strategy is based on a clear definition of the problem, so that information is collected and analyzed in detail, using experts. In case of negotiation, the legitimacy is recognized and concessions can be made in the transformation process, as is the case with the conclusion of international partnerships. On the other hand, the action-oriented strategy starts from a general idea about the problem

and tries different solutions, with the necessary changes depending on the effects.

## 5. STUDY OF INFLUENCE FACTORS

The processes of transformation of human resources management can be generated by forces of external environment and the pressures of internal environment. Pressure factors from external environment are usually outside the control of management. These forces must be continuously scanned, analyzed, evaluated, understood and as anticipated as possible, so that management can make decisions that will make the organization successfully respond to the changes required in the field of human resources management. The pressures of the internal environment can generate transformations in the organization environment, so that small, sometimes unnoticed or discontinuous transformations can have a much more serious impact on the activity of the organization than large transformations, but the control sustained by legislative regulations ensures the coordination of public and private organizations (Mitrache, Budică, 2006).

The transformations in the internal environment can and are generally controlled by the management of the organization, which can appear to create the competitive advantage or to improve some aspects of the current activity, to increase the performances or for the future development of the organization. These transformations may vary depending on purpose and complexity, so some may be minor and not significant, and others have a major effect on the organization. Thus, we can exemplify the introduction of a new personnel evaluation system, the implementation of a new computer program, the hiring of new top managers, staff reductions, the restructuring of the compartments and the introduction of a new organizational structure, the change of the organizational culture as a result of internationalization (Doval, 2005, pp. 16-17).

The five factors that can lead to the success of transformation of human resources manage-

ment are the coherence, the environmental assessment, the management, the human resources, as assets and liabilities and the correlation of the strategic change with the operational one. Coherence consists of coordinating interconnected or overlapping changes over a period of time and requires integrity from top management, consistency, feasibility and advantages. The correlation of the strategic change with the operational one focuses on justifying the need for change, setting up the action team, changing the vision in the new context and monitoring.

In "Managementul resurselor umane", Schiopoiu Burlea (2008) notes that the globalization of knowledge imposes a new vision on the way of approaching the collaboration inside and outside the organization. Human resources as assets and liabilities refer to the connection between human resources management and change and initiation of actions that support change. The environmental assessment focuses on scanning both internal and external pressures and is the basis of the construction of the network to support the transformation.

## 6. FORCE FIELD ANALYSIS

The transformation of human resource management causes resistance or opposition from internal and external factors. Starting from the idea that any situation is not static but is an effect of a dynamic equilibrium produced by two sets of interacting and opposing factors, internal or external factors, Lewin (1951) introduced a model and specifically in the preliminary analysis of the transformation process, called Force Field Analysis. The model starts from the perception of the groups involved or affected: forces or pressures that cause transformation and forces or pressures that oppose it.

The analysis involves the identification, as in a balance, of the assets (elements and forces that support the transformation) and the liabilities (elements that restrict the transformation and forces that oppose it and act to maintain the current state). These elements and forces

are placed in a diagram in which their intensity of action is read after the thickness of the arrows.

The forces for and against transformation act to maintain balance within the organization. If the forces favorable to the transformation are weak or defeated by the forces against the process, the current state is maintained, and if, on the contrary, the forces for transformation overcome the opposing forces, it occurs.

The attitude of rejecting the transformation of human resources management is generated by the fear of those concerned that they will not be able to assimilate the new procedures, but also from a number of other considerations generated from the perspective of the unknown. Changes involve a number of particularly complex actions, which are out of the reach of unannounced managers. The main causes that determine resistance are the narrow personal interest, the misunderstanding, the different evaluation of the situation, the intolerance to change, the intolerance to other points of view contrary to one's own vision and the distrust of the initiators of the transformation process (Nica, 2006a).

The different assessment of the situation, generated by the differences of perception of the situation, is perpetuated as a result of the insufficient information or different interpretation of them, which cause different groups or individuals to have a different perspective on the same reality. Consequently, the ways of solving them are also different. Intolerance is generated by distrust of one's own ability to acquire new skills and competences, being the effect of the shock wave, determined by the desire to avoid surprises, because the sudden announcement of intentions creates a state of skepticism, of open opposition. Excessive personal uncertainty also manifests itself in the fact that the first question asked by those who are faced with such a situation is "What implications will this change have on my job?". Intolerance occurs when change represents a threat, such introduction of a new pay system in terms of performance or the evaluation of the performances of the

managers and according to the appreciation of the subordinate staff.

Intolerance to other points of view contrary to one's own vision, as a manifestation of the accumulated experience, intolerant behavior or cultural environment of dictatorial essence that was the basis of the functioning of organizations for decades, is a consequence of the fear of losing control, the imbalance of the relationship between what can do to others and what they can do to me. The most frequent reaction in such situations is materialized in the attempt to save the appearances, not being invoked the true reasons. There is also a lack of confidence in the initiators of the process of transforming the management of human resources, in their ability to detect the true situation and to propose effective measures for change.

## 7. CONCLUSIONS

The forces favoring the transformation of human resources management in health organizations are more intense, having the support of the decision-makers from the level of the state management and the direct observations and the interviews conducted have shown the attachment of the employees to the organizations in which they operate.

The decision makers involved in adopting these strategies must be well trained in business and administrative management and have knowledge of case law. Choosing transformation strategy will initially involve studying the influence factors. The size and the forms of manifestation of the resistance and its supporting forces will be identified. We believe that a management strategy is appropriate for health organizations from the point of view of their organization, but it deepens the gap between managers and subordinate staff. Against this background, resistance will increase and feedback on results will be delayed.

The most convenient strategy for senior managers is the coercive one, because through it they only make provisions and demand that they be applied. For this reason the resistance will be very high, because the employees do

not participate out of conviction, but only to avoid sanction. The results of this strategy can be ephemeral as changing the manager can make the change process unnecessary.

A negotiation strategy could be functional in the case of public organizations, given that their employees can join professional unions. In other health organizations, this strategy is unusable because the hierarchy is not based on negotiation. In contrast, the educational strategy covers all categories of staff.

In our opinion, participatory strategies are welcome in health organizations, allowing their employees to manifest themselves in the sense of supporting transformation through their knowledge. Participatory strategies are optimal. At the moment of transformation the resistance can be reduced by approaching the processes from top to bottom, the uncomfortable employees, possibly from the middle management, can be replaced immediately with other people with favorable opinions.

[10] Schiopoiu Burlea, A., *Managementul resurselor umane*, Editura Universitaria, Craiova, 2008, p. 55.

## REFERENCES

- [1] Doval, E., *Managementul schimbării organizaționale în context internațional*, Editura Infomarket, Brașov, 2005.
- [2] Ford, D., *Managing Business relationship*, John Wiley&Sons, London, 2001, pp.23-26.
- [3] Kogălniceanu, G., *Schimbarea organizațională*, Săptămâna financiară, 24 mai 2007.
- [4] Lewin, K., *Field Theory in Social Science*, Harper & Row, New York, 1951.
- [5] Marris, R., *The Economic Theory of Managerial Capitalism*, Free press, Glencoe, 1964.
- [6] Mitrache, M., Budică, I., *Asumarea riscului în deciziile manageriale: riscul pur și riscul antreprenorial*, Revista finanțe publice și contabilitate, nr. 7-8, București, 2006.
- [7] Nate, S., *Tendințe în managementul de securitate națională*, Ed. Leader, Sibiu, 2007.
- [8] Nica, P., *Rezistența la schimbare și cauzele care o generează*, Revista de marketing și comunicare în afaceri, Iași, 2006a.
- [9] Nica, P., *Strategii de realizare a schimbării organizaționale*, Revista de marketing și comunicare în afaceri MarkMedia.ro, Iași, 2006b.

## DEFENSE OFFSET STRATEGY FOR DEVELOPMENT OF THE NATIONAL DEFENSE INDUSTRY IN INDONESIA

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*Basically, Indonesia has implemented a national defense offset policy. However, there are still obstacles in the implementation of these policies. This study aims at developing a strategy of implementing the Defense Offset to Strengthen the National Defense Industry. This study used the PEST (Politics, Economy, Social, Technology) analysis method, Borda method, and SWOT (Strengths, Weaknesses, Opportunities, Threats). This study is expected to provide an analysis of the optimization of defense offsets implementation. The analysis results of the internal factor obtained 7 aspects of strength and 13 aspects of weakness. The analysis results of external factors obtained 11 aspects of opportunity and 13 aspects of the threat. The analysis results of the QSPM matrix found that the strategy that is in accordance with the policy of implementing defense offset is the SO strategy. SO Strategy consists of 18 sub-strategy steps, which are aspects of government policy 6 sub-strategies; aspects of developing human resources 4 sub-strategies; aspects of the defense industry infrastructure 8 sub-strategies.*

**Key words:** *The Indonesian National Armed Forces (TNI), defense offset, defense industry, borda count method, SWOT (Strength, Weakness, Opportunity, Threat), PEST (Politics, Economy, Social, Technology)*

### 1. INTRODUCTION

To face the challenge of tasks of The Indonesian National Armed Forces (TNI) on forward, the concrete manifestation of technological dominance in the TNI system is mainly in the form of weapon systems used covering the main equipment, with all its supporters, as well as the capabilities and skills of TNI soldiers in a professional manner [1]. Certainly, the level of technology requires a strong and independent national defense industry [2]. The development of the domestic defense industry is one of the important aspects of a country's efforts to develop a defense system independently. It is related to the fulfillment of needs both in providing quality

and quantity of defense equipment in which it is in accordance with regional characteristics, and it eliminates political dependence on other countries [3]. One way to get a strong and independent defense industry, including qualified defense technology, is through an offset policy [4].

Basically, Indonesia has implemented a national defense offset policy [2]. However, there are still obstacles in the implementation of these policies, among others:

- 1) The absence of policies or regulations supporting the defense industry in the implementation of defense offset;
- 2) Capabilities of HR in supporting the development of defense offset are still minimal and limited; and

- 3) The facilities and infrastructures in the defense industry are still unable to fully support the defense offset policy.

This study aims at developing a strategy of implementing the Defense Offset to Strengthen the National Defense Industry. This study used the PEST (Politics, Economy, Social, Technology) analysis method, Borda method, and SWOT (Strength, Weakness, Opportunity, Threat). PEST analysis was used to identify the related external factors having an effect. The Borda method was used to give a score to criteria of internal and external factors. SWOT was used to develop a defense offset implementation strategy. This study is expected to provide an analysis of the optimization of defense offsets implementation and to formulate priority steps for the optimization of defense offset policies implementation to support the independence of Main Equipment and Weapon Systems.

There are several previous studies as references:

- Hajami and Chinoperekweyi (2019) critically analyzed the role of offsets and offset management in the aerospace industry [21].
- Platzgummer (2015) explains how balancing agents use performance management to control, direct, improve, and provide accountability to the public in the implementation of defense offset [22].
- Terziev, et al. (2017) explains the role of offsets as economic operations that represent a variety of industry and trade practices [5].

References about PEST:

- Alava et al (2018) explain the PEST analysis on the neutrosophic map [12].
- Acar (2015) explains about the analysis of PEST in an unstable economic environment [23].

- Putra et al (2017) explained the PEST analysis for Indonesian maritime security [24].
- Keung-Ho (2014) proposed the construction of a systemic PEST analysis diagram [11].

References about SWOT in military:

- Yogi et al (2017) SWOT to provide analysis, appropriate strategies that can be used to plan base relocation [19].
- Susilo et al (2018) explained the strategy of developing the Navy's posture to support operational tasks [25].
- Wahyudi et al (2019) explained the strategy of KRI dr. Soeharso in HA/DR operation using SWOT-ISM [20].
- Herdijanto et al (2019) explained the strategy of Revolution Military affair using SWOT analysis.

In this study, there is systematic writing in which the second section will discuss defense offset theory, PEST analysis, SWOT theory, defense industry. Then, it explains data collection, data processing, and data analysis. The third section will discuss the results of the analysis and discussion. The fourth section explains the conclusions of the study.

## 2. MATERIAL/METHOD

### 2.1. Defense Offset

Basically, Defense offset is a process of purchasing weapons or mutual investment agreed by weapons manufacturers or suppliers in return for an agreement to purchase military services and equipment. Defense offset in defense trade has been carried out in the world arms trade for the past five decades since the first offset between the US and Europe in arms trade [6].

There are two types of offsets: direct and indirect offset. Direct offset is defined as goods or services which are directly related to military equipment being sold [7]. There are three types of direct offset, which are: 1) licensed

production; 2) Co-production; and 3) Co-development. [8]

Meanwhile, indirect offset is defined as goods and services which is not directly related to purchases of military products, but it is attached as agreements in the process of buying and selling military and defense equipment. There are at least four types of indirect offsets, which are: 1) Barter; 2) Counter-purchase; 3) Counter-investment; and 4) Buyback. [9]

## 2.2. Defense industry

Based on the Act No. 16, 2012 concerning the Defense industry, the purpose of the formation of that is to revive the national defense industry, because the needs of Indonesia for Defense Industry products currently are very high and are expected to revitalize our defense industry. The presence of Act No. 16, 2012 concerning Defense Industry appeared at a right moment because The Indonesian National Armed Forces (TNI) is conducting the process of modernizing the defense equipment, and TNI has had a strategic plan on modernization of Main Equipment and Weapon Systems (Alutsista) in three stages for fifteen years [1].

Republic of Indonesia Presidential Regulation No. 59, 2013 concerning the Defense Industry Policy Committee - The empowerment of the defense industry to develop the national industry into a defense industry directed at: meeting the needs of Defense equipment, encouraging in producing products for defense and non-defense interests, cooperation with foreign defense industries both production and development. The Integration of the Defense Industry development by considering the science and technology mastery and technology transfer through cooperation between ministry and other institutions within the scope of the Defense Industry Policy Committee (KKIP) to create a strong, independent, and competitive defense industry [2].

## 2.3. PEST Analysis

PEST analysis is related to the influence of the environment on business [10].

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 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 [11].

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 [12].

## 2.4. 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 [13]. 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 [14].

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 [15]:

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

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 the Indonesian Navy in order to support technology mastery.
- b. Giving the value of the related criteria and determining the priority in the strategy implementation.

### 2.5. SWOT Analysis

SWOT analysis is the systematic identification of various factors to formulate a company's strategy [16]. This analysis is based on a 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 [17].

Thus, strategic planning must analyze the factors of the company's strategy (strengths, weaknesses, opportunities and threats) in the current conditions.

### 2.6. SWOT Elements

SWOT elements consist of Strength, Weakness, Opportunity, Opportunity, Threats. External and internal factors According to [26] if we are to analyze more deeply 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 [18].

- 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 [19].

**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

2.7. Flowchart of Research.

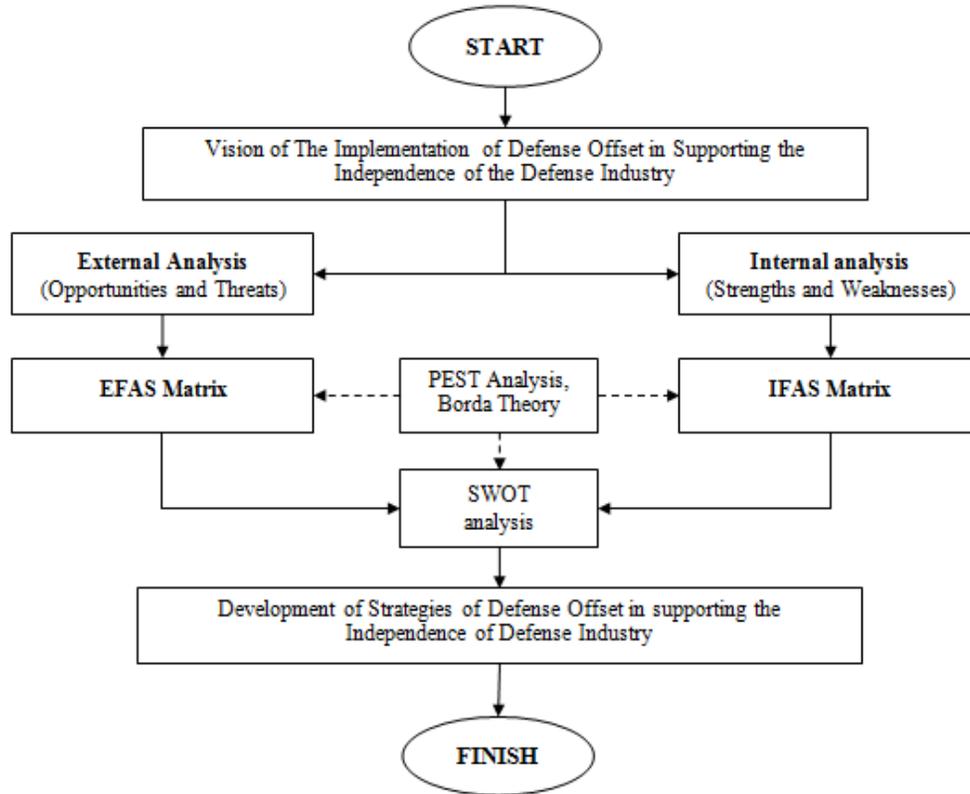


Fig. 1. Flowchart of Research.

The development of strategy of the concept of defense offset implementation in the initiation step starts with setting vision and mission. The second step is to identify the external and internal aspects. External aspects are opportunities and threats affected by the developments of global, regional and national strategic environments. Internal aspects are in the form of strength and weakness affected by current conditions in the implementation of defense offset. The third, sets the IFAS and EFAS matrices of each variable obtained and gives a score to the related criteria. The fourth, it sets a development strategy from the results of giving a score by identifying the strategy quadrant (SO, ST, WO, WT).

In this study, data collection techniques used were a questionnaire. This technique is a

method of data collection used to collect data by distributing the list of questions to the expert so that the expert provides the answer. The type of questionnaire used is an open questionnaire in which the expert is able to give the information related to the object of research in the implementation of defense offset as many as possible. After the data from the experts was collected, the data is compiled and identified based on the carried-out criteria. Then, further analysis is carried out.

**Table 2.** Expert choice in this research.

No	Expert Person	Number	Code
1	PT. Pindad	2 experts	E1-E2
2	PT. PAL	2 experts	E3-E4
3	PT. DI	2 experts	E5-E6
4	Ministry of Defense	2 experts	E7-E8
5	The Indonesian National Armed Forces Headquarters	2 experts	E9-E10

The subjects in this study were the stakeholders related to the implementation of defense offset. As planned, some of them include:

- a. Chief of Defense Industry.
  - 1) PT. Pindad (2 Expert).
  - 2) PT. PAL (2 Expert).
  - 3) PT. DI (2 Expert).
- b. Ministry of Defense. (2 Expert).
- c. The Indonesian National Armed Forces Headquarters. (2 Expert).

from the grip of the West. The weapons assistance was promised with technology transfer allowing Indonesia to gradually take care of the equipment itself and to meet its defense weapons needs. The defense offset mechanism in the procurement of defense weapons has been carried out with three types of offsets: purchasing licenses, co-production, and co-development, but the offset mechanism has not been able to sustain the needs of defense equipment in Indonesia.

**Table 3.** Scores of Likert Scale.

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

Indonesia has quite a number of parties involved in the defense industry, but both Indonesian state-owned and private-owned companies have not been able to organize the domestic defense industry. Indonesian companies, especially private-owned companies, most of them are becoming agents, distributors and re-sellers of foreign-manufacturers products. This condition causes the defense and security equipment needed by the Indonesian National Armed Forces (TNI) and The Indonesian National Police (Polri) not to be fully produced domestically.

### 3. RESULT & DISCUSSION

#### 3.1. Analysis of Internal Factor

Actually, the practice of defense offset in Indonesia began in the 1960s when Indonesia received weapons assistance from the Soviet Union for the campaign to liberate West Papua

Based on the results of the study, analysis of internal factors include:

**Table 4.** Analysis of internal factors for defense offset.

INFLUENCE ASPECT	STRENGTH FACTORS	WEAKNESS FACTORS
Policy	<ul style="list-style-type: none"> <li>1) Policy of Defense Independence</li> <li>2) Policy of Defense Budget Improvement</li> <li>3) Establishment of KKIP.</li> </ul>	<ul style="list-style-type: none"> <li>1) There is no policy of the independence of 100% of Main Equipment and Weapon Systems.</li> <li>2) There is still the dependence of several components of Main</li> </ul>

INFLUENCE ASPECT	STRENGTH FACTORS	WEAKNESS FACTORS
		Equipment and Weapon Systems. 3) The absence of a holding company for the defense industry. 4) The budget for implementing defense offset policies is still limited.
<b>HR</b>	1) Quite experienced HR 2) The level of HR education is quite high.	1) The ability or HR skills are still limited to stage three of defense offset. 2) Weak regeneration and recruitment management. 3) Many existing human resources have entered retirement age. 4) Lack of expertise.
<b>Defense Industry</b>	1) Previous experience in establishing Main Equipment and Weapon Systems. 2) The rise of national defense industry exports.	1) The quality and quantity of the defense industry are still limited. 2) Production capacity is still limited. 3) Old production machines technology. 4) Investment and capital are still limited. 5) The R&D Institution is still sectorial.

The implementation of defense offset has been regulated in Act No. 16, 2012 concerning the defense industry. The ability of the defense industry in establishing main equipment and weapon systems can be said to be capable and has the capability because it is supported by several facilities such as production facilities, IT facilities, human resources and financial facilities. However, certain programs, such as TOT submarines in the framework of Whole Local Production have not been implemented because there is equipment that has not been met due to budget constraints.

The defense industry played a role as an operational implementer needing the support of various parties such as the government as a regulator and other parties such as the TNI or other domestic industries. One of the important

things to increase the capacity and capability of a reliable defense industry is the opportunity given to the defense industry to transform in the technology sector, one of which is the opportunity to be able to do TOT from countries having technology.

On the other hand, the existing investments, such as infrastructure, need to be supported by order continuity because the existing infrastructure has a high depreciation so that if it is not supported by an order, it will be a financial burden. The suitability of the budget certainly becomes an influential thing in the implementation of defense offset. The government as one giving the authority and the regulation of the defense budget certainly has its own calculations. What is important for the defense industry is the support in the

development of technological capabilities (e.g. TOT), infrastructure, industrial component support, and order continuity.

In the aspect of human resources, the ability to produce main equipment and weapon systems is adequate. This is because workers in the defense industry already have expertise and are specifically certified in the production of main equipment and weapon systems.

However, if there is a program for the recruitment of Indonesian workers in overseas, it will have a positive impact on the defense industry. The overseas workers have superior knowledge and may have more insights due to their relationships and networks. Thus, this advantage can be utilized for the advancement of the domestic defense industry. In addition, constructive positive work cultures as overseas can be applied in Indonesia.

**Table 5.** Result of Scoring and Weighting for Internal Factor (Strength & Weakness).

No	Factor of Internal Strategy	Score	Rating	Value
<b>S</b>	<b>Strength</b>			
1	Policy of Defense Independence	0,223	4	0,893
2	Policy of Defense Budget Improvement	0,188	4	0,750
3	Establishment of KKIP	0,152	4	0,607
4	Quite experienced HR	0,125	4	0,500
5	The level of HR education is quite high	0,045	3	0,134
6	Previous experience in establishing main equipment and weapon systems	0,116	4	0,464
7	The rise of national defense industry exports	0,152	4	0,607
<b>Total</b>		1,000		3,955
<b>W</b>	<b>Weakness</b>			
1	There is no policy of the independence of 100% of Main Equipment and Weapon Systems.	0,089	3	0,268
2	There is still the dependence of several components of Main Equipment and Weapon Systems.	0,024	4	0,097
3	The absence of a holding company for the defense industry.	0,114	3	0,341
4	The budget for implementing defense offset policies is still limited.	0,097	3	0,292
5	The ability or HR skills are still limited to stage three of defense offset.	0,016	3	0,049
6	Weak regeneration and recruitment management.	0,046	3	0,138
7	Many existing human resources have entered retirement age.	0,041	3	0,122
8	Lack of expertise.	0,016	4	0,065
9	The quality and quantity of the defense industry is still limited.	0,130	4	0,519
10	Production capacity is still limited.	0,065	4	0,259
11	Old production machines technology.	0,086	3	0,259
12	Investment and capital are still limited.	0,135	4	0,541

No	Factor of Internal Strategy	Score	Rating	Value
13	The R&D Institution is still sectorial.	0,049	3	0,146
<b>Total</b>		1,000		3,095

**3.2. Analysis of External factor.**

The development of national defense is carried out to uphold national sovereignty, to maintain the territorial integrity of the Unitary State of the Republic of Indonesia, and to keep the safety of all nations from military and non-military threats. Indicators of defense development progress are marked by an increase in the readiness of personnel and main equipment and weapon systems, as well as the implementation of military training and joint training in accordance with the plan in an ongoing manner.

Technological aspects, globalization has an impact on the change of attitudes, values, the

development of science and technology, and a better level of life. Globalization in the era of Industrial Revolution 4.0 also caused Revolutionary in Military Affairs (RMA) having the implications for changes in war strategy and combat tactics in the military world. Drastic and rapid technological changes emerging during the era of Industrial Revolution 4.0 forced the military to adapt more quickly and to evolve to make major changes. TNI is preparing for the development of a new world order influenced by the era of Industrial Revolution 4.0.

Based on the results of the study, analysis of external factors includes:

**Table 6.** Analysis of External Factor for Defense Offset.

INFLUENCE ASPECT	OPPORTUNITY FACTORS	THREAT FACTORS
<b>Politic</b>	<ol style="list-style-type: none"> <li>1) Countries with Active-Free Politics</li> <li>2) Government Policy Regarding the Defense Independence.</li> <li>3) Policy on the Prohibition of Export of Raw Natural Resources.</li> </ol>	<ol style="list-style-type: none"> <li>1) The uncertainty of world politics.</li> <li>2) National democracy dividing the unity of the generation of nation.</li> <li>3) The threat of an embargo of main equipment and weapon systems</li> </ol>
<b>Economy</b>	<ol style="list-style-type: none"> <li>1) The Increase of defense budget.</li> <li>2) Export some main equipment and weapon systems to the Regional area.</li> <li>3) Adequate natural resources.</li> <li>4) Investment in the Defense Industry is increasing.</li> </ol>	<ol style="list-style-type: none"> <li>1) The uncertainty of the world economy.</li> <li>2) A trade war between the US and China.</li> <li>3) Soaring world oil prices.</li> <li>4) World currency instability.</li> </ol>
<b>Social Culture</b>	<ol style="list-style-type: none"> <li>1) Abundant Human Resources for workforce</li> <li>2) The level of education is quite high.</li> </ol>	<ol style="list-style-type: none"> <li>1) Threats from the left-right political spectrum.</li> <li>2) Unequal education and economic disparity.</li> <li>3) The threat of taking over technology experts.</li> </ol>
<b>Technology</b>	<ol style="list-style-type: none"> <li>1) The ability of the defense industry</li> </ol>	<ol style="list-style-type: none"> <li>1) A technological war between</li> </ol>

INFLUENCE ASPECT	OPPORTUNITY FACTORS	THREAT FACTORS
	continues to be driven. 2) The development of national technology is quite dynamic.	superpowers. 2) The threat of cyber-attacks 3) Experts are limited.

**3.3. Analysis of opportunity and threat**

**a. Opportunity.**

*1) Political Aspects.*

Active-free political system of Indonesia provides several opportunities in implementing defense cooperation with several friendly countries. Several countries having advantages in the field of weaponry and the defense industry have provided opportunities in implementing defense offset policies: 1) South Korea; 2) Russia; 3) Belgium; 4) Netherlands; 5) China; 6) Turkey; 7) and several other friendly countries. This condition is supported by the government's program in defense independence with the issuance of Act No. 16, 2012 concerning the defense industry stating that the development of the defense industry is an integrated part of the national resource management strategic planning.

*2) Economic Aspects*

The government stated that the increase in the budget of The Indonesian National Armed Forces or TNI would be adjusted to the growth of state revenue. The government currently allocates defense spending of 0.9% gross domestic product (GDP). For the future, the allocation will be increased in line with an increase in tax revenue. With this change, the national budget for the TNI could increase to Rp150 trillion-Rp200 trillion in the next two to four years. The budget will be allocated to increase welfare, education, and weaponry by

establishing the domestic defense industry.

*3) Social-Cultural Aspects*

The demographic bonus is one of the first steps to change this country from a developing country to a developed country. This opportunity must certainly be utilized to the optimum to build readiness towards the era of golden Indonesia of 2045. It is with the role of the government as a facility provider, the community as the main implementers of the available systems and facilities, and, of course, the two main actors must work together.

There are several sectors determining whether the country is ready to face the era like this or not. It will not be far from the economy, the quality, and amount of human resources, industrial productivity, governance, defense, education structure, and so on.

*4) Technology Aspects*

Nowadays, the process of globalization has an impact on interdependence between countries in various fields, including in the field of the defense industry. Developed countries can provide technology transfer mechanisms to developing countries on a technical level, which is to improve production efficiency, as well as on a political level, which is to strengthen the relations with these countries. Technology transfer can also be carried out between developing countries at the aim to complement

each other's shortcomings of the technology being developed. For Indonesia, this technology transfer mechanism can be its own opportunity, especially in the context of building a defense system amid the rapid development of current defense technology.

**b. Threat.**

*1) Political Aspects*

Political uncertainty and fluctuating oil prices have weighed heavily on global economic growth. These new dynamics and concerns have given rise to a new set of policy challenges, not only on how to simultaneously maintain stability and revive growth, but also on how to strengthen the foundations of the global political system.

The embargo of Indonesian arms by the United States was officially carried out in 1999. The embargo itself is a prohibition on trade by one or a group of countries against other countries to limit and to put the country's government in a difficult internal situation (Rachmawatie, 2014). The terminology regarding the embargo of arms cited by the UN Security Council (UNSC) No.1390 (2002) shows that an embargo of arms is a form of prohibition on the supply of not only the arms, but also arms' parts and anything related to military activities to parties (countries) that usually receive the supply.

*2) Economic Aspects*

The slowest growth in the world economy since at least 1992 has reflected the increasing pressure on the strength of the world's second-largest economy. This is caused by the protracted trade war between China

and US and by the decline in demand for goods from China from around the world. Economic conditions both in the country and oversea are still bad; global economic growth is slowing; instability and external uncertainties are also increasing. A country's defense budget is indeed very influential on the armed forces. The armed forces of a country must always be strong because in addition to being the frontline in a country's defense system, the strength of the armed forces can also be a vibrating force on the diplomacy table.

*3) Social-Cultural Aspect*

The increase of growth rate, from year to year, is also followed by an increase in life expectancy. It has an impact on the increase of working age. The low level of education results in the difficulty of people accepting new things. It can be seen from the inability of the community to properly take care of the results of development, so that many public facilities have been damaged due to the inability of the community to treat them properly. This fact, if left unchecked, will hamper development.

*4) Technology Aspects*

Technological developments have had consequences for the military and defense of a country. It is inseparable from the adoption of various technologies and new discoveries in the military field aiming to strengthen the national defense system. This condition makes all countries trying to renew their defense systems to face threats related to the development of technology itself. For Indonesia, it is both a challenge and an opportunity for the current defense system.

Table 7. Result of Scoring and Weighting for Internal Factor (Opportunity &amp; Threat).

No	Factors of External Strategy	Score	Rating	Value
<b>O</b>	<b>Opportunity</b>			
1	Countries with Active-Free Politics	0,083	3	0,250
2	Government Policy Regarding the Defense Independence	0,134	4	0,536
3	Policy on the Prohibition of Export of Raw Natural Resources	0,116	3	0,348
4	The Increase of defense budget	0,152	4	0,609
5	Export some main equipment and weapon systems to the Regional area	0,109	3	0,326
6	Adequate natural resources	0,080	4	0,319
7	Investment in the Defense Industry is increasing	0,134	4	0,536
8	Abundant Human Resources for workforce	0,091	3	0,272
9	The level of education is quite high	0,043	3	0,130
10	The ability of the defense industry continues to be driven	0,029	3	0,087
11	The development of national technology is quite dynamic	0,029	3	0,087
<b>Total</b>		1,000		3,500
<b>T</b>	<b>Threat</b>			
1	The uncertainty of world politics	0,108	3	0,323
2	National democracy dividing the unity of the generation of nation	0,024	3	0,073
3	The threat of an embargo of main equipment and weaponsystems	0,070	3	0,210
4	The uncertainty of the world economy	0,024	4	0,097
5	A trade war between the US and China	0,024	4	0,097
6	Soaring world oil prices	0,094	3	0,282
7	World currency instability	0,040	3	0,121
8	Threats from the left-right political spectrum	0,024	3	0,073
9	Unequal education and economic disparity	0,024	3	0,073
10	The threat of taking over technology experts	0,094	3	0,282
11	A technological war between superpowers	0,040	3	0,121
12	The threat of cyber-attacks	0,081	3	0,242
13	Experts are limited	0,081	3	0,242
<b>Total</b>		1,000		2,234

### 3.4. Analysis of SWOT Matrix

The defense industry cannot be separated from the development of the national defense system, in any country. Thus, the existence of the defense industry is one of the important components for establishing a country's defense system. However, currently, the procurement of main equipment and weapon system in meeting

MEF is still largely dependent on foreign-manufactures imports. This condition is due to the suboptimal role of the domestic defense industry.

In an effort to advance the defense industry, Indonesia faces very complex challenges in the form of intense competition between countries in seizing market share as well as capability and

competitiveness. Facing these challenges, it requires a strategic step in supporting the domestic defense equipment policy. Independence of the main equipment and weapon system can be achieved by implementing the defense offset policy system that has been regulated in the Regulations. The next step, it is needed a strategy and efforts taken so that the goal of independence of the main equipment and weapon system can be achieved.

Basically, establishing the defense industry through the implementation of defense offset is not new for Indonesia. In general, Indonesia already has several main defense industries. Indonesian defense industry players include State-Owned Enterprises (BUMN) and private companies. The business that they do is producing military equipment, producing components, supplying raw materials, and offering repair and maintenance services.

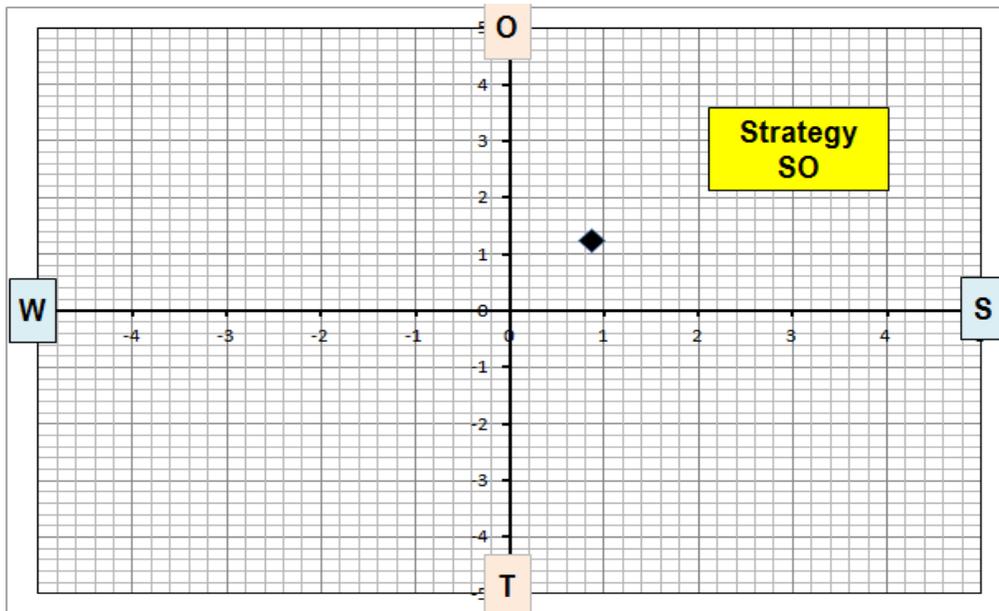
In implementing the defense offset, a strategic step is needed. The strategic steps in the KKA research were formed by identifying external and internal aspects. External aspects

are opportunity and threat influenced by developments in the global, regional, and national strategic environment. Internal aspects are in the form of strength and weakness influenced by current conditions in the implementation of defense.

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

**Table 8.** Analysis of quadrant in SWOT Strategy (IFAS & EFAS).

S	W	Quadrant	Axis
3,955	3,095	0,861	X
O	T	Quadrant	
3,500	2,234	1,266	Y



**Fig. 2.** Diagram Analysis of SWOT Strategy for Defense Offset Policy.

Based on four alternative strategies (SO, ST, WO, WT), one strategy needs to be identified in accordance with the strategy of developing defense offset policies in Indonesia. The results of the analysis of QSPM matrix and the SWOT diagram, the appropriate strategy is a SO strategy that is using strength to make the most of opportunities in implementing defense offset in Indonesia. SO steps, among others:

**a. Aspects of Government Policy**

- 1) Formulating a defense offset guideline policy and a roadmap for implementation in stages until the full independence of the main equipment and weapon system is fully met.
- 2) Carrying out monitoring of the release of offset obligations, including auditing and reviewing progress reports received from the relevant defense industry and MSMEs supporting the defense industry component.
- 3) The Ministry of Defense conducts regular interactions with all stakeholders, including industry, to encourage a partnership model for defense growth.
- 4) Encouraging the government to produce special policies related to aerospace, maritime, and territorial defense of the country to attract investment and apply new banking rules helping companies that are members of holding defense offset.
- 5) Facilitating faster absorption of technology and creating a multilevel defense industry ecosystem.
- 6) Establishing a synergy of cooperation between the national defense industry and the financial industry. This condition will help the establishment of Act No. 16, 2012 concerning the Defense Industry, particularly, regarding the procurement of strategic Defense and Security Equipment Tools

under the supervision and approval of the Ministry of Defense.

**b. Aspects of Human Resource Development**

- 1) Utilizing demographic bonuses of abundant workforce as the development of human resource and the regeneration in the implementation of defense offset.
- 2) Increasing the ability of human resources to become experienced experts by sending them to friendly countries.
- 3) Bringing in experts from abroad to become teachers.
- 4) Calling back national experts working overseas by giving an increased payment.

**c. Aspects of Defense Industry Infrastructure.**

- 1) Strengthening the defense industry infrastructure, including QA/QC/testing laboratories, both in the public and private sectors.
- 2) Producing several technology platforms under licensed production. Defense offset in which there is technology transfer has become the main reason and determinant of technology growth and development. Developing the latest technology to be able to achieve progress in manufacturing of defense products.
- 3) Applying offset banking guidelines and implementing new banking rules that ease companies that are members of holding defense offset.
- 4) Increasing production capacity by means of intensification and extensification to meet the needs of national defense equipment.
- 5) Gradually increasing R&D and development.

- 6) Encouraging collaboration to obtain the latest technology, manufacturing processes, expertise and R&D. It is as well as foster a competitive, innovative, and strong defense industry.
- 7) Mapping R&D capability to identify defense-related technologies. This mapping will include key industrial laboratories, other public sector laboratories, academic institutions and industry.
- 8) Implementing defense manufacturing investments to encourage the development of internationally competitive defense, aerospace, and domestic security related companies.

#### 4. CONCLUSION

Based on the results of the analysis in the study, the concept of the implementation strategy of defense offset policy in Indonesia can be implemented with several influential factors. The analysis results of internal factors obtained 7 aspects of strength and 13 aspects of weakness. The analysis results of external factors obtained 11 aspects of opportunity and 13 aspects of threat.

The analysis results of the QSPM matrix found that the strategy that is in accordance with the policy of implementing defense offset is the SO strategy. SO Strategy consists of 18 sub-strategy steps, which are aspects of government policy 6 sub-strategies; aspects of developing human resources 4 sub-strategies; aspects of the defense industry infrastructure 8 sub-strategies.

#### 5. ACKNOWLEDGEMENT

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#### REFERENCES

- [1] The Republic of Indonesia Ministry of Defence, *Indonesian Defence White Paper*. Jakarta: Ministry of Defence of the Republic of Indonesia, 2015.
- [2] Syarifudin Tippe, "Defense Offset Policy in Indonesia," *International Journal of Administrative Science & Organization*, vol. 20, pp. 84-89, 2013.
- [3] Sri Hartati, Ade Muhammad, Kartib Bayu, and Muhammad Tasrif, "Indonesian Defense Industry Model Concept: A Study Framework for Defense Industry Building," *Journal of Advanced Management Science*, vol. 2, no. 4, pp. 260-266, 2014.
- [4] Curie Maharani Savitri, *Contribution of Offset to Defence Industrialisation in Indonesia*. Cranfield: Cranfield University, 2016.
- [5] Venelin Terziev, Veselin Madanski, and Marin Georgiev, "Offset as an Economic Operation and a Trade Practice," *International E-Journal of Advances in Social Sciences*, vol. III, no. 9, pp. 1051-1055, 2017.
- [6] Heinz-Axel Kirchwehm, *Offset-Execution-Model for Small and Medium Enterprises*. Riga: Turiba University, 2015.
- [7] Jurgen Brauer and J. Paul Dunne, "Arms Trade Offsets: What do We Know?," Bristol, 2009.
- [8] Heinz Kirchwehm, "Impact of Defence Offsets On The Companies of The Participating Industry - A Case Study Based Examination," *International Journal of Business Research and Management*, vol. 5, no. 4, pp. 52-63, 2014.
- [9] Travis K. Taylor, "The Proper Use of Offsets in International Procurement," *Journal of Public Procurement*, vol. 3, no. 3, pp. 338-356, 2003.
- [10] Zornitsa Stoyanova and Hristina Harizanova, "Analysis of the External Environment of Green Jobs in Bulgaria," *Economic Alternative*, no. 1, pp. 122-136, 2017.
- [11] Joseph Kim Keung-Ho, "Formulation of a Systemic PEST Analysis for Strategic Analysis," *European Academic research*, vol. II, no. 5, pp. 6478-6492, 2014.
- [12] Ramona P. Alava, Murillo Jose M, Roy B.

- Zamrano, Maria I. Z. Veles, and Maikel L. VAsquez, "Pest Analysis Based on Neutrophobic Cognitive Maps: A Case study for Food Industry," *Neutrosophic Sets and Systems*, vol. 21, pp. 84-93, 2018.
- [13] M. A. Caillaux, A. P. Sant'anna, L. Angulo-Meza, and J. C. C. B. Soares de Mello, "Container Logistics in Mercosur: Choice of a Transshipment Port Using Ordinal Copeland Method, Data Envelopment Analysis and Probabilistic Composition," *Maritime Economics and Logistics*, vol. 13, pp. 355-370, 2011.
- [14] H.K. Mohajan, "Majority Judgment in an Election with Borda Majority Count," *International Journal of Management and Transformation*, vol. 6, no. 1, pp. 19-31, 2012.
- [15] S. G. Junior, J. B. S. de-Melo, and L. D. Meza, "Sequential Use of Ordinal Multicriteria Methods to Obtain a Ranking for the 2012 Summer Olympic Games," *WSEAS Transactions on Systems*, vol. 13, pp. 223-230, 2014.
- [16] Gail Brooks, Alan Heffner, and Dave Henderson, "A SWOT Analysis Of Competitive Knowledge From Social Media For A Small Start-Up Business," *Review of Business Information Systems*, vol. 18, no. 1, pp. 23-34, 2014.
- [17] Koderi, Abdullah Said, and Abdul Wahib Muhaimin, "A SWOT Analysis of Landfill Management System: Case Study of Talangagung Edu-tourism Landfill in Malang, East Java," *International Journal of Scientific and Research Publications*, vol. 8, no. 4, pp. 450-455, 2018.
- [18] Ž. Živković, D. Nikolić, P. Djordjević, I. Mihajlović, and Marija Savić, "Analytical Network Process in the Framework of SWOT Analysis for Strategic Decision Making (Case Study: Technical Faculty in Bor, University of Belgrade, Serbia)," *Acta Polytechnica Hungarica*, vol. 12, no. 7, pp. 199-216, 2015.
- [19] P. Yogi, O. Rizal, Ahmadi, and O. S. Suharyo, "Feasibility Analysis of Naval Base Relocation Using SWOT and AHP Method to Support Main Duties Operation," *Journal of Defense Management*, vol. 7, no. 1, pp. 1-8, 2017.
- [20] Asri Wahyudi, Ganesha Wandawa, Ranu Samiaji, and A. K. Susilo, "Strategic Development the Capability of Indonesia Warship (KRI) dr. Soeharso-990 for Combine Operation of Human Assistance/Disaster Resilience (HA/DR) in Southeast Asian Regional," *Journal of Defense Resources Management*, vol. 10, no. 2, pp. 73-91, 2019.
- [21] Nourdine El Hajami and Justine Chinoperekweyi, "A Global Analysis of the Role of Offsets in Aerospace Industry," *Saudi Journal of Business and Management Studies*, vol. 4, no. 1, pp. 147-163, 2019.
- [22] Peter Platzgummer, *Performance Management in Arms Trade Offsets: The Rationale and Application of Effective Management Tools*. Schaan: University of St. Gallen, 2015.
- [23] Aziz Acar, "Strategic Foresight in an Unstable Economic Environment Environment," Twente, 2015.
- [24] I. N. Putra, A. Hakim, S. H. Pramono, and A. S. Leksono, "The Effect of Strategic Environment Change toward Indonesia Maritime Security : Threat and Opportunity," *International Journal of Applied Engineering Research*, vol. 12, no. 16, pp. 6037-6044, 2017.
- [25] A. K. Susilo, U. Ciptomulyono, I Nengah Putra, Ahmadi, and Okol S. Suharyo, "Navy Ability Development Strategy using SWOT Analysis-Interpretative Structural Modeling (ISM)," *Strategic Management*, vol. 24, no. 1, pp. 30-40, 2019. [Online]. <http://www.ef.uns.ac.rs/sm/archive/2019-1/04-SM2019-1.pdf>

## INFORMATIVE COMBAT OF THE RUSSIAN HYBRID WAR

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*The objective of this paper is to analyze the control system that the media offered to Russian disinformation campaigns in a supposed context of hybrid warfare. The exposure of the news offered by the main media channels allows the analysis of the concept of hybrid warfare to be concentrated and its comparison with the traditional strategic conception, in order to determine if the activities in question can be classified in this type of conflict. Information warfare and related components such as cyber warfare, electronic warfare and more, are becoming increasingly complex and can be used both defensively and offensively in the current security context offered by the national media.*

**Key words:** *hybrid war, media, propaganda, strategic ability, Russian Federation, security environment, independent system.*

### 1. INTRODUCTION

The incorporation of information and communication technologies (ICT) has brought a total change in the way we interact and communicate, but also in the way we inform ourselves. The expansion of what we know today as the Internet has allowed millions of people around the world to have access to the largest source of information in human history, primarily through smartphones, personal computers and state-of-the-art tablets.

One of the areas where the spread of the Internet had the greatest impact was communication, both in the structure of the media, in the field of its audience and in the content itself. Traditional media has been forced to adapt its organization to new formats and to a continuous demand for information from readers, in addition to the emergence of new media, exclusively digital. But this request for information has also raised some doubts about the credibility and quality of information, which is really worrying if we consider the importance of the media in democratic societies. The speed with which news is currently being propagated - either through websites, media or social

networks - has an almost immediate impact on public opinion and, in many cases, ephemeral. The need to continuously generate news meant that they have a huge volatility, while conditioning the quality of the information.

In this context, public complaints addressed to Western governments regarding alleged misinformation campaigns led by the government of the Russian Federation have concentrated much of the attention of the international media. Concepts such as cyber-attacks, fake news, and hybrid threats have become widespread to denounce the spread of fake news in order to destabilize internal processes such as the June '20 Brexit, US presidential elections, and the Political Crisis and Catalan social network from Spain, which reached its peak in October 2017. According to the statements, attempts to intervene would be based on the use of information understood as a military element, of an asymmetrical nature, in a supposed context of hybrid war, directed by the Russian Federation against Western democracies, through the so-called "Gerasimov Doctrine".

### 2. METHODOLOGY

The purpose of this analysis is to compare the journalistic treatment that the media has offered to disinformation campaigns and to Russian hybrid problems. The concept of hybrid developed traditionally from a strategic-military field, influenced the events mentioned above in the current context of the hybrid war, as emphasized by most media and analysts in the field.

The article starts from the presentation of a series of news related to the disinformation campaigns of Russian origin and the influence that the concept of hybrid war had. Due to the large amount of news published on these issues, from the synthetic procedure, a general selection of news from various prestigious national and international media have provided a variety of perspectives such as The Guardian, The Washington Post, BBC and the Later Country, and following descriptive method, the term hybrid warfare is introduced from its traditional conception, starting from the origin of the concept, exposing some general definitions and characteristics and contextualizing it in what became popular as Gerasimov doctrine. Finally, by comparative method, the journalistic treatment of this type of conflict is compared with the traditional strategic conception.

### 3. CONTEXTUALIZATION OF THE HYBRID WAR

In recent years, taking as a temporary reference the referendum that took place in the UK to leave the European Union and especially after the US presidential elections held in November 2016, the media has concentrated much of its international information, warning of the danger posed by fake news - popularized as fake news - for Western democracies.

In its information objective, the media has used all kinds of concepts, new to a large part of the public, such as cyberspace, cyber-attack, cyber warfare or hybrid warfare, to explain the

events that occur through what we commonly call the Internet, in which a state, in this case the Russian Federation, would use the digital sphere to interfere with another's state internal processes, in order to destabilize its democratic systems. In this unique and complex context, here's how the media reported on events.

Although Brexit is now considered an example of Russian interference in the election campaign, we found few references in the media that, both during the campaign and in the post-referendum period, accused the government of Vladimir Putin of wanting to influence the vote. The referendum defined these activities as a hybrid war. For the most part, the post-election analyzes focused on the uncertainty generated by the United Kingdom's exit from the European Union, the economic, political and social consequences that could follow, as well as the new role of the European Union at that time.

To a large extent, it was only in the US presidential elections, held in November 2016 that the media directly indicated to Moscow that they had carried out computer attacks against the Democratic Party and orchestrated misinformation campaigns to influence voting through public opinion. At this point, the emphasis was placed on cyberspace and the vulnerabilities it represents for Western democracies. Despite this fact, only after a few months began to appear continuously information about the possible Kremlin interference in the British referendum, through the spread of fake news, as well as through the use of social media.

The events marked before and after the role that a foreign power would have played in trying to influence an internal electoral process. These were a warning signal for the European countries that later months they were going to organize different electoral processes. In this context, the Guardian newspaper stated in a headline that *"the EU is intensifying its campaign against Russian propaganda"* [1] because of the fear that would have generated

the possible Russian influence in the US elections, as this could extend to Europe. It is emphasized that the Union will *"step up efforts to counter Russia's hybrid war campaign after Donald Trump's election."* [2] The news refers to the East STRATCOM working group, an organization created in 2015 by the EU External Action Service - and therefore before the processes presented here - to counter Russian misinformation campaigns during the crisis in Ukraine.

In this international context of misinformation, fake news, Russian influences in electoral processes, cyber-attacks and alleged hybrid war, Spain has been plunged into a major political and social crisis because of a referendum by the regional government of Catalonia, at the beginning of October 2017, which was intended to decide by consultation on the possibility of independence from the Spanish state, without the consent of the Spanish government. These activities were quickly incorporated into the information language. Titles such as *"Cyber war between the Catalan and Spanish governments to close the referendum site"* [3], published in the El País newspaper a few days before the referendum or *"The great Catalan cyber war of 2017"* [4], published by The Washington Post, just two weeks after held the referendum, they used the concept of cyber war in a generic way, regardless of its significance and possible implications, for the simple fact that certain activities were carried out through the network.

The concept of cyber war was one of the most used in the journalistic field to refer to the activities that take place on the Internet, but in return, it created confusion. Richard A. Clarke, former US National Security, Infrastructure Protection and Counter-Terrorism Coordinator and President's Special Adviser on Cyber Security, defines cyber war as *"actions taken by a nation-state to break into computers or other state networks for the purpose of causing damage or alteration."* [5] Except for cyber-

attacks against the Democratic Party, for which he had access to the campaign data and information of the Party members, the propaganda activities that took place in Brexit and in the Catalan conflict cannot be described as cyber war, according to Clarke's Definition, as they would not have led to the illegitimate access to the systems or networks of other states, in order to cause damages or changes, but rather they would be influential and manipulative activities through the network.

This new doctrine, elaborated in Russia, seeks to weaken democracies, mixing in their electoral processes and fueling their internal conflicts, whether ideological or territorial, using tools such as fake news or manipulation of social networks.

Instead, they just say that we are in a conflict (hybrid war) promoted by a state actor (Russia), by spreading fake news over the internet and social networks, with the ultimate goal of weakening Western democratic governments. On the other hand, the news of these activities presents the hybrid war as something new, which is part of a military doctrine of Russian origin known as the Gerasimov doctrine.

#### 4. THE ORIGIN AND CHARACTERISTICS OF THE HYBRID WARS

There are authors who attribute the origin of the term hybrid warfare to the retired US Marine General Robert Walker, who in 1998 analyzed in his paper the hybrid model of wars. On the other hand, there are those who point out that the origin should be placed a few years later, in 2002, when the term was used to explain the tactical actions of the First Chechen War, which took place between 1994 and 1996. However these were not officially used until the 2005 US National Defense Strategy [6]. Only in 2005 was the publication of Future Warfare: The Rise of Hybrid Warfare published by General James N. Mattis and Colonel Frank G. Hoffman and the

work Conflict in the Century. Rise of Hybrid Wars published by Frank G. Hoffman, when the concept gained theoretical content and became popular.

The concept has been largely extended to try to understand contemporary wars between state and non-state actors, in which a top theoretical actor in the field of technology, military or doctrinal capacity has been surprised by a non-state actor.

#### 4.1. Definitions of hybrid warfare

One of the first approaches defines hybrid warfare as *"the one at the intersections between special war and conventional war."* [7] For his part, Hoffman broadens and specifies his nature and considers that *"it mixes the lethality of the state conflict with the fanatical and widespread fervor of the irregular war"* [8]. It can be promoted by both state and non-state actors. These conflicts *"incorporate a variety of different ways of conducting war, including conventional capabilities, irregular tactics and formations, terrorist activities, including violence and coercion without discrimination and criminal disturbance."* [8] In practice, this involves the combination of conventional and irregular activities. In a similar vein, the infantry colonel of the Spanish army, José Luis Calvo Albero, defines the hybrid war as the *"one in which at least one of the opponents uses a combination of conventional operations and irregular war, mixed with the latter, with actions, terrorists and connections to organized crime."* [9]

Despite these approaches, there is currently no precise definition of the concept, which is widely accepted, beyond the smallest common denominator of the combination of conventional, asymmetrical means, procedures and tactics. In post-Cold War conflicts, those who faced western states would, at times, have used conventional forces, irregular troops, terrorist acts and organized crime.

#### 4.2. The characteristics of hybrid wars

The news presented the hybrid war as a unique conflict, focusing mainly on the information element, misinformation and fake news, and its dissemination on the Internet. But such conflicts would also involve combining other elements to consider, such as the actors involved, the type of weapons they have and the scenarios that are constantly developing. Some features of hybrid wars are:

- *The physiognomy of the actors involved:* these include states, guerrilla groups and terrorists, as well as organized crime groups or private military contractors. These types of conflicts can be assumed by state actors or non-state actors. As noted above, analyzes of hybrid warfare have focused mainly on confrontations between non-state actors, regularly attacked by a failed state, and western states, such as in the wars in Afghanistan, Iraq, and confrontation between Hezbollah and Israel. Insurgent groups would develop hybrid warfare because they would have lower capabilities for state actors, personnel deficiencies, doctrine, weapons and technology. Comprised mainly of volunteers, the objective would be to counteract the superiority of the state actor and exploit its vulnerabilities. On the other hand, this type of conflict can also arise from the state actors, in a possible conventional confrontation with other state actors, superior from a military point of view. An unusual case would be the conflict between Ukraine and Russia in 2014, in which the most theoretically powerful state, Russia was the one who used the hybrid war against the least developed ones. This decision would be based on avoiding a conventional confrontation and, in turn, on a possible confrontation with the

United States and NATO, in which Russia would be the affected party.

- *Type of weapon used:* Irregular forces have more armament than ordinary armies, such as the latest technologies and heavy weapons, which makes it more difficult to distinguish between conventional and irregular forms of war.
- *The tactic used:* from the use of conventional actions to terrorist acts, the use of insurgent actions, informative operations or computer operations.
- *Use of information and communication technologies:* this feature of hybrid warfare includes the control of traditional media up to the internet and social networks. This would make it possible to strengthen one's own image or to counteract that of the adversary, in order to reach the "*hearts and minds of people*" [10], which would be largely psychological warfare. In this way, there is an increasing importance of the so-called information war and the use of cyberspace.
- *Scenarios for the battle space:* these types of conflicts are considered essentially urban, as opposed to guerrilla wars, which would take place in the jungle or mountains. This creates greater difficulties in achieving the military objectives, due to the presence of the civilian population and the possible consequences on the critical infrastructure, such as transport and energy.
- *Liaison with terrorist groups and organized crime:* It is common for groups involved in hybrid wars to have links with terrorist groups or organized crime. This does not necessarily imply that they have common goals.
- *The increasing importance of the psychological element:* there is an intentional disregard for the legality and

international humanitarian law by the promoters of hybrid wars and the related criminal and terrorist groups. On the contrary, the Western Armed Forces are subject to rules, military traditions or confrontation rules. Therefore, hybrid wars can be considered formally different from traditional conflicts, in that they "*have been fought conventionally and symmetrically on clearly defined fronts, with time-advanced technological means and subject to the commonly accepted uses and customs of war for competitors.*" [11]

- *Planning:* the promoters of this type of conflict would have previously detected the weaknesses of the adversary, in the political, ideological, economic or demographic field, in order to prolong the conflict, to increase the costs or to influence the perception of the societies and of the western states.

It should be noted that hybrid wars involve the combination of regular and irregular elements. Therefore, the use of one of these elements does not imply that a conflict can necessarily be considered a "hybrid". Russian activities in the cases: Brexit, the US elections and the Catalan conflict, have received the hybrid qualification largely due to the use of cyberspace and the combination of computer attacks, propaganda and misinformation, the use of information and communication technologies, as well as information operations. However, it was by no means an armed confrontation involving state or non-state actors.

## 5. THE HYBRID WAR AND THE RELATIONSHIP WITH MASS-MEDIA

According to the press, Russia is waging a hybrid war against Western states. However, the above classification presents a different scenario from those described. The news, according to

the news, is that only one state, Russia would wage such wars simultaneously against several states, including the main military powers such as the United States and Britain. This, through a continuous process that extends over time, but in which we can identify high pressure moments, for example, shortly before the electoral processes in the UK. Despite the development that Russia has made in the digital sphere, along with misinformation campaigns, it has no monopoly on these activities. However, the media reported that it is an almost exclusive activity of Russia. It should be borne in mind that one of the fundamental characteristics of the hybrid war would be not only the use of information and communication technologies, but also the simultaneous use of other components mentioned above. That is, the combination of the usual and irregular elements referred to by Hoffman. In the supposed hybrid war between Russia and the western states, there is no armed conflict in which regular and irregular forces participate, advanced weapons are used or terrorist acts are carried out.

One of the features emphasized by the media was the novelty of this type of conflict and the exclusivity that Russia had in approaching hybrid wars. Some experts believe that *"these forms of action can hardly be described as new or considered as a specific response to the westernized fighting style."* [12]

On the other hand, one of the characteristic elements of hybrid wars is the space in which they develop, mainly urban centers. If we look at the conflict in Eastern Europe, Russia would have used cyberspace as the main stage of its activities. For all these reasons, although computer operations were carried out via the Internet, not only the dissemination of news, but also computer attacks such as those against the United States Democratic Party, which allowed access to email accounts, these activities were defined as hybrid war, within the events exposed to the news.

## 6. GERASIMOV DOCTRINE AND THE HYBRID WAR

If the concept of hybrid warfare was concentrated in one part of the analysis, other concepts were used to contextualize these conflicts. The media emphasized that the hybrid war was part of a Russian military doctrine that became popular as the Gerasimov doctrine, which would expose the line separating the war from peace is now widespread, so they must develop tactics to allow it working in the shadows, conditioning the electoral processes, agitating the civilian population or hacking targets in other countries.

The origin of the concept dates from February 2013, with the publication of the article "The value of science in anticipation" of the Chief of Defense Staff of the Russian Army, General Valeri Gerasimov in the journal *Voyenno-Promyshlenny Kuryer*. For most Western media and analysts, the article is the cornerstone of what is known in the West as the Gerasimov doctrine. *"It is interpreted as a proposal for a new Russian mode of war that combines conventional and unconventional warfare with aspects of national power"* [13], which refers to indirect and asymmetrical methods. With the events in Crimea and Ukraine, some of the elements set out in Gerasimov's 2013 document have been identified and the idea that it exposes a new way of acting has been propagated.

The hybrid then crossed the border of strategic debate to become a word of common use and was used to define the full range of informational, destabilizing and subversive activities that the Kremlin could conduct in a hidden, semi-covert or clandestine manner, below the threshold of conflict.

Despite widespread acceptance of the concept and the fact that it represents a new doctrine, some analysts have questioned whether it is military doctrine or propose a new Russian way of waging war. It is noteworthy that he

stated in his article "*his perspective on the recent past, present and future of the war*" [14], based largely on what happened in the "*Arab Spring*" [15] and the "*color revolutions*" [16]. Gerasimov emphasizes non-military means, such as political, economic, humanitarian, undercover operations, as well as the importance of information. Russia, for its part, considers hybrid warfare to be a Western term and therefore different from its doctrinal system. In fact, the Russian Federation refers to different terms related to hybrid warfare, such as "*non-linear warfare*", "*ambiguous warfare*" and "*network warfare*" [17].

Three years later, Gerasimov published a new article in which he presented some ideas about contemporary wars, apparently similar to the previous document, but in which he added the experiences of conflicts in Ukraine and Syria. Gerasimov identifies hybrid methods in color revolutions and states that these movements are, in fact, matters promoted by the West. Unlike the 2013 article, this document refers openly to wars and hybrid methods, but in a different way as the ones from the West.

As mentioned above, hybrid warfare would combine conventional and irregular methods, in which we found links with organized crime or terrorist groups, while, in Gerasimov's view, in contemporary conflicts, it is increasingly common to give priority to common uses of non-military, political, economic, informational and other measures that are implemented with the support of military force [18]. All of these elements integrated under the same umbrella are called hybrid methods.

In practice, this would imply a more limited perception of hybrid actions than the West has. Despite this difference, the author argues that the integration of traditional and hybrid activities is a feature of contemporary armed conflicts, in which he indicates the informative element as the main of the hybrid methods. This is because the falsification of events, the limitation of the media activity, become one of

the most efficient asymmetrical methods for carrying out wars. Its effect can be comparable to the results of massive troop use.

In short, Gerasimov refers to hybrid warfare methods, as he believes that Russia should cope with these types of wars and, therefore, must know and adapt to them. In addition, it must be taken into account that Gerasimov presents it in a scenario of armed warfare, while misinformation campaigns and fake news in the West would take place in a context of political and social tension and confrontation, but in the absence of an armed conflict. Last but not least, Mark Galeotti, the analyst who coined the term *Gerasimov's doctrine* [19], not only denied the existence of that alleged doctrine, but also noted that Gerasimov's article was intended to resolve how to combat unconventional actions.

## 7. CONCLUSIONS

It is common to find news related to misinformation campaigns of Russian origin claiming to be registered in a context of hybrid warfare against the West. The main problem with the journalistic information presented here is that, for most part, the authors do not expose even a brief approximation to the concepts used, their meaning and implications, such as misinformation, fake news, cyber war or hybrid warfare.

Sometimes this leads to the use of some of these concepts as synonyms. Possibly, one of the reasons for the confusion is the mix between the use of recent concepts, in this case, those related to the cyber space, with others that are traditionally located in a military and academic field, in an attempt to wish to be informed about changes that appear on the international stage. This is also due to the spiral in which the media has entered, driven by a constant demand for information from citizens, wanting to be informed almost minute by minute about the latest news, which means the information

quantity rather than the quality of the messages is transmitted.

Undoubtedly, the use of cyber and information by Russia has been the focus of the news regarding the hybrid war. But while it is true that this country has encouraged the use of information operations and has taken advantage of the potential of the digital environment in its interests, it is true that the development of misinformation campaigns and the use of information and communication technologies cannot be identified solely with the hybrid war.

One of the characteristics of hybrid conflicts is the combination of different conventional and asymmetrical elements, but the news focused almost exclusively on the digital element, through which the campaigns of misinformation, fake news and the massive use of social networks were developed. Although they can be part of hybrid conflicts, and the fact that in recent years the cyber element has gained enormous importance in conflicts, we cannot stress that these activities are movements of the hybrid war.

Therefore, if we conclude that the events that took place on the occasion of Brexit referendum, in the US elections and in the Catalan conflict cannot be described as a hybrid war, a significant analysis framework to understand the news of cyberspace and its impact on international relations in these scenarios could be developed from the grey area concept. The concept defines those activities that are below the conflict threshold, which are conducted in peacetime, as opposed to hybrid warfare, and which include computer attacks or misinformation and propaganda campaigns that would have as a common feature the difficulty of determining their attribution. Therefore, this concept would allow an analysis of activities that are not specifically described as war actions, but could become just as decisive as a military conflict.

The analysis presented in the article focuses on the importance of conceptualizing and

contextualizing the reported facts. It is clear that the practice of journalism differs from the academic field, but it is true that the news should transmit as rigorously as possible and expose to the reader what is happening in their specific context, trying to use appropriate concepts in each case. We are still in an early stage in the analysis of cyberspace capabilities, and its reduction only to the use that a single state can make for the dissemination of propaganda campaigns, which means we do not understand its potential in international relations.

#### ENDNOTES AND REFERENCES

- [1]. Boffey, Daniel, Jennifer Rankin, "EU escalates its campaign against Russian propaganda." The Guardian, 23 November 2017;
- [2]. Boffey, Daniel, „UE strânge fonduri pentru combaterea războiului de dezinformare cu Rusia". The Guardian, 5 decembrie 2018;
- [3]. Pueyo, Jordi. 2017. "Ciberguerra entre los gobiernos catalán y español por el cierre de la web del referéndum". El País, 14 de Septiembre.  
[https://elpais.com/ccaa/2017/09/14/catalunya/1505390726\\_024743.html](https://elpais.com/ccaa/2017/09/14/catalunya/1505390726_024743.html), accessed at 14.06.2019;
- [4]. Caryl, Christian. 2017. "The great Catalanian cyberwar of 2017". The Washington Post, 18 de Octubre.  
<https://www.washingtonpost.com/news/democracy-post/wp/2017/10/18/the-great-catalonian-cyberwar-of-2017/>, accessed at 04.08.2019;
- [5]. Clarke, Richard A., Robert K. Knake. 2010. *Cyber War: the next threat to national security and what to do about it*. EEUU: Harper Collins Publishers;
- [6]. Colom, Guillem. 2019. "La amenaza híbrida: mitos, leyendas y realidades". Instituto Español de Estudios Estratégicos, Do-cumento de Trabajo.  
[http://www.ieee.es/Galerias/fichero/docs\\_opinion/2019/DIEEEO24\\_2019GUICOL-hibrida.pdf](http://www.ieee.es/Galerias/fichero/docs_opinion/2019/DIEEEO24_2019GUICOL-hibrida.pdf), accessed at 19.01.2020;

- [7]. Walker, Robert G. 1998. “*Spec Fi: The United States Marine Corps and Special Operations*”. Tesis de maestría, Naval Postgraduate School.  
<https://apps.dtic.mil/dtic/tr/full-text/u2/a359694.pdf>, accessed la 09.02.2020;
- [8]. Hoffman, Frank G. 2007. *Conflict in the 21st Century. The Rise of Hybrid Wars*. Virginia: Potomac Institute for Policy Studies.  
[http://www.potomacinstitute.org/images/stories/publications/potomac\\_hybridwar\\_0108.pdf](http://www.potomacinstitute.org/images/stories/publications/potomac_hybridwar_0108.pdf), accessed at 09.02.2020;
- [9]. Palacios, José Miguel. 2016. “Rusia: guerra híbrida y conflictos asimétricos”. Revista Ejército 904, julio-agosto: 22-27;
- [10]. Wither, James K. “*Making Sens of Hybrid Warfare*”. Connections: The Quarterly Journal 2, 2016;
- [11]. Colom, Guillem. 2018. “La Doctrina Gerasimov y el pensamiento estratégico ruso contemporáneo”. Revista Ejército 933, diciembre. <https://www.ugr.es/~gesi/Doctrina-Gerasimov.pdf>, accessed at 12.02.2020;
- [12]. Colom, Guillem “*Vigencia y limitaciones de la guerra híbrida*”. Revista Científica General José María Córdova 1, 2012;
- [13]. Bartles, Charles K., “*Cómo comprender el artículo de Gerasimov*”. Military Review, 2016;
- [14]. Gerasimov, Valeri. 2013. “*Ценность науки в предвидении*”. VPK 476 8, marzo. <https://vpk-news.ru/articles/14632>, accessed at 02.02.2020;
- [15]. “*The Arab Spring has been a series of protest movements that have taken place in several countries in the Middle East and North Africa since the end of 2010. Mainly, these have taken place in Arab countries where an authoritarian or totalitarian regime has ruled*”, [https://en.wikipedia.org/wiki/Prim%C4%83vara\\_arab%C4%83](https://en.wikipedia.org/wiki/Prim%C4%83vara_arab%C4%83), accessed 24.02.2020
- [16]. “*The color revolution is the non-violent overthrow of power through street protests*”, <https://ro.odkurzacze.info/2746-the-most-famous-color-revolutions.html>, accessed on 23.02.2020;
- [17]. Milosevich, Mira “*El poder de la influencia rusa: la desinformación*”. Real Instituto Elcano, ARI 7/2017, 2017;
- [18]. Gerasimov, Valeri. . “*По опыту Cupuu*”. VPK 624 9, 2016 marzo. <https://www.vpk-news.ru/articles/48913> accessed at 09.02.2020;
- [19]. Galeotti, Mark. 2018. “*I’m sorry for creating the Gerasimov Doctrine*”. Foreign Policy, <https://foreignpolicy.com/2018/03/05/im-sorry-for-creating-the-gerasimov-doctrine/>, accessed at 23.02.2020.